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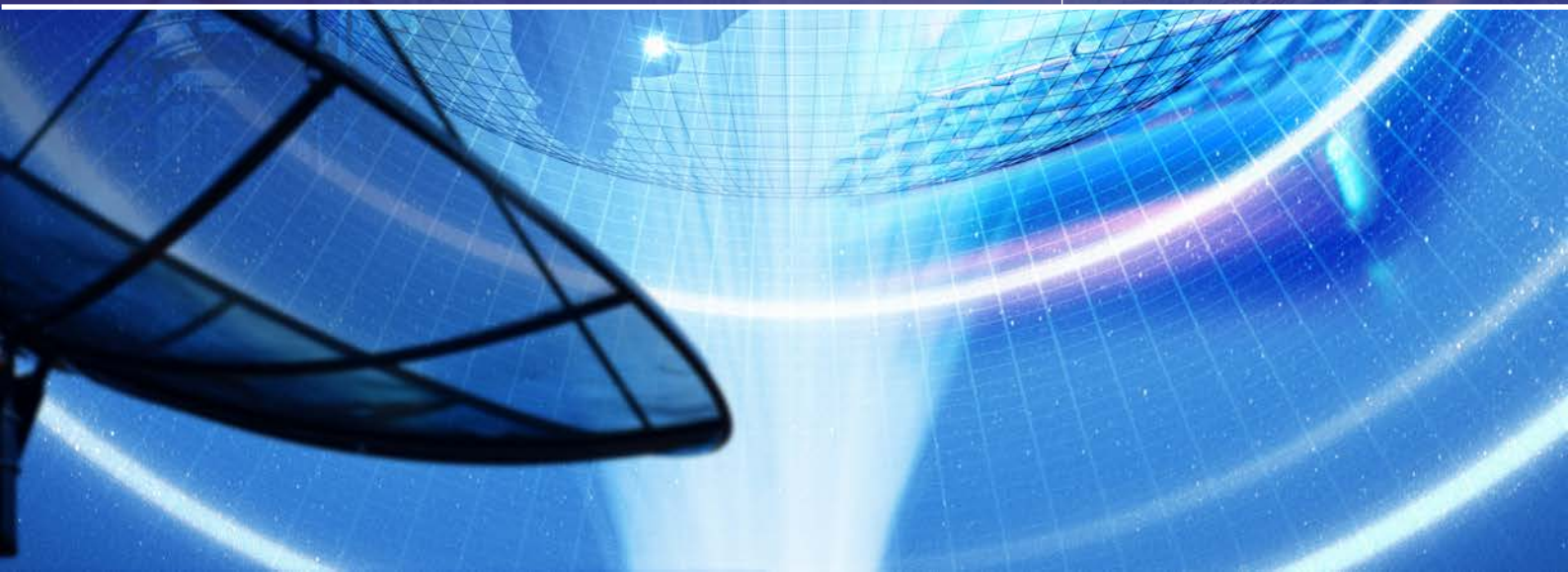
The Global Information Technology Report 2010–2011

Transformations 2.0

10th Anniversary Edition

Soumitra Dutta
Irene Mia



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Soumitra Dutta, INSEAD

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Editors

The Global Information Technology Report 2010–2011 is a special project within the framework of World Economic Forum's Centre for Global Competitiveness and Performance and the Industry Partnership Programme for Information Technology and Telecommunications Industries. It is the result of a collaboration between the World Economic Forum and INSEAD.

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The terms *country* and *nation* as used in this report do not in all cases refer to a territorial entity that is a state as understood by international law and practice. The terms cover well-defined, geographically self-contained economic areas that may not be states but for which statistical data are maintained on a separate and independent basis.

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Preface

ROBERT GREENHILL
Chief Business Officer, World Economic Forum

The last decade has seen information and communication technologies (ICT) dramatically transforming the world, enabling innovation and productivity increases, connecting people and communities, and improving standards of living and opportunities across the globe. While changing the way individuals live, interact, and work, ICT has also proven to be a key precondition for enhanced competitiveness and economic and societal modernization, as well as an important instrument for bridging economic and social divides and reducing poverty.

As we celebrate the 10th anniversary of the *Global Information Technology Report* (GITR) series and the extraordinary achievements ICT has already made possible over the past 10 years, we also want to take the opportunity to look forward and imagine the next transformations enabled by ICT—*transformations 2.0.* The pace of technological advance is accelerating and ICT is increasingly becoming a ubiquitous and intrinsic part of people's behaviors and social networks as well as of business practices and government activities and service provision. We expect transformations 2.0 to continue to move human progress forward by further leveraging ICT's positive social, political, and economic impact on governments, enterprise, and civil society alike.

The GITR series has been published by the World Economic Forum in partnership with INSEAD since 2001, accompanying and monitoring ICT advances over the last decade as well as raising awareness of the importance of ICT diffusion and usage for long-term competitiveness and societal well-being. Through the lens of the Networked Readiness Index (NRI), the driving factors of networked readiness and ICT leveraging have been identified, highlighting the joint responsibility of all social actors, namely individuals, businesses, and governments, in this respect. The series has become over time one of the most respected studies of its kind. It has been extensively used by policymakers and relevant stakeholders as a unique tool to identify strengths on which to build and weaknesses that need to be addressed in national strategies for enhanced networked readiness.

The Global Information Technology Report 2010–2011 features the latest results of the NRI, offering an overview of the current state of ICT readiness in the world. This year's coverage includes a record number of 138 economies from both the developing and developed world, accounting for over 98 percent of global GDP. A number of essays and case studies on transformations 2.0 and best practices in networked readiness are featured in the *Report,* together with a comprehensive data section—including detailed profiles for each economy covered and data tables with global rankings for the NRI's 71 indicators.

We would like to convey our sincere gratitude to the industry experts who contributed outstanding chapters to this *Report,* exploring the next ICT-enabled transformations and highlighting best policies and practices in ICT diffusion and usage. We especially wish to thank the editors of the *Report,* Soumitra Dutta at INSEAD and Irene Mia at the World Economic Forum, for their leadership and long-lasting dedication to the project, together with the other members of the GITR team: Roberto Crotti, Thierry Geiger, Joanna Gordon, and Derek O'Halloran. Appreciation also goes to Alan Marcus, Head of Information Technology and Telecommunications Industries and Jennifer Blanke, Head of the Centre for Global Competitiveness and Performance, as well as her team: Ciara Browne, Margareta Drzeniek Hanouz, Pearl Samandari, and Satu Kauhanen. Last but not least, we would like to express our gratitude to our network of 150 Partner Institutes around the world and to all the business executives who participated in our Executive Opinion Survey. Without their valuable input, the production of this *Report,* would not have been possible.

Foreword

SHUMEET BANERJI
Chief Executive Officer, Booz & Company

In the years that Booz & Company has been involved with the World Economic Forum and the *Global Information Technology Report* (GITR) series, we have seen information and communication technologies (ICT) offer the foundation for major leaps forward in almost every area of human activity. Governments, businesses, and consumers have a fundamentally different understanding of technology and its potential than they did 10 years ago, when the GITR was first published.

For each of these groups, the purpose of technology and the way they interact with it has changed. Governments, which once focused on the concrete issues of building infrastructure and providing access to citizens, are beginning to recognize that technology itself is not as important as the socioeconomic achievements it can engender—via e-health programs, e-government services, and smart grids for utilities, for example. Businesses have recognized that ICT is not just an avenue to cost-cutting and more efficient operations, but a critical way to open a dialogue with consumers and other stakeholders via all kinds of digital communications: mobile advertising, digital marketing, social networks, e-commerce. And consumers inhabit a new, always-connected digital world—particularly Generation C, those connected, communicating, content-centric, computerized, community-oriented, always-clicking consumers born after 1990.

As digital economies steadily become the norm, our goal at Booz & Company is to continue exploring the economic and social benefits that ICT can bring—and the ways in which they are increasingly interconnected. An e-health system built upon electronic medical records can improve bottom lines for hospitals, but it also offers social benefits by allowing for better patient care. Smart grids allow utilities to deliver a new range of smart home services, many of which also offer a greater environmental good.

More and more, various groups of stakeholders will need to collaborate on ICT projects in order to ensure that they are designed in ways that allow all of them to reap the potential advantages.

Furthermore, ICT's socioeconomic benefits are not limited by national borders. Technology allows the best and brightest minds in every nation to have access to each other in a way that was never before possible. Young people who may once have tried to clean up their cities can now form global communities of like-minded peers—and work together to clean up the planet. Talented entrepreneurs can launch their ideas in a global marketplace and tap into capital from halfway around the world.

Some might say that this sense of optimism, about the potential that can be created by an interconnected world, is misplaced. The theme for the World Economic Forum Annual Meeting 2011, "Shared Norms for the New Reality," acknowledged the pervasive challenges facing leaders and institutions—the aftermath of several demanding years in the global economy.

We choose to be relentlessly positive in the face of these challenges. Around the world, technology can help nations and individuals to level the playing field, to turn ideas into reality, to overcome generations of stagnant development. No nation and no region has a monopoly on innovation and new thinking. There is no area on the globe that has an inherent advantage in asking new questions, or exploring new areas. Digital economies, unlike the industrial economies of the past, do not rely on natural resources but on smart, ambitious individuals. There are many places on earth that can aspire to be the next Silicon Valley, the next Nanjing-Beijing corridor, the next Singapore.

It is based on this assumption that Booz & Company creates our vision for a world with seamless connectedness, always-on access to knowledge, and unrestricted openness to innovation. We are honored to contribute to *The Global Information Technology Report 2010–2011* and to continue shaping this vision for the future.

Executive Summary

SOUMITRA DUTTA, INSEAD
IRENE MIA, World Economic Forum

The *Global Information Technology Report* series celebrates its 10th anniversary this year. The series has followed and tried to cast light on the evolution of information and communication technologies (ICT) over the last decade, as well as raising awareness about the importance of ICT diffusion and leveraging for increased development, growth, and better living conditions. The methodological framework of the Networked Readiness Index (NRI) has mapped out the enabling factors driving networked readiness, which is the capacity of countries to fully benefit from new technologies in their competitiveness strategies and their citizens' daily lives. The Index has allowed private and public stakeholders to monitor progress for an ever-increasing number of economies
all over the globe, as well as to identify competitive strengths and weaknesses in national networked readiness landscapes. In doing so, the NRI and the series have grown into a unique policy tool in the discussion and design of national strategies to increase networked readiness and overall competitiveness.

As ICT continues to drive innovation, productivity, and efficiency gains across industries as well as to improve citizens' daily lives, *The Global Information Technology Report 2010–2011* takes a forward look on occasion of the 10th anniversary of its publication. Rather than focusing on the major economic, political, and social transformations enabled by ICT over recent years, the *Report* tries to imagine the new wave of transformations—*transformations 2.0.* Collecting the insights of practitioners, academics, and industry experts, the *Report* explores the ways in which ICT will further revolutionize the way social stakeholders work, interact, and conduct their lives, businesses, and transactions. ICT has shown its revolutionary power as a key catalyst for change, modernization, and innovation and one can safely predict this trend will only accelerate going forward. As in past editions, the *Report* highlights a number of best practices in ICT readiness and usage in order to showcase strategies and policies that have proven particularly successful in some specific country or region, and that could be a source of inspiration for relevant stakeholders around the world.

The *Report* series is the result of a long-standing partnership between the World Economic Forum (the Forum) and INSEAD, aimed at identifying the drivers of national capacity to leverage ICT advances. The *Report* is composed of four thematic parts. Part 1 relates the findings of the Networked Readiness Index 2010–2011 (NRI) and features selected expert contributions on the general theme of transformations 2.0. Part 2 includes a number of case studies showcasing best practices in networked readiness in Costa Rica, Saudi Arabia, the United States, and the European Union. Part 3 comprises detailed profiles for the 138 economies covered in this year's *Report,* providing a thorough picture of each economy's current networked readiness landscape and allowing for international and historical comparisons on specific variables or components of the NRI. Part 4 includes data tables for each of the 71 variables composing the NRI this year, with rankings for the economies covered as well as technical notes and sources for the quantitative variables used.

Part 1: The Current Networked Readiness of the World and ICT-Enabled Transformations 2.0

Part 1 presents the latest findings of the NRI, offering a comprehensive assessment of the present state of networked readiness in the world. Moreover, a number of expert contributions focusing on the coming transformations, enabled and driven by ICT, are included. These relate to (1) the emerging Internet economy, (2) communities to be built around digital highways, (3) the promise of technology, (4) ICT's growing impact on poverty reduction, (5) ICT's contribution to meeting the decade's challenges, (6) localization 2.0, (7) ICT for an effective social strategy, (8) the creation of a fiber future and its regulatory challenge, and (9) mobile banking in the emerging world.

Insight from the NRI 2010–2011 on the world's networked readiness

Chapter 1.1, "The Networked Readiness Index 2010–2011: Celebrating 10 Years of Assessing Networked Readiness," presents the latest findings of the Index, putting them into a regional and income-group context while also looking at the across-years trends in networked readiness.

The current networked readiness framework and resulting NRI were developed by INSEAD in 2002 as part of an ongoing joint research project with the Forum, and is the main methodological tool used in the *Report* to assess the extent to which a record number of 138

economies around the world leverage ICT advances for increased competitiveness and development. The framework gauges:

- the conduciveness of national environments for ICT development and diffusion, including the broad business climate, some regulatory aspects, and the human and hard infrastructure needed for ICT;
- the degree of preparation for and interest in using ICT by the three main national stakeholders in a society (i.e., individuals, the business sector, and the government) in their daily activities and operations; and
- the actual use of ICT by the above three stakeholders.

Although the networked readiness framework has been kept stable since 2002, with some modification in the nature and number of variables, a process of revision was begun last year to better capture recent trends and evolutions in the ICT sector. The chapter provides some information on recent and expected future developments. As in previous years, the NRI is composed of a mixture of quantitative data collected by international organizations—such as the International Telecommunication Union (ITU), the United Nations, and the World Bank—and survey data from the Executive Opinion Survey (Survey), conducted annually by the Forum in each of the economies covered by the *Report*. The NRI 2010–2011 covers a record number of 138 economies from both the developed and developing world, accounting for over 98 percent of world GDP.

Sweden tops the 2010–11 rankings for the second time in a row, with an outstanding performance across the board. Although some Nordic countries lost some ground with respect to last year, the others are still among the most successful countries in the world at fully integrating new technologies in their competitiveness strategies and using them as a crucial lever for long-term growth. Finland, Denmark, Norway, and Iceland rank among the top 20, at 3rd, 7th, 9th, and 16th, respectively.

Singapore is stable at 2nd, leading Asia and the world in networked readiness, followed by Finland (up three places from last year), Switzerland, and the United States.

Europe continues to display remarkable levels of ICT readiness, with 11 regional economies featuring among the top 20 of the world's best performers. Besides the Nordics and Switzerland, the Netherlands (11th), Germany (13th), Luxembourg (14th), the United Kingdom (15th), and France (20th) rank among the most networked economies worldwide.

Asia is home to some of the best performers in the world in the NRI rankings and to the countries that have proven the most dynamic over time. In particular, six economies besides Singapore feature among the top 20, namely Taiwan (6th), Korea (10th), Hong Kong (12th), Australia (17th), New Zealand (18th), and Japan (19th). With regard to the largest Asian emerging markets, China consolidates its position at 36th after years of impressive progression in the rankings, while India loses some ground and is down five places at 48th.

Although a number of countries in Latin America and the Caribbean region post notable improvements or consolidate their achievements in networked readiness, the region as a whole continues to trail behind international best practices in leveraging ICT advances. No Latin American or Caribbean economy appears in the top 20 and only a handful feature in the top 50: Barbados (38th), Chile (39th), Puerto Rico (43rd), Uruguay (45th), and Costa Rica (46th). While Brazil climbs five places to 56th, Mexico is stable at 78th, and Argentina drops five places to 96th.

The assessment of sub-Saharan Africa's networked readiness continues to be disappointing, with the majority of the region lagging in the bottom half of the NRI rankings, bar Mauritius (45th) and South Africa (61st). Tunisia consolidates its leadership in North Africa at 35th place, while all other countries in the region, with the exception of Morocco (83rd, 5 places up), follow a downward trend. The biggest decline is that of Libya, which drops a staggering 23 places to 126th. Egypt (75th) and Algeria (117th) lose 4 places each, although both improve in score. On a more positive note, the Middle East continues to feature prominently in the rankings, with four countries in the top 30, namely Israel (22nd), the United Arab Emirates (24th), Qatar (25th), and Bahrain (30th).

An analysis of country and regional trends in networked readiness using a five-year time series and an overview on future dissemination efforts and the impact of the *Report* are also included in the chapter.

The emerging Internet economy going into the future

The next decade will see the global Internet transformed from an arena dominated by advanced countries, their businesses, and citizens to one where emerging economies will become predominant. As more citizens in these economies go online and connectivity levels approach those of advanced markets, the global shares of Internet activity and transactions will increasingly shift toward the former. In addition, with the improvement in the speed and quality of broadband and with Web 2.0 technologies and applications, economic and social dynamics across the world will change dramatically, with massive implications in terms of productivity gains and new opportunities for individuals. This inflection point presents an opportunity for economies—and cities—all over the globe to take decisive steps to gain the competitive advantage that can be derived from widespread use of broadband networks.

In their chapter "The Emerging Internet Economy: Looking a Decade Ahead," authors Enrique Rueda-Sabater and John Garrity (both at Cisco Systems) illustrate this transformation through the dynamics of the global Internet economy—the factors behind which are faster growth in emerging countries, rapid expansion of their consumer class, and developments in wireless technology—and take a look at the paths of Internet connectivity that different countries have followed. They found that two major factors especially impact the spread of Internet: the availability of personal computers (PCs), and the density of preexisting fixed telephone lines and cable. On this basis, a country classification from a connectivity perspective is proposed, as follows: first adopters, converging adopters, and belated adopters. Through this analysis and classification, the authors seek to gain insights into the likely dynamics—and the options countries face—as Internet use becomes more intensive (through faster and higher-quality broadband) and more widespread (as networks, both fixed and wireless, connect more and more people around the world). For converging adopters, the challenge appears to be accelerating the speed of adoption and reducing the lag between widespread Internet penetration and broadband penetration. For belated adopters, it is shifting gears to leapfrog to faster Internet and broadband adoption. The authors believe the answer in both cases points toward the implementation of a comprehensive strategy combining investments in broadband infrastructure and skills concomitantly with improving the policy and regulatory frameworks that affect the adoption of network technology.

Building communities around digital highways

Recognizing the crucial role played by digital highways (defined as nationwide high-speed broadband enabled by a combination of fixed as well as wireless networks) in fostering socioeconomic development, governments around the world are spending billions and setting ambitious targets to foster their growth. Just as actual highways connect people and foster social and commercial activity, digital highways can facilitate the creation of virtual communities in vital areas. When policymakers and telecommunications operators collaborate with leaders in other sectors, such as health and education, they are laying the groundwork for profound improvements—boosting national competitiveness, innovation, economic productivity, and social inclusion.

In Chapter 1.3, "Building Communities around Digital Highways," Karim Sabbagh, Roman Friedrich, Bahjat El-Darwiche, and Milind Singh (all at Booz & Company) delve into the rationale for digital highways and assess their current development status in order to determine the actions required from policymakers, networked operators, and other relevant stakeholders to facilitate broadband deployment and the opportunities ahead. The authors remark that accelerating the deployment of digital highways and deriving full benefits from this is not a simple task. It requires fundamental changes in vision and action throughout the entire broadband ecosystem. They believe policymakers and network operators first must look beyond broadband networks alone and facilitate the development of a host of related services and applications, then actively encourage citizens to use them. The authors also claim there is a strong need for collaboration among other sector participants such as device manufacturers, applications developers, and counterparts in adjoining sectors. Finally, the members of the broadband ecosystem must work with their counterparts in adjacent industries—such as health, energy, education, and transportation—to develop the applications that will help those sectors to reap broadband's benefits. Only when all of these stakeholders are fully engaged can digital highways reach their full potential and facilitate efficiency, competitiveness, and prosperity in the communities they serve. The future of digital highways rests on a collaborative, committed, and capable ecosystem, which not only delivers high-speed broadband but also builds vibrant communities around it. The authors strongly believe that communities facilitating stakeholders' innovation, adoption, and collaboration will realize the extraordinary potential of broadband.

The promise of technology

The pace of change and technological evolution has accelerated greatly over the last decades, with unequivocally positive transformations for societies, companies, and individuals. It is remarkable not only how dramatically the technologies in everyday use have changed, but also how easily society as a whole has adopted these innovations. ICT has provided the foundation for the huge leaps that we have witnessed in the last few decades. Its impact can be grouped into at least three distinct categories: economic, business, and social. The three are interrelated, in the sense that what happens in each is both cause and consequence of what happens in the others.

In his chapter "The Promise of Technology," César Alierta from Telefónica provides a thoughtful overview of the most recent technological advances, notably those enabled by ICT, and points to some of the possibilities for future evolution. Areas addressed in the chapter include ICT's impact on productivity and competitiveness, business management, companies' size, knowledge of the market and networks, and relations between governments and citizens, among others. The chapter's review leads to the inescapable conclusion that we almost certainly have much yet to discover. In light of the transformations we have already experienced, the author concludes it is improbable that the next decades will not see further significant discoveries or, for that matter, that the innovation dynamic in ICT will substantially diminish. Indeed, the current pipeline is already full and promising, and constantly being

refilled. The idea, however—Alierta says—is not to seek innovation for innovation's sake. Technology has profoundly and positively reshaped the world in which we live—for individuals and for whole societies, changing our lives for the better.

ICT's growing impact on poverty reduction

During the past few years, a growing number of poor people have benefited from improved access to interactive communication. The rapid uptake of mobile telephones even in remote locations of low-income countries, together with the emergence of many innovative mobile applications and services, has radically increased the potential for ICT to play a constructive role in the fight against poverty. At the same time, the role of the poor in this context is transforming, increasingly shifting from one of passive consumption of ICT toward one of active use and participation in the production of ICT goods and services, thus giving greater importance to ICT in development and poverty reduction strategies. Enterprises have a crucial role in this endeavor, especially small and micro ones, which see the greatest involvement of the poor. They can help reduce poverty in two main ways: through direct income generation, and through diversified and more secure employment opportunities.

Chapter 1.5, "The Growing Possibilities of Information and Communication Technologies for Reducing Poverty" by Torbjörn Fredriksson (UNCTAD), highlights some innovative applications that can make a tangible difference and improve living standards of the urban and rural poor, with a particular focus on the role of enterprises. Two ways in which ICT in enterprises can benefit the poor are considered: the first by using ICT in enterprises of direct relevance to farmers, fishermen, and other micro enterprises in low-income countries; the second occurs when the poor are directly involved in the sector and are employed producing ICT goods and services. The author advocates for a holistic poverty-focused approach to ICT and enterprise in order to seize the many opportunities that are appearing as well as to address potential pitfalls. He believes a poverty-focused approach to ICT and enterprise must aim to identify and facilitate economic growth in ways that are socially inclusive. Policymakers need to support ICT adoption and use at lower levels of economic activity and sophistication, including subsistence-based enterprises. To this end, a first step should be for governments and development partners to ensure the further expansion of mobile coverage to those areas not yet covered by a mobile signal and adequate levels of competition, as well as to enhance access to broadband technologies. In addition, mobile and other ICT services need to be made affordable to the poor through an array of measures, including a long period of prepaid validity, per-second charging, nationwide tariffs, and commercialization of used handsets for mobile telephony as well as ways of addressing the lack of electricity, for example. At the same time, the author calls for governments and development partners to work with the private sector—the primary source of infrastructure investment and service innovation—if they want to fully realize the promise of ICT for poverty reduction. Successful projects aimed at enhancing the productive use of ICT by enterprises have often seen the involvement of multiple stakeholders acting in partnerships.

Meeting the decade's challenges

No one would argue that both business and society at large face daunting challenges over the next decade. To take just one example from business, many companies are counting on emerging markets as the primary source of their revenue growth in coming years—forgetting that for the foreseeable future, products in those markets will sell at a fraction of their developed-economy prices. Such business challenges will play out against the backdrop of monumental societal issues, including how to deliver basic education and healthcare to billions of people who lack them today. Transformational ICT will play a central role in solving many of the challenges we face. For starters, the spread of ICT throughout the developing world—continuing the trend documented in this and previous *Global Information Technology Reports*—will make it easier to distribute fundamental services, such as education and healthcare, more broadly. At the same time, technology innovations in areas such as mobile and cloud computing will spawn solutions to specific business problems.

But in Chapter 1.6, "Meeting the Decade's Challenges: Technology (Alone) Is Not the Answer," Vineet Nayar (at HCL Technologies) points out that even the most transformational technology offers little value on its own. Sparking ICT innovation and enabling the implementation of new technologies require the human catalyst of an engaged and empowered team of people. The author argues that because ICT innovation and implementation typically involve people in organizations—whether business, nonprofit, or governmental—we need to reinvent the traditional hierarchical organization if we are to realize ICT's tremendous potential. Drawing on HCL's experience of organizational reinvention, the chapter presents a number of lessons for organizations aiming to foster transformational ICT by transforming themselves, as follows:

1. Recognize one's "value zone," the place where frontline employees interact with the people of one's customers or other stakeholders and where innovation, and implementation of innovations, typically occurs.

2. Create trust through transparency, so that people care enough about their organization to seek and seize opportunities to generate innovative and value-creating solutions.
3. Invert the organizational pyramid, as an acknowledgment that frontline employees are the ones typically creating value for their organization and stakeholders—and to empower those employees to do that.
4. Nurture new leaders and new kinds of leaders, often younger employees who eschew hierarchy and thrive in the collaborative environment required to solve today's problems.

Only if one is able to reinvent one's organizations in this fashion, the author argues, will ICT be effectively put to work meeting tomorrow's challenges.

Localization 2.0

When it comes to adapting their products and services to the needs of customers in different countries, companies that supply ICT products and services have so far focused on the basics—changing the languages their products and services work in, the character sets they use, and so on. It is an approach that worked well in the past. Developed countries dominated the consumption of ICT products and services, the *lingua franca* of multinational corporations was predominantly English, and the business practices organizations used tended to be those that had evolved in the West. But the world is changing fast. Changes in the balance of global trade have been underway for some time, but have gathered pace since the recession hit the United States, Europe, and other developed economies in 2008. While the balance has shifted, Chinese manufacturers, Indian software companies, and the other powerhouses of developing economies have expanded globally, either by establishing operations of their own in other countries or by buying established businesses. The language of global commerce may still be English and the business practices used still those of the West, but for how long? In parallel, ICT products and services have penetrated much more deeply and extensively through populations all over the world. In particular, they have now spread beyond early adopters and others prepared to adapt their ways to the technologies on offer to a mass market of users that (not unreasonably) expects technologies to adapt to them, not the other way around. Together, these trends create the need for much greater levels of localization than have been acceptable in the past. While localization 1.0 focused on adapting ICT products and services to operate in different languages and use different character sets, localization 2.0 will align them more broadly with the laws, cultures, and customs of the countries in which they are sold. Chapter 1.7, "Localization 2.0" by Jeff Kelly and Neil Blakesley (both at BT), explores the dimensions of the localization challenges that lie ahead and considers what can be done to address them.

ICT for an effective social strategy

In his chapter "Transformation 2.0 for an Effective Social Strategy," Mikael Hagström (at SAS) notes that the global economic crisis has undermined our confidence in many of the organizations to which we traditionally turn for leadership, support, and assistance, notably governments. Pulled in several directions at once, these are hard pressed to mount effective responses to their many urgent challenges—including high levels of unemployment, increased need for public services, aging populations, rising budget deficits, falling tax revenues, and political divisiveness. Visionary leaders and thinkers are required to actively promote innovation and transformation as essential components of comprehensive solutions. The author provides a review of the many government and public-sector agencies around the world that fall into this forward-looking category, together with some inspirational examples of ICT usage in this sense. He also touches on the history of analytic decision making and discusses its evolution in the public sector. Last but not least, the author envisages a future where data-driven decision making can play a role in transforming governments and societies, with the goal of inspiring readers and proactively working to leverage analytics as the doorstep to the digital age. Going forward, there is an opportunity to reinvent government by intensifying its interaction with civil society, but government leaders need to ask themselves some fundamental questions about how they collect, analyze, and exploit data in this new world. We are only just beginning to realize the transformative potential of analytics in enabling social and economic innovation. Although analytics is not a panacea, the author strongly believes it is part of the solution. At a time of diminished resources, heightened expectations, and a seemingly inexhaustible supply of data, analytics can help us make the best of the information we have.

The creation of a fiber future and the regulatory challenge

Policymakers want a regulatory framework that stimulates competition in the telecommunications industry while maintaining individual players' incentives to invest in network and service improvements. Industry regulators aim for a regulatory balance between competition and investment that maximizes consumer and social benefits. But as technologies and investment costs change, that point of balance moves. Chapter 1.9, "Creating a Fiber Future: The Regulatory Challenge" by Scott Beardsley, Luis Enriquez, Mehmet Güvendi, and Sergio Sandoval (all at McKinsey & Company Inc.), examines the case of fiber networks and investment costs. Fiber networks provide higher broadband speeds and potentially broadband services with far greater economic, consumer, and social benefits, yet they are

hugely expensive to build and will be difficult to afford on a nationwide scale without some kind of regulatory concessions or subsidies from government. The chapter explores the pressures on operators to build fiber networks and the related economic and regulatory obstacles standing in their way. It also shares best practices from the regulatory strategies and measures to overcome those obstacles put in place by those countries/regions with widespread fiber networks (namely the United States, Japan, and the European Union). The authors conclude that it is too soon to say whether the new regulatory approaches offer sufficient incentives and certainty to operators to stimulate the large-scale investments in fiber networks needed, but it is certainly a start in that direction. They think that "business as usual" will not work and that more innovative ways of collaborating among local and national governments, operators, and regulators will be required. Broadly, governments can act to spur demand for high-speed broadband among citizens, provide investment support for industry players, and—perhaps most important of all—put forth a compelling vision of the economic benefits of a "high fiber" future. Regulators need to find the right ways, within their economies, to balance the need for competition against the creation of an investment-friendly environment. This may require a re-examination of their current approach to regulation.

Mobile banking in the emerging world

When residents of the Maldives lost their savings in the tsunami of 1994, it was not because they had sunk them into assets later destroyed in the flood. Instead, the losses involved cash: funds Maldivians had stuffed into mattresses because they lacked access to banks. When the tsunami hit, people's life savings were literally washed away. In his chapter "The Emerging World's Five Most Crucial Words: 'To Move Money, Press Pound'," Ram Menon (at TIBCO Software Inc.) makes the case for extending the reach of financial services worldwide, considering that some 2.7 billion people lack access to banking according to the World Bank's estimates. He analyzes the cases of Kenya and South Africa: although Kenya is the financial hub of East and Central Africa, at least a third of its population remains beyond banking's reach. Some do not qualify for accounts. Others—the literacy-challenged, for example—rarely want them. Even in South Africa—a middle-income nation with a strong financial system—only 60 percent of adults use a bank. But a mobile phone is a different story. Nearly 95 percent of all South African adults own a mobile phone, a group that includes many who are unbanked. The author believes mobile phones have the potential to democratize access to financial services. In the developing world, no instrument is of greater value. Over 1.5 billion mobile phones are currently in use across the emerging world—a number likely to reach 2.5 billion by 2015, as developing nations drive over 80 percent of all new subscriptions worldwide. The mobile phone has become the Trojan horse for change in the emerging world: it is inexpensive, personal, connected, and ubiquitous. Here, a handset offers more than voice and text and music and gaming. It offers sustenance: mobile agricultural advice, healthcare support, and money transfer. The latter is especially compelling. Mobile telephony has spawned mobile money, turning small, local merchants into the equivalent of bank branches. In bringing banking services to those who have never seen the inside of a bank, it creates a stepping stone to formal financial services for billions of people with no accounts, credit, or insurance. The author argues that mobile telephony is generating a financial sea change across the emerging world and explores its first waves in this chapter.

Part 2: Best Practices in Networked Readiness: Selected Case Studies

Part 2 presents deep-dive studies on selected national or regional experiences in leveraging ICT or developing the sector, showcasing best practices and policies implemented in Costa Rica, Saudi Arabia, the United States, and the European Union.

Costa Rica's development story and the ICT sector

Costa Rica represents an interesting case study for countries looking to design national strategies to develop the ICT sector as a driver for long-term growth and competitiveness. Indeed, the country is notable among the economies of its kind for the success obtained in this respect, as also evidenced by the country's good performance in a number of different international assessments of aspects related to ICT. Three major public policies have fostered the rapid and sustainable growth of the ICT sector in the country, including continuous public investment in education, the reduction of internal taxes and trade barriers to technological products, and solid foreign trade and foreign direct investment (FDI) platforms.

Chapter 2.1, "Costa Rica's Efforts Toward an Innovation-Driven Economy: The Role of the ICT Sector" by Vilma Villalobos (Microsoft) and Ricardo Monge-González (Presidential Council on Competitiveness and Innovation of Costa Rica), provides an overview of the ICT sector in Costa Rica, its progress over time, and its contribution to the national economy. It also explores ICT's role in the national strategy to transform the country into an innovation-driven economy, the success factors for its rapid and sustainable growth, the current challenges, and the agenda addressed by the Presidential Council on Competitiveness and Innovation. Instrumental to the sector's development were ICT-friendly public policies implemented since the 1980s, including investment in human capital to create a pool of healthy and qualified laborers, foreign trade liberalization, export promotion

and FDI attraction, and early pioneer measures to facilitate the population's access to informatics (including the creation of the National Program of Educational Informatics and reduction of internal taxes and trade barriers on technological products). All these, together with the country's political stability, favorable business climate, and central geographical location, were crucial elements in attracting FDI, with consequent important knowledge spillovers and technology transfer to the domestic sector. Going forward, the challenge is to adopt a structured and coordinated strategy across government bodies to address pending shortcomings. The chapter concludes by examining the key role of the newly created Presidential Council on Competitiveness and Innovation in this regard, together with its strategy and the progress it has realized since its creation in 2010.

YESSER and effective e-government in Saudi Arabia

In Chapter 2.2, "Growing Talent for the Knowledge Economy: The Experience of Saudi Arabia," authors Mustafa M. Khan and Mark O. Badger (both at YESSER) and Bruno Lanvin (INSEAD, eLab) relate Saudi Arabia's journey into the e-government race and toward the creation of an information and knowledge-based society. This journey involved building advanced infrastructures, deploying effective governance mechanisms, and incorporating the practices of continuous improvement by addressing the human factor—often the most challenging part of any e-government transformation—into its actions and future direction. The authors focus notably on YESSER, the National e-Government Program, launched to provide better government services and enhance efficiency and effectiveness in the public sector, as well as to build the basis for a Saudi information and knowledge-based society. Simultaneously, a large number of regulatory and policy actions aimed at fostering competitiveness and establishing a business environment supportive to ICT were adopted. In its first five years of operation, YESSER achieved progress on two important fronts: implementing robust shared services that ensure secure government information flows and the delivery of secure online services, and providing organizational infrastructure to help government agencies successfully develop and implement their e-Government Transformation Plans—the transformation of traditional services to online ones, with the consequent benefits in terms of convenience, timeliness, and lower costs. The Saudi National e-Government Program is entering its second five-year phase this year, with a renewed focus on creating a skilled workforce. The development of Saudi human capital is at the center of the next five-year plan as the country continues to advance toward the next generation of a technology-enabled government and knowledge society. The authors believe that the role and experience of YESSER has been remarkable. By considering and promoting e-government—not just as a set of measures to bring more public services online, but as a transformation tool to improve the relationship among government, business, and citizens—it had to develop specific human resources policies and design innovative ways to attract and retain talent within its own team. Today, the experience gathered by Saudi Arabia in this area can be a source of inspiration not only for other parts of the government, but also for other countries around the world. Combining this experience with the latest advances made in other contexts (in the areas of curricula, global knowledge economy skills, and skills for innovation, for example) represents yet another potential source for huge benefits to Saudi economy and society.

The broadband strategy in the United States

In early 2009, the US Congress directed the US Federal Communications Commission (FCC) to develop a plan to ensure that every American has "access to broadband capability." That planning exercise resulted in *Connecting America: The National Broadband Plan* (NBP) issued in March 2010. The NBP highlighted in particular the idea that broadband is not an end, but rather a tool for furthering national objectives, including improving education, healthcare, energy efficiency, public safety, and the delivery of public services. As such, four main ways are identified by which the government can influence the development of broadband, as follows: (1) ensuring robust competition; (2) efficiently allocating assets that the public sector controls or influences (such as spectrum and public infrastructure); (3) encouraging the deployment, adoption, and use of broadband in areas where the market alone is not enough (such as those where the cost of deployment is too high to earn a return on private capital or where households cannot afford to connect); and (4) providing firms and consumers with incentives to extract value from the use of broadband, particularly in sectors such as education and healthcare, among others.

In Chapter 2.3, "A National Plan for Broadband in the United States," authors Jonathan B. Baker and Paul de Sa (both at the FCC) provide a comprehensive overview of some of the NBP's most important themes. Among these are the need to ensure robust competition and an efficient allocation of spectrum and infrastructure controlled by the public sector, as well as the need to encourage broadband deployment, adoption, and usage and to use broadband to further national purposes (i.e., consumer welfare, civic participation, public safety and homeland security, community development, healthcare delivery, energy independence and efficiency, education, worker training, private-sector investment, entrepreneurial activity, job creation, and economic growth, among other areas). The authors highlight that, one year after the NBP's release, most of its recommendations are in the process of being implemented, although it is evolving continuously and so reflecting new realities and leveraging unforeseen opportunities. They, together with

the authors of the NBP, believe full implementation will need a long-term commitment to measure progress and adjust programs and policies in order to improve performance.

The challenge of high speed in the European Union

In Chapter 2.4, "Broadband Developments in Europe: The Challenge of High Speed," Lucilla Sioli (European Commission) describes broadband developments undergone by the European Union over the recent years. Indeed, the region has experienced extraordinary growth in broadband roll-out and uptake in the last decade. More than 60 percent of households and 90 percent of enterprises are connected to broadband, enjoying the Internet experience. The European broadband market has developed into the largest in the world, with 128.3 million lines. Some European Member States also currently top the ranks in terms of penetration rates worldwide. The fixed broadband penetration rate in the European Union as a whole was 25.6 percent in July 2010 and continued to grow. Despite these good results, fostered also by a favorable regulatory environment, recently up-take has been slow and deployment of next-generation access is only beginning. The *Digital Agenda for Europe* (the European strategy for a flourishing digital economy) as well as *Europe 2020* (the European growth strategy for the next decade) set ambitious high-speed targets to make a quantum leap to equip the European Union with the 21st-century infrastructure it needs, calling for the development of a comprehensive policy based on a mix of technologies, focusing on two things: the achievement of universal broadband coverage (with Internet speeds gradually increasing to 30 Mb/s and above) and fostering the deployment and up-take of next-generation access networks, allowing connections above 100 Mb/s by 2020. This chapter intends to frame the current political debate and broadband policy in the European Union in its own context, which is often different from those of other economies. In doing so, the author highlights the challenges going forward, such as migrating toward higher speeds; the uncertainty of business models, which is currently keeping investment back; and some new practices that are being tested in a number of countries. The author also analyzes the ongoing political debate and notes that in 2010 the EU Commission published a broadband Communication that laid out a common framework for actions at EU and Member State levels. These included the strengthening of the regulatory framework through a Next Generation Access recommendation, the proposal of a European Spectrum Policy Programme, the rationalization of the funding instruments, and the definition of national targets through comprehensive broadband plans. Developments will be monitored through the Digital Agenda Scoreboard, to be published in June 2011.

Parts 3 and 4: Country/Economy Profiles and Data Presentation

Parts 3 and 4 feature comprehensive profiles for each of the 138 economies covered this year in the *Report* and data tables for each of the 71 variables composing the NRI, with global rankings. Each part begins with a description of how to interpret the data provided.

Technical notes and sources, included at the end of Part 4, provide additional insight and information on the definitions and sources of the specific quantitative non-Survey data variables included in the NRI computation this year.

The Networked Readiness Index Rankings

The Networked Readiness Index 2010–2011

Country/ Economy	Rank	Score	Rank within income group*	
Sweden	**1**	**5.60**	**HI**	**1**
Singapore	2	5.59	HI	2
Finland	3	5.43	HI	3
Switzerland	4	5.33	HI	4
United States	5	5.33	HI	5
Taiwan, China	6	5.30	HI	6
Denmark	7	5.29	HI	7
Canada	8	5.21	HI	8
Norway	9	5.21	HI	9
Korea, Rep.	10	5.19	HI	10
Netherlands	11	5.19	HI	11
Hong Kong SAR	12	5.19	HI	12
Germany	13	5.14	HI	13
Luxembourg	14	5.14	HI	14
United Kingdom	15	5.12	HI	15
Iceland	16	5.07	HI	16
Australia	17	5.06	HI	17
New Zealand	18	5.03	HI	18
Japan	19	4.95	HI	19
France	20	4.92	HI	20
Austria	21	4.90	HI	21
Israel	22	4.81	HI	22
Belgium	23	4.80	HI	23
United Arab Emirates	24	4.80	HI	24
Qatar	25	4.79	HI	25
Estonia	26	4.76	HI	26
Malta	27	4.76	HI	27
Malaysia	**28**	**4.74**	**UM**	**1**
Ireland	29	4.71	HI	28
Bahrain	30	4.64	HI	29
Cyprus	31	4.50	HI	30
Portugal	32	4.50	HI	31
Saudi Arabia	33	4.44	HI	32
Slovenia	34	4.44	HI	33
Tunisia	**35**	**4.35**	**LM**	**1**
China	36	4.35	LM	2
Spain	37	4.33	HI	34
Barbados	38	4.32	HI	35
Chile	39	4.28	UM	2
Czech Republic	40	4.27	HI	36
Oman	41	4.25	HI	37
Lithuania	42	4.20	UM	3
Puerto Rico	43	4.10	HI	38
Montenegro	44	4.09	UM	4
Uruguay	45	4.06	UM	5
Costa Rica	46	4.05	UM	6
Mauritius	47	4.03	UM	7
India	48	4.03	LM	3
Hungary	49	4.03	HI	39
Jordan	50	4.00	LM	4
Italy	51	3.97	HI	40
Latvia	52	3.93	HI	41
Indonesia	53	3.92	LM	5
Croatia	54	3.91	HI	42
Vietnam	55	3.90	LM	6
Brazil	56	3.90	UM	8
Brunei Darussalam	57	3.89	HI	43
Colombia	58	3.89	UM	9
Thailand	59	3.89	LM	7
Panama	60	3.89	UM	10
South Africa	61	3.86	UM	11
Poland	62	3.84	HI	44
Trinidad and Tobago	63	3.83	HI	45
Greece	64	3.83	HI	46
Romania	65	3.81	UM	12
Sri Lanka	66	3.81	LM	8
Kazakhstan	67	3.80	UM	13
Bulgaria	68	3.79	UM	14
Slovak Republic	69	3.79	HI	47
Azerbaijan	70	3.79	UM	15
Turkey	71	3.79	UM	16
Macedonia, FYR	72	3.79	UM	17
Jamaica	73	3.78	UM	18
Egypt	74	3.76	LM	9
Kuwait	75	3.74	HI	48
Gambia, The	**76**	**3.70**	**LO**	**1**
Russian Federation	77	3.69	UM	19
Mexico	78	3.69	UM	20
Dominican Republic	79	3.62	UM	21
Senegal	80	3.61	LM	10
Kenya	81	3.60	LO	2
Namibia	82	3.58	UM	22
Morocco	83	3.57	LM	11
Cape Verde	84	3.57	LM	12
Mongolia	85	3.57	LM	13
Philippines	86	3.57	LM	14
Albania	87	3.56	UM	23
Pakistan	88	3.54	LM	15
Peru	89	3.54	UM	24
Ukraine	90	3.53	LM	16
Botswana	91	3.53	UM	25
El Salvador	92	3.52	LM	17
Serbia	93	3.52	UM	26
Guatemala	94	3.51	LM	18
Lebanon	95	3.49	UM	27
Argentina	96	3.47	UM	28
Moldova	97	3.45	LM	19
Georgia	98	3.45	LM	20
Ghana	99	3.44	LO	3
Guyana	100	3.43	LM	21
Iran, Islamic Rep.	101	3.41	UM	29
Zambia	102	3.36	LO	4
Honduras	103	3.34	LM	22
Nigeria	104	3.32	LM	23
Malawi	105	3.31	LO	5
Mozambique	106	3.29	LO	6
Uganda	107	3.26	LO	7
Ecuador	108	3.26	LM	24
Armenia	109	3.24	LM	25
Bosnia and Herzegovina	110	3.24	UM	30
Cambodia	111	3.23	LO	8
Tajikistan	112	3.23	LO	9
Côte d'Ivoire	113	3.20	LM	26
Benin	114	3.20	LO	10
Bangladesh	115	3.19	LO	11
Kyrgyz Republic	116	3.18	LO	12
Algeria	117	3.17	UM	31
Tanzania	118	3.16	LO	13
Venezuela	119	3.16	UM	32
Mali	120	3.14	LO	14
Lesotho	121	3.14	LM	27
Burkina Faso	122	3.09	LO	15
Ethiopia	123	3.08	LO	16
Syria	124	3.06	LM	28
Cameroon	125	3.04	LM	29
Libya	126	3.03	UM	33
Paraguay	127	3.00	LM	30
Nicaragua	128	2.99	LM	31
Madagascar	129	2.98	LO	17
Mauritania	130	2.98	LO	18
Nepal	131	2.97	LO	19
Zimbabwe	132	2.93	LO	20
Angola	133	2.93	LM	32
Swaziland	134	2.91	LM	33
Bolivia	135	2.89	LM	34
Timor-Leste	136	2.72	LM	35
Burundi	137	2.67	LO	21
Chad	138	2.59	LO	22

* Income groups: *HI* = high income; *UM* = upper-middle income; *LM* = lower-middle income; *LO* = low income. The highest-ranked economy of each income group appears in bold typeface. Country classification by income group is from the World Bank (situation as of December 2010).

(Cont'd.)

Part 1

The Current Networked Readiness of the World and ICT-Enabled Transformations 2.0

CHAPTER 1.1

The Networked Readiness Index 2010–2011: Celebrating 10 Years of Assessing Networked Readiness

SOUMITRA DUTTA, INSEAD
IRENE MIA, World Economic Forum
THIERRY GEIGER, World Economic Forum

This year marks the 10th anniversary of the *Global Information Technology Report* (GITR) series produced by the World Economic Forum (Forum) in collaboration with INSEAD. The initial idea with this project was to explore the impact of innovation and new technologies on productivity and development, as a component of the Forum's research on competitiveness. To this end, over the past decade the Networked Readiness Index (NRI), featured in the series, has been measuring the degree to which developed and developing countries across the world leverage information and communication technologies (ICT) for enhanced competitiveness. It has been helping policymakers and relevant societal stakeholders to track their economies' strengths and weaknesses as well as their progress over time, to identify best practices in networked readiness worldwide, and to design roadmaps and strategies toward optimal ICT diffusion. The *Report* series and the NRI are among the most comprehensive and internationally respected assessments of countries' preparedness to effectively benefit from ICT advances.

While the NRI has accompanied and measured ICT evolution in the last 10 years, every edition of the *Report* has gathered the insights of industry experts and academics around a theme of networked readiness of particular relevance for the industry together with a number of case studies exploring and showcasing best practices in ICT usage around the world. This year, to celebrate its first 10 years, the *Report* will take a look at the coming transformations enabled by ICT—transformations 2.0—with a focus on the impact they will have over the next few years on the key societal actors: individuals, businesses, and governments.

Over the last decade, ICT in its many manifestations has become truly ubiquitous. The mobile phone is now for many the omnipresent symbol of ICT in our lives. Today we live in a world where more people have access to ICT (usually a mobile phone) than to toilets or clean water or the electric grid. Although researchers and industry observers have documented the positive impact of ICT diffusion on an economy's GDP—estimates show that a 10 percent increase in mobile phone penetration is associated with a 1 percent growth in GDP[1]—we continue to be challenged by questions that were raised by John Gage of Sun Microsystems in the first edition of the GITR: "Can we apply ICT to improve the condition of each individual? Can ICT, designed for one-to-one links in telephone networks, or for one-to-many links in radio and television networks, serve to bond us all? And how can new forms of ICT—peer-to-peer, edge-to-edge, many-to-many networks—change the relationship between each one of us and all of us?"[2]

These questions become particularly relevant given the important role played by ICT (in particular social media) during the recent political upheavals in countries such as Tunisia and Egypt. Governments and public organizations are slowly realizing the power of ICT for

redefining governance and providing new modes of engagement with citizens. However, institutional change remains slow and hard. For ICT to be used effectively, technology needs to be matched to the local context and be sensitive to people's needs. Doing all this is not easy. The first law of technological change mentioned by John Gage in the first edition of the GITR remains true today: "Technology is easy. People are hard."[3]

This chapter presents the methodology and framework underpinning the NRI and the highlights of its 2010–11 rankings for a record 138 economies. An analysis of country and regional trends in networked readiness using a five-year time series, along with an overview of future dissemination efforts, is also included.

The networked readiness framework: Preparing for the next decade

When the networked readiness framework was created, it represented one of the first attempts to make conceptual sense of the complex ICT reality, identifying the common factors enabling countries to effectively use technology. The framework was intended to provide guidance to policymakers and civil society on the factors that they needed to take into account to fully leverage ICT in their competitiveness and growth strategies.

Based on the latest academic research, management literature, and ongoing work by other institutions and multilateral organizations on the subject,[4] the networked readiness framework has been kept stable since 2002. There have been some minor adjustments at the variable level to better reflect the dynamic trends in the technology landscape and in the methodology employed to compute the rankings.[5] This has allowed for meaningful comparisons across time with the creation of a valuable database of technology metrics, providing unique insights for researchers as well as for decision makers in the adoption of concrete policy decisions.

However, a comprehensive review process of the framework has been undertaken in the last two years to make sure it continues to effectively capture the main drivers of ICT readiness almost a decade after its creation.[6] In particular, considering how ICT has become increasingly omnipresent and almost universal in today's world,[7] the issue seems to have moved from one of access to the question of how to make the best use of ICT in order to improve business innovation, governance, citizens' political participation, and social cohesion. The original framework does capture usage but falls short in looking at the impact of ICT usage on the elements above.

At the same time, rigorous and quantitative measurement of ICT impact is still in its early days. Data definition and availability remain a challenge, especially when the ambition is to cover nearly 140 economies.

As a first step, the 2010–11 framework includes some new indicators gauging the extent of virtual social networks, as well as ICT impact on business innovation and delivery of basic services to citizens, as detailed later in this chapter. Fully incorporating ICT impact into the networked readiness framework will take more time, which is needed to define appropriate metrics and put in place rigorous processes to collect these data on an international basis. However, the GITR team is committed to stepping up its efforts in this area and to working together with the relevant data organizations, experts, and practitioners on this matter. The *Report*'s 10th anniversary will also see the launch of a new platform to share data, collect feedback, and foster dialogue around the societal impact of ICT (see Box 1).

The *Report* also provides a context for diving deeper into specialized topics. For instance, as part of the 10th anniversary celebration and in response to issues raised in discussions with the members of the Forum's information technology and telecommunications community, a special study was undertaken—as a collaboration among the Forum, Comscore, the Oxford Internet Institute, and INSEAD—on the impact of the Internet on global attitudes toward privacy, trust, security, and freedom of expression (see Box 2). It is expected that similar in-depth research on topical issues will accompany future editions of the *Report*.

The networked readiness framework 2010–11 and its methodology

As discussed, the theoretical framework underlying the NRI 2010–2011 was introduced for the first time in 2002, and has remained stable ever since with some adjustments (see Box 4 for details). It assesses the extent to which different economies across the world leverage ICT advances on the basis of the following three underlying principles:

1. *An ICT-conducive environment is a key precondition of networked readiness.* The successful use of ICT is enabled by the country's overall environment for innovation and ICT, including market conditions, regulatory framework, and infrastructure (both physical and human).
2. *Networked readiness requires a society-wide effort.* While the government has a natural leadership role to play in establishing an innovation-friendly environment and in setting the ICT vision for the future, all national stakeholders should be involved in the definition and implementation of the vision: a joint effort of the government, the business sector, and individuals is required to achieve optimal networked readiness. The combination of an ICT-savvy government with a clear ICT vision and an actively engaged private sector has been at the core of networked readiness success stories such as Israel, Estonia, Korea, and Singapore. These economies have

Box 1: Capturing and shaping the digital transformation: Leveraging the GITR

DEREK O'HALLORAN and **JOANNA GORDON**, World Economic Forum

Digitization is changing our world on an almost daily basis, with profound yet unknown significance for all aspects of our lives—from warfare to global poverty, banking to governance, media to health. These rapid changes bring exceptional challenges.

The GITR series has provided a unique platform for public-private dialogue on innovation and networked readiness and has contributed to raising awareness of the importance of new technologies for overall competitiveness with governments and civil society alike. Moreover, the series has acted as a focal point for collaborative, evidence-based generation of knowledge, leveraging the Forum's competitiveness expertise and the insights of its unique member community. Through a combination of new web-based tools, deeper engagement with its members and constituents, and the creation of a repository for ICT and development data, the Forum hopes to further the understanding of networked readiness enablers and capture ICT impact. In this spirit, on the occasion of the 10th anniversary of the series, the Forum is launching a number of important initiatives, explained below.

1. Dialogue series

The GITR dialogue series consists of multi-stakeholder discussions and workshops aimed at improving private and public capacity to fully use and leverage global ICT benchmarks to inform national strategies, provide a space for dialogue about the implications of the digital transformations, and collect feedback on the networked readiness framework to keep it pertinent. The Forum will host keystone workshops across regions, and offer relevant stakeholders thought leadership opportunities to lead real-world or virtual sessions on more focused topics.

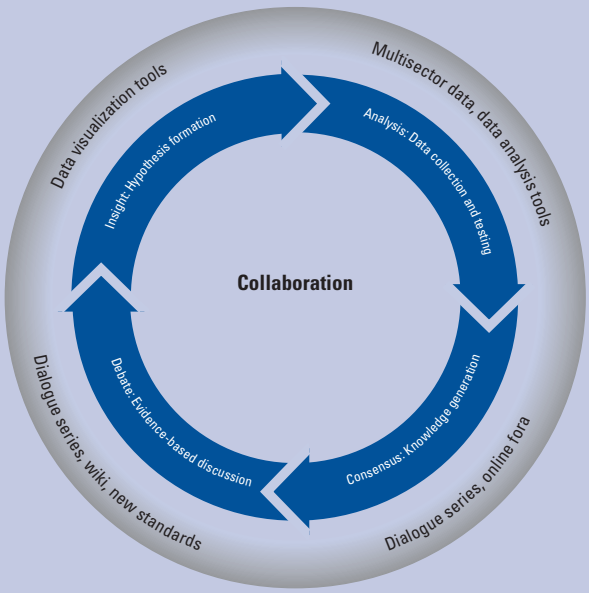
2. New web platform

A new interactive web platform will be launched to make the GITR data more user-friendly, serve as a focal point for development and innovation data from other organizations, and foster dialogue on issues of networked readiness among different stakeholders. The platform will provide tools that allow users to share insights, discuss findings or best practices, and contribute to a shared pool of knowledge. Notably, it will include data visualization and analysis tools, a discussion forum, and a wiki. Materials from the dialogue series sessions will be shared on the website forum to allow broader and continued dialogue on specific topics. The platform is being developed in collaboration with DevInfo and Ruderfinn.

3. Data repository

As the focus of networked readiness moves beyond questions of access, investment decisions, policymaking, and research agendas are pushed beyond baseline metrics and need more nuanced evidence. What sorts of technology inputs have the biggest impact? And conversely, on what sorts of outputs does technology have the biggest impact? Health? Education? Financial inclusion? What are the critical environmental factors that ensure such success? The Forum is working with internal and external partners to allow new datasets to be hosted alongside the NRI data on the new website referenced above. By exposing networked readiness data alongside others' key indicators, with tools that allow for simple graphical analysis and supported by focused real-world and virtual engagements, new insights, hypotheses, discussion points, and knowledge can be generated (see Figure A).

Figure A: The collaborative knowledge creation cycle



Box 2: A global perspective on freedom of expression, privacy, trust, and security online

SOUMITRA DUTTA, INSEAD; **BILL DUTTON,** Oxford University; and **GINETTE LAW,** INSEAD

Global diffusion of the Internet is centering debate on values and attitudes that often vary across cultures, especially around issues of online freedom of expression, privacy, trust, and security. Leading Internet stakeholders—such as private- and public-sector members, governments, policymakers, and the media—have concentrated their attention on these particular concerns. Yet relatively little is known about the opinion of users on the subject or about the different ways—determined to some extent by which part of the world they inhabit—they may experience the impact of the Internet.

In order to better understand cross-cultural differences in user behaviors and attitudes, the Oxford Internet Institute and INSEAD, in collaboration with Comscore and the Forum, conducted a survey on global user outlook on freedom of expression, privacy, trust, and security online. Over 5,400 adult Internet users from 13 different countries participated in the study.

Findings point to the rise of a new global Internet culture, where users across countries generally share similar opinions and habits related to these vital matters pertaining to the Internet. By and large there is support and desire for freedom of expression, privacy, trust, and security online from users worldwide, without any willingness for trade-offs among these potentially conflicting values and priorities. Users in the newly adopting countries, which are becoming the dominant online population, are however expressing even greater support for the most basic value underpinning the Internet—freedom of expression. In addition, users in nations that are more recently embracing the Internet are also outpacing users in older adopting nations in their innovative uses of the Internet, manifesting more liberal attitudes and behaviors than their counterparts. In conclusion, a new Internet world is emerging today—one that may lead to many changes and consequences for the future of the Internet.

The full study by the same authors will be released in April 2011 as a part of the celebration of the *Global Information Technology Report* series' 10th anniversary.

been able to effectively use ICT as a tool for the structural transformation of their economies and societies, leapfrogging to higher stages of development.

3. *ICT readiness leads to ICT usage and increased impact*. National actors that are more prepared and show a greater interest toward ICT advances will be likely to use it more effectively in their daily activities. This link between enablers and usage/impact comes from prior research in the management literature, where all models of total quality management made an explicit distinction between enablers and results.[8] Figure 1 provides a graphic representation of the networked readiness framework in its three dimensions: environment, readiness, and usage/impact. The environment component is composed of the market, regulatory, and infrastructure pillars, while the readiness and usage/impact components are composed of three pillars respectively broken down along the lines of individuals, businesses, and the government.

The networked readiness framework translates into the NRI, comprising three subindexes that measure the environment for ICT, together with the main stakeholders' readiness and usage, with a total of nine pillars and 71 variables as follows:

1. *Environment subindex*
   - Market environment
   - Political and regulatory environment
   - Infrastructure environment
2. *Readiness subindex*
   - Individual readiness
   - Business readiness
   - Government readiness
3. *Usage subindex*
   - Individual usage
   - Business usage
   - Government usage

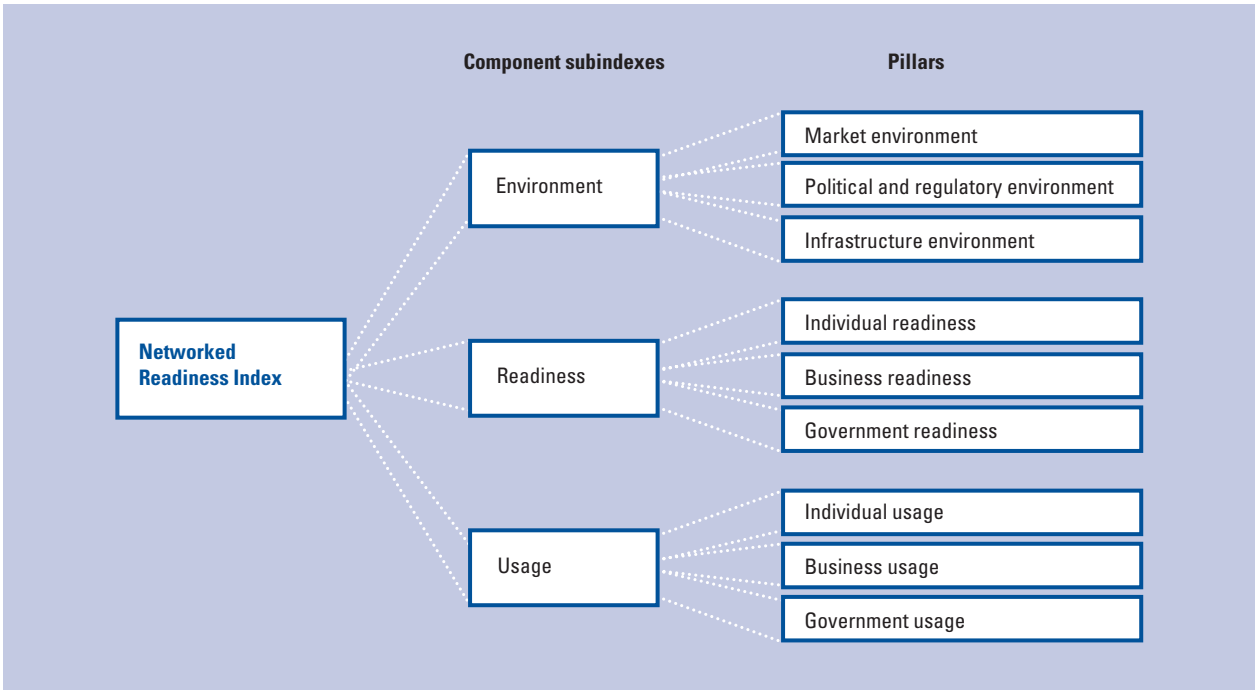
The final NRI score is a simple average of the three composing subindex scores, while each subindex's score is a simple average of those of the composing pillars. In doing this, we assume that all Index components give a similar contribution to national networked readiness. The Technical Appendix at the end of this chapter includes detailed information on the composition and computation of the NRI 2010–2011.

A brief description of the different composing elements (at the subindex and pillar level) follows.

Environment subindex

The environment subindex gauges the friendliness of a country's market, regulatory, and infrastructure

Figure 1: The networked readiness framework



environments to innovation and ICT development. It includes a total of 31 variables grouped into three different pillars.

The *market environment pillar* (10 variables) gauges the quality of the business environment for ICT development and diffusion, including dimensions such as the availability of appropriate financing sources (notably venture capital) and the extent of business sophistication (as captured by cluster development), together with the ease of doing business (including the presence of red tape and excessive fiscal charges) and the freedom of exchanging information over the Internet (proxied by the freedom of the press).

The *political and regulatory environment pillar* (11 variables) assesses the extent to which the national legal framework facilitates innovation and ICT penetration, taking into account general features of the regulatory environment (including the protection afforded to property rights, the independence of the judiciary, and the efficiency of the law-making process) as well as more ICT-specific dimensions (the development of ICT laws and the protection of intellectual property, including the software piracy rate and the level of competition in the Internet and telephony sector).

The *infrastructure environment pillar* (10 variables) captures the development of the national innovation-related infrastructure, both in its physical elements (namely the number of telephone lines and secure Internet servers, electricity production, mobile network coverage rate, Internet bandwidth, and accessibility of digital content) and its human aspects (including the tertiary enrollment rate, the quality of research institutions, and the availability of scientists and engineers).

Readiness subindex

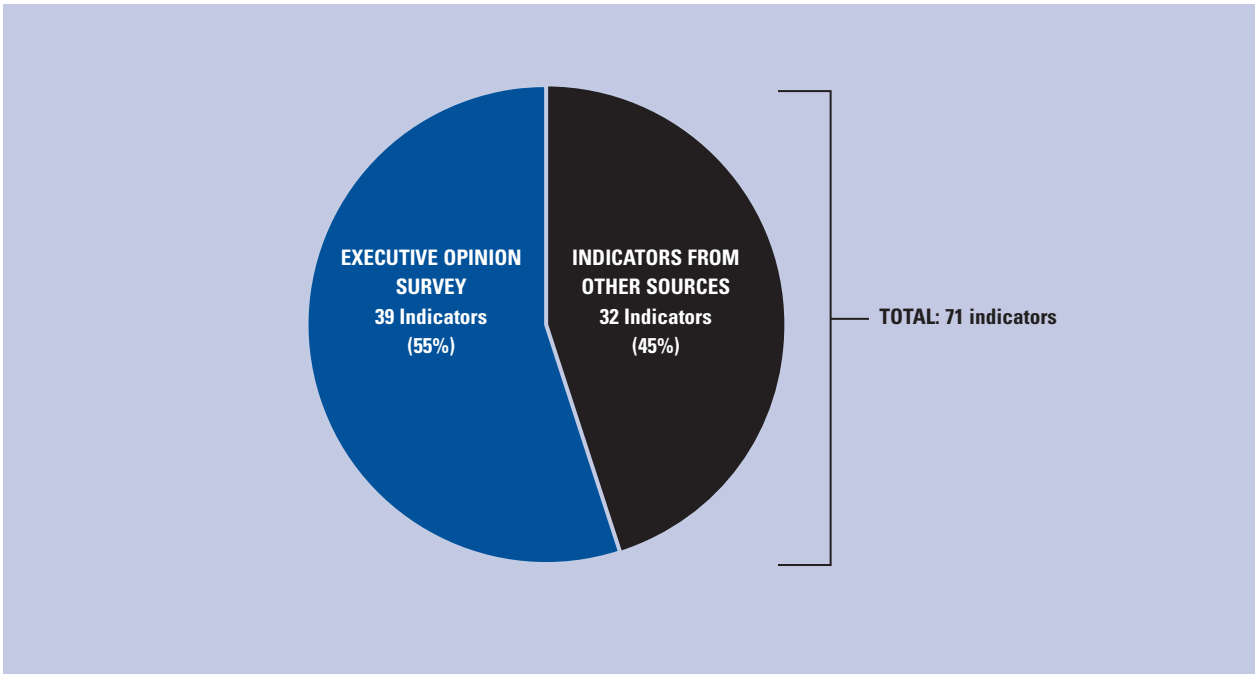
The readiness subindex gauges the preparation and willingness of the three stakeholder groups to use technology, particularly ICT, in their day-to-day activities and transactions, with a total of 20 variables.

The *individual readiness pillar* (nine variables) provides insight into citizens' preparedness to use ICT, taking into consideration both basic educational skills and ICT accessibility. The first aspect is captured by the quality of the educational system (notably math and science education) and the literacy rate; the latter by residential telephone connection charges and monthly subscription costs, as well as fixed broadband, mobile cellular, and fixed telephone line tariffs.

The *business readiness pillar* (eight variables) assesses firms' capacity and inclination to incorporate ICT into their operations and processes. Elements taken into consideration are the quality of on-the-job training; spending on research and development (R&D); collaboration between academia and industry, key to fostering applied innovation and intrinsic to effective clusters; the quality of suppliers in the economy; and the affordability of telecommunication for business (i.e., business telephone connection and monthly telephone subscription fees).

The *government readiness pillar* (three variables) in turn attempts to gauge government's vision and prioritization of ICT in the national agenda and competitiveness strategy,

Figure 2: Breakdown of indicators used in the NRI 2010–2011 by data source



including the extent to which public procurement of high-tech products is used as a tool to promote efficiency and innovation.

Usage subindex

The last component of the NRI measures the actual ICT usage by an economy's main social actors and includes a total of 20 variables. As discussed above, this subindex will progressively evolve toward capturing ICT impact in terms of inclusive society, business innovation, and better governance. The transition started last year and continues in this edition with the introduction of a few new variables.

The *individual usage pillar* (eight variables) measures ICT penetration and diffusion at the individual level, using indicators such as the number of mobile and broadband Internet subscribers, Internet users, personal computers (PCs), cellular subscriptions with data access, and Internet access in schools. The use of virtual social networks and ICT impact on basic services are also measured.

The *business usage pillar* (eight variables) assesses businesses' capacity to effectively use technology to generate productivity gains and innovation by capturing firms' technology absorption and capacity for innovation (including the number of utility patents per 100 population and high-tech exports), as well as the extent to which businesses use the Internet in their daily transactions and operations. Moreover, ICT impact on creating new models and products as well as organizational models is included.

The *government usage pillar* (four variables) provides insight into the implementation of its vision for ICT, including the quality of e-government services provided and the extent of e-participation achieved, as well as ICT impact on government's efficiency.

Computation methodology and data

In order to capture as comprehensively as possible all relevant dimensions of economies' networked readiness, the NRI 2010–2011 is composed of a mixture of quantitative and survey data, as shown in Figure 2.

Thirty-two out of 71—or 45 percent—of the variables composing the NRI are quantitative data, collected by international organizations such as the International Telecommunication Union (ITU), the World Bank, and the United Nations. International sources ensure the validation and comparability of data across countries.

The remaining 39 variables capture aspects that are more qualitative in nature or for which internationally comparable quantitative data are not available for a large enough number of countries, but that are nonetheless crucial to fully measure national networked readiness. These data come from the Executive Opinion Survey (the Survey), which the Forum administers annually to over 15,000 business leaders in all the economies included in the *Report*.[9] The Survey represents a unique source of insight on important dimensions of ICT readiness, such as the government's vision for ICT, the economy's

quality of education, and ICT impact on access to basic services or on the development of new products and services, among others.

The NRI's coverage every year is determined by the Survey coverage and quantitative data availability. This year the *Report* includes 138 economies, five more than in the 2009–10 edition. Five new countries are included for the first time (Angola, Cape Verde, Lebanon, Iran, and Swaziland) and Moldova was re-instated,[10] while Suriname had to be dropped for lack of Survey data.

In terms of NRI composition, albeit (as previously mentioned) the networked readiness framework has remained stable since 2002, the actual variables included in the Index each year have experienced some variation over time. This has kept the Index current with the rapid changes happening in the dynamic ICT sector so that it continues to be an ever-relevant and cutting-edge explanatory tool. For example, a larger number of variables related to mobile telephony has been included over the last few years to reflect the increased importance of this element in the technology landscape. On a similar note, a new variable on the use of virtual social networks is included this year to capture one of the most interesting trends observed in recent times. Moreover, time-sensitive variables that have not been recently updated by relevant international institutions may need to be dropped in any given year. As detailed below, there have been some modifications to the number and nature of variables included in the NRI this year in preparation of the evolution envisaged for the networked readiness framework over the next decade. The changes made this year are detailed below, by pillar:

1. **Market environment.** The variable on intensity of competition has been dropped because the competition aspect is now covered by the Internet and telephony sectors competition index indicator included in the political and regulatory environment pillar.
2. **Political and regulatory environment.** The variable Software piracy rate (as a percentage of software installed) has been added to give a better sense of the intellectual property protection in a country, complementing the related Survey indicators (variables 2.06 and 2.07).
3. **Infrastructure environment.** Variable 3.02, Mobile network coverage rate, is included for the first time to better capture hard infrastructure. With respect to human resources infrastructure, the variable on education expenditure (as a percentage of GCI) had to be dropped because it was discontinued by the World Bank. Also the variable Local availability of specialized research and training services (3.09) was moved to this pillar from pillar 5 (business readiness) because it pertains more to the soft infrastructure of a country.
4. **Individual readiness.** Variable 4.03, Adult literacy rate, was added as an important indicator of citizens' preparedness to use ICT.
5. **Business readiness.** As mentioned, the variable Local availability of specialized research and training services was moved to pillar 3, while the variable Availability of new telephone lines for businesses was dropped.
6. **Government readiness.** No change was made to this pillar.
7. **Individual usage.** Mirroring the changes in ITU's methodology of collecting ICT penetration data, the variable gauging the number of PCs per 100 population was replaced by the number of Households with a PC. Also Cellular subscriptions with data access (as a percentage of total subscriptions) was added to better assess the degree of sophistication of mobile devices in a country. Last but not least, two new Survey variables capturing aspects related to the impact of ICT on social cohesion have been included: Use of virtual social networks (7.07) and Impact of ICT on access to basic services, including health and education (7.08).
8. **Business usage.** The variable on the prevalence of foreign technology was dropped since this aspect is captured by the variable Capacity for innovation. An important improvement was also made in the patent application measurement: US Patent and Trademark Office (USPTO) data used for granted utility patents have been replaced by World Intellectual Property Organization (WIPO) data on utility patent applications. As discussed in more detail in Box 3, PCT applications (variable 8.05) is combined with National office patent applications (variable 8.04) in a composite indicator that better captures national innovation potential. Moreover, two new Survey variables have been added to capture the Impact of ICT on services and products (8.07) and the Impact of ICT on new organizational models (8.08).
9. **Government usage.** The variable on the presence of ICT in government agencies was removed since it has been dropped in the latest Survey.

More details on the variables included in the Index and their computation can be found in the Technical Appendix at the end of this chapter and in the Technical Notes and Sources section at the end of the *Report*.

Box 3: Capturing innovation: The patent system

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The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, enabling inventors to appropriate the returns of their innovative activities.

To achieve this objective, a patent confers a set of exclusive rights to applicants by law for inventions that meet standards of novelty, non-obviousness, and industrial applicability. It is valid for a limited period of time (generally 20 years), during which patent holders can commercially exploit their inventions on an exclusive basis. In return, applicants disclose their inventions to the public so that others, skilled in the art, may replicate the invention.

Patents as statistical indicators of innovative activity

Patent indicators, along with other science and technology indicators (e.g., R&D expenditures), are a good and detailed source of information on the inventive activity of countries, regions, and firms, as well as other innovators. Among the available innovation indicators, patent indicators are probably the most frequently used. Griliches (1990) calls patents "a good index of inventive activity" and Eaton and Kortum (1996) approve of patent data as a widely accepted measure of innovation.[1] As opposed to many other related indicators, patent data are also available for most countries in a timely manner.

The *Global Information Technology Report* series has included patent data for a number of years. Previous editions used the number of patents granted by the United States Patent and Trademark Office (USPTO) as a proxy for innovative activity.

This edition of the *Report* relies on a new composite indicator based on two patent measures drawn from the World Intellectual Property Organization (WIPO)'s Statistics Database (www.wipo.int/ipstats/en), as explained below.

1. The number of patent applications filed by residents at their national patent office (resident applications)

When an inventor decides to protect an invention through the patent system, the first step is to file an application with a patent office.

In most cases, applicants tend to file at their national patent office. Data on resident patent applications (2009 or latest available year) capture this patenting activity of residents in a given country. An application is filed with a patent office by an applicant residing in the country in which that office has jurisdiction. For example, a patent application filed with the Japan Patent Office (JPO) by a resident of Japan is considered a resident application for the JPO.

In contrast, patent indicators based on a specific office will introduce a home bias between resident (domestic) and non-resident (foreign) applications, because the propensity to patent at the national patent office is considerably higher than the propensity to patent abroad. For example, only 4.4 percent of total Chinese patent applications in 2008 were filed abroad.[2] Patents submitted to one single patent office are also likely to reflect the trade patterns of that particular country. Moreover, data of one single office will capture only a fraction of world innovation.

In addition, the use of statistics on patent applications—instead of data on patents granted—ensures that innovative performance is captured in a more timely and comprehensive manner. In contrast, data on patents granted reflect inventions that obtain patent protection and that are most likely several years old. This is because of lengthy (and increasing) processing and examination periods, which are part of the patenting process.

2. The number of patents filed under the WIPO-administered Patent Cooperation Treaty

To complement national data, the second metric used in the *Report* is the number of Patent Cooperation Treaty (PCT) international applications data by residents of a given country in 2010.[3]

National patent office data are frequently criticized on the grounds that there is a lack of international comparability. The use of PCT data to some extent alleviates those criticisms.

An inventor of a promising technology with international market potential will wish to protect his or her invention in more than one country. In addition to filing patents directly in other jurisdictions, inventors can file an "international application" through the PCT, which facilitates the acquisition of patent rights in a large number of jurisdictions (142 contracting states) by reducing the requirement to file a separate application in each jurisdiction.

The use of PCT data sheds light on patents that might be the most economically valuable, as these are the ones that inventors are likely to patent abroad and for which inventors are willing to incur the extra costs that the process of patenting abroad requires. It usefully complements data on national patents filed that—depending on the country in question—might have a more limited commercial and global appeal.

In conclusion, this combination of data on national patent office filings and filings under the PCT system makes for a strong and timely indicator of inventive activity and innovation with very good country coverage. It also better achieves the goal of capturing worldwide innovative activity, in particular inventions in medium- or lower-income economies and inventions with a possibly strong international appeal.

Notes

1 See Griliches 1990; Easton and Kortum 1996; and the OECD Patent Statistics Manual.

2 WIPO 2010.

3 See www.wipo.int/pct/en/ for more information on the PCT.

The current networked readiness landscape: Insight from the NRI 2010–2011

This section provides an overview of the networked readiness landscape of the world as assessed by the NRI 2010–2011, highlighting the top 10 performers and main regional trends for Europe and Central Asia, Asia and the Pacific, Latin America and the Caribbean, sub-Saharan Africa, and the Middle East and North Africa (MENA).[11] Tables 1 through 4 report the 2010–11 rankings for the overall NRI, its three components, and its nine pillars, also indicating the rankings within each relevant income group to further contextualize the results for each economy covered. In addition, the Country/Economy Profiles and Data Table sections at the end of the *Report* present the detailed results for the 138 economies covered by the study and the 71 indicators composing the NRI. To complement the analysis of the 2010–11 results, Box 4 traces back the history of the NRI and describes its most salient trends since 2006.

Top 10

The composition of the top 10 is fairly stable compared with last year. Eight of the top 10 countries were already members of the club a year ago.

For the second year in a row, **Sweden** tops the NRI thanks to an outstanding performance across the board. The country ranks 1st in 12 of the 71 indicators composing the NRI and within the top 10 in a further 35. Sweden offers one of the best climates for technological adoption and innovation. Penetration of new technologies is among the densest in the world, with over 90 percent of the population using the Internet on a regular basis. Beyond usage, a number of new indicators included in the NRI this year reveal the impact ICT is having on the Swedish economy and society at large. In Sweden more than anywhere else, ICT improves access to basic services and gives rise to new organizational models as well as new business models, products, and services. A true knowledge-based economy, Sweden boasts the 4th highest number of PCT patent applications per million population (338.85).

The runner-up for the second year in a row, **Singapore** trails Sweden by a negligible hundredth of a point and outperforms its Nordic rival on several dimensions of the NRI. In particular, Singapore boasts the most conducive political and regulatory environment in the world, thanks to its efficient and transparent administration and business-friendly policies. It also leads the readiness component for the fifth consecutive year owing to the unparalleled zeal with which the government promotes ICT, the country's excellent educational system, and its businesses' prowess in R&D and staff training. In total, Singapore features in the top 10 of all pillars but one, infrastructure environment, where it ranks a still-excellent 12th.

Finland moves up three positions and completes the NRI podium. Finland's performance is consistently outstanding. The country features in the top 10 of eight pillars; the only area of relative weakness is the government usage pillar, where Finland ranks 24th. Conducive market and regulatory environments, as well as excellent soft and hard infrastructures, constitute a very fertile ground. Businesses are aggressive at harnessing and pioneering new technologies. As a result, the country ranks 3rd for the number of PCT patent applications per million population (388.88). ICT readiness is remarkable within the population (3rd) thanks mainly to the country's excellent educational fundamentals, and ICT usage is therefore pervasive and earns Finland the second spot in this dimension.

For the second year in a row, **Switzerland** ranks 4th overall. The country offers one of the most favorable environments in the world for innovation and new technologies, with a world-class infrastructure (3rd), a business-friendly environment (2nd), and an efficient political and regulatory framework (6th). Its level of business readiness is second to none thanks to intense collaboration with academia (2nd) and heavy R&D spending (2nd). As a result, Switzerland has become one of the world's most prolific innovators. On a per capita basis, it ranks 2nd for the number of international patent applications filed through the PCT (467.07). Over 20 percent of its exports are made up of high-tech products (10th). By contrast, ICT does not seem to be as much of a priority in the government's competitiveness agenda (23rd for government readiness). Also government usage is assessed as the worst area in the country's performance, at 41st.

After dropping two ranks in the last edition, the **United States** retains its 5th overall place despite losing ground on a number of individual indicators. Remarkably enough, the country features in the top 20 of all nine NRI pillars. The United States does best in the usage-related categories, where it ranks 5th. US businesses boast among the highest levels of ICT readiness (6th) and usage (3rd). Its academic excellence contributes a great deal to the outstanding innovative capacity of the economy and more generally to the ICT readiness of the population. Some of the leading universities are among the largest innovators in the country, along with the big corporations. In addition, collaboration between academia and businesses is the most extensive in the world. The United States receives excellent marks for ICT usage by the government (4th). In particular, the country ranks 2nd for the quality of the government's Internet services and 6th for the quality of interaction between the government and citizens using new technologies (e-participation). Chapter 2.3 describes the US National Broadband Plan issued in March 2010 and the country's achievements so far in deploying an extensive broadband infrastructure.

Table 1: The Networked Readiness Index 2010–2011 and 2009–2010 comparison

	NRI 2010–2011				NRI 2009–2010	
Country/Economy	Rank	Score	Rank within income group*		Rank	Score
Sweden	**1**	**5.60**	**HI**	**1**	1	5.65
Singapore	2	5.59	HI	2	2	5.64
Finland	3	5.43	HI	3	6	5.44
Switzerland	4	5.33	HI	4	4	5.48
United States	5	5.33	HI	5	5	5.46
Taiwan, China	6	5.30	HI	6	11	5.20
Denmark	7	5.29	HI	7	3	5.54
Canada	8	5.21	HI	8	7	5.36
Norway	9	5.21	HI	9	10	5.22
Korea, Rep.	10	5.19	HI	10	15	5.14
Netherlands	11	5.19	HI	11	9	5.32
Hong Kong SAR	12	5.19	HI	12	8	5.33
Germany	13	5.14	HI	13	14	5.16
Luxembourg	14	5.14	HI	14	17	5.02
United Kingdom	15	5.12	HI	15	13	5.17
Iceland	16	5.07	HI	16	12	5.20
Australia	17	5.06	HI	17	16	5.06
New Zealand	18	5.03	HI	18	19	4.94
Japan	19	4.95	HI	19	21	4.89
France	20	4.92	HI	20	18	4.99
Austria	21	4.90	HI	21	20	4.94
Israel	22	4.81	HI	22	28	4.58
Belgium	23	4.80	HI	23	22	4.86
United Arab Emirates	24	4.80	HI	24	23	4.85
Qatar	25	4.79	HI	25	30	4.53
Estonia	26	4.76	HI	26	25	4.81
Malta	27	4.76	HI	27	26	4.75
Malaysia	**28**	**4.74**	**UM**	**1**	27	4.65
Ireland	29	4.71	HI	28	24	4.82
Bahrain	30	4.64	HI	29	29	4.58
Cyprus	31	4.50	HI	30	32	4.48
Portugal	32	4.50	HI	31	33	4.41
Saudi Arabia	33	4.44	HI	32	38	4.30
Slovenia	34	4.44	HI	33	31	4.51
Tunisia	**35**	**4.35**	**LM**	**1**	39	4.22
China	36	4.35	LM	2	37	4.31
Spain	37	4.33	HI	34	34	4.37
Barbados	38	4.32	HI	35	35	4.36
Chile	39	4.28	UM	2	40	4.13
Czech Republic	40	4.27	HI	36	36	4.35
Oman	41	4.25	HI	37	50	3.91
Lithuania	42	4.20	UM	3	41	4.12
Puerto Rico	43	4.10	HI	38	45	4.07
Montenegro	44	4.09	UM	4	42	4.10
Uruguay	45	4.06	UM	5	57	3.81
Costa Rica	46	4.05	UM	6	49	3.95
Mauritius	47	4.03	UM	7	53	3.89
India	48	4.03	LM	3	43	4.09
Hungary	49	4.03	HI	39	46	3.98
Jordan	50	4.00	LM	4	44	4.09
Italy	51	3.97	HI	40	48	3.97
Latvia	52	3.93	HI	41	52	3.90
Indonesia	53	3.92	LM	5	67	3.72
Croatia	54	3.91	HI	42	51	3.91
Vietnam	55	3.90	LM	6	54	3.87
Brazil	56	3.90	UM	8	61	3.80
Brunei Darussalam	57	3.89	HI	43	63	3.77
Colombia	58	3.89	UM	9	60	3.80
Thailand	59	3.89	LM	7	47	3.97
Panama	60	3.89	UM	10	58	3.81
South Africa	61	3.86	UM	11	62	3.78
Poland	62	3.84	HI	44	65	3.74
Trinidad and Tobago	63	3.83	HI	45	79	3.60
Greece	64	3.83	HI	46	56	3.82
Romania	65	3.81	UM	12	59	3.80
Sri Lanka	66	3.81	LM	8	72	3.65
Kazakhstan	67	3.80	UM	13	68	3.68
Bulgaria	68	3.79	UM	14	71	3.66
Slovak Republic	69	3.79	HI	47	55	3.86

(Cont'd.)

Table 1: The Networked Readiness Index 2010–2011 and 2009–2010 comparison *(cont'd.)*

	NRI 2010–2011				NRI 2009–2010	
Country/Economy	Rank	Score	Rank within income group*		Rank	Score
Azerbaijan	70	3.79	UM	15	64	3.75
Turkey	71	3.79	UM	16	69	3.68
Macedonia, FYR	72	3.79	UM	17	73	3.64
Jamaica	73	3.78	UM	18	66	3.73
Egypt	74	3.76	LM	9	70	3.67
Kuwait	75	3.74	HI	48	76	3.62
Gambia, The	**76**	**3.70**	**LO**	**1**	77	3.61
Russian Federation	77	3.69	UM	19	80	3.58
Mexico	78	3.69	UM	20	78	3.61
Dominican Republic	79	3.62	UM	21	74	3.64
Senegal	80	3.61	LM	10	75	3.63
Kenya	81	3.60	LO	2	90	3.40
Namibia	82	3.58	UM	22	89	3.40
Morocco	83	3.57	LM	11	88	3.43
Cape Verde	84	3.57	LM	12	n/a	n/a
Mongolia	85	3.57	LM	13	94	3.36
Philippines	86	3.57	LM	14	85	3.51
Albania	87	3.56	UM	23	95	3.27
Pakistan	88	3.54	LM	15	87	3.44
Peru	89	3.54	UM	24	92	3.38
Ukraine	90	3.53	LM	16	82	3.53
Botswana	91	3.53	UM	25	86	3.47
El Salvador	92	3.52	LM	17	81	3.55
Serbia	93	3.52	UM	26	84	3.51
Guatemala	94	3.51	LM	18	83	3.53
Lebanon	95	3.49	UM	27	n/a	n/a
Argentina	96	3.47	UM	28	91	3.38
Moldova	97	3.45	LM	19	n/a	n/a
Georgia	98	3.45	LM	20	93	3.38
Ghana	99	3.44	LO	3	98	3.25
Guyana	100	3.43	LM	21	100	3.22
Iran, Islamic Rep.	101	3.41	UM	29	n/a	n/a
Zambia	102	3.36	LO	4	97	3.26
Honduras	103	3.34	LM	22	106	3.13
Nigeria	104	3.32	LM	23	99	3.25
Malawi	105	3.31	LO	5	119	3.01
Mozambique	106	3.29	LO	6	116	3.03
Uganda	107	3.26	LO	7	115	3.03
Ecuador	108	3.26	LM	24	114	3.04
Armenia	109	3.24	LM	25	101	3.20
Bosnia and Herzegovina	110	3.24	UM	30	110	3.07
Cambodia	111	3.23	LO	8	117	3.03
Tajikistan	112	3.23	LO	9	109	3.09
Côte d'Ivoire	113	3.20	LM	26	104	3.16
Benin	114	3.20	LO	10	111	3.06
Bangladesh	115	3.19	LO	11	118	3.01
Kyrgyz Republic	116	3.18	LO	12	123	2.97
Algeria	117	3.17	UM	31	113	3.05
Tanzania	118	3.16	LO	13	120	3.01
Venezuela	119	3.16	UM	32	112	3.06
Mali	120	3.14	LO	14	96	3.27
Lesotho	121	3.14	LM	27	107	3.12
Burkina Faso	122	3.09	LO	15	108	3.10
Ethiopia	123	3.08	LO	16	122	2.98
Syria	124	3.06	LM	28	105	3.13
Cameroon	125	3.04	LM	29	128	2.86
Libya	126	3.03	UM	33	103	3.16
Paraguay	127	3.00	LM	30	127	2.88
Nicaragua	128	2.99	LM	31	125	2.95
Madagascar	129	2.98	LO	17	121	3.00
Mauritania	130	2.98	LO	18	102	3.19
Nepal	131	2.97	LO	19	124	2.95
Zimbabwe	132	2.93	LO	20	132	2.67
Angola	133	2.93	LM	32	n/a	n/a
Swaziland	134	2.91	LM	33	n/a	n/a
Bolivia	135	2.89	LM	34	131	2.68
Timor-Leste	136	2.72	LM	35	130	2.69
Burundi	137	2.67	LO	21	129	2.80
Chad	138	2.59	LO	22	133	2.57

* Income groups: *HI* = high income; *UM* = upper-middle income; *LM* = lower-middle income; *LO* = low income. The highest-ranked economy of each income group appears in bold typeface. Country classification by income group is from the World Bank (situation as of December 2010).

Table 2: Environment subindex

ENVIRONMENT SUBINDEX			Market environment		Political and regulatory framework		Infrastructure environment	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Sweden	5.89	7	5.36	2	6.20	2	6.11
2	Switzerland	5.74	2	5.44	6	5.97	3	5.80
3	Finland	5.64	6	5.37	4	6.06	9	5.49
4	Singapore	5.63	5	5.40	1	6.23	12	5.27
5	Canada	5.62	4	5.40	13	5.75	4	5.71
6	Norway	5.58	8	5.29	8	5.91	8	5.55
7	Netherlands	5.52	12	5.11	12	5.79	6	5.66
8	Luxembourg	5.50	3	5.41	5	6.06	18	5.02
9	United Kingdom	5.47	17	5.02	10	5.83	7	5.56
10	Denmark	5.47	11	5.13	11	5.80	10	5.47
11	Iceland	5.44	35	4.64	19	5.41	1	6.25
12	Hong Kong SAR	5.43	1	5.73	15	5.60	20	4.97
13	Australia	5.41	14	5.07	7	5.95	14	5.21
14	United States	5.39	13	5.08	20	5.41	5	5.70
15	New Zealand	5.38	16	5.02	3	6.12	19	4.99
16	Germany	5.33	23	4.83	9	5.87	11	5.28
17	Austria	5.13	27	4.77	14	5.71	21	4.92
18	France	5.12	32	4.72	17	5.56	16	5.08
19	Taiwan, China	5.09	15	5.05	28	4.94	13	5.27
20	Ireland	5.03	34	4.70	16	5.56	22	4.84
21	Japan	5.02	30	4.74	18	5.54	23	4.79
22	Belgium	5.01	24	4.83	21	5.15	17	5.07
23	Estonia	4.81	28	4.76	24	5.06	25	4.62
24	Israel	4.79	21	4.90	36	4.81	24	4.65
25	United Arab Emirates	4.77	18	4.98	34	4.82	28	4.51
26	Qatar	4.73	10	5.14	30	4.89	35	4.15
27	Korea, Rep.	4.69	53	4.27	41	4.61	15	5.18
28	Malta	4.69	42	4.41	22	5.14	27	4.52
29	Cyprus	4.67	22	4.87	29	4.90	32	4.24
30	Bahrain	4.59	9	5.15	38	4.73	41	3.90
31	Barbados	4.55	46	4.37	26	4.97	30	4.31
32	Saudi Arabia	4.53	19	4.95	25	4.97	54	3.68
33	Chile	4.52	20	4.93	32	4.85	46	3.80
34	Slovenia	4.52	40	4.46	44	4.54	26	4.56
35	Portugal	4.50	36	4.53	37	4.80	34	4.18
36	Malaysia	4.47	33	4.72	27	4.97	51	3.72
37	Spain	4.46	49	4.31	40	4.63	29	4.44
38	South Africa	4.40	25	4.80	23	5.14	73	3.25
39	Puerto Rico	4.36	38	4.49	39	4.70	44	3.89
40	Czech Republic	4.33	56	4.23	46	4.48	31	4.29
41	Mauritius	4.28	26	4.79	33	4.85	78	3.20
42	Lithuania	4.18	72	4.04	51	4.29	33	4.21
43	Oman	4.17	31	4.73	45	4.50	71	3.28
44	Hungary	4.17	76	4.02	48	4.34	37	4.15
45	Tunisia	4.15	52	4.29	42	4.58	57	3.59
46	Slovak Republic	4.10	50	4.30	55	4.20	47	3.79
47	Montenegro	4.07	51	4.29	54	4.22	52	3.71
48	Panama	4.07	29	4.75	71	3.94	62	3.50
49	Jordan	4.04	57	4.20	43	4.55	65	3.37
50	Greece	4.03	90	3.89	63	4.06	36	4.15
51	Italy	4.02	82	3.98	69	3.98	38	4.09
52	Kuwait	3.99	44	4.40	78	3.83	49	3.75
53	Latvia	3.99	79	3.99	53	4.23	50	3.75
54	Croatia	3.99	98	3.84	65	4.05	39	4.08
55	Uruguay	3.98	85	3.92	49	4.32	53	3.71
56	Namibia	3.97	43	4.40	35	4.82	108	2.70
57	China	3.97	71	4.04	50	4.31	58	3.54
58	India	3.93	41	4.43	52	4.28	81	3.09
59	Romania	3.91	89	3.89	68	4.00	45	3.84
60	Poland	3.91	74	4.03	81	3.80	43	3.90
61	Trinidad and Tobago	3.89	55	4.25	73	3.93	61	3.51
62	Indonesia	3.89	37	4.49	72	3.94	74	3.22
63	Turkey	3.87	80	3.99	61	4.08	60	3.53
64	Thailand	3.87	39	4.46	58	4.16	85	2.98
65	Jamaica	3.81	58	4.19	57	4.18	83	3.06
66	Brazil	3.80	93	3.86	64	4.06	63	3.49
67	Costa Rica	3.80	68	4.10	86	3.76	59	3.54
68	Gambia, The	3.80	95	3.85	31	4.88	110	2.66
69	Mexico	3.80	63	4.15	70	3.98	72	3.26
70	Bulgaria	3.79	99	3.82	103	3.52	40	4.04
71	Egypt	3.79	65	4.13	66	4.03	75	3.20
72	Morocco	3.79	59	4.17	59	4.16	84	3.04
73	Macedonia, FYR	3.73	67	4.10	82	3.79	70	3.31
74	Botswana	3.73	69	4.09	47	4.35	106	2.75
75	Sri Lanka	3.68	62	4.15	90	3.69	76	3.20
76	Peru	3.68	47	4.34	94	3.63	82	3.07
77	Azerbaijan	3.67	78	4.00	79	3.82	79	3.18
78	Vietnam	3.66	84	3.92	60	4.14	92	2.93
79	El Salvador	3.66	48	4.32	88	3.71	90	2.94
80	Colombia	3.65	86	3.91	75	3.92	80	3.13
81	Lebanon	3.62	45	4.37	126	3.12	66	3.37
82	Ghana	3.60	60	4.17	62	4.07	118	2.55
83	Russian Federation	3.60	118	3.48	111	3.41	42	3.90
84	Senegal	3.59	70	4.05	84	3.77	91	2.94
85	Malawi	3.58	91	3.88	56	4.20	109	2.66
86	Georgia	3.58	66	4.13	93	3.64	87	2.96
87	Kazakhstan	3.57	97	3.84	100	3.54	68	3.34
88	Zambia	3.56	64	4.14	76	3.91	111	2.65
89	Brunei Darussalam	3.54	100	3.82	74	3.92	96	2.89
90	Serbia	3.54	113	3.55	108	3.43	56	3.63
91	Iran, Islamic Rep.	3.53	122	3.46	89	3.70	64	3.44
92	Dominican Republic	3.53	73	4.03	80	3.81	107	2.73
93	Guatemala	3.53	54	4.26	114	3.38	93	2.93
94	Philippines	3.52	83	3.97	95	3.62	86	2.98
95	Albania	3.49	92	3.87	83	3.78	98	2.82
96	Pakistan	3.48	61	4.16	104	3.51	104	2.77
97	Moldova	3.47	117	3.51	99	3.56	69	3.33
98	Ukraine	3.44	128	3.36	122	3.20	48	3.76
99	Kenya	3.42	88	3.90	97	3.58	102	2.77
100	Argentina	3.41	130	3.21	115	3.37	55	3.65
101	Cape Verde	3.40	87	3.91	87	3.72	117	2.57
102	Uganda	3.38	114	3.55	67	4.01	116	2.58
103	Mongolia	3.35	111	3.60	102	3.53	94	2.91
104	Tanzania	3.33	107	3.62	77	3.90	120	2.48
105	Nigeria	3.31	94	3.86	107	3.44	112	2.65
106	Bosnia and Herzegovina	3.31	125	3.41	118	3.32	77	3.20
107	Guyana	3.30	103	3.72	109	3.43	105	2.75
108	Honduras	3.29	75	4.02	131	3.02	99	2.82
109	Cambodia	3.28	102	3.72	101	3.53	115	2.59
110	Benin	3.28	104	3.70	105	3.48	113	2.65
111	Burkina Faso	3.24	116	3.52	85	3.76	123	2.43
112	Kyrgyz Republic	3.20	126	3.38	113	3.39	97	2.84
113	Mozambique	3.19	96	3.85	92	3.65	133	2.08
114	Armenia	3.19	119	3.48	125	3.13	88	2.96
115	Bangladesh	3.19	77	4.02	132	3.01	119	2.54
116	Nicaragua	3.18	108	3.61	117	3.32	114	2.62
117	Ecuador	3.18	127	3.38	116	3.36	100	2.81
118	Lesotho	3.18	105	3.68	91	3.69	130	2.16
119	Mali	3.14	101	3.74	96	3.62	134	2.07
120	Côte d'Ivoire	3.12	120	3.47	127	3.11	103	2.77
121	Syria	3.09	129	3.31	130	3.06	95	2.90
122	Paraguay	3.07	81	3.99	135	2.88	124	2.36
123	Tajikistan	3.07	121	3.46	112	3.40	126	2.34
124	Mauritania	3.06	123	3.45	98	3.58	129	2.17
125	Algeria	3.05	131	3.15	123	3.20	101	2.78
126	Cameroon	3.02	124	3.43	121	3.21	122	2.43
127	Swaziland	3.01	115	3.52	119	3.24	127	2.26
128	Venezuela	3.00	138	2.74	133	2.89	67	3.36
129	Ethiopia	2.96	106	3.62	110	3.42	137	1.84
130	Madagascar	2.92	112	3.58	129	3.08	132	2.11
131	Zimbabwe	2.90	132	3.12	120	3.23	125	2.35
132	Timor-Leste	2.90	110	3.61	134	2.89	128	2.19
133	Libya	2.88	135	2.98	138	2.70	89	2.95
134	Nepal	2.86	109	3.61	124	3.20	138	1.79
135	Angola	2.79	134	3.01	106	3.47	136	1.88
136	Bolivia	2.78	133	3.07	137	2.81	121	2.46
137	Burundi	2.70	137	2.87	128	3.09	131	2.16
138	Chad	2.58	136	2.90	136	2.86	135	1.97

(Cont'd.)

Table 3: Readiness subindex

READINESS SUBINDEX			Individual readiness		Business readiness		Government readiness	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Singapore	5.79	1	6.13	5	5.26	1	5.98
2	Finland	5.52	3	5.80	3	5.52	10	5.24
3	Sweden	5.48	23	5.44	2	5.69	8	5.32
4	Qatar	5.47	10	5.70	21	4.84	2	5.88
5	Switzerland	5.39	12	5.65	1	5.70	23	4.83
6	United Arab Emirates	5.37	5	5.77	24	4.75	3	5.57
7	Taiwan, China	5.32	13	5.64	12	4.97	5	5.36
8	United States	5.30	11	5.66	6	5.23	17	5.02
9	Denmark	5.30	9	5.72	9	5.14	16	5.05
10	Malaysia	5.23	14	5.63	19	4.88	11	5.18
11	Hong Kong SAR	5.21	2	6.04	27	4.67	18	4.92
12	Luxembourg	5.17	22	5.44	22	4.76	7	5.32
13	Iceland	5.17	4	5.77	14	4.91	24	4.82
14	Germany	5.14	25	5.40	4	5.27	29	4.75
15	Canada	5.13	6	5.73	20	4.88	27	4.78
16	China	5.11	8	5.72	30	4.56	15	5.06
17	Korea, Rep.	5.11	19	5.54	16	4.91	22	4.87
18	Tunisia	5.10	17	5.56	37	4.40	6	5.33
19	Netherlands	5.08	24	5.43	7	5.20	35	4.61
20	Norway	5.08	20	5.52	13	4.94	26	4.78
21	Malta	5.03	29	5.32	36	4.41	4	5.37
22	Belgium	4.93	27	5.38	8	5.17	58	4.24
23	New Zealand	4.93	26	5.39	29	4.64	28	4.75
24	Saudi Arabia	4.91	34	5.26	38	4.39	12	5.09
25	Costa Rica	4.91	7	5.72	26	4.71	53	4.30
26	Australia	4.91	39	5.21	25	4.73	25	4.79
27	Israel	4.90	43	5.17	11	5.02	41	4.51
28	Austria	4.90	30	5.31	23	4.76	32	4.63
29	France	4.87	48	5.12	18	4.89	38	4.59
30	Bahrain	4.86	15	5.59	67	3.94	14	5.07
31	United Kingdom	4.85	54	5.08	17	4.91	39	4.57
32	Estonia	4.82	47	5.12	34	4.45	19	4.89
33	India	4.82	21	5.50	33	4.47	47	4.48
34	Oman	4.81	40	5.19	52	4.16	13	5.08
35	Vietnam	4.78	33	5.28	51	4.18	20	4.88
36	Ireland	4.76	51	5.09	10	5.08	63	4.13
37	Portugal	4.75	84	4.68	45	4.30	9	5.27
38	Japan	4.75	80	4.75	15	4.91	37	4.59
39	Indonesia	4.74	18	5.55	42	4.34	51	4.32
40	Cyprus	4.71	16	5.59	53	4.15	48	4.39
41	Montenegro	4.67	37	5.21	43	4.33	46	4.48
42	Sri Lanka	4.62	31	5.29	64	3.97	36	4.60
43	Slovenia	4.60	41	5.18	35	4.45	61	4.18
44	Barbados	4.60	38	5.21	56	4.07	42	4.51
45	Czech Republic	4.58	66	4.89	28	4.65	59	4.21
46	Mauritius	4.58	36	5.23	60	4.02	45	4.48
47	Chile	4.45	100	4.42	39	4.37	40	4.55
48	Uruguay	4.45	61	5.00	65	3.96	49	4.38
49	Azerbaijan	4.44	67	4.89	83	3.81	33	4.62
50	Brunei Darussalam	4.41	89	4.59	68	3.93	30	4.71
51	Colombia	4.41	68	4.88	50	4.19	62	4.15
52	Jordan	4.37	35	5.25	119	3.37	43	4.50
53	Thailand	4.36	75	4.81	48	4.22	71	4.07
54	Cape Verde	4.35	58	5.03	120	3.33	31	4.70
55	Kenya	4.35	73	4.83	55	4.11	70	4.11
56	Kazakhstan	4.34	53	5.08	81	3.83	66	4.12
57	Jamaica	4.34	57	5.06	61	3.98	77	3.97
58	Gambia, The	4.34	123	3.87	47	4.26	21	4.88
59	Brazil	4.28	110	4.24	41	4.36	56	4.24
60	Pakistan	4.28	56	5.07	70	3.92	84	3.86
61	Panama	4.26	76	4.80	91	3.68	52	4.31
62	Lithuania	4.25	65	4.89	62	3.98	82	3.87
63	Trinidad and Tobago	4.24	44	5.16	89	3.71	86	3.85
64	Italy	4.22	62	4.95	46	4.27	113	3.44
65	Guyana	4.20	77	4.79	57	4.05	91	3.76
66	Puerto Rico	4.20	107	4.27	32	4.52	90	3.80
67	Macedonia, FYR	4.20	87	4.63	85	3.76	60	4.20
68	Russian Federation	4.18	59	5.02	90	3.70	89	3.82
69	Senegal	4.18	122	3.89	59	4.03	34	4.61
70	Spain	4.17	109	4.24	31	4.56	93	3.71
71	Namibia	4.16	93	4.49	66	3.96	74	4.02
72	Latvia	4.15	49	5.10	75	3.85	110	3.49
73	Poland	4.14	83	4.69	54	4.13	103	3.59
74	Egypt	4.13	70	4.85	112	3.43	68	4.12
75	Mongolia	4.12	60	5.02	117	3.38	78	3.95
76	Romania	4.10	63	4.93	63	3.98	119	3.40
77	Serbia	4.09	50	5.10	98	3.58	101	3.60
78	Iran, Islamic Rep.	4.09	55	5.07	118	3.37	88	3.83
79	South Africa	4.09	113	4.16	40	4.37	92	3.72
80	Ghana	4.08	90	4.56	80	3.83	83	3.86
81	Turkey	4.07	94	4.45	93	3.64	64	4.12
82	Ukraine	4.06	28	5.38	106	3.52	122	3.27
83	Dominican Republic	4.05	102	4.40	108	3.50	57	4.24
84	Hungary	4.03	104	4.36	58	4.05	95	3.68
85	Lebanon	4.03	32	5.29	44	4.32	138	2.48
86	Algeria	4.03	72	4.83	82	3.81	116	3.44
87	Mozambique	4.02	128	3.69	72	3.89	44	4.49
88	Tajikistan	4.02	92	4.53	95	3.62	80	3.92
89	Albania	4.02	78	4.77	127	3.22	72	4.07
90	Croatia	4.02	88	4.60	71	3.90	106	3.56
91	Greece	4.01	69	4.86	94	3.63	108	3.54
92	Moldova	4.01	46	5.14	111	3.44	112	3.45
93	Botswana	4.01	114	4.11	92	3.66	55	4.26
94	Zambia	3.99	116	4.07	73	3.88	75	4.00
95	Kuwait	3.95	45	5.15	128	3.13	105	3.57
96	Ethiopia	3.95	112	4.16	99	3.57	67	4.12
97	Armenia	3.93	52	5.08	129	3.13	104	3.58
98	Argentina	3.91	79	4.75	49	4.21	135	2.75
99	Philippines	3.89	74	4.83	109	3.49	121	3.37
100	Mexico	3.89	97	4.45	103	3.55	98	3.66
101	El Salvador	3.89	85	4.66	97	3.59	118	3.41
102	Malawi	3.88	124	3.86	78	3.84	79	3.94
103	Bulgaria	3.88	95	4.45	107	3.52	96	3.66
104	Bangladesh	3.87	96	4.45	124	3.24	81	3.90
105	Uganda	3.86	121	3.91	101	3.57	65	4.12
106	Morocco	3.83	125	3.85	96	3.60	73	4.05
107	Georgia	3.82	86	4.65	132	3.11	94	3.70
108	Nigeria	3.81	119	3.94	77	3.84	97	3.66
109	Guatemala	3.81	99	4.43	74	3.88	128	3.13
110	Honduras	3.81	106	4.32	100	3.57	109	3.53
111	Cambodia	3.80	118	4.01	113	3.42	76	3.98
112	Peru	3.80	108	4.26	104	3.54	100	3.61
113	Ecuador	3.76	82	4.72	123	3.30	123	3.27
114	Benin	3.76	133	3.48	105	3.53	54	4.27
115	Slovak Republic	3.76	111	4.18	69	3.92	126	3.17
116	Côte d'Ivoire	3.75	126	3.85	84	3.76	99	3.65
117	Syria	3.74	81	4.73	133	3.10	120	3.39
118	Nepal	3.74	71	4.84	125	3.24	127	3.13
119	Lesotho	3.73	103	4.37	116	3.39	117	3.41
120	Venezuela	3.72	101	4.41	76	3.85	132	2.90
121	Zimbabwe	3.72	98	4.45	110	3.48	124	3.22
122	Bosnia and Herzegovina	3.71	64	4.92	114	3.42	134	2.78
123	Mali	3.70	129	3.69	122	3.31	69	4.11
124	Tanzania	3.69	130	3.68	102	3.56	87	3.83
125	Kyrgyz Republic	3.68	42	5.18	130	3.13	136	2.73
126	Swaziland	3.61	115	4.08	87	3.73	130	3.02
127	Angola	3.61	135	3.24	88	3.73	85	3.85
128	Cameroon	3.60	132	3.49	79	3.83	111	3.48
129	Madagascar	3.53	134	3.25	86	3.75	102	3.60
130	Libya	3.52	105	4.34	138	2.68	107	3.55
131	Burkina Faso	3.50	137	2.74	115	3.39	50	4.37
132	Paraguay	3.46	91	4.54	131	3.13	137	2.71
133	Mauritania	3.45	131	3.67	126	3.23	115	3.44
134	Bolivia	3.33	117	4.01	134	3.05	131	2.92
135	Burundi	3.31	127	3.81	136	3.03	129	3.10
136	Nicaragua	3.26	120	3.92	135	3.04	133	2.83
137	Chad	3.13	136	2.87	121	3.32	125	3.19
138	Timor-Leste	3.04	138	2.68	137	3.01	114	3.44

(Cont'd.)

Table 4: Usage subindex

USAGE SUBINDEX			Individual usage		Business usage		Government usage	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Korea, Rep.	5.78	4	5.90	2	5.20	1	6.25
2	Taiwan, China	5.49	15	5.40	1	5.29	2	5.76
3	Sweden	5.42	1	6.45	6	4.91	17	4.91
4	Singapore	5.35	7	5.73	10	4.68	3	5.65
5	United States	5.28	19	5.28	3	4.97	4	5.61
6	Finland	5.12	2	6.17	8	4.74	24	4.45
7	Denmark	5.10	5	5.84	14	4.32	9	5.14
8	Japan	5.07	14	5.43	4	4.96	19	4.83
9	United Kingdom	5.04	12	5.55	12	4.43	10	5.13
10	Netherlands	4.97	8	5.73	13	4.33	18	4.84
11	Norway	4.95	10	5.66	16	4.21	14	4.98
12	Germany	4.95	17	5.37	7	4.80	20	4.67
13	Hong Kong SAR	4.92	11	5.61	25	3.80	7	5.35
14	Canada	4.89	23	5.12	22	4.07	5	5.48
15	Switzerland	4.87	9	5.69	5	4.94	41	4.00
16	Australia	4.86	18	5.36	27	3.75	6	5.48
17	France	4.79	25	5.01	11	4.43	16	4.92
18	New Zealand	4.78	13	5.45	24	3.87	13	5.01
19	Israel	4.75	20	5.23	9	4.68	28	4.35
20	Luxembourg	4.74	3	6.05	18	4.16	42	4.00
21	Austria	4.68	16	5.38	20	4.14	22	4.52
22	Estonia	4.66	22	5.20	28	3.74	12	5.04
23	Iceland	4.60	6	5.76	17	4.19	46	3.86
24	Malta	4.56	26	4.95	21	4.14	21	4.59
25	Malaysia	4.53	45	4.26	15	4.24	11	5.10
26	Belgium	4.46	24	5.10	26	3.79	23	4.49
27	Bahrain	4.45	29	4.90	58	3.15	8	5.31
28	Spain	4.35	32	4.78	46	3.33	15	4.95
29	Ireland	4.33	31	4.78	23	4.05	35	4.17
30	United Arab Emirates	4.27	21	5.22	39	3.50	40	4.08
31	Portugal	4.24	27	4.95	40	3.49	30	4.29
32	Slovenia	4.20	30	4.88	41	3.48	32	4.23
33	Lithuania	4.17	34	4.71	38	3.51	29	4.29
34	Qatar	4.16	28	4.91	42	3.47	37	4.11
35	Cyprus	4.12	35	4.71	36	3.52	36	4.14
36	China	3.96	63	3.54	19	4.16	34	4.18
37	Czech Republic	3.91	39	4.57	30	3.69	60	3.46
38	Hungary	3.88	41	4.48	35	3.54	53	3.62
39	Saudi Arabia	3.88	40	4.54	44	3.38	52	3.71
40	Chile	3.87	54	3.91	47	3.29	26	4.42
41	Barbados	3.83	42	4.45	29	3.70	70	3.33
42	Tunisia	3.81	61	3.56	43	3.44	27	4.42
43	Oman	3.76	48	4.20	56	3.16	45	3.91
44	Uruguay	3.75	47	4.22	63	3.08	43	3.97
45	Puerto Rico	3.73	56	3.71	33	3.55	44	3.93
46	Brunei Darussalam	3.73	33	4.73	79	2.88	54	3.59
47	Croatia	3.73	44	4.36	66	3.03	49	3.79
48	Bulgaria	3.70	36	4.67	73	2.96	59	3.46
49	Italy	3.67	38	4.58	51	3.21	80	3.22
50	Latvia	3.65	43	4.45	62	3.09	64	3.41
51	Colombia	3.61	70	3.36	65	3.04	25	4.43
52	Brazil	3.61	64	3.51	37	3.52	48	3.80
53	Jordan	3.57	62	3.55	71	2.96	33	4.20
54	Slovak Republic	3.51	37	4.64	64	3.07	107	2.84
55	Montenegro	3.51	53	3.97	54	3.18	66	3.38
56	Kazakhstan	3.49	73	3.28	75	2.91	31	4.28
57	Poland	3.48	46	4.23	60	3.11	93	3.11
58	Costa Rica	3.45	77	3.25	31	3.68	61	3.43
59	Greece	3.45	50	4.11	88	2.81	62	3.42
60	Macedonia, FYR	3.42	51	4.11	98	2.70	58	3.47
61	Thailand	3.42	72	3.31	34	3.55	63	3.41
62	Turkey	3.42	58	3.62	61	3.10	55	3.54
63	Romania	3.42	52	4.02	70	2.98	74	3.25
64	Mexico	3.38	78	3.18	48	3.23	50	3.72
65	Egypt	3.37	79	3.16	83	2.85	39	4.09
66	Trinidad and Tobago	3.36	49	4.15	97	2.70	79	3.22
67	India	3.34	98	2.83	45	3.38	47	3.82
68	Panama	3.33	59	3.60	59	3.12	73	3.26
69	Russian Federation	3.31	55	3.91	72	2.96	96	3.05
70	Dominican Republic	3.29	82	3.14	68	3.01	51	3.72
71	Philippines	3.28	85	3.07	32	3.57	81	3.20
72	Kuwait	3.27	57	3.71	94	2.75	69	3.35
73	Vietnam	3.27	74	3.28	55	3.17	68	3.36
74	Azerbaijan	3.26	69	3.37	76	2.90	56	3.51
75	Mongolia	3.24	97	2.83	92	2.78	38	4.11
76	Mauritius	3.23	68	3.39	69	3.00	72	3.32
77	Jamaica	3.19	60	3.57	85	2.84	88	3.17
78	Guatemala	3.19	86	3.06	53	3.19	71	3.32
79	Albania	3.17	66	3.49	86	2.83	83	3.19
80	Indonesia	3.14	87	3.01	50	3.21	82	3.20
81	Peru	3.14	80	3.15	78	2.90	67	3.37
82	Sri Lanka	3.13	100	2.76	57	3.15	57	3.48
83	South Africa	3.10	95	2.88	52	3.19	76	3.24
84	Morocco	3.10	71	3.35	89	2.80	89	3.14
85	Argentina	3.10	65	3.50	82	2.86	101	2.94
86	Ukraine	3.10	84	3.11	74	2.93	75	3.25
87	Senegal	3.05	99	2.79	49	3.22	91	3.14
88	Kenya	3.03	104	2.66	67	3.02	65	3.40
89	El Salvador	3.01	90	2.94	84	2.85	77	3.24
90	Gambia, The	2.97	96	2.87	80	2.88	86	3.17
91	Cape Verde	2.96	94	2.89	93	2.77	78	3.22
92	Georgia	2.96	81	3.15	103	2.64	94	3.08
93	Honduras	2.94	93	2.90	77	2.90	98	3.02
94	Serbia	2.92	67	3.48	121	2.50	114	2.78
95	Moldova	2.89	76	3.25	116	2.56	105	2.86
96	Pakistan	2.87	106	2.61	87	2.83	87	3.17
97	Botswana	2.85	101	2.76	112	2.59	84	3.19
98	Ecuador	2.83	89	2.94	109	2.61	99	2.94
99	Nigeria	2.83	92	2.93	81	2.87	123	2.67
100	Lebanon	2.82	88	3.01	91	2.79	125	2.65
101	Guyana	2.78	91	2.94	105	2.63	113	2.78
102	Venezuela	2.76	83	3.11	124	2.49	122	2.68
103	Côte d'Ivoire	2.73	116	2.35	100	2.69	90	3.14
104	Bosnia and Herzegovina	2.71	75	3.26	118	2.53	133	2.36
105	Libya	2.70	103	2.68	117	2.54	102	2.89
106	Kyrgyz Republic	2.65	105	2.65	134	2.25	97	3.05
107	Mozambique	2.65	125	2.13	96	2.70	92	3.12
108	Ghana	2.63	112	2.46	102	2.65	116	2.77
109	Namibia	2.62	107	2.59	90	2.80	129	2.47
110	Cambodia	2.62	115	2.35	104	2.63	104	2.86
111	Armenia	2.61	108	2.56	107	2.61	124	2.66
112	Tajikistan	2.60	114	2.40	99	2.70	119	2.70
113	Iran, Islamic Rep.	2.60	110	2.54	114	2.56	120	2.70
114	Bolivia	2.57	109	2.54	123	2.49	121	2.69
115	Mali	2.57	132	2.02	122	2.50	85	3.18
116	Benin	2.55	119	2.28	108	2.61	115	2.77
117	Zambia	2.54	120	2.24	101	2.69	118	2.71
118	Uganda	2.54	121	2.19	111	2.60	109	2.83
119	Nicaragua	2.53	117	2.31	126	2.46	108	2.83
120	Burkina Faso	2.53	135	1.92	110	2.61	95	3.07
121	Lesotho	2.51	126	2.12	106	2.62	110	2.80
122	Bangladesh	2.50	134	2.01	115	2.56	100	2.94
123	Madagascar	2.50	123	2.18	119	2.53	112	2.79
124	Cameroon	2.49	129	2.09	113	2.59	111	2.79
125	Tanzania	2.47	127	2.11	120	2.52	117	2.77
126	Malawi	2.46	124	2.13	95	2.71	127	2.55
127	Paraguay	2.46	111	2.51	125	2.48	131	2.40
128	Mauritania	2.43	128	2.11	130	2.33	106	2.85
129	Algeria	2.42	102	2.74	138	2.11	130	2.42
130	Angola	2.39	122	2.18	129	2.35	126	2.64
131	Syria	2.35	113	2.45	135	2.24	134	2.36
132	Ethiopia	2.34	136	1.83	131	2.31	103	2.87
133	Nepal	2.30	131	2.03	127	2.38	128	2.49
134	Timor-Leste	2.22	130	2.03	133	2.26	132	2.37
135	Zimbabwe	2.17	133	2.01	128	2.38	137	2.12
136	Swaziland	2.10	118	2.31	137	2.16	138	1.84
137	Chad	2.07	137	1.66	132	2.30	135	2.25
138	Burundi	1.99	138	1.56	136	2.17	136	2.24

(Cont'd.)

In 6th position, **Taiwan** makes a remarkable entry into the top 10.[12] Taiwan is an international innovation powerhouse. Its patent office is one of the world's busiest—in 2009 alone, it processed over 78,000 patent applications. That represents a record 3,392 applications per million population, far more than 2nd- and 3rd-ranked Korea (2,611) and Japan (2,315). As with most of the top-ranked countries in the Index, the government has placed ICT at the heart of its competitiveness agenda. Through incentive programs and massive investment in ICT infrastructure, the government has been a catalyst of these positive developments. Taiwan ranks 5th in the government readiness pillar and 2nd in the government usage pillar, and represents an inspiring success story of a resource-poor economy turned into a major high-tech global player in the space of a few decades.

Former long-standing best-performer **Denmark** drops to 7th position as a result of slightly lower scores across the board. Yet its performance remains consistently strong. Indeed, Denmark's lowest rank among the nine NRI pillars is a still very positive 16th in the government readiness pillar. Among all countries, only Singapore does better in this regard, 12th being its lowest pillar rank. The country's showing rests on outstanding levels of preparation and use of ICT by all national stakeholders (9th and 7th for readiness and usage, respectively), especially individuals (9th and 5th for individual readiness and usage, respectively). Environmental factors are also very favorable at 11th overall, with an even contribution of market, regulatory, and infrastructure environments.

Canada (8th) slips one position, essentially because of its lower marks in the usage component of the Index (14th, down six places). Nevertheless it displays a strong showing, mainly driven by a very ICT-conducive environment (5th) and high levels of individual readiness (6th) and government usage (5th). Individual and business usage are weaker at 23rd and 22nd, respectively: comparatively low penetration rates for mobile telephony remains a notable problem for the country (70.9 per 100 population, corresponding to 95th place). On a similar note, Canadian businesses appear less prompt than their southern neighbors to harness new technologies or to produce and export innovative products in the international markets—the country ranks 20th for PCT patent applications per million population (80.2) and only 9.2 percent of its goods exports are high-tech products (28th).

At 9th, **Norway** is the fourth Nordic in the top 10. Up one place, the country's performance is virtually unchanged since last year, with small movements in the rankings attributable to variations in the performance of other countries. Norway continues to boast one of the most conducive environments for innovation and ICT development (6th). The area presenting the most room for improvement is the readiness component (20th).

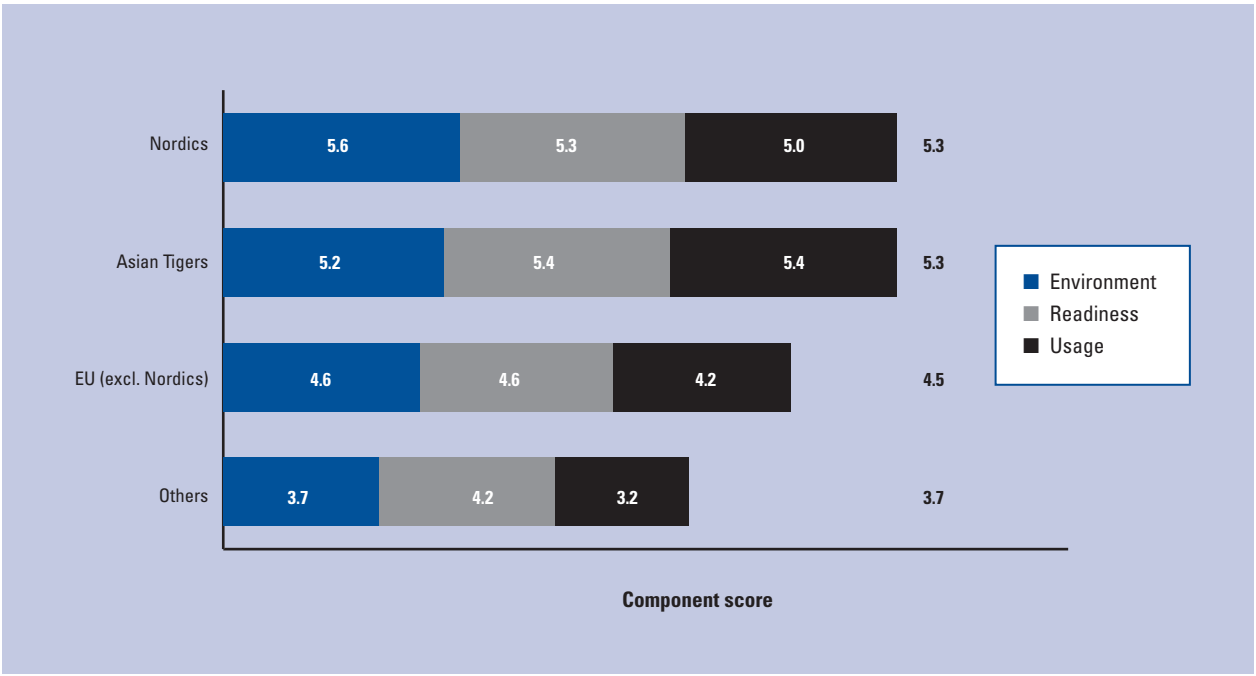
Up five positions, **Korea** re-enters the top 10 for the first time since the 2007–08 edition when it was 9th. Korea's performance exhibits a peculiar pattern. It tops the ICT usage component, but trails behind other members of the top 10 by a wide margin for the quality of its market environment (53rd). The regulatory framework is also problematic (41st), with very low marks for the effectiveness of law-making bodies (131st) and the efficiency of the legal system to challenge regulations (86th), among other dimensions. These results stand at odds with the country's outstanding performance in terms of usage, which earns Korea the top spot in this category. In this pillar, the country leads both the Government Online Services and E-Participation Indexes.

Before delving into the regional analysis of the NRI results, we highlight a number of general trends in this year's findings, looking at the most successful countries, the relationship between networked readiness and income, and a size and consistency of performance across pillars.

As a group, the five Nordics continue to impress by their capacity to leverage ICT. Four of them appear in the top 10, with Iceland positioning at a still-satisfactory 16th position. The overall performance of the Asian Tigers is just as impressive (see Figure 3). Behind Singapore, Taiwan and Korea, both gaining five ranks, re-enter the top 10, while Hong Kong follows closely at 12th. One remarkable result is the performance of the Tigers in terms of government usage. Korea, Taiwan, and Singapore occupy the first three positions and Hong Kong places 6th in this pillar. More generally, these four economies do significantly better than the Nordics in the usage-related categories but, on the other hand, they present an environment that is slightly less conducive for ICT.

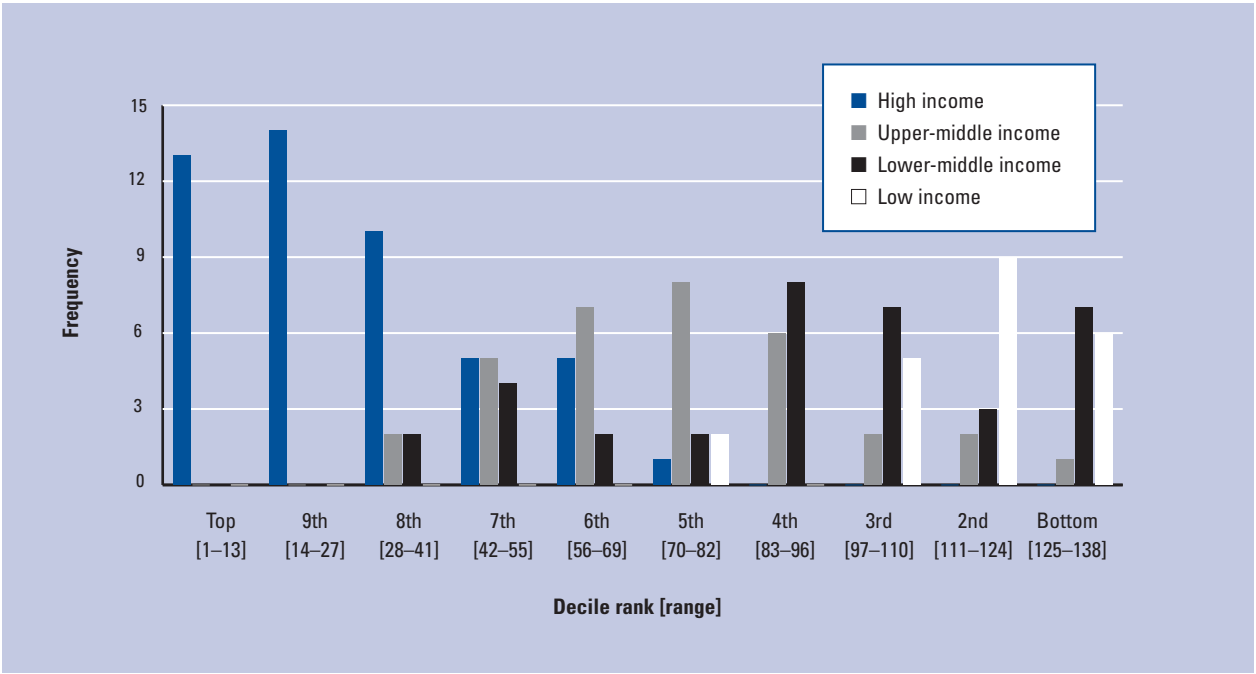
Unsurprisingly, rich countries leverage ICT better on average than least-developed countries (see Figure 4). Indeed, the top two deciles are exclusively populated by high-income economies.[13] At 28th, Malaysia is the only non-high-income country to feature in the top 30. By contrast, Kuwait (75th) stands out as the only high-income economy outside the first half of the rankings. On the other hand, all low-income economies rank beyond the 97th rank (i.e., 3rd decile and lower) with the two notable exceptions of Gambia (76th) and Kenya (81st). The correlation, however, is not perfect. Sweden and Kuwait boast the same GDP per capita, yet when it comes to their NRI performance the gap is huge—almost 2 points. Another case in point is Malaysia and Libya, which are similarly rich but very much apart in terms of networked readiness (1.7 points). Although the relationship between wealth and networked readiness is clearly positive, country size has little influence on NRI performance, as shown by Figure 5. This finding supports the fact that factors driving networked readiness are similar for all countries, independent from their size, which contradicts the intuitive thinking that small economies have a clear advantage when it comes to

Figure 3: Average NRI score for selected country groups



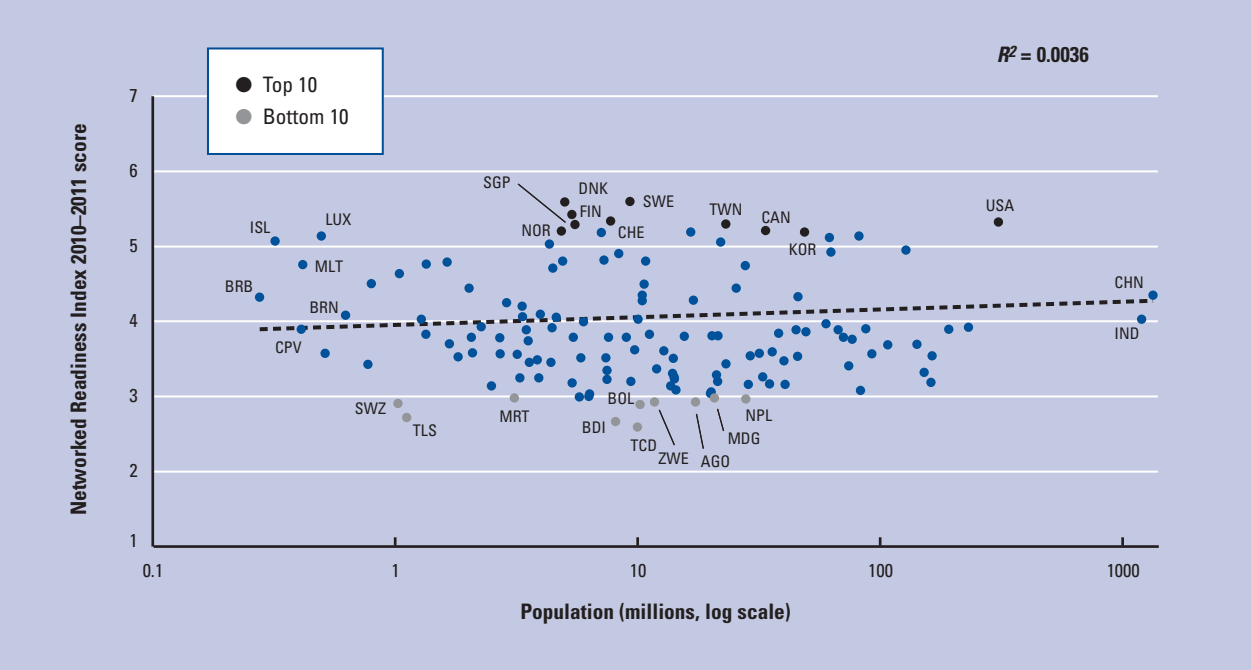
Note: The contribution of each component to the overall NRI is depicted by the length of each respective solid bar. The number at the end of each bar is the overall NRI score. *Nordics* comprise Denmark, Finland, Iceland, Norway, and Sweden; *Asian Tigers* refers to Hong Kong, Korea, Singapore, and Taiwan. *EU (excl. Nordics)* corresponds to the EU27 less Denmark, Finland, and Sweden. *Others* refers to all other economies covered by the study.

Figure 4: NRI 2010–2011 decile rank distribution by income group



Note: See text for details.

Figure 5: NRI 2010–2011 and population



Source: Population data from IMF, 2010.
Note: AGO = Angola, BRB = Barbados, BOL = Bolivia, BDI = Burundi, CAN = Canada, TCD = Chad, CHN = China, DNK = Denmark, FIN = Finland, ISL = Iceland, IND = India, KOR = Korea, Rep., MDG = Madagascar, MRT = Mauritania, NPL = Nepal, NOR = Norway, SGP = Singapore, SWZ = Swaziland, SWE = Sweden, CHE = Switzerland, TWN = Taiwan, China, TLS = Timor-Leste, USA = United States, ZWE = Zimbabwe.

connecting their territories and implementing a digital agenda. Indeed, if it may be easier to do the above in small countries, large market size surely grants other advantages for networked readiness, including economies of scale and increased ease for developing innovation.

Finally, Tables 5 and 6 give an indication of the consistency of a country's performance in the NRI. As Table 5 shows, the 10 best-performing countries do well in most pillars. In seven pillars, the top spot goes to one of them. The two remaining pillars, market environment and infrastructure environment, are led by Hong Kong (12th overall) and Iceland (16th), respectively. Table 6 provides further insight into the factors driving the overall performance of the top 10 countries and selected country groups. On this heat map, lighter shadings indicate a better score performance. The last two pillars, namely business usage and government usage, constitute the weakest aspects in a majority of countries' performance, as reflected by the darker shadings on the heat map. The pattern for the individual usage pillar shows much more contrast and reveals a marked divide between developed and developing economies.[14] While most of the developing world is experiencing exponential growth in mobile telephony adoption, computerization rate and Internet use remain very low and contribute to lowering the score for overall ICT usage. The digital divide between developed and developing economies is still fairly deep and will take many more years to bridge fully. The infrastructure environment pillar is the other area where the developing world is clearly lagging behind.

Europe and Central Asia

Europe continues to display remarkable levels of ICT readiness, with Sweden leading the rankings for the second year in a row and 10 other economies featuring among the top 20 world's best performers, namely Finland (3rd), Switzerland (4th), Denmark (7th), Norway (9th), the **Netherlands** (11th), **Germany** (13th), **Luxembourg** (14th), the **United Kingdom** (15th), **Iceland** (16th), and **France** (20th).

Although some of these countries lose ground with respect to last year,[15] the Nordic countries are still among the most successful in the world in fully integrating new technologies in their competitiveness strategies and using them as a crucial lever for long-term growth, as noted above. Their prowess is based on some common enabling features. In particular, they all display a very innovation-friendly environment, with transparent and conducive regulations and top-class educational and research systems working closely with the industry, together with a strong innovation culture society-wise. Moreover, a consistent focus on innovation and ICT diffusion in the government agenda over the years has resulted in remarkably high ICT penetration rates and in the emergence of global players in high-tech and innovative products. These features represent important competitive strengths going forward, notably

Table 5: Composition of the top 3 by pillar and presence in the top 10

Country/Economy	**Overall NRI**	Market environment	Political and regulatory environment	Infrastructure environment	Individual readiness	Business readiness	Government readiness	Individual usage	Business usage	Government usage	No. of times in top 10	No. of times in top 3
Sweden	**1**	7	**2**	**2**	—	**2**	8	**1**	6	—	7	4
Singapore	**2**	5	**1**	—	**1**	5	**1**	7	10	**3**	8	4
Finland	**3**	6	4	9	**3**	**3**	10	**2**	8	—	8	3
Switzerland	**4**	**2**	6	**3**	—	**1**	—	9	5	—	6	3
United States	**5**	—	—	5	—	6	—	—	**3**	4	4	1
Taiwan, China	**6**	—	—	—	—	—	5	—	**1**	**2**	3	2
Denmark	**7**	—	—	10	9	9	—	5	—	9	5	—
Canada	**8**	4	—	4	6	—	—	—	—	5	4	—
Norway	**9**	8	8	8	—	—	—	10	—	—	4	—
Korea, Rep.	**10**	—	—	—	—	—	—	4	**2**	**1**	3	2
Hong Kong SAR	12	**1**	—	—	**2**	—	—	—	—	7	3	2
Luxembourg	14	**3**	5	—	—	—	7	**3**	—	—	4	2
Iceland	16	—	—	**1**	4	—	—	6	—	—	3	1
New Zealand	18	—	**3**	—	—	—	—	—	—	—	1	1
United Arab Emirates	24	—	—	—	5	—	**3**	—	—	—	2	1
Qatar	25	10	—	—	10	—	**2**	—	—	—	3	1

Notes: The pillar rank is reported only if it is10th or better. The top three ranks are highlighted in blue typeface.

Table 6: The NRI 2010–2011 heat map for selected economies and country groups

	Networked Readiness Index		Market environment	Political and regulatory environment	Infra-structure environment	Individual readiness	Business readiness	Government readiness	Individual usage	Business usage	Government usage
Country/Economy	Rank	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Top 10											
Sweden	1	5.6	5.4	6.2	6.1	5.4	5.7	5.3	6.4	4.9	4.9
Singapore	2	5.6	5.4	6.2	5.3	6.1	5.3	6.0	5.7	4.7	5.6
Finland	3	5.4	5.4	6.1	5.5	5.8	5.5	5.2	6.2	4.7	4.5
Switzerland	4	5.3	5.4	6.0	5.8	5.6	5.7	4.8	5.7	4.9	4.0
United States	5	5.3	5.1	5.4	5.7	5.7	5.2	5.0	5.3	5.0	5.6
Taiwan, China	6	5.3	5.0	4.9	5.3	5.6	5.0	5.4	5.4	5.3	5.8
Denmark	7	5.3	5.1	5.8	5.5	5.7	5.1	5.0	5.8	4.3	5.1
Canada	8	5.2	5.4	5.7	5.7	5.7	4.9	4.8	5.1	4.1	5.5
Norway	9	5.2	5.3	5.9	5.5	5.5	4.9	4.8	5.7	4.2	5.0
Korea, Rep.	10	5.2	4.3	4.6	5.2	5.5	4.9	4.9	5.9	5.2	6.2
Income groups											
High income	—	4.7	4.7	5.1	4.7	5.2	4.6	4.6	5.1	3.9	4.4
Upper middle income	—	3.7	4.0	3.9	3.4	4.8	3.9	3.9	3.5	3.0	3.4
Lower middle income	—	3.5	3.8	3.6	2.9	4.6	3.7	3.8	2.8	2.9	3.1
Low income	—	3.2	3.6	3.6	2.4	4.0	3.6	3.8	2.2	2.5	2.8
Regions (low- and middle-income economies only)											
East Asia & Pacific	—	3.8	4.1	3.9	3.0	4.8	3.9	4.3	3.1	3.3	3.5
Europe & Central Asia	—	3.6	3.8	3.6	3.4	4.9	3.6	3.7	3.5	2.8	3.2
MENA	—	3.5	3.8	3.7	3.2	4.9	3.6	3.9	3.0	2.7	3.2
South Asia	—	3.5	4.1	3.5	2.7	5.0	3.8	4.0	2.4	2.9	3.2
Sub-Saharan Africa	—	3.3	3.7	3.8	2.5	3.9	3.7	3.9	2.3	2.6	2.8
Average (138 econ.)	—	3.9	4.2	4.2	3.5	4.8	4.0	4.1	3.7	3.2	3.6

Note: Lighter shadings indicate better performance.

Box 4: The NRI in a historical context and main trends in networked readiness

The 2010–11 edition of the GITR marks the 10th anniversary of the series. Designed as a tool for policymakers, ever since its inception the *Report* has featured the Networked Readiness Index (NRI) as the analytical framework for assessing countries' levels of networked readiness. Following the inaugural 2001–02 edition, the structure of the NRI was significantly revised.[1] Developed by INSEAD, the current NRI framework described in Figure 1 was introduced in 2002 and has been kept constant ever since.

However, within the NRI framework, the methodology for computing the rankings has evolved. While the computation of the Index has always been based on successive aggregations of scores using an arithmetic mean, from the variables level (i.e., the most disaggregated level) to the overall NRI score, the method of selecting indicators included in the NRI has changed. In earlier editions, the selection was based on a principal component analysis. Since the 2006–07 edition, it has been based on expert opinion, obviously with the benefit of previous experience.[2]

In light of these methodological changes and to ensure strict comparability, for the following analysis on inter-temporal trends in the NRI we consider only the last five editions of the NRI. As shown in Table A, the composition of the top 10 has remained fairly stable, with 7 of the current 10 best-performing countries already present in the 2006–07 edition. Denmark topped the rankings at the time, a position it held until the 2008–09 edition. Sweden was 2nd, followed by Singapore, Finland, and Switzerland. The United States (then 7th) and Norway (10th) also ranked within the top 10. So did the Netherlands (6th), Iceland (8th), and the United Kingdom (9th). But these three countries were then replaced by Taiwan, Canada, and Korea. Over the five-year period, the top three spots have been shared among six countries only, namely Sweden, Singapore, Finland, Switzerland, the United States, and Denmark. Sweden is the only country to have featured on the podium of each edition.

Table A: Performance of the top 10 countries since 2006

	NRI EDITION				
Country/Economy	2010–11	2009–10	2008–09	2007–08	2006–07
Coverage	138	133	134	127	122
Sweden	**1**	**1**	**2**	**2**	**2**
Singapore	**2**	**2**	4	5	**3**
Finland	**3**	6	6	6	4
Switzerland	**4**	4	5	**3**	5
United States	**5**	5	**3**	4	7
Taiwan, China	**6**	11	13	17	13
Denmark	**7**	**3**	**1**	**1**	**1**
Canada	**8**	7	10	13	11
Norway	**9**	10	8	10	10
Korea, Rep.	**10**	15	11	9	19

Note: The top three ranks in each edition are in blue bold typeface.

The top 20 group is characterized by a similar stability. Seventeen countries of the current top 20 were already members of the club back in 2006. Luxembourg (now 14th), New Zealand (18th), and France (20th) have joined this year, replacing then-members Austria (now 21st), Israel (22nd), and Estonia (26th).

Looking beyond the top 20, the rankings have proven more unstable. The analysis points to many stories of economies dramatically improving their networked readiness over time, while others have been losing considerable ground.

Extending the historical analysis to the entire sample requires taking into account the fact that the number of countries studied has increased. The 72-country sample of the first edition has expanded to a record 138 economies in the current one. In order to deal with this ever-increasing country coverage, we resort to percentile ranking. A percentile is the value of a variable below which a certain percent of observations fall. Through this approach, we recognize that it is not exactly the same for a country to rank 90th among 122 economies—the 2006–07 sample—as it is to rank 90th among 138. That the second case is more flattering is not reflected in the country's *absolute* rank—90th in both cases. Yet it shows in the country's *percentile* rank—35th against 26th.

Based on this approach, we identified the most dynamic countries by looking at the difference between the latest percentile rank (2010–11) and the 2006–07 percentile rank (or earliest edition of inclusion): the larger the difference, the bigger the improvement. Figure A.1 plots the trajectories of the 10 countries that have progressed the most over the period under consideration. These are (in descending order of improvement) Vietnam, Albania, Gambia, China, Sri Lanka, Montenegro, Bahrain, Kenya, Zambia, and Mozambique. Vietnam's spectacular progression spans an impressive three deciles. This group of 10 is geographically very diverse, with four representatives from sub-Saharan Africa, three from Developing Asia, two from Eastern Europe, and one from the Middle East. Although most of the countries started from a low base, China and Bahrain were already in the first half of the rankings but still managed to make remarkable strides. All these economies have generally upped their game across the board, but the readiness component of the NRI clearly stands out as the main driving force behind their improvements.

On the other hand, the analysis reveals several cases of countries that have failed to keep up with their peers. Figure A.2 illustrates the rank evolution of the 10 countries having fallen the most since the 2006–07 edition, namely Mauritania, Algeria, Venezuela, Argentina, El Salvador, the Slovak Republic, Mexico, Jamaica, Thailand, and Bolivia. Latin America and the Carribean hosts six of these laggards.

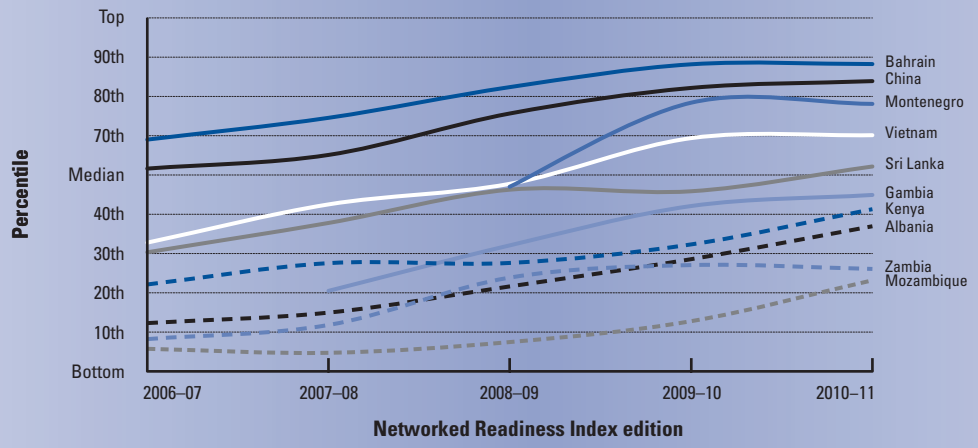
Figure A.3 depicts the evolution in ranking of selected countries that were at similar levels of networked readiness in the 2006–07 edition, revealing striking differences in trajectories. For instance, three neighboring countries that were in the bottom decile then have embarked on very distinct paths:

(Cont'd.)

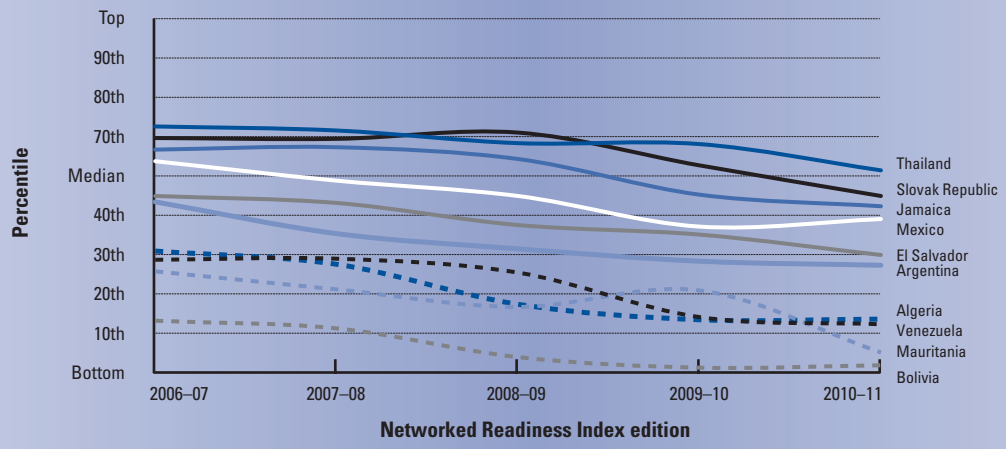
Box 4: The NRI in a historical context and main trends in networked readiness *(cont'd.)*

Figure A: Evolution in the NRI rankings of selected countries since 2006

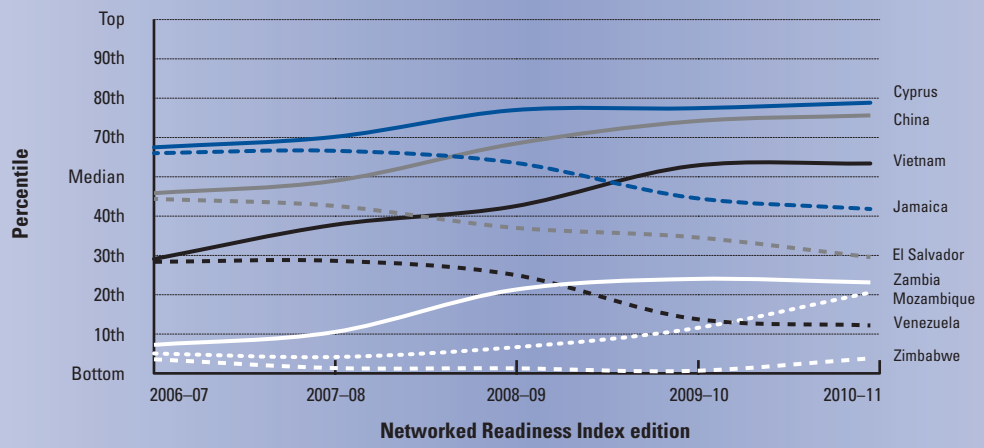
A.1: Ten most improved countries in the NRI



A.2: Ten most declining countries in the NRI



A.3: Evolution in the NRI for countries with similar starting points



(Cont'd.)

Box 4: The NRI in a historical context and main trends in networked readiness *(cont'd.)*

Zambia and Mozambique have significantly improved their showings, though each at its own pace, whereas Zimbabwe has remained among the worst performers throughout the period. Vietnam and Venezuela were initially both ranked in the second-lowest decile, and now Vietnam ranks almost five deciles higher. The gap is almost as wide between China and El Salvador, which once belonged to the same decile. Higher in the rankings, Cyprus and Jamaica provide another remarkable example. Three deciles now part Cyprus from Jamaica, which has dropped below the median rank.

Notes

1 For more information on the 2001–02 theoretical framework, see Kirkman et al. 2002.

2 The treatment of missing variables has also changed: whereas until 2005 they were estimated using analytical techniques such as regression and clustering, beginning in 2006 they are indicated with "n/a" and not taken in consideration in the calculation of the specific pillar to which they belong. Moreover, the scale used to compute the NRI and the variables that compose it have been aligned to the Forum's (increasing) 1–7 scale, changing with respect to the scale used previously for a couple of years (i.e., positive and negative scores around a standardized mean of 0). For more information, see Dutta and Jain 2006 and Mia and Dutta 2007. For more information regarding the computation of the Index, refer to the Appendix of this chapter.

for countries such as Iceland, which are still recovering from the recent global economic crisis.

The picture for the EU15 group is more nuanced,[16] with different degrees of success in leveraging ICT across the region. Sweden, Finland, Denmark, Norway, the Netherlands, Germany (13th), the United Kingdom (15th), France (20th), **Austria** (21st), and **Belgium** (22nd), among other countries, feature once again among the best performers worldwide, fully exploiting the latest technologies in their national strategies and daily activities. At the other extreme, countries such as **Greece** (64th) and, to a lesser extent, **Italy** (51st) remain less networked, even losing some ground from last year (down three and eight places, respectively). Both countries need to reinforce their market environment (90th and 82nd, respectively) and improve their stakeholders' overall readiness to use new technologies (91st and 64th, respectively), while increasingly moving ICT usage and diffusion to the center of the national agenda (108th and 113th for government readiness and 62nd and 89th for government usage for Greece and Italy, respectively).

Among the EU accession 12,[17] **Estonia** (26th) continues to display a solid ICT performance, in line with European and international best practices. ICT has been used by Estonian leadership as a key lever for societal and economic structural transformation since the country regained independence in the early 1990s. ICT diffusion and access have ranked high on the national agenda, with the development of first-class and widespread e-government services and high e-participation.[18]

Slovenia (34th), the **Czech Republic** (40th), and **Lithuania** (42nd) follow, with fairly high levels of networked readiness. **Poland** (62nd), **Romania** (65th), and **Bulgaria** (68th) close the rankings for the region. While Romania has lost six places since last year, Poland and Bulgaria each post a three-place improvement. This upward trend is particularly marked for Poland, since the country had already climbed four positions from 2008 to 2009.

While the three countries display similar strengths in their individual usage (46th, 52nd, and 36th for Poland, Romania, and Bulgaria, respectively) and infrastructure quality (43rd, 45th, and 40th, respectively), their market and regulatory environments remain, to different extents, elements of weakness. So too is the lack of a coherent government vision on ICT development and diffusion (103rd, 119th, and 96th, respectively).

Turkey does not manage to reverse the downward trend observed in recent years, and drops another two places to 71st. The country's competitive advantages, including its fairly ICT-conducive environment (63rd) and high usage levels (62nd), do not seem to fully compensate for important hindrances in individual and business readiness (94th and 93rd, respectively). On a more positive note, the government readiness and usage pillars have improved 19 and 2 places, respectively, highlighting a stronger government vision and leadership in ICT diffusion for increased competitiveness.

Kazakhstan overtakes **Azerbaijan** as the best performer of the Commonwealth of Independent States (CIS), as the former climbs to 67th position and the latter drops six places to 70th. Kazakhstan is now the only CIS representative in the upper part of the rankings. The country continues to deliver a convincing performance in its government usage pillar, progressing a further eight places to 31st. The quality of the government's online presence (24th) and its degree of interaction with its citizens (18th) are remarkable.

Russia moves up three positions and places 77th this year, with improvements across the board. The country can count on a fairly ICT-conducive infrastructure (42nd), built on the country's satisfactory educational and research base together with rather high levels of individual readiness and usage (59th and 55th). At the same time, a number of problematic features continue to prevent Russia from better leveraging ICT in its competitiveness landscape. Among these are its extremely poor market (118th) and regulatory (111th)

environments and low levels of ICT readiness (90th) and use (72nd) by the business sector. Moreover, the lack of prioritization of the sector in the government agenda remains a reason for concern, with little government readiness (89th) and usage (96th).

Ukraine ranks 90th. Despite maintaining its score, the country has lost 15 places in the course of the last two editions, as others have actually improved. Ukraine offers a particularly unattractive market environment (128th) and challenging regulatory framework (122nd) for ICT uptake.

Armenia falls to 109th rank, while the **Kyrgyz Republic** recovers some of the ground it lost last year and ranks 116th, a gain of seven places.

Asia and the Pacific

The networked readiness snapshot sketched by the NRI this year for Asia and the Pacific is by and large positive. The region is home to some of the best performers in the world and to the economies that have proven the most dynamic over time. In particular, seven of them feature among the top 20, namely Singapore (2nd), Taiwan (6th), Korea (10th), Hong Kong (12th), Australia (17th), New Zealand (18th), and Japan (19th).[19] Moreover, as discussed in Box 4, China, Indonesia, Sri Lanka, and Vietnam have been among the fastest-improving economies since 2006. Malaysia is the only upper-middle-income country within the top 30 overall. No doubt all these success stories are a source of inspiration for a number of underperformers in the region, including **Timor-Leste** (136), **Nepal** (131), **Bangladesh** (115th), and **Pakistan** (88th).

After a brief stint in the top 10, and in spite of its consistent and very strong performance, **Hong Kong** falls back to 12th place. The territory obtains the top mark in the market environment pillar. In particular, it boasts one of the world's most developed financial systems (5th) and doing business is made easy by its notably moderate level of taxation and low burden of government regulation. In addition, it ranks second only to Singapore in the individual readiness pillar, thanks to the quality of its education and the affordability of ICT usage costs. As in Singapore, the government of Hong Kong is actively promoting and using ICT in its daily activities (6th) and in providing basic services to its citizens (12th for the impact of ICT on access to basic services). On a more negative note, Hong Kong is not as successful as other economies in the region at generating innovation. Although extremely sophisticated and quick at adopting cutting-edge technology, businesses rank a comparatively low 49 for their capacity to innovate and produce only 21.27 local patent applications per million population (55th).

Australia's performance is fairly stable at 17th overall, with a score unchanged from last year. The country's notable competitive advantage is the quality of the general environment (13th), in particular the political and regulatory framework (7th). **New Zealand** follows closely at 18th.

Japan gains two places from last year and positions itself at 19th, with an overall performance very much in line with previous years. The readiness dimension of the Index (38th) remains its weakest aspect, partly because of the high access costs to ICT even when taking into account purchasing power differences (for example, Japan ranks 128th for its mobile cellular tariffs), the relatively poor quality of its educational system, and the limited success of the government in promoting ICT. On a more positive note, Japan posts a steady improvement in its ICT usage (from 14th to 8th). The sophisticated business sector appears to be using ICT particularly effectively (4th) in its operations and transactions, as reflected by the impressive number of PCT patent applications per million population (252.09, 6th) and high percentage of high-tech products exported to international markets (19.15 percent of total goods exports, 14th).

Malaysia is ranked 28th, with a slight improvement in its overall score this year, and it places 10th for ICT readiness of the society as a whole. Among the main stakeholders, the government is showing the way. ICT plays a critical role in its *Wawasan 2020* (Vision 2020) plan for Malaysia to become a high-income economy by 2020.

China consolidates its position in the rankings at 36th, after years of vibrant progression. It is by far the country that leverages ICT the most among the four BRICs, leading India, Brazil, and Russia by 12, 22, and 31 positions, respectively. Since 2006, China has leapfrogged 23 positions and features among the 10 most dynamic countries worldwide. Yet, over the years, the country has failed to improve significantly in its environment component (57th), most notably its market environment (71st). Starting a business remains time-consuming and burdensome; corporate taxation is among the highest in the world (120th); and freedom of the press, though improving, is still limited (99th). Also, while Chinese businesses are relatively quick at adopting new technologies and have developed a taste for innovation (21st), the latest technologies are not generally available in the country (93rd). On a more positive note, the country ranks 16th for its overall readiness. In particular, it places 8th and 15th for individual and government readiness, respectively. Usage of ICT is widespread among businesses (19th), but individual usage is also increasing (63rd, up seven), albeit from a low level. Internet and mobile telephony are growing at breakneck pace. China added about a hundred million mobile subscribers between 2008 and 2009. Roughly half of its 1.4 billion population are now equipped with a mobile phone.

Losing ground on most indicators and delivering an uneven performance, **India** is down five positions at 8th. India's placement is dragged down by its poor marks in most education-related variables included in

the NRI, and more generally by the poor quality of its soft and hard infrastructures (81st). On the other hand, notwithstanding widespread red tape and distortive taxes, the market environment is assessed rather positively at 41st, thanks to a sophisticated financial market, well-developed clusters, and widespread availability of new technologies. Also competition and low telephony costs are a boost to India's readiness (33rd). The country ranks an impressive 21st for its level of individual readiness and 33rd for that of businesses. Government readiness is still high (47th), but ICT seems to have become less of a priority since last year. Also individual usage is improving, although from a very low base (98th, 11 places up from last year). While Internet access remains limited (0.65 and 5.12 per 100 population broadband Internet subscribers and Internet users, respectively, corresponding to a 100th and 118th position in the sample), mobile telephony has been growing exponentially as a result of strong demand, increased purchasing power, and also fierce competition and innovation that helped to improve network coverage and drive prices down.[20]

Indonesia leaps 14 places forward to 53rd, with improvements across the three NRI components, boosting the country's overall score from 3.7 to 3.9 in an area of the NRI rankings that is very densely populated, thus explaining the big rank variation. ICT readiness remains Indonesia's notable relative strength, at 39th. Individual readiness is particularly high (18th), owing to fairly good educational standards and affordable ICT. Going forward, this will certainly help in increasing ICT penetration and usage, which remain rather low (80th). Also encouraging is the fact that the government is giving more importance to ICT in its development agenda, as reflected in the 41-rank improvement in the government readiness pillar (51st) since 2006.

Ranked 55th, **Vietnam** has made impressive strides. This year and for the first time in five editions, the country drops in the rankings by one place despite improving its score slightly. Yet, as explained in Box 4, Vietnam remains the country that has progressed the most since 2006. Like many of the emerging economies in the region, Vietnam's main comparative advantage is its level of preparedness to use ICT (35th, up two positions). Yet, unlike most countries at a similar stage of development, government readiness (20th, up four) is the highest among the three main actors. ICT development is one of the top priorities for the government (18th), which sees the sector as a key driver for national competitiveness (26th).

Against this backdrop, **Thailand** offers a striking contrast. The country is among the 10 economies that have declined the most since 2006. It has fallen from 37th to 59th place in the rankings since then (with a steep 12-place drop just since last year) and been overtaken by much-less-advanced economies in the region, including China, India, Indonesia, and Vietnam. With respect to 2009, the country's performance sees a deterioration in all NRI components, particularly marked in the environment (64th, down 14 places) and usage (61st, 11 places down).

After last year's remarkable 11-place improvement, **Pakistan** is fairly stable at 88th. Its performance exhibits the same pattern as most emerging economies in the region: the country does much better in terms of readiness (60th) than in the environment and usage components (both ranked 96th), where considerable room for improvement remains.

Latin America and the Caribbean

Although a number of countries in Latin America and the Caribbean region post important improvements or consolidate their achievements in networked readiness, the region as a whole continues to trail behind international best practices in leveraging ICT advances. No Latin American or Caribbean economy appears in the top 20 and only a handful feature in the top 50, namely Barbados (38th), Chile (39th), Puerto Rico (43rd), Uruguay (45th), and Costa Rica (46th).

Although losing some ground since last year, the Caribbean island of **Barbados** continues to lead the region for the third consecutive year. The country boasts a very conducive regulatory environment (26th) and high-quality infrastructure (30th), together with remarkable levels of business (29th) and, to a lesser extent, individual (42nd) usage. Moreover, citizens and the government display a high degree of interest and preparedness in using new technologies (38th and 42nd for individual and government readiness, respectively). At the same time, a number of problematic elements remain in the market environment (46th), especially in terms of financing availability (85th for venture capital availability and 48th for financial market sophistication) and business sophistication (95th for cluster development). Government usage also remains poor at 70th, with inadequate e-government services (104th) and little e-participation (95th).

Chile is up one place this year at 39th, with a notable 0.15 score improvement. The country has consistently led the region in the last 10 years, albeit losing its primacy to Barbados in 2008. ICT diffusion and usage have been continuously prioritized by the government over the last two decades or so, with the adoption of one of the first digital agendas in the region and the establishment of a very conducive regulatory environment (32nd). This is reflected in the good marks the country gets for its government readiness (40th) and usage (26th): notably the world-class Chilean e-government services are assessed very positively at 18th. However, the country's individual readiness remains extremely low at 100th, mainly due to its poor educational system, which is assessed as especially inadequate for math and science education (122nd), and to high tariffs for fixed lines (127th) and fixed broadband Internet (100th).

Puerto Rico is up two places at 43rd, and continues to display competitive strengths in the quality of its environment (39th) for ICT as well as in its preparedness to use, and its actual usage of new technologies by its sophisticated and innovative business sector (32nd and 33rd for business readiness and usage, respectively)—no doubt the most networked social actor on the island. On a less positive note, its citizens and government do not seem to be as inclined to use ICT (107th and 90th for individual and government readiness, respectively). Also, although their usage has improved since last year (six and seven places up, at 56th and 44th, respectively), the government and citizens in general lag behind the business sector when it comes to ICT use.

Uruguay continues its impressive upward trend started last year (when it climbed eight ranks from the 2008–09 edition) with an additional 12-place improvement this year, soaring to 45th position. The country advances in all three NRI components: up 9 places in environment and usage (to 55th and 44th, respectively) and 10 in readiness (to 48th). Although the market environment remains a problematic area at 85th place and the business sector does not leverage as much ICT as it could (65th and 63rd for business readiness and usage), the country benefits from a government with a coherent vision for ICT going forward as a key element for increased competitiveness. Government readiness and usage rank 49th and 43rd, respectively, improving 13 and 4 positions since 2009. Uruguayan authorities have been increasingly using ICT as a tool for better and more widespread provision of basic services to their citizens in recent years: indeed, together with Peru, the country achieved one of the world's largest One Laptop per Child deployment.[21]

Similar to Uruguay, **Costa Rica** has kept climbing in the rankings since 2006, with an additional three-place improvement since last year and notable advances in all three subindexes, particularly in readiness (seven places, up to 25th). The country's solid showing rests on outstanding levels of readiness to use ICT by all national stakeholders, most notably individuals (7th) and businesses (26th). Also the sophisticated business sector effectively incorporates ICT in its production systems, processes, and activities (31st for business usage), successfully exporting high-value-added goods in international markets—10.54 percent of Costa Rica's goods exports are high-tech goods, corresponding to 13th place in the world. Chapter 2.1 provides a compelling overview of Costa Rica's high-tech success story in recent years. On the other hand, the environment (68th)—notably in its regulatory component (86th) and individual ICT usage (77th)—are worrisome features that will need to be reinforced for all Costa Ricans to fully leverage ICT's many and diverse economic, social, and political benefits.

Brazil climbs five places this year to 56th, with an important improvement in its ICT environment (eight places up, to reach 66th). As in previous years, Brazil's innovative and sophisticated business sector leads the country in ICT usage (41st and 37th for business readiness and usage, respectively), followed by the government (56th and 48th for government readiness and usage). In particular, the business sector is extensively leveraging ICT in its operations and transactions (25th for extent of business usage) to increase its efficiency and innovation capacity (24th and 27th, respectively, for ICT impact on new products and services and on new organizational models). Likewise, ICT is an important component of the government's vision for the future (58th) and is widely used by the government to increase access to basic services (49th). On a related note, Brazil is also home to fairly efficient and advanced e-government services (53rd for the development of government online services).[22] However, Brazil's burdensome market environment (93rd) and dismal levels of individual readiness (110th) are important hindrances to a better ICT leveraging. While the market environment could be improved by reducing red tape and inefficiency, the low educational standards—especially in science and math (125th)—coupled with high fixed telephone and mobile cellular tariffs (109th and 126th, respectively) prevent more widespread ICT usage by citizens (the country ranks 64th for individual usage).

Colombia consolidates its networked readiness achievements of last year with another two-place step up to 58th overall, while **Panama** loses two positions to 60th (albeit improving in score). In the Caribbean, **Trinidad and Tobago** posts one of the largest improvements in the whole sample (16 places) and climbs to 63rd, with across-the-board advancement. Especially striking is a 19-place progression in ICT usage, led by major advances in the individual (up 16 places to 49th) and government (up 14 places to 79th) components.

Mexico is stable at 78th place overall, with a slight improvement in score. The country displays fairly high levels of business (48th) and government (50th) usage. In particular, the government provides extensive and well-functioning e-government services to its citizens (38th) and plenty of opportunities for e-participation (32nd). At the same time, a number of long-standing deficiencies affect Mexico's networked readiness landscape, preventing the country from fully exploiting ICT potential for increased growth. Individual and business readiness—at 97th and 103rd, respectively—are extremely low, which is attributable mainly to a combination of poor educational standards and training and high ICT access costs. In particular, telephone installation costs and monthly telephone subscriptions, both for residential and business users—are high, ranked 115th and 112th for residential telephone installation and monthly telephone subscriptions, and 99th and 127th for business telephone installation and monthly telephone subscriptions, respectively. Similarly, the government appears not to adequately prioritize ICT or to have a coherent vision of its importance for the country's long-term competitiveness (98th for

government readiness). However, it does use ICT in its daily activities (50th for government usage), with well-developed e-government services (38th) and satisfactory levels of e-participation (32nd). An enhanced government focus on the sector should go hand in hand with an improvement of the market environment (69th), particularly in its regulatory (70th) and infrastructure (72nd) dimensions, which at the moment are not totally conducive to innovation and ICT development.

Notwithstanding a slight improvement in score, **Argentina** drops five places to 96th, with enduring shortcomings in its market (130th) and regulatory (115th) environments and a worrisome, almost nonexistent government prioritization of ICT diffusion and usage (135th and 101st, respectively, for government readiness and usage). On the other hand, the country boasts a fairly developed infrastructure for ICT (55th), thanks especially to a solid human resource base. Moreover, business readiness remains high at 49th. Likewise, ICT penetration at the individual level (65th) is satisfactory, pointing to the possibility of increasingly leveraging ICT in citizen-government relations, especially for the provision of basic services, for which at the moment Argentina ranks a dismal 135th.

As in previous years, **Honduras** (103rd), **Ecuador** (108th), **Venezuela** (119th), **Paraguay** (127th), **Nicaragua** (128th), and **Bolivia** (135th) trail behind the rest of the region and most of the global sample. These economies share a number of worrisome features that stand in the way of increased networked readiness, including overregulated markets and inefficient political frameworks; poor educational and research systems; scarce penetration rates that are also the result of unaffordable ICT access for most of their populations; and, last but not least, little priority given to ICT in the governments' agendas and competitiveness strategies.

Sub-Saharan Africa

The assessment of sub-Saharan Africa's networked readiness continues to be disappointing, with the majority of the region lagging in the bottom half of the NRI rankings, bar Mauritius (47th) and South Africa (61st). Even though ICT penetration rates have soared in the region over recent years, boosted by mobile telephony, and many countries have started to leverage more and more ICT to improve efficiency and reach out more and more to citizens, sub-Saharan Africa does not seem to have progressed as much and as fast as other areas of the world. Underdeveloped infrastructure, inefficient markets, opaque regulatory environments, inadequate educational standards, and widespread poverty are powerful obstacles against a more extensive and efficient use of new technologies for increased development and prosperity in the region.

Mauritius consolidates its predominance in the region, with a six-place improvement to 47th. The country's remarkable showing rests on its extremely conducive market (26th) and regulatory (33rd) environments, with little red tape, non-distortive tax rates, good standards of intellectual property protection (53rd for this variable and 45th for software piracy rate), and a high level of competition in Internet and telephony, among other elements.

This is coupled with the country's high level of interest and preparedness in using ICT by all national stakeholders (36th, 60th, and 45th for individual, business, and government readiness, respectively). In particular, there is the perception that the government places a high priority on ICT diffusion in its development strategy (25th), notably using these technologies to provide better access and quality of basic services for its citizens (53rd). On a more negative note, infrastructure, especially in its human resources dimension, shows a margin for improvement at 78th place, and ICT usage is still far below international best practices, especially for the business sector (69th) and the government (72nd).

South Africa follows, fairly stable at 61st place overall, with notable strengths in the first-class quality of its market (25th) and regulatory (23rd) environments, characterized by a well-developed financial market (6th) and venture capital (39th), favorable laws relating to ICT (32nd), strong intellectual property standards (27th), and low software piracy rate (18th), among other advantages. Moreover, the sophisticated business sector is at the forefront of ICT leveraging (40th and 52nd for business readiness and usage, respectively), using it extensively in its activities (52nd for extent of business usage) and to produce innovative products (35th for firm-level technology absorption and 47th for capacity for innovation). On a less positive note, individual preparation and uptake of ICT remain very weak, at 113th and 95th, respectively. This is attributable to its poor educational standards, notably in science and math (136th), as well as to the very high access costs to ICT prevailing in the country—South Africa ranks 129th for residential monthly telephone subscriptions, and 107th, 102nd, and 79th for fixed telephone, mobile cellular, and fixed broadband Internet tariffs, respectively. Also government readiness remains poor at 92nd, with little success in promoting ICT (92nd). The government is not using ICT to improve the efficiency of its operations either (80th), providing inadequate e-services to its citizens (62nd) that have little impact on access to or the quality of basic services (95th).

A second tier of countries includes **Gambia, Senegal, Kenya, Namibia,** and new entrant **Cape Verde,** placed at 76th, 80th, 81st, 82nd, and 84th, respectively. Kenya and Namibia, in particular, strengthen their positions by nine and seven places since last year, with impressive 26- and 33-rank improvements in their ICT readiness (ranked 55th and 71st, respectively). Both countries appear to be on a promising upward trend,

as they had already climbed seven and three positions from 2008 to 2009.

The remaining countries are once again confined among the laggards of the world in effectively using ICT. Moreover, although economies such as **Malawi** (105th), **Mozambique** (106th), and **Uganda** (107th) post important improvements in their overall networked readiness since last year (up 14, 10, and 8 positions, respectively), many more remain stable or lose further ground vis-à-vis other parts of the world. **Mauritania** (130th, 28 places down), **Mali** (120, 24 places down), **Lesotho** (121st, 14 places down), and **Burkina Faso** (122, 14 places down) are the most notable examples of this latter category.

Angola and **Swaziland** enter the rankings for the first time at a disappointing 133rd and 134th position, respectively.

Middle East and North Africa (MENA)

Israel is up six places to 22nd overall, regaining its primacy in the region with an especially impressive 23-place improvement in its readiness component (ranked 27th), and also thanks to the inclusion of previously missing data. The country's remarkable ICT prowess rests on a very conducive environment (24th), especially in its market (21st) and infrastructure (24th) components, coupled with high levels of readiness and usage of ICT by all social stakeholders (27th and 19th, respectively). In particular, the country's ICT uptake and leveraging is led by an extremely dynamic and sophisticated business sector (11th and 9th for business readiness and usage), which actively uses new technologies to create new products, services, and organizational models (the country is ranked 22nd and 10th for ICT impact on new products and services and on new organizational models, respectively). Israel firmly maintains its status as one of the innovation powerhouses of the world, as suggested by its numbers of PCT patent applications (199.01 per million population, 10th) as well as by the high percentage of high-tech products exported in international markets (at 23.63 percent of total goods exports, ranked 8th). Israel's successful recent development story of the last three decades or so has been very much based on innovation and ICT. The government played an instrumental role in setting the vision for ICT and in establishing an innovation-enabling environment, simultaneously involving the private sector in the implementation of the vision and intervening in a market-friendly way to compensate for market failures whenever needed.[23]

The **United Arab Emirates** follows closely, fairly stable at 24th overall. The country has risen in the rankings in recent years, reflecting the increasingly central role ICT occupies in the government's agenda as an enabling infrastructure for economic diversification and a target sector in itself (ranked a high 3rd for government readiness). The government's focus in the sector has been matched by an equal interest in and capacity for using the latest technologies by individuals (5th and 21st for individual readiness and usage, respectively), with a stellar increase in ICT penetration rates over the last few years. Other competitive advantages are to be found in the very ICT-friendly market environment (18th) and infrastructure for ICT (28th).

Qatar is up five places to 25th rank overall, with improvements across the board, particularly in the readiness (4th, up eight places) and usage (34th, up six places) components. Similar to the United Arab Emirates, the government has consistently prioritized ICT diffusion and usage in recent years (2nd for government readiness), which has prompted an intense ICT uptake from the citizens (10th and 28th for individual readiness and usage, respectively).[24]

Bahrain consolidates its position at 30th, displaying notable competitive strengths in the quality of its market environment (9th) and the high degree of preparedness of its citizens to use ICT (15th), an aspect that has already converted to high penetration rates (29th for individual usage). The strong government vision and leadership in ICT diffusion (ranked 14th) has also resulted in first-class e-services (8th), significantly expanding outreach of basic services to citizens (11th), high e-participation (11th), and increased government efficiency (12th).

Saudi Arabia continues to climb in the rankings, with another five-position improvement to 33rd place overall. The country posts advances notably in its environment (32nd) and readiness (24th) components (both up six places). Its solid showing is driven by very ICT-conducive market (19th) and regulatory (25th) environments, as well as by a coherent ICT prioritization in the government's competitiveness agenda (ranked 12th for government readiness). Chapter 2.2 provides an exhaustive account of the Saudi government's vision for ICT and the e-government program, YESSER. **Oman** also realizes an impressive nine-place jump to 41st, with remarkable improvements in all three components: the country is up 14, 12, and 9 positions, respectively, for its environment (43rd), readiness (34th), and usage (43rd). **Jordan** follows at 50th, losing some ground from last year (down six places).

On a more negative note, **Kuwait** remains the laggard among the Gulf countries at 75th overall while **Syria** loses another 19 places and positions itself at a dismal 124th place.

New entrants **Lebanon** and **Iran** position themselves in the bottom part of the rankings, at 95th and 101st, respectively.

Tunisia consolidates its leadership in North Africa with a four-place improvement to 35th rank overall. The country's main competitive advantage when it comes to leveraging ICT advancements is to be found in the notable levels of readiness and preparedness for using ICT of all national stakeholders (18th), led by a public sector that has strongly focused on ICT as a key com-

petitiveness tool over the last 20 years (ranked 6th for government readiness). Individual readiness is also very high, at 17th, resting on good educational standards and low residential telephone installation and monthly subscriptions (22nd and 23rd, respectively) and low fixed telephone and fixed broadband Internet tariffs (28th and 29th, respectively). Government usage is satisfactory at 27th, pointing to a successful implementation of its vision of ICT, notably through well-developed e-services (29th), extensively improving access to basic services for citizens (13th). Tunisia's success story in using ICT as a developmental tool and the achievements made so far are important strengths that will no doubt help the country in its transition to democracy after the recent political turmoil.

All countries in the region, with the exception of **Morocco** (ranked 83rd, five places up), follow a downward trend, with **Libya** dropping a staggering 23 places to 126th. Also Egypt (74th) and **Algeria** (117th) lose four places each, although both improve in score. In particular, in the case of **Egypt,** important improvements in the country's individual usage (79th, 21 places up), regulatory environment (66th, five places up), and government usage (39th, up three places) do not manage to compensate for a weakening showing, notably in business usage (where the country is ranked 83rd, a drop of 31 places) and government readiness (68th, 15 places down). The important progress realized by the past administration in promoting ICT (27th) and in improving and expanding the outreach of basic services to citizens (41st)—also through well-designed e-services (ranked 23rd)—should be continued and reinforced by the new government going forward.

The Middle East continues to feature prominently in the rankings, with four countries in the top 30, namely Israel (22nd), the United Arab Emirates (24th), Qatar (25th), and Bahrain (30th). This reflects the especially dynamic ICT uptake in most parts of the region in the context of the sector's increasing prioritization in national agendas as a crucial instrument for economic diversification, enhanced efficiency, and modernization.

Conclusion

Few today would go back willingly to a world without the Internet and its many associated developments. For many young adults, conceiving of such a world may even be impossible. ICT, and the Internet in particular, have already changed the world dramatically, and all indications point to an even higher rate of transformation of our lives over the next decade. While the precise nature of these transformations 2.0 are difficult to accurately envisage, evolving technology trends are pointing to the most likely directions they will take over the next few years—what we term as the move toward *SLIM* ICT:

- *S* for *social:* ICT is becoming more intricately linked to people's behaviors and social networks. The horizons of ICT are expanding from traditional processes and automation themes to include a human and social focus.

- *L* for *local:* Geography and local context are becoming important. ICT provides an effective medium for linking people and objects (and processes) with local environments. This will allow differentiation across local contexts and the provision of tailored services.

- *I* for *intelligent:* ICT will become even more intelligent. People's behaviors, individual preferences, and object interactions among other elements will be more easily stored, analyzed, and used to provide intelligent insights for action.

- *M* for *mobile:* The wide adoption of the mobile phone has already brought ICT to the masses. Advances in hardware (screens, batteries, and so on), software (e.g., natural language interfaces), and communications (e.g., broadband wireless) will continue to make computing more mobile and more accessible.

In this context of continuous technological evolution, we hope that the GITR series will continue to serve as a useful reference and guide for policymakers and decision leaders from both the public and private sectors over the next years, as it has done in its first decade. The impact of ICT is widespread and will affect all key stakeholders of the GITR framework: individuals, businesses, and governments. We will continue to monitor these impacts and include them through appropriate measures within the networked readiness framework.

Notes

1 http://devgateway.blogspot.com/2009/07/world-bank-report-highlights-importance.html.

2 Gage 2002, p. 4.

3 Gage 2002, p. 5.

4 For a detailed review of the literature and thinking behind the networked readiness framework developed by INSEAD in the 2002–03 edition, see Dutta and Jain 2003.

5 To be more precise, the framework used in the first 2001–02 edition is not strictly comparable with the one developed by INSEAD and used since then as the main methodological framework for the *Report* series. For more information on the 2001–02 theoretical framework, see Kirkman et al. 2002.

6 See Box 1 in Dutta et al. 2010.

7 The almost universal presence of ICT is thanks mainly to recent trends such as the stellar diffusion of mobile telephony across the world, the decreasing cost of Internet access via residential and public connections, and the emergence of lower-cost access devices such as mobile telephones and cheap PCs.

8 See EFQM at http://www.efqm.org/en/tabid/132/default.aspx.

9 The NRI 2009–2010 includes the results of the 2009 and 2010 Surveys. For more details on the Survey methodology, see Browne and Geiger 2010.

10 Moldova re-entered the Index in 2010 after being excluded in 2009 for lack of Survey data.

11 North America as a region is not covered as such in this chapter, since the United States and Canada's performances are examined in the top-10 section. Mexico is covered in the Latin America and the Caribbean section.

12 Note that several indicators, including data on ICT tariffs, were previously not available for Taiwan. Their inclusion this year benefits the economy and explains in part the progression in the overall rankings.

13 A *decile* is any of the nine values that divide a sorted sample of observations into ten equal parts. That is, the 1st decile corresponds to the 10th percentile, the 9th decile corresponds to the 90th percentile. The World Bank considers high-income countries to be those that in 2009 had a GNI per capita of US$12,196 or more. The rest of the income groups are defined as follows: low income, US$995 or less; lower middle income, US$996–US$3,945; and upper middle income, US$3,946–US$12,195.

14 All economies that do not belong to the high-income group are considered *developing*.

15 Including former top performer Denmark and Iceland (both down four places).

16 The EU15 comprises the countries that joined the European Union before the last two accession rounds in 2004 and 2007: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

17 The EU accession countries include Bulgaria, the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia.

18 For more details on Estonia's recent development story and the role of ICT, see Dutta 2007.

19 See the top 10 paragraph above for highlights on the performance of Singapore, Taiwan, and Korea.

20 For a full account of India's networked readiness and progress over the last few years, see Mia 2010.

21 See http://www.olpcnews.com/countries/peru/olpc_peru_passes_uruguay_for_w.html.

22 For more details on Brazil's recent achievements in terms of e-government services and strategy going forward in that area, see Magalhães et al. 2009.

23 For an overview of Israel's recent development story, which turned the country from a citrus exporter to a major ICT player in the space of 30 years, see Lopez-Claros and Mia 2006.

24 For an account of Qatar's digital strategy in recent times, see Al-Jaber and Dutta 2008.

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Technical Appendix: Structure and computation of the Network Readiness Index 2010–2011

This appendix presents the structure of the Networked Readiness Index 2010–2011 (NRI). The NRI separates environmental factors from ICT readiness and usage, and is composed of three subindexes. Each subindex is divided into three pillars. The variables (or *indicators*) used in the computation of the NRI are then distributed among the nine pillars. The number preceding the period indicates to which pillar the variable belongs (e.g., variable 1.01 belongs to the first pillar; variable 9.02 belongs to the ninth pillar). The numbering of the variables matches that of the Data Tables at the end of the *Report*. Note that the numbering of variables in the 2nd, 3rd, 4th, 7th, and 8th pillars has changed to reflect the adjustments made to the structure of the NRI, as discussed in the text.

The computation of the NRI is based on successive aggregations of scores, from the variables level (i.e., the most disaggregated level) to the overall NRI score (i.e., the highest level). For each level, we use an arithmetic mean to aggregate the components of each category.[a] As a result, each level's components bear the same weight. For example, the score a country achieves in the 3rd pillar, Infrastructure environment, accounts for one-third of the Environment subindex which in turn accounts for one-third of the overall NRI score.

Variables that are derived from the World Economic Forum's Executive Opinion Survey (the Survey) are identified here by an asterisk (*). All the other indicators come from external sources, as described in the Technical Notes and Sources section at the end of the *Report*. These variables are transformed onto a 1-to-7 scale in order to align them with the Survey's results. We apply a min-max transformation, which preserves the order of, and the relative distance between, country scores.[b]

NETWORKED READINESS INDEX

Networked Readiness Index = 1/3 Environment subindex + 1/3 Readiness subindex + 1/3 Usage subindex

Environment subindex

Environment subindex = 1/3 Market environment + 1/3 Political and regulatory environment + 1/3 Infrastructure environment

1st pillar: Market environment

- 1.01 Venture capital availability*
- 1.02 Financial market sophistication*
- 1.03 Availability of latest technologies*
- 1.04 State of cluster development*
- 1.05 Burden of government regulation*
- 1.06 Extent and effect of taxation*[c]
- 1.07 Total tax rate[c]
- 1.08 Time required to start a business[d]
- 1.09 Number of procedures required to start a business[d]
- 1.10 Freedom of the press*

2nd pillar: Political and regulatory environment

- 2.01 Effectiveness of law-making bodies*
- 2.02 Laws relating to ICT*
- 2.03 Judicial independence*
- 2.04 Efficiency of legal framework in settling disputes*[e]
- 2.05 Efficiency of legal framework in challenging regulations*[e]
- 2.06 Property rights*
- 2.07 Intellectual property protection*
- 2.08 Software piracy rate
- 2.09 Number of procedures to enforce a contract[f]
- 2.10 Time to enforce a contract[f]
- 2.11 Internet and telephony sectors competition index

3rd pillar: Infrastructure environment

- 3.01 Number of telephone lines
- 3.02 Mobile network coverage rate
- 3.03 Secure Internet servers
- 3.04 International Internet bandwidth*
- 3.05 Electricity production
- 3.06 Tertiary education enrollment rate
- 3.07 Quality of scientific research institutions*
- 3.08 Availability of scientists and engineers*
- 3.09 Local availability of specialized research and training services*
- 3.10 Accessibility of digital content*

(cont'd.)

Technical Appendix: Structure and computation of the Network Readiness Index 2010–2011 *(cont'd.)*

Readiness subindex

Readiness subindex = 1/3 Individual readiness
+ 1/3 Business readiness
+ 1/3 Government readiness

4th pillar: Individual readiness

4.01 Quality of math and science education*
4.02 Quality of the educational system*
4.03 Adult literacy rate
4.04 Residential telephone connection fee[g]
4.05 Residential monthly telephone subscription[g]
4.06 Fixed telephone lines tariffs
4.07 Mobile cellular tariffs
4.08 Fixed broadband internet tariffs
4.09 Buyer sophistication*

5th pillar: Business readiness

5.01 Extent of staff training*
5.02 Quality of management schools*
5.03 Company spending on R&D*
5.04 University-industry collaboration in R&D*
5.05 Business telephone connection fee[h]
5.06 Business monthly telephone subscription[h]
5.07 Local supplier quality*
5.08 Computer, communications, and other services imports

6th pillar: Government readiness

6.01 Government prioritization of ICT*
6.02 Government procurement of advanced technology products*
6.03 Importance of ICT to government vision of the future*

Usage subindex

Usage subindex = 1/3 Individual usage
+ 1/3 Business usage
+ 1/3 Government usage

7th pillar: Individual usage

7.01 Mobile telephone subscriptions
7.02 Cellular subscriptions with data access
7.03 Households with a personal computer
7.04 Broadband Internet subscribers
7.05 Internet users
7.06 Internet access in schools*
7.07 Use of virtual social networks*
7.08 Impact of ICT on access to basic services*

8th pillar: Business usage

8.01 Firm-level technology absorption*
8.02 Capacity for innovation*
8.03 Extent of business Internet use*
8.04 Local office patent applications[i]
8.05 Patent Cooperation Treaty applications[i]
8.06 High-tech exports
8.07 Impact of ICT on new services and products*
8.08 Impact of ICT on new organizational models*

9th pillar: Government usage

9.01 Government success in ICT promotion*
9.02 ICT use and government efficiency*
9.03 Government Online Service Index
9.04 E-Participation Index

Notes

a Formally, for a category i composed of K indicators, we have:

$$category_i = \frac{\sum_{k=1}^{K} indicator_k}{K}$$

b Formally, we have:

$$6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 1$$

where *sample minimum* and *sample maximum* are, respectively, the lowest and highest country scores in the sample of economies covered by the NRI. In some instances, adjustments were made to account for extreme outliers. For those variables for which a higher value indicates a worse outcome (e.g., total tax rate, time to enforce a contract), we apply a normalization formula that, in addition to converting the series onto a 1-to-7 scale, reverses it, so that 1 and 7 still correspond to the worst and best possible outcomes:

$$-6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 7$$

c Variables 1.06 and 1.07 combine to form one single variable.

d Variables 1.08 and 1.09 combine to form one single variable.

e Variables 2.04 and 2.05 combine to form one single variable.

f Variables 2.09 and 2.10 combine to form one single variable.

g Variables 4.04 and 4.05 combine to form one single variable.

h Variables 5.05 and 5.06 combine to form one single variable.

i Variables 8.04 and 8.05 combine to form one single variable. Wherever PCT data were not available, a 0 is assumed.

CHAPTER 1.2

The Emerging Internet Economy: Looking a Decade Ahead

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Coming out of the recent economic crisis, it is clear that rapid growth in many emerging countries—large and small—is accelerating the transformation of the global economic landscape. Technology, together with the compounding effects of economic and demographic factors, is adding fuel to that fire. The result will be felt particularly strongly in Internet usage and in the markets that revolve around it.

The next decade will see the transformation of the global Internet from an arena dominated by the advanced-market economies and their businesses and citizens to one where emerging-market economies are predominant. The Internet has already generated major economic and social benefits, but most of its global impact is undoubtedly still ahead. It will characterize the decade of the 2010s and, as broadband networks become widespread, it will profoundly change economic and social dynamics across the world.

Although technically nearly 50 years old (since the launch of ARPANET), for all practical purposes, the Internet as a widespread phenomenon is only about a decade and a half old—and this is in the high-income economies that were its first adopters. Over the past 15 years these advanced markets went through a series of critical-mass thresholds leading to the current intensive phase of broadband Internet. Most citizens in advanced economies connect daily to learn, work, and play, as do an increasing number in emerging countries.

As more citizens in emerging economies go online and connectivity levels approach those of advanced economies, the global shares of Internet activity and transactions will increasingly shift toward these economies. In addition, with improvements in the speed and quality of broadband and with Web 2.0 technologies and applications, more economic and social benefit will be generated.

The Internet and the applications riding on high-speed IP networks provide a unique and cost-effective way for economies to enhance national competitiveness and to rise above physical and geographic constraints. Countries and cities that effectively harness the power of broadband networks are treating them as basic infrastructure—key to competitiveness in the knowledge economy.

After exploring the economic aspects of this triple economic/demographic/technological transformation, this chapter will look at the path of Internet connectivity that different economies have followed. Two major factors are noteworthy for their impact on the spread of the Internet: the availability of personal computers

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(PCs) and the density of pre-existing fixed telephone lines and cable. We propose classifying economies, from a connectivity perspective, into one of three categories: first adopters, converging adopters, or belated adopters. Through this analysis and classification we seek to gain insights into the likely dynamics—and the options economies face—as Internet use becomes more intensive, through faster and higher-quality broadband, and more widespread, as fixed and wireless networks connect more and more people around the world.

The Internet economy

Major socioeconomic shifts underway will affect the markets that revolve around the Internet in the coming decade. As a metric to illustrate and track these shifts, we propose an indicator we call the *Internet economy*. The concept is essentially a proxy for the purchasing power in the hands of people using the Internet. It is meant to complement analyses already available on the shifting composition of the global GDP that are helpful as broad indicators but of more limited value when considering more specific market or socioeconomic dynamics.

The Internet economy metric combines three factors at the economy level (although the same could be applied to cities or regions): the number of Internet users, the average per capita income, and an adjustment factor reflecting the economy's income disparities. The combination of these three factors takes into account the fact that Internet users will have higher-than-average per capita incomes (this adjustment factor fades as Internet use becomes more widespread in a economy and, hence, the income of Internet users approaches the average).[1]

Internet usage penetration rates indicate only the proportion of people who have experienced the Internet rather than households with their own connection. However, these data can provide a good basis on which to construct a leading indicator with very significant implications for market trends. We know from the trajectory of the more advanced economies and cities that the time lag between initial experience of the Internet and more intensive usage is not long, and, in fact, is getting shorter and shorter.

The Internet economy metric has considerable value as relative measure of market size and of the Internet-related maturity of different economies. It is, therefore, complementary to broader indicators such as GDP, which do not factor in how connected an economy is. In addition, a time-series comparison of Internet economy estimates provides a valuable perspective on market trends.

The speed of the change revealed by such trend analysis is impressive. Only 15 years ago, virtually all the global Internet economy was in advanced market economies. This was the infancy of the Internet, so it probably is not quite as meaningful as more recent data. In 2000, with the Internet already in full swing, emerging economies accounted for less than 6 percent of the total global Internet economy. This share increased to almost 15 percent by 2005 and to an estimated 30 percent today (Figure 1).

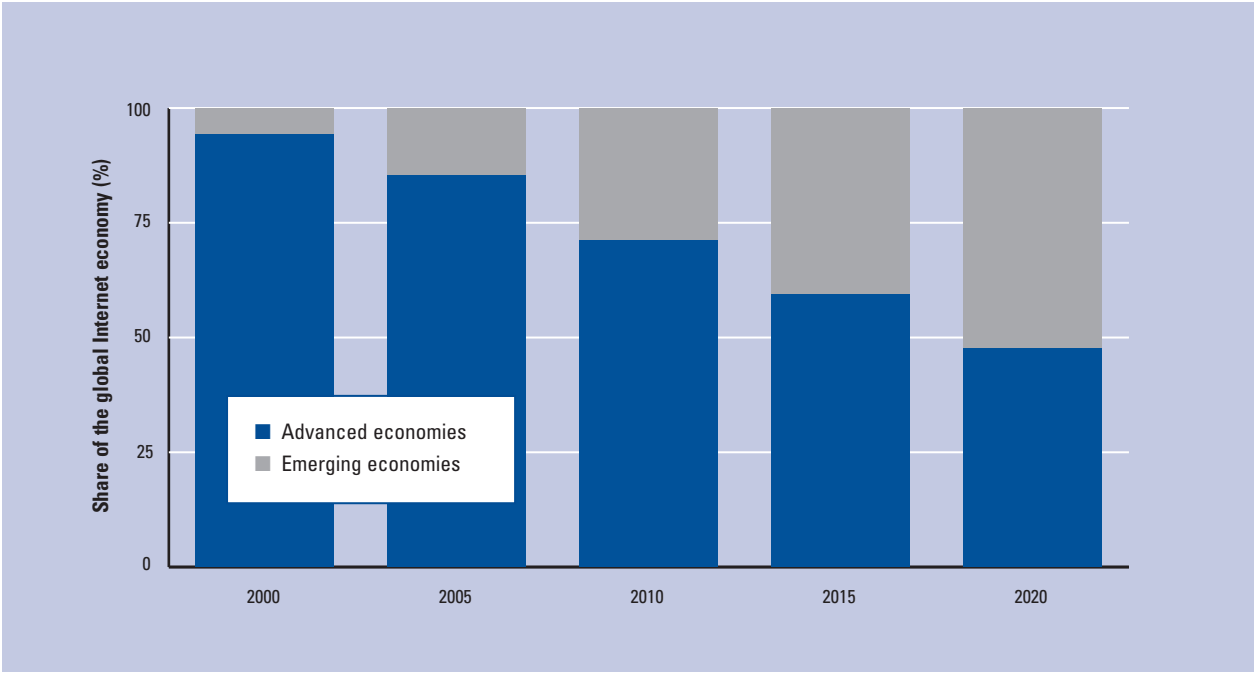
Looking ahead, we estimate that emerging markets will represent about half of the world's Internet economy by 2020. This dramatic pace of change indicates the powerful trends underway that will have a major impact on the global composition of many information and communication technologies (ICT) markets. However, while the direction is clear, we also recognize considerable uncertainties around the actual speed and geographical distribution—hence the work on scenarios described in Box 1.

There are two main reasons why we can confidently project a major shift in the composition of the Internet economy. First, the impressive economic growth performance of emerging economies compared with that of the advanced ones and its impact, together with demographic trends, on the expansion of global demand for non-basic items are likely to be an important catalyst in this respect. The recent global economic crisis has further exacerbated the differential in growth rates between emerging and advanced economies—now expected to be on the order of 4 percentage points (Figure 2). The cumulative effect of such growth differential if this trend continues over this decade, along with the fact that emerging economies account for virtually all the increase in the world's population, will be significant on consumption patterns. On one hand, it will lead to a rise in the share of GDP represented by consumer expenditures. On the other, it will result in the rapid expansion of what we call the *global consumer class*.

As an approximation of the size and dynamics of this consumer class, we look at individuals with annual income above US$6,000 (in real 2007 terms)—an arbitrary boundary but one that is roughly indicative of the income threshold above which consumption for non-basic items begins to grow rapidly in many economies.[2] This is different from analyses that revolve around the concept of "middle class," which identifies groups falling in between upper- and lower-income thresholds. For our purpose—related to consumption of ICT goods and services—we find it best to rely simply on an income "floor" without considering the income "ceiling" implicit in middle-class estimates.

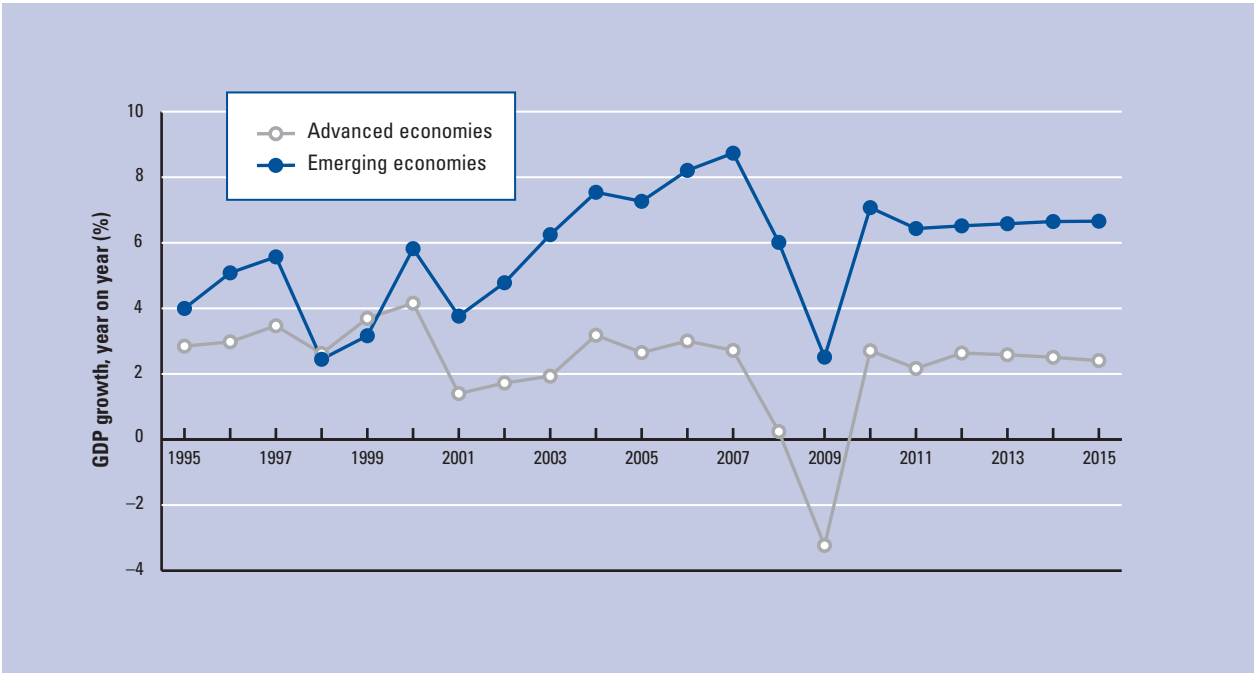
Based on the above definition, the size of the consumer class is currently about 2.5 billion (up from 1.6 billion in 2000). Growth is expected to accelerate over the next decade, so that the global consumers will number close to 4 billion by 2020. Virtually all of the 2000–20 increase is taking place in emerging countries. These countries will have thus gone from representing

Figure 1: Shares of the emerging Internet economy, 2000–20



Sources: ITU, 2010; IMF, 2010; United Nations, 2010; authors' calculations.

Figure 2: GDP growth, 1995–2015



Source: IMF, 2010.

Box 1: Scenarios to explore uncertainties on the Internet of the future path

As noted in the main text, the rapid pace of change in the global composition of the Internet economy is expected to continue. Figure A—indicating that about half of the global Internet economy would be attributable to emerging economies by 2020—shows what could be considered a "base case" for that evolution. Cisco recently conducted a scenario exercise looking at different possible shapes the Internet of the future could take. With 2025 as the time horizon, Cisco explored the implications of each of the four scenarios for the global composition of the Internet economy by that time.

The scenarios were constructed after considering the possible—and plausible—interactions of three axes of uncertainty:

- **Network buildout:** This axis refers to the key characteristics of the global network, including reach, carrying capacity, speed, and other quality factors. How these characteristics differ around the world will significantly influence what the Internet will look like in 2025—and how much of its promise of productivity increases, economic growth, and social inclusion will have been realized.

- **Technological progress:** While failing to invest in research and development (R&D) guarantees that there will be no technological progress, R&D investment *per se* does not ensure technological breakthroughs. This axis reflects the large element of unpredictability associated with efforts to develop new technologies—and with the rate of adoption of newly available technologies.

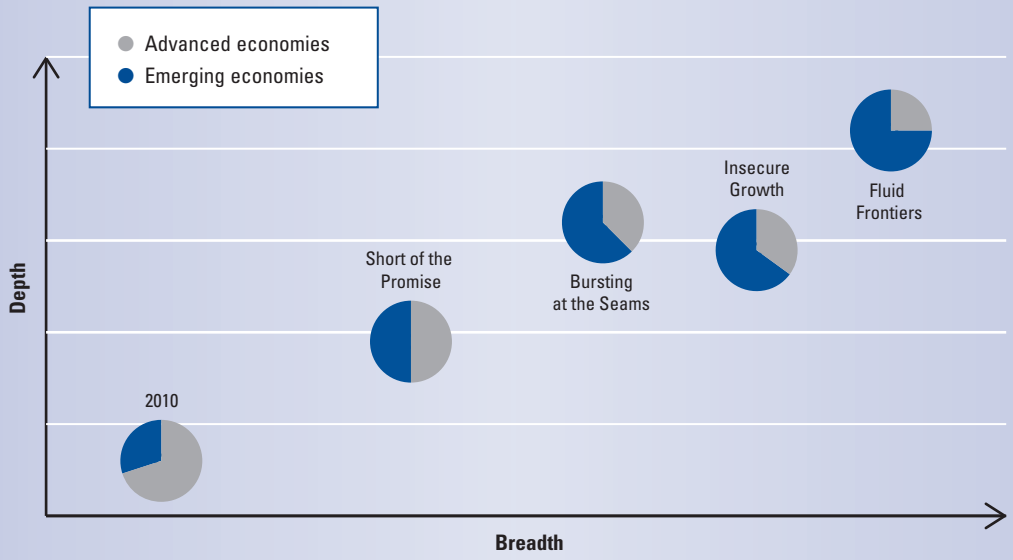
- **User behavior:** This axis concerns the choices that users—both individuals and businesses—will make and that will, in turn, shape overall demand for Internet access, devices, applications, and content. How will trade-offs between ubiquitous connectivity and security, confidentiality and privacy be resolved across geographies and generations? How will economic factors and demand elasticity to evolving pricing models affect usage?

Using these axes of uncertainty as a framework, four scenarios were developed:

- ***Fluid Frontiers***: The Internet has become pervasive and centrifugal. Technology has continued to make connectivity and devices more and more affordable (in spite of limited investment in network buildout) while global entrepreneurship—and fierce competition—have ensured that the wide range of needs and demands from across the world are met quickly and from equally diverse setups and locations.

- ***Insecure Growth:*** Users—individuals and business alike—have been scared away from intensive reliance on the Internet. Relentless cyber attacks driven by wide-ranging motivations have defied the preventive capabilities of governments and international bodies. A range of secure alternatives has emerged, but they are expensive.

Figure A: Emerging Internet economy



Box 1: Scenarios to explore uncertainties on the Internet of the future path *(cont'd.)*

- ***Short of the Promise:*** Prolonged economic stagnation in many economies has taken its toll on Internet diffusion. Technology did not offer any compensating surprises and protectionist policy responses to economic weakness made matters worse—both in economic terms and with regard to network technology adoption.

- ***Bursting at the Seams:*** The Internet has become a victim of its own success. Demand for IP-based services is boundless but capacity constraints and occasional bottlenecks create a gap between the expectations and reality of Internet use. Meanwhile, international agreements on technology standards become elusive as geopolitical factors become important influences on national technology policies.

These scenarios have many implications but we will limit focus here on what they tell us about the global composition of the Internet economy (in terms of its share of emerging economies, which we estimate to be 30 percent in 2010). The figure shows the different shares implied by each scenario and it also positions each scenario in terms of the breadth (reach, or global penetration) and depth (intensity, or median traffic per user) of Internet usage. Fluid Frontiers is the scenario in which emerging economies dominate the Internet economy by 2025. At the other end of the spectrum, in the Short of the Promise scenario, their share has barely reached 50 percent in 2025 (lagging significantly behind the expectations of our base case).

Source: Cisco & Global Business Network 2010.

44 percent of the consumer class in 2000 to 74 percent in 2020 (Figure 3).[3]

As household incomes rise, the share of consumption expenditure (as a share of income) for basic items decreases rapidly, freeing up disposable income for other types of expenditure.[4] Above that level, healthcare (which is turning into an increasingly technology-intensive service) becomes an expenditure priority, followed closely by telecommunications services and equipment. Hence, this emerging consumer class can be expected to use its increased purchasing power, among other things, to gain or improve Internet connectivity.

This will not be a homogeneous phenomenon. The expansion of the consumer class is explosive first in the more dynamic emerging markets that already have large populations near the non-basic consumption threshold (notably Brazil, China, Mexico, Russia, and Turkey); it will then spread to rapidly growing countries where current income levels are still relatively low (such as Egypt, India, Indonesia, and Vietnam).

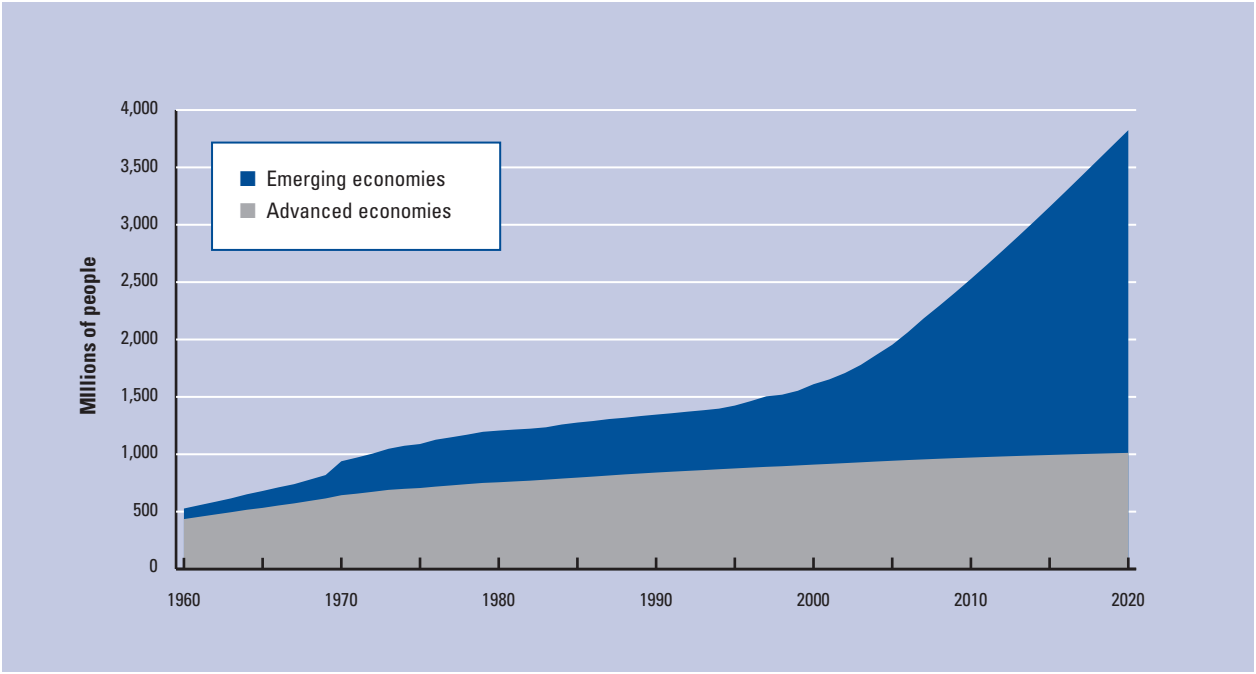
A second driver behind the shift in the composition of the Internet economy is the large "room for growth" for Internet penetration in emerging countries. In advanced economies, over 70 percent of the population are using the Internet, while in emerging ones an average 20 percent do so. The point is simply that as advanced economies are approaching saturation in Internet penetration, emerging ones are just beginning to get connected. Recent growth in Internet usage worldwide already means that a majority of Internet users live in emerging economies and their numbers are growing very rapidly (Figure 4).

An additional factor is that most emerging economies have yet to reach the thresholds, in terms of Internet and broadband penetration, that generate critical mass or network effects; the related dynamics will accelerate as they start crossing those thresholds (these are generally considered to be around a 20–30 percent penetration rate). The urbanization taking place in many emerging economies will act as an accelerator and further contribute to increasing consumption of telecommunications services, because cities act as "beachheads" for the adoption of communications technology.

Emerging economies are not homogeneous, of course, and there is wide diversity in this regard. In *The Global Information Technology Report 2008–2009,* we proposed a classification of all economies across five stages of Internet connectivity.[5] The classification in stages—based on snapshots reflecting the situation of individual economy with respect to key thresholds of connectivity at given points in time—continues to be a useful methodological framework to place an economy's situation in perspective. Appendix A summarizes the stages and highlights recent changes. As we look ahead at likely paths of Internet adoption, we find it useful to group emerging economies in two categories and look for insights that can be derived from differences with the path followed by more advanced economies.

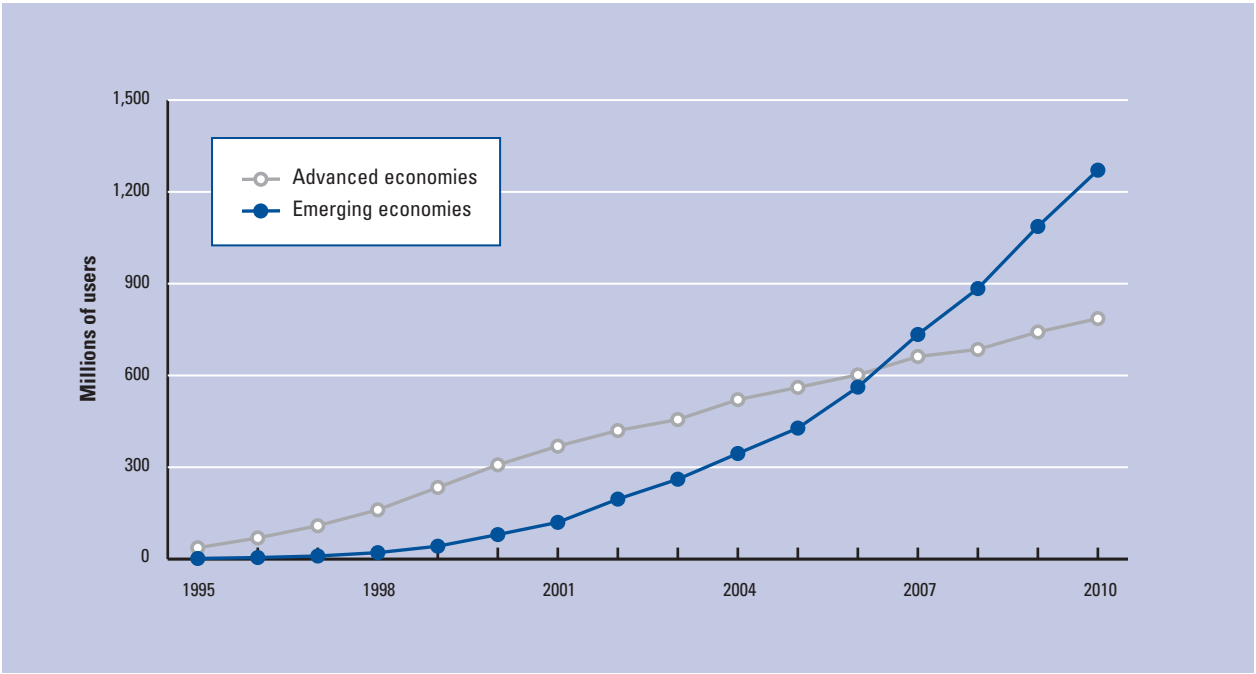
We find two important differences between the connectivity path followed by advanced economies

Figure 3: The consumer class, 1960–2020



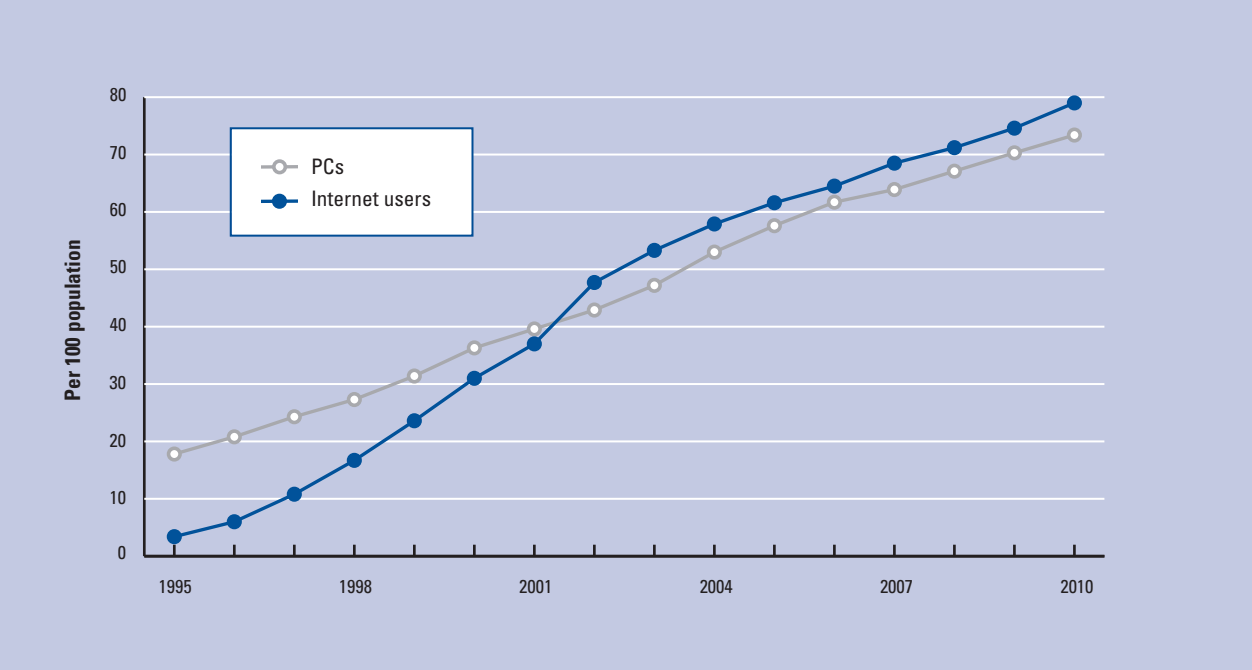
Sources: Goldman Sachs Research, 2010; authors' calculations.

Figure 4: Internet users, 1995–2010



Sources: ITU, 2010; authors' calculations.

Figure 5: First adopters, 1995–2010



Sources: ITU, 2010; authors' calculations.

and the one on which most emerging economies have embarked, with a few exceptions, related mainly to economies in Central and Eastern Europe. These are still generally counted as "emerging" but share many characteristics—including EU membership—with advanced economies. The first difference is the fact that in most advanced economies many people were using PCs before they became connected to the Internet, while in many emerging economies PC availability has lagged behind and most Internet users' first experience was through shared facilities. The second is that the high density of fixed telephone lines in advanced economies, as compared with emerging ones, had made it possible for a relatively quick switch from dial-up connections to broadband as high-speed digital subscriber line (DSL) technology became widespread in response to demand for high-speed connections.

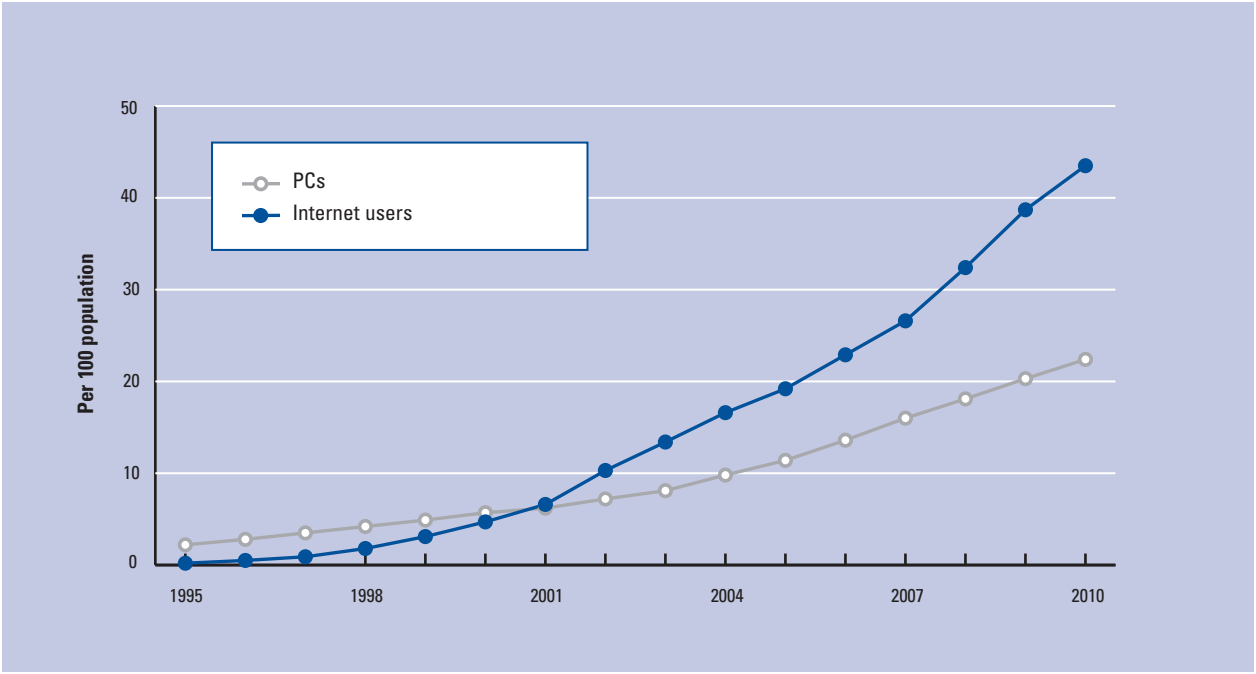
The first wave of Internet connectivity (1995–2010): PC-enabled

The snapshot of current connectivity identifies the relative differences between economies' current ICT adoption. However, to understand the recent paths of connectivity and future prospects for specific economies, it is useful to review the dynamics of Internet adoption by country group since 1995. For this purpose we characterized economies as being first adopters, converging adopters, or belated adopters (Appendixes A and B detail the characteristics of the three groups and the economies by each of them).

First adopters

First-adopter economies are those with populations that are already very connected today, with widespread Internet use mainly via broadband. From a historical perspective, these economies are first adopters of the Internet because they led the way in Internet access and usage. Internet growth in these economies increased dramatically between 1995 and 2005 (Figure 5). The 30 economies that have already crossed the critical mass threshold for broadband connectivity have on average 75 percent of their population using the Internet, and a majority of their households have a broadband connection. Internet penetration is probably approaching saturation level, and now the *intensity* of Internet traffic is growing exponentially. One factor setting these higher-income economies apart from the other two groups is that there was a critical mass of PCs already in use by the time the Internet came around, hence it was easy for people to get connected. In 1995, the average PC-installed base in first adopters was approximately 17.4 per 100 population, compared with 2.1 per 100 population in converging adopters (and 0.5 PCs per 100 population in belated adopters). In the early years of the commercial Internet, there were significant cost barriers to accessibility (PC price and Internet service rates) and citizens in the first-adopter economies were best positioned to "log on." It is also worth noting, however, that

Figure 6: Converging adopters, 1995–2010



Sources: ITU, 2010; authors' calculations.

a number of economies (Estonia and Korea, Rep. are prime examples) managed to accelerate Internet adoption beyond what their income levels would have suggested, a development that was clearly the result of deliberate policies to promote connectivity.

Converging adopters

In the next group of economies, Internet connectivity levels are not yet at the intensive use level, but Internet and broadband adoption are quickly accelerating (Figure 6). These economies are adding to the stock of Internet users at a rapid rate—on average, they added 11 new Internet users per 100 population in just the two years between 2007 and 2009. Here Internet use is still outpacing PC adoption, resulting in connectivity methods that are markedly different from those used in the first adopters. Citizens of the converging adopters are using shared facilities to connect (at Internet cafés, community centers, schools, workplaces, and so on). Internet use and broadband adoption is expected to reach first-adopter levels, but the pace at which this takes place will depend on affordability and availability of devices and connections.

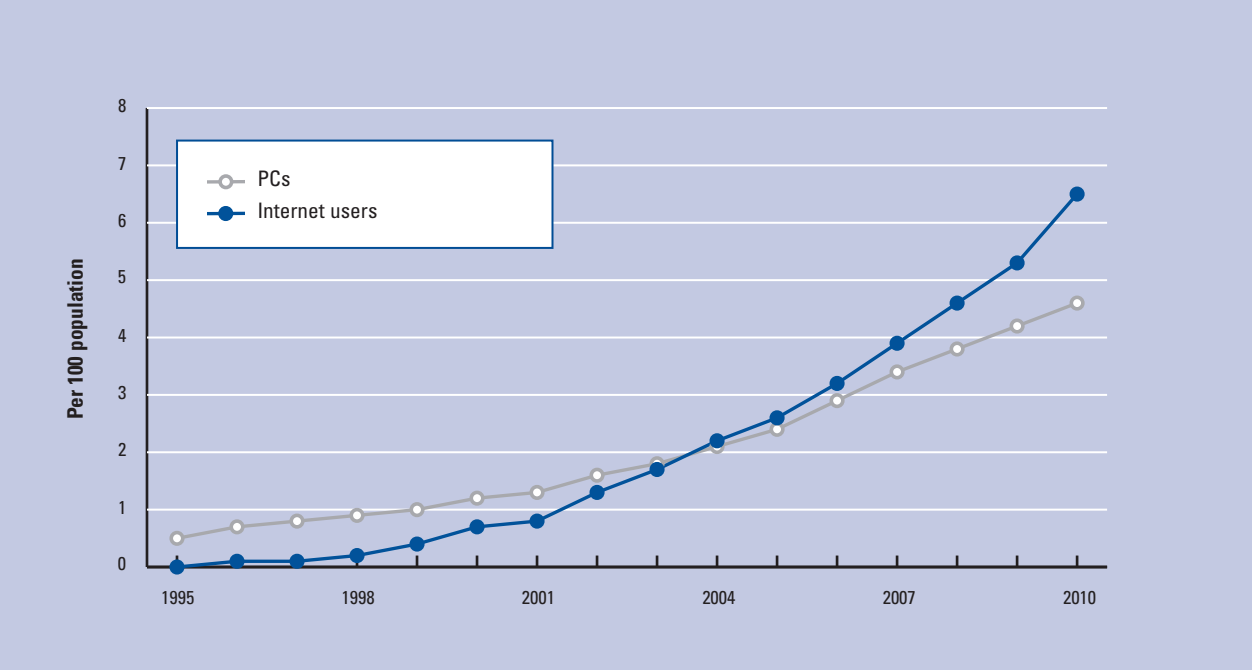
Belated adopters

At the other end of the spectrum from first adopters are the 61 emerging countries where only about 5 percent of the population uses the Internet and less than 1 percent of households have broadband connections. Belated adopters' populations will take longer to fully participate in the Internet. Currently they have very low rates of Internet use and PC adoption (Figure 7). Although the pattern appears to be similar to that of converging adopters—with Internet usage outpacing PC penetration—the levels are significantly lower and the hurdles to connectivity much higher. If/when technology advances lower the costs of devices and increase connectivity options (especially wireless ones), and as their purchasing power increases, these belated adopters will emerge as the growth areas of Internet adoption, just as the converging adopters are now. Because of the multiplier effect that occurs with rising income (a greater proportion is spent on ICT), and as new methods of access become established (such as the move beyond PCs, as shown by the converging adopters), Internet use will eventually reach a critical mass in these belated adopters and begin to accelerate, as we have seen in the Internet use paths followed by the first and converging adopters.

Internet connectivity of the future: The wireless Internet revolution

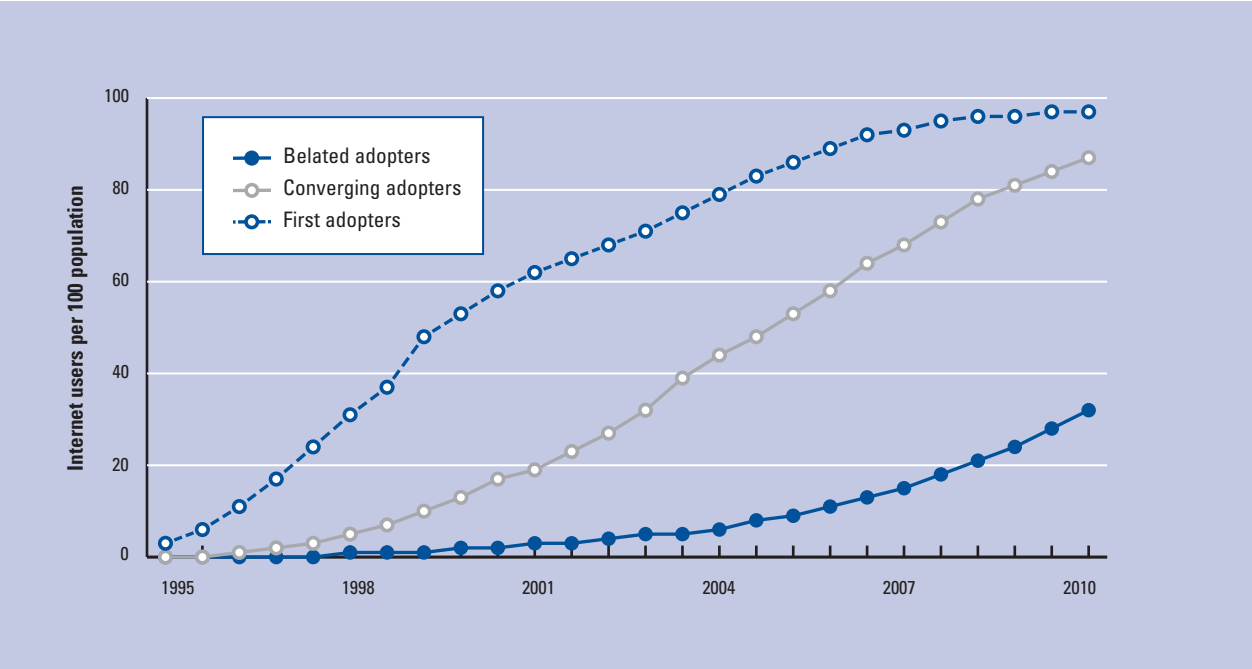
Internet use is forecasted to continue rising rapidly, now particularly in the converging adopters and later in the belated adopters, as Figure 8 illustrates. But though Internet adoption is common to most of the economies across these groupings, the nature of connectivity will be markedly different for economies where Internet use is outpacing PC installation. As technology evolves further, lowering connectivity and device costs, we expect

Figure 7: Belated adopters, 1995–2010



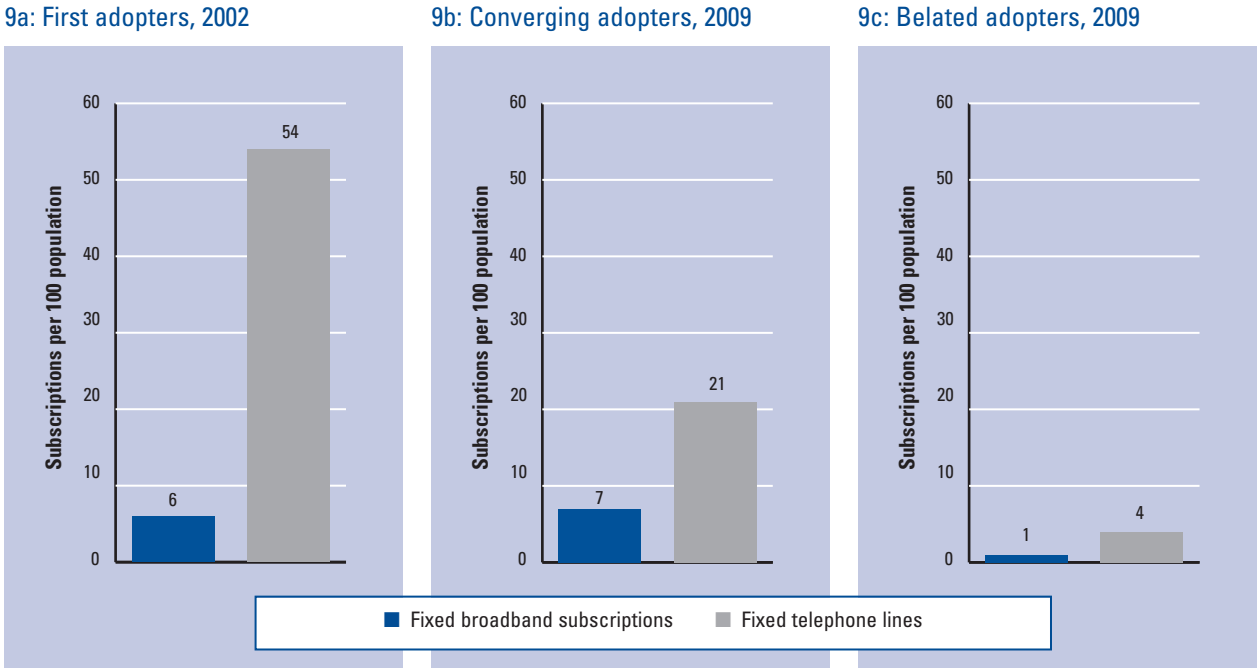
Sources: ITU, 2010; authors' calculations.

Figure 8: Internet penetration for the three groups, 1995–2010



Sources: ITU, 2010; authors' calculations.

Figure 9: Ceiling for fixed broadband



Sources: ITU, 2010; authors' calculations.

new modes of access to emerge (e.g., wireless device access).

Simple Internet use, however, is a stepping stone to high-speed broadband access, where the largest gains from ICT adoption occur.[6] And it is the economies in the first-adopter grouping that are reaping the benefits from high-speed broadband Internet use. On average, there are nearly 28 broadband subscribers per 100 population in the first-adopter economies. By comparison, in converging adopters the figure is seven subscribers and near zero in belated adopters.

The rapid spread of broadband in first adopters was facilitated by high densities of fixed telephone lines. This dense installed base of fixed line subscriptions facilitated the adoption of DSL Internet access as Internet subscribers transitioned from dial-up to high-speed connectivity.[7] By contrast, fixed telephone subscriptions in converging adopters is on average half of what it was in first adopters back in 2000. Other economies cannot count on this easy passage, and increasing their broadband penetration will be related to the spread of a wide range of wireless technologies and infrastructure.

The picture is clear when comparing the situation of first adopters in 2002 (when their broadband penetration was only 6 percent but that of fixed telephone lines was 54 percent) with that of converging adopters in 2009 (with a similar broadband penetration but only 21 percent fixed line density). Even more striking is the situation of belated adopters, with currently very low broadband penetration and only 4 percent fixed line density. The installed base of fixed telephone lines can be seen as a "ceiling" for the low-cost switch to fixed broadband connectivity, hence the appeal of wireless options—including, but not limited to, mobile telephony (Figure 9).

One wireless technology, the mobile phone, demonstrates the exponential growth possibility of wireless communication. In 1999, there were twice as many fixed telephone lines as mobile telephone subscriptions. Ten years later, in 2009, the number of fixed telephone lines has remained flat at 18 percent of the world population, whereas mobile phone subscriptions have risen to 67 percent of world population—an estimated 4.6 billion mobile phone subscriptions. Improvements in wireless technology in the future that will increase data transmission speed, lower cost (for both devices and services), and expand geographic access, in addition to policies and regulations that provide radio spectrum for wireless Internet, will facilitate increasing high-speed Internet use in the converging and belated adopters.

Growth in Internet use, and more importantly in high-speed broadband, will need to emerge from access via methods beyond fixed telephone subscriptions to facilitate the rise in Internet use across converging and belated adopters. Wireless Internet access (mobile data connectivity, satellite access, and fixed terrestrial wireless such as WiMax) is already proving to be an alternative, with mobile in the lead but other wireless options poised for rapid growth as well.[8]

Conclusion

Much of the world has yet to tap to a significant extent the Internet's huge potential for generating economic and social benefits. As more people get connected, it will trigger massive implications for productivity and will open all kinds of new opportunities for individuals. We have illustrated this through the dynamics of the global Internet economy—the factors behind which are faster growth in emerging countries, rapid expansion of their consumer class, and developments in wireless technology.

All those factors suggest that we are at an inflection point. Internet adoption and intensity of use through broadband connections will accelerate, and the global composition of the Internet community and markets will change markedly over the next decade. This inflection point presents an opportunity for countries—and cities—to take decisive steps to gain the competitive advantage that can be derived from widespread use of broadband networks.

For countries that appear today to be converging adopters, the challenge is to accelerate the speed of adoption and reduce the lag between widespread Internet penetration and broadband penetration. For countries that are belated adopters, the urgent challenge is to shift gears and leapfrog to faster adoption of Internet and broadband.

The answer in both cases points toward the implementation of a comprehensive strategy combining investments in broadband infrastructure and skills with improvements in the policy and regulatory frameworks that affect the adoption of network technology. Key considerations to that effect should include the treatment of broadband networks, from the perspective of public policy, as basic infrastructure; the recognition that competition is one of the best drivers of technology adoption; and imaginative policies that facilitate access to spectrum and to existing infrastructure that can be shared by networks—thus reducing the costs of deployment and encouraging private investment.

When we look back from 2020 or 2025, we will see major differences between the emerging countries that took advantage of the opportunity of broadband networks to escalate their competitiveness and prosperity and those that failed to do so. Those differences will not be related primarily to starting positions or relative wealth—they will be due instead to decisive implementation of strategic plans and to inspired public-private partnerships that promote the widespread adoption of network technology.

Notes

1 The adjustment factor we use is based on the Gini coefficient for income distribution. However, we dampen the effect of the income distribution adjustment as Internet use becomes more universal, because income distribution matters less (in the context of our Internet economy measure) as more of a country's population becomes connected. Internet economy = (GDPpc PPP × total Internet users) × {1 + [Gini coefficient × (1 – Internet penetration ratio)]} .

2 Nomura International, among others, has identified the US$6,000 per capita income level that results in "burst of GDP & credit; higher spending and lower savings" across many economies over the past 50 years (Nomura International 2009, p. 17). Kharas 2010 has used the term *consumer class,* applied to per capita income levels above US$10 per day.

3 Goldman Sachs Global Investment Research 2010.

4 Food accounts for well over half of total expenditures for national incomes below US$1,500 per capita, but drops to one quarter for those above US$3,000 and drops further at higher income levels. See Goldman Sachs Global Investment Research 2010.

5 Chapter 1.3 of *The Global Information Technology Report 2008–2009* details the stages of Internet connectivity and the key Internet adoption thresholds.

6 Qiang et al. 2009 showed that among ICT, including Internet access, broadband connectivity leads to the largest gains in GDP.

7 Coaxial cable Internet access also facilitated the transition to high-speed broadband in first adopters, but the cost of installation makes individual transition to cable Internet more costly unless users already subscribe to cable television service.

8 Comprehensive data on wireless access (at the country level) are not yet available, but the latest figures from the International Telecommunication Union (ITU) indicate that at the end of 2010, there were 940 million 3G mobile subscriptions with the possibility of data transmission at broadband speeds, compared with 555 million wired broadband subscriptions.

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Appendix A: Stages of Internet connectivity

First introduced in *The Global Information Technology Report 2008–2009,* the stages of connectivity revolve around key adoption thresholds that show the progression from occasional or rare access to familiarization with the Internet, to widespread connectivity, and, finally to more regular, intensive use of Internet-based services. Chapter 1.3 of that *Report* detailed the stages of Internet connectivity and the key Internet adoption thresholds. In summary, the five stages are:

- **Proto-Internet:** In this stage are economies in which the vast majority of citizens have not come in contact with the Internet.
- **Early days:** This stage includes economies that have higher Internet usage rates but where the large majority of the population has yet to experience the Internet directly.
- **Familiarization:** Economies in this stage are fast becoming familiar with the Internet, but Internet subscription is still not widespread.
- **Extensive use:** This is a transitional stage, comprising economies whose populations are familiar with the Internet and are subscribing to Internet service on a wide scale, but have not yet shifted to broadband.
- **Intensive use:** Economies in the 5th stage are those in which broadband subscription is prevalent and Internet connections are predominantly high-speed.

Since the introduction of the stages of Internet connectivity two years ago, most economies across the world have progressed toward greater Internet adoption. The table illustrates how the number of economies concentrated in the least-connected stages (proto-Internet and early days) has fallen, with many of those economies moving to an Internet environment where citizens are logging in but have yet to establish subscription services. The growth of the number of economies in this middle stage, familiarization, highlights the rise in connectivity, but also emphasizes the challenge remaining for economies as they move beyond simple Internet familiarity to Internet subscriptions. The extensive use stage remains a transition point, as the high level of Internet subscriptions in these economies move to broadband. The number of economies in this stage has fallen and, as the average Internet speed per unit cost continues to rise, we expect this trend to continue as citizens across the world move directly into Internet subscriptions with broadband speeds. And since 2007, the number of economies in the intensive use stage has increased significantly, demonstrating the progress being made in expanding access and upgrading the quality of connectivity in many economies.

We use these stages to describe the historic trend in connectivity since 1995. Economies in the proto-Internet and early days stages are the *belated adopters.* Those in the snapshots of familiarization and extensive use comprise the *converging adopters,* and the economies in the intensive use stage are those that are the *first adopters.*

Table 1: Number of economies by stage of connectivity

Stage of connectivity	2007	2008	2009
Intensive use	22	28	30
Extensive use	20	16	16
Familiarization	41	46	50
Early days	34	33	33
Proto-Internet	40	34	28

Source: ITU, 2010; authors' calculations.

Appendix B: Economies in each stage of Internet connectivity and descriptive statistics

Belated adopters		Converging adopters		First adopters
Afghanistan	Indonesia	Albania	Macedonia FYR	Australia
Algeria	Kenya	Argentina	Malaysia	Austria
Angola	Laos	Azerbaijan	Maldives	Belgium
Armenia	Lesotho	Bahrain	Mauritius	Canada
Bangladesh	Liberia	Belarus	Mexico	Cyprus
Belize	Libya	Bosnia and Herzegovina	Moldova	Denmark
Benin	Madagascar	Brazil	Morocco	Estonia
Bhutan	Malawi	Brunei Darussalam	Nigeria	Finland
Bolivia	Mali	Bulgaria	Oman	France
Botswana	Mauritania	Cape Verde	Panama	Germany
Burkina Faso	Mozambique	Chile	Paraguay	Hong Kong SAR
Cambodia	Myanmar	China	Peru	Iceland
Cameroon	Namibia	Colombia	Poland	Ireland
Central African Rep.	Nepal	Costa Rica	Portugal	Israel
Chad	Nicaragua	Croatia	Qatar	Italy
Comoros	Niger	Czech Republic	Romania	Japan
Congo (Brazzaville)	Pakistan	Dominican Rep.	Russia	Luxembourg
Congo, D.R.	Philippines	Ecuador	Saudi Arabia	Malta
Côte d'Ivoire	Rwanda	Egypt	Serbia	Netherlands
Djibouti	Senegal	Eritrea	Slovakia	New Zealand
Timor-Leste	Solomon Islands	Georgia	Suriname	Norway
El Salvador	South Africa	Greece	Syria	Singapore
Equatorial Guinea	Sri Lanka	Guatemala	Thailand	Slovenia
Ethiopia	Swaziland	Guyana	The Bahamas	Korea, Rep.
Fiji	Tajikistan	Hungary	Trinidad & Tobago	Spain
Gabon	Tanzania	Jamaica	Tunisia	Sweden
Ghana	Togo	Jordan	Turkey	Switzerland
Guinea	Uganda	Kazakhstan	Ukraine	Taiwan, China
Haiti	Zambia	Kuwait	United Arab Emirates	United Kingdom
Honduras	Zimbabwe	Kyrgyz Republic	Uruguay	United States
India		Latvia	Uzbekistan	
		Lebanon	Venezuela	
		Lithuania	Vietnam	

Averages	Number of countries	Internet users (per 100 population)	Internet subscriptions (per 100 population)	Broadband subscriptions (per 100 population)	Personal computers (per 100 population)	GDP per capita (US$)	Urban Pop. (%)
First adopters	30	75	31	28	70	40,514	80
Converging adopters	66	39	9	7	20	9,317	63
Belated adopters	61	5	1	1	4	1,806	41

Sources: ITU, 2010; IMF, 2010; United Nations, 2010.
Note: These are illustrative classifications based on the latest available data, mostly reflecting the situation at the end of 2009.

CHAPTER 1.3

Building Communities around Digital Highways

KARIM SABBAGH, ROMAN FRIEDRICH, BAHJAT EL-DARWICHE, and **MILIND SINGH,** Booz & Company

In March 2009, the US Federal Communications Commission (FCC) published *Connecting America: The National Broadband Plan,* an effort to address the fact that only seven of ten households in the United States use the Internet. Beyond examining infrastructure requirements, the FCC plan recognized that ubiquitous, affordable high-speed broadband is essential in driving national competitiveness: broadband, as noted in the plan, enables advances in seven priority areas, including education, healthcare, energy and the environment, and civic engagement.[1]

The United States is far from alone in its aspirations. Governments around the world are spending billions and setting ambitious targets as they recognize that a crucial foundation for many areas of socioeconomic development are digital highways—defined as nationwide high-speed broadband enabled by a combination of fixed as well as wireless networks. Just as actual highways connect people and foster social and commercial activity, digital highways can facilitate the creation of virtual communities in vital areas. When policymakers and telecommunications operators collaborate with leaders in other sectors, such as health and education, they are laying the groundwork for profound improvements—boosting national competitiveness, innovation, economic productivity, and social inclusion.

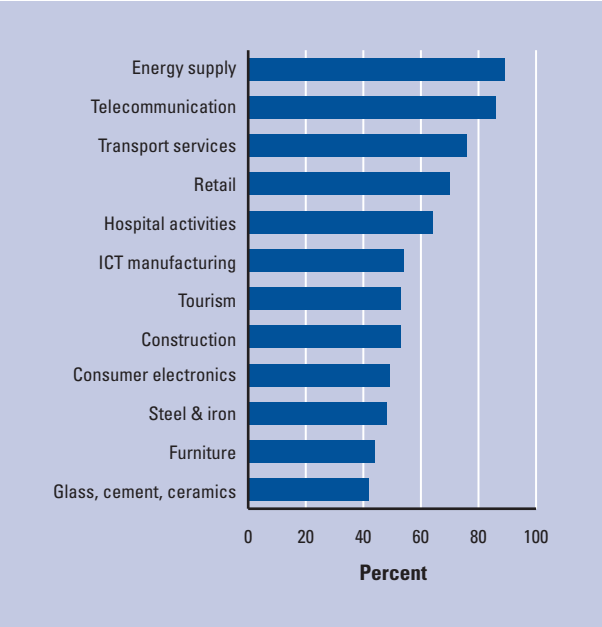
Accelerating the deployment of digital highways and deriving their full benefits is not a simple task. It requires fundamental changes in vision and action throughout the entire broadband ecosystem. Policymakers and network operators first must look beyond broadband networks alone and facilitate the development of a host of related services and applications, then actively encourage citizens to use them. There is also a strong need for collaboration among other sector participants such as device manufacturers, application developers, and counterparts in adjoining sectors. Finally, the members of the broadband ecosystem must work with their counterparts in adjacent industries—such as health, energy, education, and transportation—to develop the applications that will help those sectors to reap broadband's benefits. Only when all of these stakeholders are fully engaged can digital highways reach their full potential and facilitate efficiency, competitiveness, and prosperity in the communities they serve.

After making the case for the need for digital highways and assessing their current development status, this chapter will explore the actions required from policymakers, networked operators, and other relevant stakeholders to facilitate broadband deployment as well as the opportunities ahead.

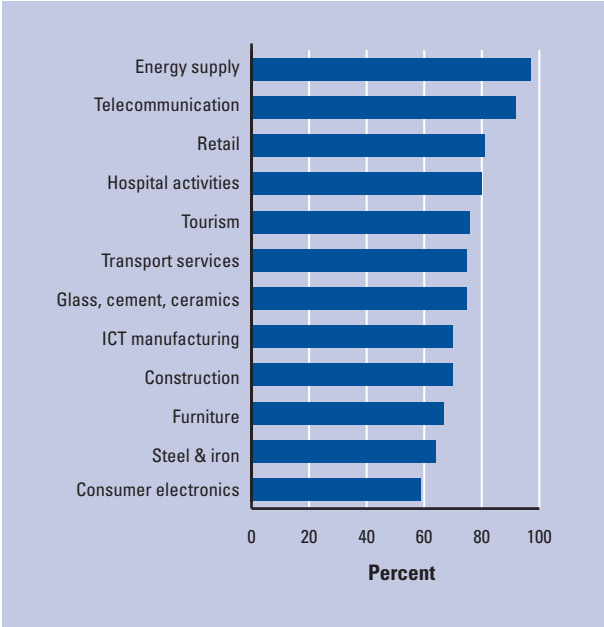
The authors wish to thank Christos Mastoras and Roshni Goel for their research assistance in the preparation of this chapter.

Figure 1: The role of ICT in innovation by industry, 2006–09

1a: Product and service innovation



1b: Process innovation



Source: e-Business W@tch, 2010.
Note: The percentage is of the product and process innovation that is enabled by ICT in each sector. The methodology and metrics to assess both innovation and ICT contribution are defined by the e-Business W@tch study.

The need for digital highways

Widely accessible, high-speed broadband infrastructure is the foundation underlying all of these possibilities, and several trends are converging to underscore the need for these digital highways.

First, the proliferation of information and communications technologies (ICT) continues to have a strong impact on socioeconomic growth. Since the term entered the vernacular in 1997, consumers and businesses have recognized ICT as a source of productivity enhancement. As a result, enterprises have invested in the sector, particularly in developed markets, and ICT adoption has increased dramatically. There were 100 million personal computers in 1990 and 1.4 billion in 2010. The number of mobile phone users increased from 10 million to more than 5 billion over the same period, and the number of Internet users surged from 3 million to 2 billion. As adoption of ICT has made exponential gains, so has its role in fostering both product and process innovation across industry sectors (see Figure 1). All of these technologies rely, in one way or another, on broadband. Therefore, countries seeking to better their standard of living and competitiveness look to digital highways as a national imperative.

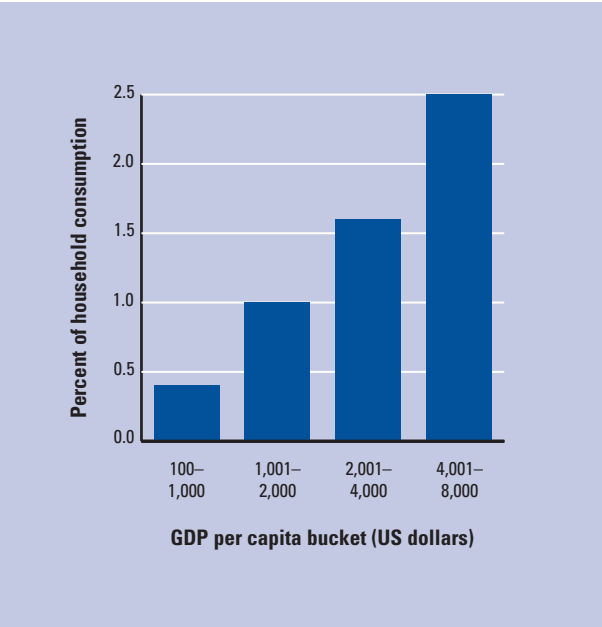
Another critical need for digital highways stems from changing consumer behavior. Around the globe, people are coming to expect constant immersion in the digital world to be able to fulfill their need for communication, information, and entertainment anywhere, at any time. What is more, they are not just consuming content but also creating it. This change, plus the increasing digitization of enterprise and government services, has led to an explosion of digital content. A recent International Data Corporation (IDC) study estimates that the total digital content created in 2010 reached 1.2 zettabytes—that is 1.2 with 21 zeros, the equivalent of 75 billion fully loaded 16-gigabyte Apple iPads.[2] By 2020, IDC estimates digital content will have grown another 30-fold, to 35 zettabytes. Facing steep costs, enterprises are turning increasingly to cloud computing. IDC forecasts that the amount of data on the cloud will reach 15 percent of the digital data universe, or 5 zettabytes by the same date. Already major technology companies such as Microsoft, Google, and Amazon offer cloud services. The transmission of so much data will put additional strain on broadband networks.

Indeed, this proliferation of data has had a profound impact on the industry: a recent study by Ericsson highlighted the landmark moment in December 2009 when total mobile data surpassed voice traffic.[3] Data use will only continue to rise as smartphones become more common, and because smartphone users consume as much as 15 times more bandwidth than users of regular phones. Although successive generations of wireless technologies have improved the efficiency of the wireless spectrum, it is not sufficient to handle the data explosion: mobile operators will need to turn to fixed broadband networks to support their operations as the popularity of smartphones continues to surge.

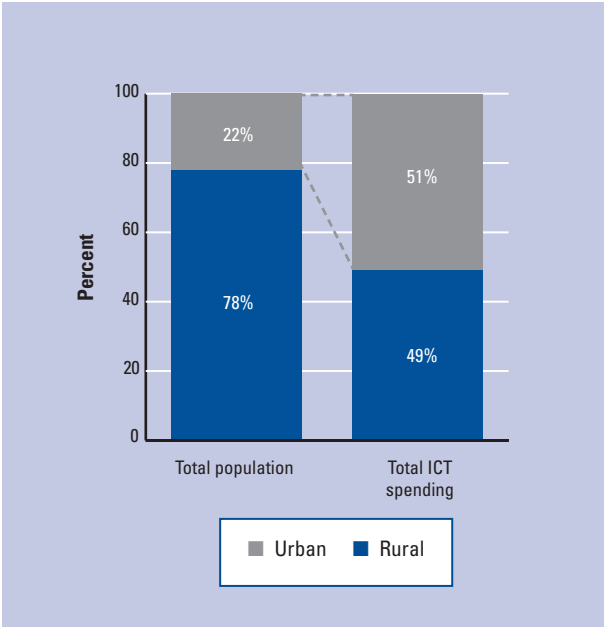
Governments represent another source of network demand as they increasingly move toward e-government solutions to serve their citizens. The United Nations'

Figure 2: Changes in ICT consumption patterns in emerging markets, 2007

2a: ICT consumption by GDP buckets



2b: Effect of urbanization: Indian ICT spending



Sources: World Bank, 2010; World Resources Institute, 2007; Booz & Company analysis.

E-Government Survey estimates that only 2 percent of countries today do not have a government website.[4]

Emerging economies are also spawning demand for digital highways. In many growing economies, consumers are increasing their expenditures on ICT, creating demand for high-speed networks to handle surges in data traffic (see Figure 2). Emerging economies also see rapid growth in their urban centers: urban populations in emerging markets grew 3.4 percent between 1975 and 2005, compared with growth of 0.8 percent in developed countries over that same period. Such urbanization is usually accompanied by a host of challenges—traffic congestion and pollution, for example—that require ICT solutions, such as intelligent public transport systems. Further, emerging economies are investing in e-government platforms that require universal and affordable accessibility to be successful.

The proliferation of content and data usage from governments, businesses, and consumers, as well as the growing needs of both emerging and mature markets, underscore how crucial it is for countries to keep building their digital highways. The countries that embrace the need for affordable and ubiquitous national networks have proven to be more competitive in the global arena, as suggested by the high correlation existing between broadband penetration and the World Economic Forum's Global Competitiveness Index (see Figure 3). The takeaway is clear: digital highways are an imperative for all nations, developed or emerging.

The state of digital highways

Despite digital highways' socioeconomic impact and their importance as the foundation for digital communities, more than 83 percent of the world's population lacks connection to a broadband network (see Figure 4). High-speed broadband is available to just 6 percent of the global population. Notwithstanding the best efforts of governments and the private sector, the broadband digital divide persists as a significant challenge to inclusive and sustainable development, especially in emerging economies.

These gloomy statistics, however, fail to show the progress that countries *have* made in recent years (see Figure 5). Policymakers and network operators are taking major strides to accelerate the availability of national broadband networks.

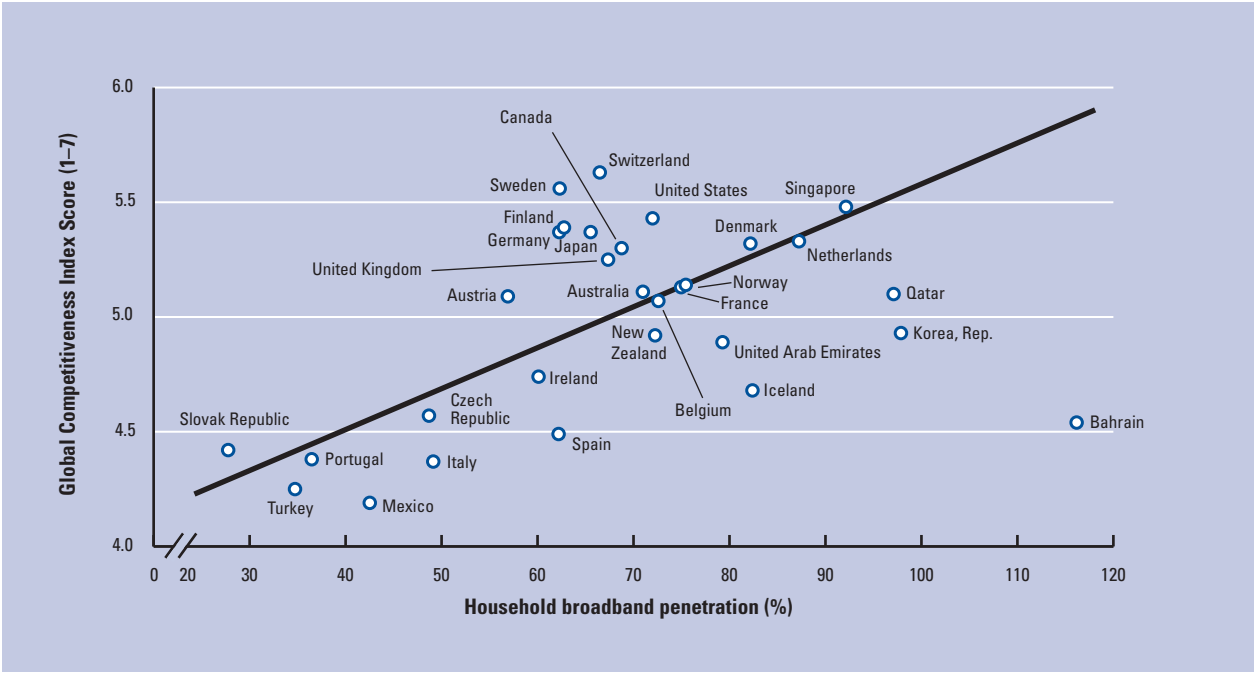
Policymakers

Both in developed and developing markets, policymakers are considering the establishment of digital highways to be a national imperative, and they are introducing regulations and policy to ensure their rapid deployment.

In July 2010, for example, the Finnish government formally declared broadband to be a legal right and vowed to deliver high-speed access (100 MB/s) to every household in Finland by 2015.[5] The French assembly declared broadband to be a basic human right in 2009,[6] and Spain is proposing to give the same designation to broadband starting in 2011.[7]

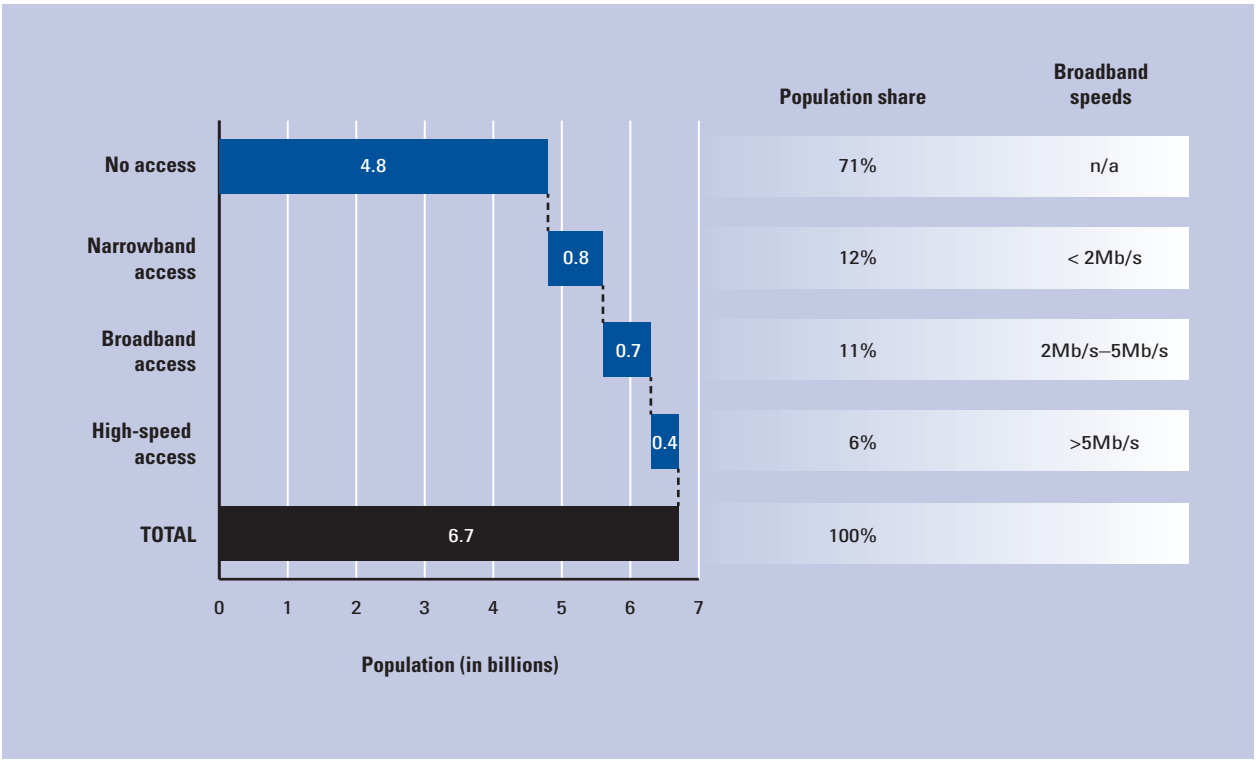
In some countries, policymakers are establishing comprehensive broadband policies. In the United States, the FCC's *Connecting America* plan outlines initiatives to

Figure 3: Competitiveness vs. broadband penetration, 2010



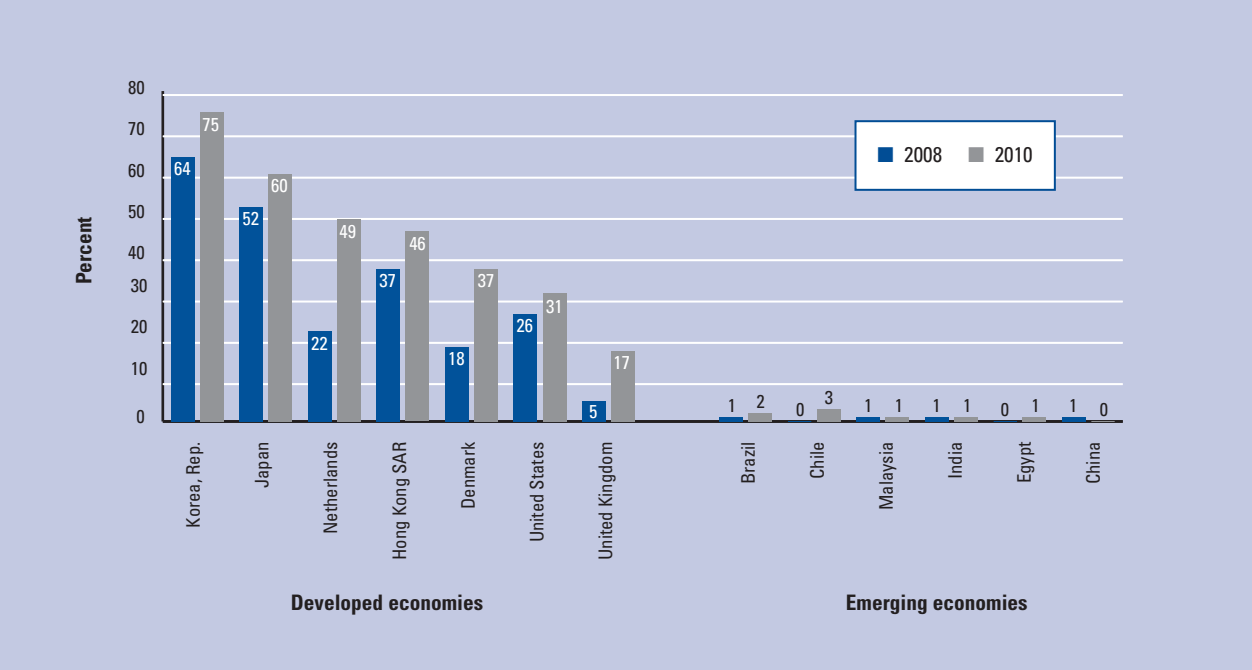
Sources: World Economic Forum, 2010; ITU, 2010; Booz & Company analysis.
Note: *Competitiveness* is defined by the World Economic Forum as the set of institutions, policies, and factors that determine the level of productivity of a country.

Figure 4: Global access to broadband, 2010



Sources: Akamai , 2010 Q1; Booz & Company analysis.

Figure 5: Broadband connections faster than 5 Mb/s



Sources: Akamai, 2010; Booz & Company analysis.

improve high-speed broadband adoption across sectors and industries, proposing a US$9 billion fund to accelerate broadband deployment.[8] The UK government has committed £850 million to its broadband plan,[9] and Brazil has committed US$7.3 billion over the next five years.[10] Other emerging economies are also stepping up their plans: Estonia said it will spend US$500 million for a national broadband network,[11] and India has begun setting its National Broadband Plan.[12]

Policy initiatives have not been limited to infrastructure; some policymakers are investing in demand stimulation. Korea, Rep. (Korea) has put US$65 million into a smart grid pilot on Jeju Island, operating a fully integrated smart grid for 600 households.[13] In the United States, the government has committed as much as US$11 billion as part of its Recovery and Reinvestment Act to develop smart grids.[14]

Additionally, regulators are becoming more involved, encouraging rules to foster cooperation that would facilitate the buildout of national networks. The European Commission, for example, recently articulated regulatory recommendations to encourage partnerships among operators that will use next-generation fiber networks.[15]

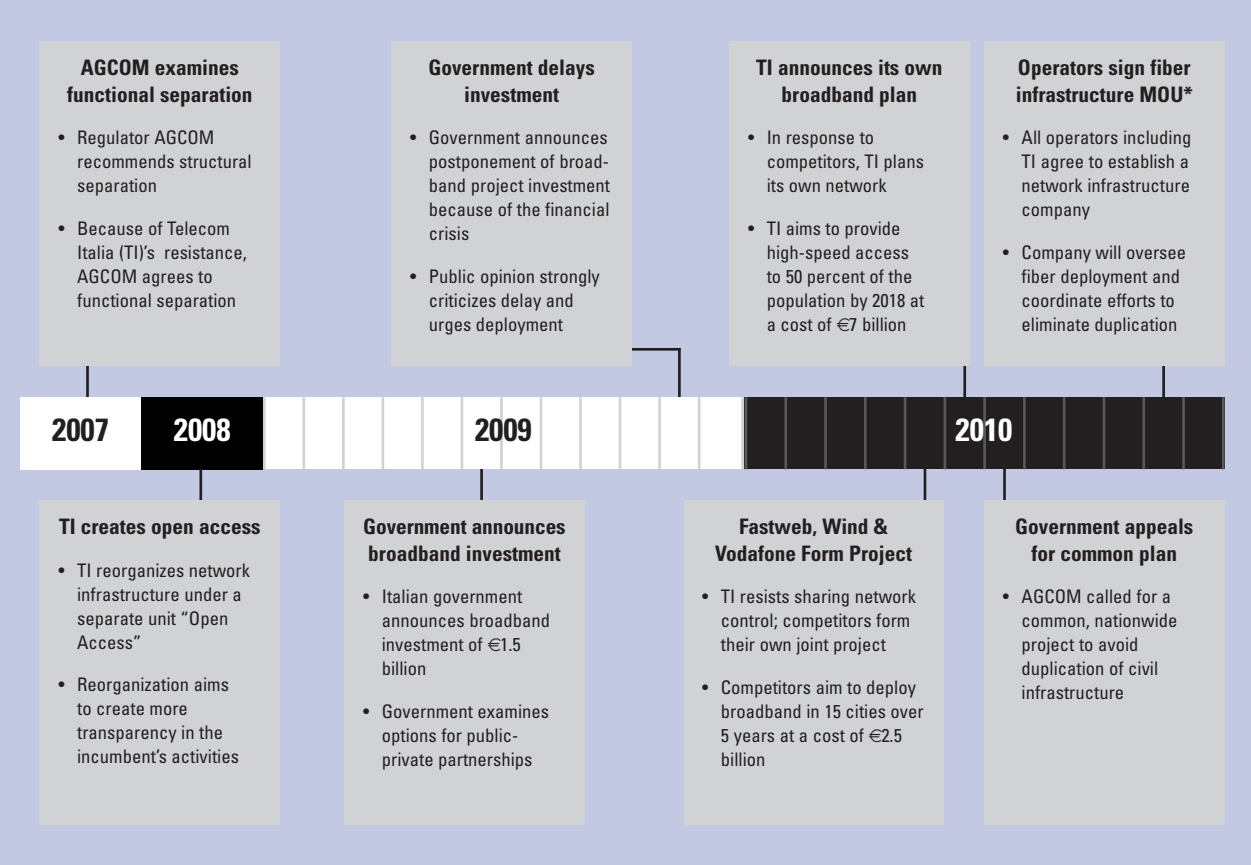
Network operators

Along with policymakers, network operators are the dominant stakeholders in the sector, and they are increasingly playing an active role in the development of digital highways by adopting new business models that separate their network assets from services. These multi-layer business models allow operators to reduce their focus, investment, and dependency on traditional revenue streams and instead position themselves to scale next-generation networks and related applications and services. Often policymakers and network operators work together to forge solutions beneficial to them both.

For example, Telstra, the incumbent operator in Australia, recently followed operators in Singapore and New Zealand in adopting a multi-layer network. Telstra will separate its wholesale business and its retail business and progressively decommission its copper network as the government-backed national broadband network rolls out. This was a difficult deal, as it upends the operator's entire approach to doing business; it required protracted negotiations, including, at one point, the position that the government would build an A$43 billion network without Telstra. Ultimately, the operator agreed to accept A$11 billion from the Australian government as an incentive to de-layer its services.

In 2007, Italy's telecommunications regulator, AGCOM, began seeking ways to boost the country's low broadband penetration rates. After lengthy negotiations, Italy's incumbent operator—Telecom Italia—agreed to delayer its networks by undergoing a functional separation to establish a new open-access entity, from which all operators would acquire wholesale services. Investment in fiber networks in the country still remained limited, however, until the Italian government announced a €1.5 billion injection into a fiber company in early 2009 to accelerate the deployment of next-generation infrastructure. That plan stalled until November 2010, when the Italian government worked with operators to

Figure 6: Italy's national broadband network history



Note: MOU means Memorandum of Understanding.

forge a plan that creates an infrastructure company run by representatives from major operators and the ministry of telecommunications (see Figure 6). Italy's model reflects similar evolutions in Australia and Singapore, where the incumbent was reluctant at first to be a part of the broadband company, but eventually joined in a national effort.

Building communities around digital highways

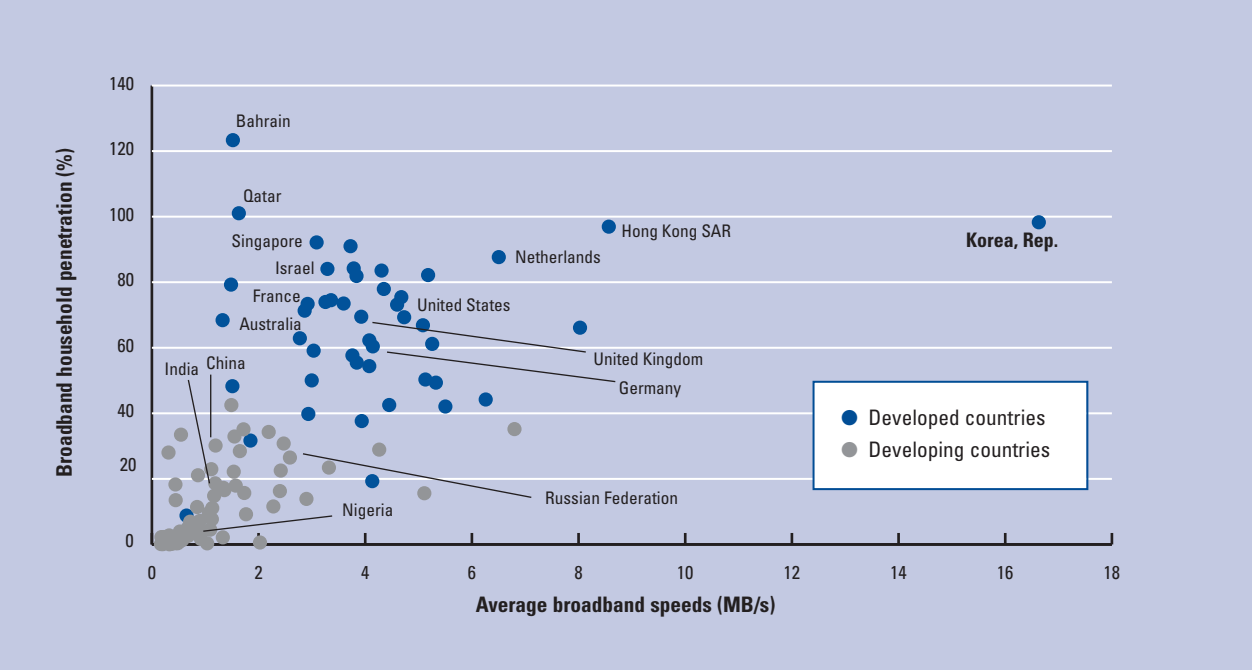
With national broadband networks around the world on track for continued deployment, participants in the broadband sector are recognizing that the true value of digital highways does not reside in their construction alone. If broadband represents a digital highway, then the applications that are enabled by broadband are the communities that will grow alongside it—and they are critical to realizing the maximum socioeconomic benefits from broadband. Policymakers, operators, device manufacturers, and application developers are unlocking the true potential of digital highways by facilitating the creation of applications that deliver better services and boost national competitiveness. The possibilities enabled by broadband include, but are not limited to:

- *Enabling smart governments:* ICT today is playing a key role in helping governments maintain public service standards while they struggle with budget deficits and attempt to curb national spending. A study by the European Union revealed that European taxpayers could save more than €15 billion (US$20 billion) if their governments were to switch to electronic invoicing systems.[16]

- *Enabling healthcare:* The number of citizens over the age of 60 is likely to double in developed countries over the next three decades. ICT is playing a vital role in enhancing the quality and reducing the cost of healthcare in these economies through applications such as electronic health records and e-health services. iData Research forecasts that the US patient monitoring market, including home telehealth and hospital wireless telemetry monitoring segments, will reach nearly US$4 billion by 2017.[17]

- *Enabling sustainability:* The adoption of green ICT applications could result in a 15 percent reduction of global CO_2 emissions, or 7.8 gigatons by 2020, according to a Smart 2020 study.[18] These applications include elements such as smart grids, which received US$3.4 billion in stimulus funding in 2009 in the United States.

Figure 7: Korea: A digital highway champion



Sources: Akamai, 2010; Booz & Company analysis.
Note: World Bank's classification is used for defining developed and developing countries; high-income countries (GNI per capita > US$12,196) are classified as developed; the rest are classified as developing (situation as of December 2010).

In developing countries, in particular, national broadband networks offer a helping hand up the socio-economic ladder by enabling a few critical areas:

- *Enabling basic services:* Access to primary services such as healthcare and education is a challenge for most rural citizens in developing markets; ICT enables governments and nongovernmental organizations (NGOs) to broaden their provision of these vital services. A number of nonprofit organizations are using mobile networks to deliver m-health services, such as patient data collection and the dissemination of health information, to poor, rural populations throughout Africa. Similarly, in education, nonprofits and operators can collaborate to offer lessons, study tips, and quizzes via mobiles.

- *Enabling livelihoods:* Almost one-fourth of the world's population lives below the poverty line, on less than US$1.25 per day. ICT can help governments and international nonprofit organizations improve the purchasing power of low-income groups. In the agriculture sector, for example, farmers can obtain instant weather information and market prices for their crops on their mobile phones—which could help them harvest at the right time and sell products for an appropriate price. This service also reduces reliance on middle men and overall market information asymmetry.

At this stage, most countries are still focusing on the deployment of broadband itself and are just beginning to explore the possibilities that arise when it becomes ubiquitous and affordable. For example, only 1.5 percent of facilities belonging to the American Hospital Association have comprehensive e-health systems, while smart meter penetration in the United States was estimated at 6 percent in 2009. Even in the public sector, with its wide range of e-government initiatives, adoption has been slow: indicatively, only 30 percent of individuals age 16–74 were using the Internet to interact with public authorities in the European Union in 2009.

But a few countries have already begun to envision the communities that can spring up around the digital highway; some have even begun to reap the benefits of building such communities. These countries show what is possible when members of the broadband ecosystem collaborate both with each other and with adjacent sectors to develop the applications that catalyze broadband's potential.

Korea, for example, is the global leader in both access speeds and the adoption of high-speed broadband services (see Figure 7). It has achieved this status through a series of sustained efforts over the last 15 years, starting with the Korea Information Infrastructure plan in 1995—the plan aimed to connect all households to a broadband network by 2005. Since then, Korea has continued periodically to reassess the availability and quality of its broadband network and set higher aims for itself. In 2009, Korea announced a government-backed initiative

Figure 8: FCC's broadband goals and performance dashboard sample

	2020 GOAL	SELECTED METRIC
Focused on ACCESS	• 100 million US homes have affordable access to actual download speeds of at least 100 Mb/s, and actual upload speeds of at least 50 Mb/s	• Average actual upload speeds: Nationwide and by provider • Average actual download speeds: Nationwide and by provider • Number of households with access to broadband networks with sufficient speed • Minimum price for a broadband subscription: Nationwide and by provider
	• Every American should have affordable access to robust broadband service and the means and skills to subscribe if they so choose	• Percentage of Americans who subscribe to broadband services — Total — Socioeconomic segments — Demographic groups • Percentage of Americans with sufficient digital literacy skills
Focused on ADOPTION	• To ensure the safety of the American people, every first responder should have access to a nationwide, wireless, interoperable broadband public safety network	• Percentage of first responders using the nationwide public safety networks
	• To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption	• Percentage of American homes that have smart electric meters capable of communicating real-time energy information to consumers

Source: FCC, 2010.

to boost average broadband access speeds to 1 Gb/s for all of its citizens by 2009.

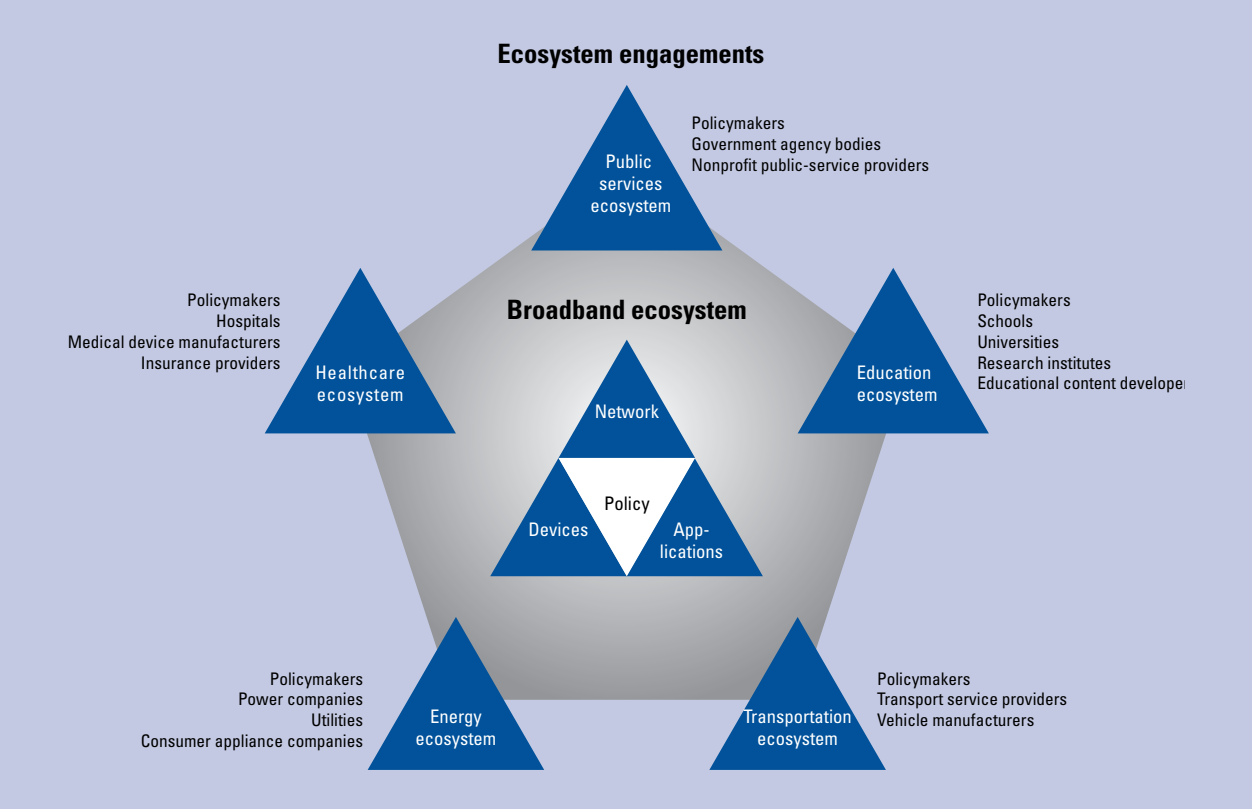
In addition to access, policies have focused on applications: As early as 1999, Korea outlined plans to boost information technology (IT) applications and literacy under its Cyber Korea 21 plan; it took further steps in its 2006 E-Korea vision plan, which focused on the promotion of information applications.[19] Recently, the country announced a commitment of more than US$500 million for cloud computing initiatives, with the objective of encouraging local businesses to export cloud services.

Operators, device manufacturers, and application developers in Korea have been instrumental in developing the country's digital highway, creating the next-generation applications that boost broadband adoption. For instance, SK Telecom—the leading mobile services provider—offers a "digital home" application that allows users to control and monitor home appliances, and a mobile radio-frequency identification (RFID) one that gives users vital information about products before purchase. Korea is also the global leader in online gaming services, with more than 30 percent of the population registered on online multi-player games.

Device manufacturers such as LG and Samsung have emerged as global market leaders in electronics, partially enabled by successful partnerships with local telecommunications players in which they built devices that allow for RFID solutions and micropayment tools. None of these manufacturers could have created these devices on their own; their development required extensive collaboration with ICT policymakers; policymakers in relevant industry sectors, such as finance; sector stakeholders, such as banks and retailers; application developers; and operators, which charge customers to use the applications made possible by these devices.

In combination, these initiatives have resulted in a number of competitive advantages for Korea. Between 2000 and 2007, the country more than tripled the number of patents filed in science and technology. ICT adds

Figure 9: Ecosystem approach



Source: Booz & Company.

more value to enterprise performance in Korea than in almost any other OECD country; and in public services, Korea has surpassed the United States and the European Union (EU) countries to rank highest on the UN's E-Government Development Index since 2008. Thanks also to the above, Korea has enjoyed one of the highest rates of GDP growth rates in the last 10 years among OECD countries.

These achievements are not out of reach for other countries—but they will require similar levels of dedicated effort. One way to boost the use of broadband applications is to generate a better understanding of their effectiveness. Some entities have taken early steps to do so. A study commissioned by the Internet Innovation Alliance shows that broadband is estimated to have generated net consumer benefits of US$32 billion in 2008 in the United States, and higher speeds could continue providing consumers there with greater benefits, adding at least US$6 billion in consumer benefits per year.[20] Additionally, new technologies such as smart grids could result in energy consumption savings in the United States of 5 percent in the residential sector and 2.5 percent in the industrial sector. Policymakers, such as the FCC, are also establishing tools to measure the impact of broadband: in a sample dashboard, the FCC has laid out a number of metrics focused on broadband access and adoption to track progress against its 2020 goals (see Figure 8).

Thus far, however, attempts at quantifying the impact of broadband and the applications it enables have been isolated and limited. A standard global approach to understanding and measuring how broadband affects socioeconomic progress will be critical to unlocking its potential.

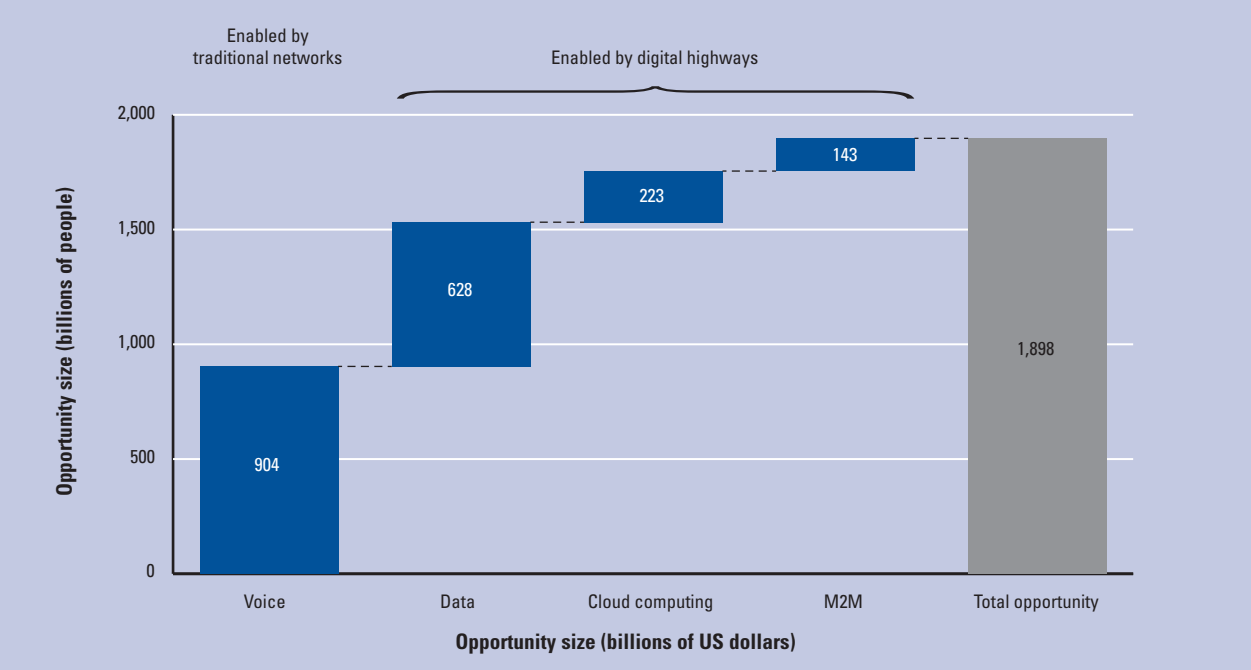
In the meantime, each member of the broadband ecosystem has a clear role in building communities around digital highways. Policymakers will need to adopt a holistic approach that encourages the development and use of applications. Operators will need to focus on the opportunities generated by this shift in direction and seek out new revenue streams accordingly. And device manufacturers and application developers will need to collaborate with each other as well as with operators on the propositions that will most appeal to users.

Policymakers: Adopting an ecosystem perspective

The widespread adoption of broadband applications depends on whether ICT policymakers can take an inclusive, collaborative view of the broadband ecosystem. Three initiatives for ICT policymakers are clearly necessary.

First, they must collaborate with policymakers in adjacent industries—such as healthcare, education, energy, and transportation—to develop sector-specific ICT policies (see Figure 9). Second, policymakers must stimulate development of digital highway applications, such as cloud computing, including selectively investing

Figure 10: Projected opportunities enabled by digital highways, 2015



Sources: ABI Research, 2010; ZTE, 2010; Booz & Company analysis.

in initiatives needed to drive their use. Finally, ICT policymakers need to move beyond simply tracking the availability and adoption of broadband services and establish tools for a holistic assessment of broadband's impact. Measuring the contribution of broadband applications to economic and societal progress can make their benefits more tangible, thereby driving more demand and stimulating the creation of even more applications. To do so, policymakers must identify the key metrics that allow for impact assessment, develop methods and tools for monitoring impact, and publish these results. Such metrics could include broadband's contribution to sector growth, effectiveness, cost savings and affordability, job creation, and overall quality of life.

The Infocomm Development Authority of Singapore (IDA) is an example of a policymaker that has taken such a broad view of ICT development. The IDA has developed an array of programs in health, education, financial services, enterprise, and government to support its master plan iN2015, which aims to grow the ICT sector as well as key economic sectors via ICT. Public-service initiatives are already reaping results: within a span of two years, Singapore climbed 12 places to rank 11th on the UN's E-Government Development Index. Similarly, in the Middle East, policymaker and sector developer ictQATAR has launched ICT2015, a five-year national ICT plan, which aims to develop ICT for government and society through four programs (e-education, e-health, e-government, and e-inclusion). It also fosters economic development through ICT by building a digital content ecosystem for Qatar and driving innovation and entrepreneurship.[21]

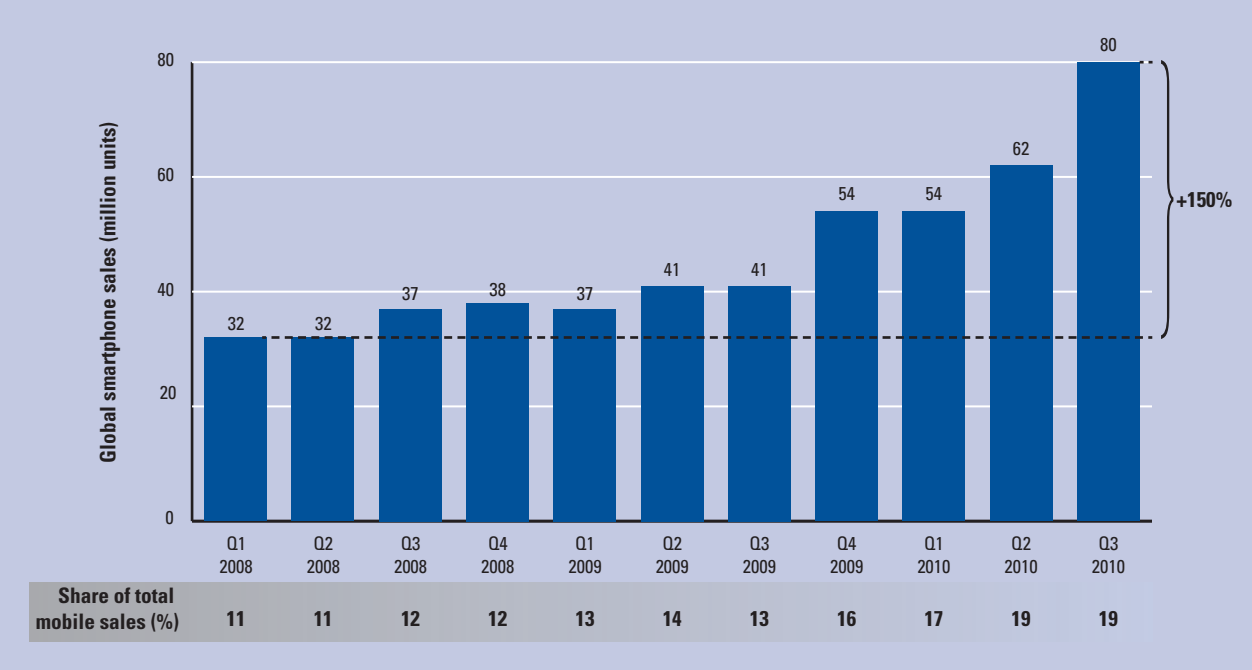
Operators: Building new capabilities for new opportunities

In the next five years, revenue opportunities for operators worldwide will continue to shift from those generated on traditional networks (mainly voice-driven) to services enabled by digital highways, such as data services and cloud computing. In 2015, such services could amount to a US$994 billion opportunity for operators (see Figure 10). Operators that have been slow to invest in broadband, hoping to first get the full return on their investments in traditional services, will need to adapt to this shift to recognize the opportunities afforded by digital highways.

Operators around the world are already shifting their strategies accordingly; many have forged partnerships with application developers or other ecosystem stakeholders. For example, Vodafone Spain has collaborated with Microsoft to offer a suite of enterprise cloud services;[22] Vivo in Brazil has built partnerships with Ericsson and NGO Saúde e Alegria to provide isolated communities in the Amazon with access to a range of health and educational services.[23] Other operators, such as Orange, are developing capabilities in-house. Orange offers "M2M Connect" solutions for healthcare, transportation, and security businesses that want to monitor their assets in real time.[24]

Operators are also targeting opportunities in mobile application stores. Some, such as Airtel, are building their own;[25] some are collaborating with others to build

Figure 11: Smartphone ownership, Q1 2008–Q3 2010



Sources: Gartner, 2009; Booz & Company analysis.

application stores with a global scale. A group of 24 operators and three device manufacturers recently announced that they are planning to build a wholesale application community.[26]

However, delivering these solutions and serving these markets requires operators to build a different set of capabilities than those required in providing traditional telecommunication services. Many of these capabilities revolve around working with partners: a recent study from Harvard Business School and Esade Business School found that, although partnering on very simple products is overkill, and partnering on extremely complex products is likely to involve too many trade-offs as partners try to reach agreement, projects of some complexity—such as applications—benefit from the innovation boost that other companies can provide.[27]

First and foremost, therefore, operators need to enhance their ability to engage and incentivize large developer communities. Second, they need to build go-to-market partnerships that offer access to specialized skills. Finally, they need to move away from their traditional focus on network deployment to emphasize services and applications. Operators have traditionally operated closed networks and allowed new applications on a system only after intensive testing. Moving to an approach that allows for frequent new services requires operators to significantly scale up their service provisioning and delivery platforms. In addition, operators need to establish open platforms, which allow small developers to profitably develop applications for operators.

Selling specialist solutions such as smart metering, cloud computing, or machine-to-machine (M2M) communication requires operators to have access to hardware, software, and operational capabilities that may not be available in-house. Establishing partnerships with companies that are familiar with the relevant sectors and have relationships with sector stakeholders, such as power companies, is critical for operators to target these opportunities. Operators are already partnering with large IT and Internet firms such as Microsoft, Google, and Amazon to resell their cloud services to their current customers; they need to enhance their partnerships in other sectors to capitalize on digital opportunities.

Finally, although applications and services present attractive long-term opportunities for operators, they are unlikely to yield significant revenues immediately. Operators must ensure that short-term thinking does not cloud their vision. Although they will need to continue investing in traditional revenues opportunities, they must be sure that management focus and capital are being directed toward new sources of revenues as well.

Device manufacturers and application developers: Collaborating to appeal to users

Like operators, device manufacturers and application developers should collaborate with other ecosystem players to capitalize on the digital highways opportunity.

In light of consumers' and application providers' growing demand for data services, manufacturers are responding with smartphone devices that capitalize on upcoming digital highways. The number of smartphone

models has increased considerably, as have smartphone sales (see Figure 11). Markets such as the United States are already seeing smartphones capture 47 percent of market share in new handset sales.[28] Accordingly, the number of players in the market is set to grow rapidly over the coming five years, with electronics players such as Dell, Acer, and Huawei joining the fray.

In terms of contributing to socioeconomic development, device manufacturers can forge partnerships with public- and private-sector players to drive adoption of applications in key sectors and underpenetrated segments. For example, Nokia has partnered with Vodafone Group Foundation, the Pan-American Health Organization, and the Brazilian Department of Indigenous People's Health to develop MobiSUS, a mobile phone–based program that allows Brazilian healthcare workers operating in remote, challenging environments to collect health data more efficiently, thus improving the delivery of care. The project is being implemented in 18 of 34 Special Indigenous Health Districts, where the use of mobile technologies is replacing the current paper form–based system. Nokia has provided the handsets, software, and data-gathering platform for the program, which will be implemented on a national scale in cooperation with the Brazilian Ministry of Health.[29]

Device manufacturers can also play a central role in nurturing developer communities, which can drive the development and adoption of new broadband applications. Device manufacturers should team up with telecommunications operators, operating system providers, and application developers to enable open platforms and profitably bring new propositions to market.

Application developers too are playing a key role in broadband adoption. Many are teaming up with operators to push applications such as cloud computing; the global cloud computing market is estimated to be sized at US$68 billion in 2009 and set to grow to US$223 billion by 2015.[30] Application developers are also getting involved in developing infrastructure; for instance, Google is rolling out trial fiber networks in an initiative called "Think Big with a Gig."[31] Other ecosystem players, such as Apple, are encouraging the growth of a broadband application developer community; Apple offers software, technical support, and other resources for application development. Building on the success of its iPhone applications store, it has recently launched a Mac application store to offer desktop applications.[32]

Application developers should encourage the broader use of successful next-generation services such as cloud computing by scaling them across multiple platforms. In 2009, global spending on ICT services was close to US$4 trillion across hardware, software, services, networks, and human resources; as part of this spending moves to the cloud, application developers can target a market currently dominated by large multinational firms such as Microsoft and IBM. Specifically, there is a clear and increasing need to develop tools for search capabilities, information management and prioritized storage, and security and privacy protection. Targeting this opportunity requires application developers to effectively collaborate with both operators and device manufacturers.

M2M is the second key priority area for application development: it is one of the fastest-growing technology areas, and offers strong revenue opportunity for network operators and technology suppliers thanks to the emergence of end-user devices with M2M features. According to recent studies, the M2M market is estimated to increase to US$19 billion in the coming years, with impressive growth from 75 million devices in 2009 to about 225 million devices in 2014.[33] The M2M market growth is being fueled in part by the arrival of end-user devices with M2M features, such as Amazon's Kindle.

M2M devices offer socioeconomic benefits as well. IBM Smart Cities and Cisco Intelligent Cities, for example, are using M2M technologies to deliver intelligent energy management for smart cities. In doing so, IBM and Cisco have had to collaborate with smart meter manufacturers, energy companies, and operators to build and deliver holistic platforms to end users.

Conclusion

UN Secretary-General Ban Ki-moon recently said in an address to the Broadband Commission for Digital Development that broadband has extraordinary potential for human progress.[34] A campaign from that commission, a global NGO, calls for universal broadband with the slogan "B more."[35]

However, to deliver on the promise of broadband and to "B more," stakeholders across the ICT ecosystem need to take a holistic approach to its role in society. The future of digital highways rests on a collaborative, committed, and capable ecosystem, which not only delivers high-speed broadband but also builds vibrant communities around it. Communities that facilitate stakeholders' innovation, adoption, and collaboration will realize the extraordinary potential of broadband.

Notes

1 FCC 2010.

2 IDC 2010.

3 Ericsson 2010b.

4 UN Public Administration Programme 2010.

5 BBC 2010a.

6 BBC 2010a.

7 Reuters 2009.

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CHAPTER 1.4

The Promise of Technology

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The pace of change and technological evolution has accelerated greatly over the last decades. It is remarkable not only how dramatically the technologies in everyday use have changed, but also how easily society as a whole has adopted these innovations. For example, until just a few years ago, only the earliest adopters had access to mobile phones; most people relied on landlines for telephone communication. Now digital mobile telephones are ubiquitous: nearly everyone has ready access to local, national, and global connections. And this seems to have happened in the blink of an eye.

The transformation above has been unequivocally positive—for societies, for companies, and for individuals. This optimistic view rests on the broad platform of the liberation and democratization of information and of technology.

Not too long ago, having information—data—in an organization conferred power. Particular individuals were thought of as the "owners" of critical bits of information, ensuring them the attention of, proximity to, and influence over top decision makers. Today, however, even medium-sized enterprises have well-organized information systems characterized by affordable and powerful applications capable of processing, analyzing, and interpreting data without quantitative limitations of time, space, or place. Data have been liberated from the control of the few and are now accessible to the many.

Essentially, it is this transformation—embodied in information and communication technologies (ICT)—that has provided the foundation for the huge leaps that we have witnessed in the last few decades.

The impact of ICT can be grouped into at least three distinct categories: economic, business, and social. The three are interrelated, in the sense that what happens in each of them is both cause and consequence of what happens in the others. Nonetheless, it is useful to discuss them separately.

This chapter will provide an overview of these recent technological advances, and will also point to some of the possibilities for future evolution.

The fifth revolution

Since the late 18th century, Western society has experienced five distinct eras or revolutions: the Industrial Revolution (beginning roughly in 1771), steam power (beginning in 1829), electricity (in 1875), oil (in 1908), and ICT (in progress).

Each of these eras has entailed a paradigm shift, more or less abrupt or disruptive, which has led to profound changes in the organization of the economy, starting with individual businesses and, eventually, transforming society as a whole. Each era has experienced three major phases: installation, re-accommodation, and deployment.

During the first phase, new learning spreads and past conventions are dislodged, with the clear result

that certain companies, sectors, and territories lose importance and new ones begin to emerge. The second phase is characterized by an abundance of examples of transition, although often there are doubts about the sustainability of change. In the third phase, the new paradigm becomes dominant and unleashes widespread opportunities for generating wealth. Of course all this results in significant changes in the relative position of businesses, industries, and whole countries.

This is exactly what we see now, with one crucial difference: today the velocity of change is spectacularly accelerating.

A rapid change

Each of the first four periods of capitalist restructuring took half a century, with one, two, or more decades for each phase. For example, the widespread use of steam and then of electricity in the processes of production and transportation in the early and late 19th century, respectively, entailed a conversion over several decades in each phase before the transformation was complete. The more recent contributions to domestic life, such as the telephone, radio, and television, are other examples.

However, this is changing in our current experience. A mere decade elapsed between the start of the commercial availability of both mobile phones and the Internet and their widespread adoption. Something similar is happening with the spread of broadband.

This increased velocity of adoption, while distinctive, does not alter the essence of the similarities with earlier transformations and, consequently, of the lessons that can be drawn from them. The main lesson is that any change of paradigm—or, if you prefer, the technological breakthrough that it creates—opens a wide range of opportunities, but also risks becoming a serious threat to all those who shun its adoption.

The point is simple, but critical. Globalization is here to stay, with the resultant increasing interdependence among economies, industries, and markets, characterized by intensified and ever-changing competition. Success in this world will increasingly be defined by the extent and pace at which an organization (or a society) innovates and becomes more productive. In turn, innovation and productivity are related to the adoption and appropriate adaptation of new technological applications.

Challenges for productivity and competitiveness

Assessing the impact of new technologies in general, and ICT in particular, in the evolution of economic productivity has been controversial, both in academic circles and among practitioners.

One source of the controversy is the so-called Solow paradox. Stripped of its scientific garb, this paradox asserts that there is a lag between investing in or deploying ICT and the generation of positive effects on productivity, whether these effects occur in the production system as a whole or in one or in another of its sectors. At least part of the controversy lies in disagreements over how best to measure productivity gains. But, even while these quantitative differences persist, they do not undermine the fundamental point: ICT contributes decisively to the evolution of productivity. This is as true at the micro level of an enterprise or business as it is for the entire economy that benefits from the competitiveness of individual companies.[1]

This contribution is reinforced by accelerating globalization, which has changed—and changed a lot—many of the paradigms that once determined competitiveness. Put another way, the ingredients or the profile of the comparative advantages that, centuries ago, conferred greater capacity for progress and welfare on some than on others are not the same today. The effect of technological advances on this change has not been studied sufficiently, but technological innovation is clearly one of the most important factors driving change.

No less important is the extent to which the impact of new technologies in the social sphere benefits the entire economy. For example, it is common sense that a better-educated population and healthier citizens with longer life expectancies contribute to the way an economy optimizes its global position. The contribution of ICT to both social fields—education and health—is not only obvious, but is also one of the areas where the implementation of technology has enormous potential, even if that technology is only partially applied.

Contributions to business management

Overall, ICT implementation in any organization makes possible the access to resources that contribute to improved efficiency. In the specific case of companies, this provides essential elements for improving their competitive position. One result is that sheer size has become less important to success. Conversely, any lag or gap in incorporating new technologies into the production process has become a serious impediment to strengthening one's market presence. Of course, choosing the right technologies is critical: anything else imposes costs and loss of opportunities.

In general, appropriate use of technology reflects two of the essential elements of improvement: efficiency and efficacy. With regard to efficiency, technology promotes improved dissemination and processing of information at all levels of an organization and, moreover, significantly reduces the risk of making a mistake. With regard to efficacy, technology allows for the application of company resources in a more appropriate manner, increasing the effectiveness of the tasks or processes being undertaken.

Students of management methods like to talk about the reciprocal role of business strategy versus the tactics of choosing specific management tools. However, the

two are inseparable and must be addressed in parallel because they depend on each other.

The traditional approach argued that ICT should be subordinated to the strategic business focus. That is, essential components—such as applications—should be designed to optimize already-established processes, while infrastructure would be built out to enable the best and most efficient use of the selected applications. However, the constant evolution of available technology has changed this conceptual sequence.

In fact, the tools and equipment available today allow for the introduction of processes that otherwise would be unaffordable, often because of simple economies of scale or other factors related to size or the availability of financial, human, and other resources. To put it another way, the availability of technology, in its broadest sense, is now an added element in setting the strategic positioning of any company.

Thus, two formerly subordinate and to some extent disconnected processes must be thought about as being interactive. Technology strategy has become a significant part of business strategy. This is so because, among other reasons, technology configuration has become a potential competitive advantage—or disadvantage—in the global market.

Moving from theory to practice: today there are many globally successful companies that have based their business models on technological tools that allow them to identify market trends and customer preferences and to manage their products in nearly real time. Companies such as the fashion distributor Inditex and the online shopping enterprise Amazon have changed the parameters of their businesses, creating new ways of selling and producing that, in turn, have created new ways for consumers to buy. And the key to these market successes has been innovation.

Inditex is a great example of how the strategic use of ICT can provide a competitive advantage in a sector that, to a certain extent, was very standardized, as was the case for fashion production and retail sales. Their key has been to incorporate the customer into the production and distribution process by obtaining, processing, and applying information on sales and market trends in real time. The daily knowledge of the evolution of sales, as well as the unmet demand of consumers, allows Inditex to organize not only the production, but even the design of new clothing and accessories. Moreover, Inditex can renew the product range in its stores with more frequency than the sector average: at least twice a week with a maximum of two or three weeks between the store request and the supply. This advantage would not have been possible without the integration of ICT as a key strategic element, using information in real time in an intelligent manner and incorporating it in all aspects of design, production, and distribution—the logistics—of the company. It is worth mentioning, notwithstanding, that Inditex is, within its industry, the only global company in the sector integrating design, production, distribution, and sales with its own retail network.

Amazon has been a pioneer at leveraging the huge possibilities of electronic commerce in the digital age. ICT plays a crucial role in Amazon's strategy, not only in its web catalog of products, but also in its purchasing process and delivery logistics. Also, and very importantly, ICT is key to creating an interactive relationship with its customers, with the resulting customer loyalty and cross-selling it obtains by taking advantage of the new generation of Web 2.0 technologies.

These are only two examples of companies, in traditional sectors, that understood very early the importance of putting intensive ICT use as the foundation of innovation. It should be pointed out that many other companies have chosen a similar path and become leaders in their sector: banking, tourism, distribution, and so on. In every case, they highlight the relevance of basing the innovation of their business models in the strategic use of ICT.

Technology and size

Although technology tends to minimize the crucial importance of business size, it is an empirical fact that large organizations continue to use technology more intensely than smaller ones.

This matters not only because small- and medium-sized enterprises (SMEs) comprise the majority of the productive activity in almost all countries, but also because their preponderance is often inversely proportional to their relative economic potential and performance. An exception has been the United States, with its historically dynamic growth, which has many SMEs but also a cast of big corporations. However, other countries with economies that are dominated by small-scale businesses but lack significant numbers of larger ones have experienced much slower growth and development. This situation is starting to change, in significant part because of the spread of technology.

This is true, for example, in Latin America. The region is evolving from a chronic developmental laggard to a strong grower, becoming one of the most dynamic areas for the implementation and use of new technologies. In Latin America, the expansion of mobile technology has been particularly relevant. It is important also to highlight how this technology reaches remote areas, underprivileged populations, and, in general, areas and social groups that otherwise would be excluded from new technologies. Therefore ICT has become instrumental in strengthening the links within communities and giving access to business and employment opportunities to large segments of the population. Mobile phone technology has contributed to narrowing the digital divide, reaching a penetration rate of more than 80 percent of the population.

Latin America's great leap forward is also characterized by the development of corporations with a global dimension that are beginning to assume leadership positions in different sectors. The extent to which this is the cause or the effect of the shift in economic performance is open to debate, but it clearly reflects the rapid adoption of new technologies in the region, with everything that entails. The fast development of telecommunications in the region during the past 20 years would not have been possible without the contribution of sound public policies that pushed for the opening of markets, created competition, and attracted the large capital investments required to create and renovate the necessary infrastructures. The current positive scenario is, to a great extent, a consequence of a private investment effort in telecommunications infrastructure. This effort has contributed to making Latin America the region with the highest rate of foreign direct investment in the world. Latin America's leap is something where, without diminishing the importance of other elements, a decisive factor is the contribution of telecommunications, essential for undertaking or participating in innovative processes. To put it simply, to be without access to global intercommunication today is not an option.

Necessary networks

Another point worth highlighting is that of the emerging risks from bottlenecks to innovation-based growth: the increasingly urgent need for advanced communication networks capable of providing sufficient speed, quality, and security. In industry jargon, these are called *next generation networks* (NGNs). Such networks make the difference between having access to a wide array of tools, applications, and services and being confined to the limitations of the immediate surroundings.

To put it bluntly, progress does not really exist for those who are unable to access a telecommunications network. However, not just any network will do: it must have sufficient—and probably growing—bandwidth to provide suitable quality and reliability. This will allow the full potential of the phenomenon of convergence (networks, equipment, applications, services, and so on), in turn permitting yet new options to be developed.

Some studies have analyzed the effects of broadband deployment. For example, last year the World Bank published research demonstrating that every 10 percent increase in broadband penetration produces a 1.4 and 1.2 percent rise in GDP growth in middle-income and developed countries, respectively.[2] Another study showed that increased broadband penetration significantly increases productivity growth in countries with high and medium ICT intensity—potentially by as much as 15 percent.[3]

This and other research make clear that places with broadband connections are better able to attract and retain investment than those without such infrastructure. As a result, areas with broadband tend to host more competitive companies, producing greater employment, creating more value-added, and generating greater wealth for the benefit of the whole community.

In light of these findings, it is surprising that there is not greater urgency in rolling out NGNs. The reasons for this undoubtedly depend on different factors in different places. Sometimes the obstacle is regulations; sometimes it is the considerable investment required without an adequate framework for its recovery by the operators. However, it is clear that markets or countries that fail to build advanced networks are likely to be left further and further behind.

Crisis as opportunity

The challenge is even more relevant now because many countries are rethinking their growth and development models after the global economic crisis of the past few years. This is an area in which technology—and particularly ICT—can play a crucial role, even if there are no solutions that guarantee success.

The irony is that the budgetary constraints that are pressing on almost all countries are often presented as an insurmountable obstacle to the provision of public policies that could foster increasing innovation and access to technology. This view is shortsighted and reflects the idea that innovation requires government incentive programs, grants, and direct participation. In fact, the more important role on which governments should focus is that of developing an overall framework, including appropriate regulation, that effectively promotes innovation.

In addition, governments could provide education in those areas where barriers to the implementation of new technologies still exist, especially since such barriers are often psychological. Oddly enough, access to technology does not override the mental block of seeing it as something elusive, whether because of its cost, the ability to use it, or even fears of loss of control of the production process of the company. Governments could help address this factor.

All corporate leaders, regardless of the sector in which they operate, the scale of the companies they lead, or the size of the markets they serve, must sooner or later make decisions in at least three broad areas: determining what applications are best suited or most appropriate for improving the performance of processes; what equipment, infrastructure, and tools are needed to optimize the contribution of ICT to the business; and what management model for the available technology is best suited for distinct characteristics of the organizations they lead.

Although these are seemingly simple issues, they are difficult to define and implement. In practice, finding the right answers often challenges not only leaders'

management capabilities, but also the internal dynamics of many organizations. The right answers, however, are critical to success.

"Knowledge" of the market

One of the most sensitive—and decisive—strategic responsibilities for any management team is the ability to accurately anticipate the future. Of course it is not easy, and in some turbulent periods it may not even be possible. But in any environment, access to sound information, in the right form and on a timely basis, is necessary for an executive team to have even the possibility of developing effective and actionable visions of future trends.

Understanding markets has always provided a competitive advantage. Today, however, accurate data about market behavior, trends, and preferences are critical for business success, especially as the availability of such information approaches "real time." To put it another way, business strategy is becoming increasingly dependent on the consumer, who is demanding to be treated more as an individual, even by the world's largest corporations. This is the unstoppable advance toward increasing segmentation that is driven by technological progress in the broadest sense: equipment, tools, applications, and so on, which provide an ever-greater capacity to capture, process, analyze, store, and transmit data. Again, telecommunications is a key factor in this process.

Managers have available an extensive catalog of applications, equipment, tools, and services, but optimizing their use inevitably requires the right kind of training and education within the organization. Even when ICT services are outsourced, selecting service providers requires sufficient technology management capacity to identify what kind of contributions are appropriate to meet the specific needs of a given company.

The networked society

We are not always fully aware of the changes in social dynamics that ICT, in particular in the telecommunications arena, have encouraged. This is true not only at the level of the individual and the household, but also at the level of societal welfare. For example, technology is making important contributions to reducing long-existing gaps in education and connectivity, to society's overall betterment.

The recent explosion in social networking and the related evolution of new forms of business, operational, scientific, and other relationships point in even more promising directions. Contrary to many predictions—including those made by some of the more inventive science fiction writers—technological change has not led to a progressive isolation of the individual. Instead, technology is facilitating the emergence of new forms of interaction—among individuals, groups, and companies—creating a new kind of cooperative that overcomes limitations of space, time, and place. The implications extend to many fields, but for society as a whole, three areas are particularly important: education, health, and relationships between government and governed.

Lifelong learning

No one doubts the determining role that education holds for the welfare and prosperity of any country. Going back to the Middle Ages, knowledge and information were reserved for the small circle of the upper classes and the monastic orders: the former because of their dominant power, and the latter because of their tasks of copying, translating, and preserving learning. For centuries, manuscripts, papers, and documents were mainly located in palaces and monasteries, putting them out of reach of the majority of the population.

Gutenberg's invention of the printing press and its slow and costly universalization brought about a transcendental break in terms of the availability, dissemination, and access to knowledge. At first this collided with the obstacle of a barely literate population, leaving a fairly narrow band of readers and narrators to control access to knowledge through their subjective interpretations. Eventually, however, the flow of printed material overwhelmed even those constraints and produced one of the most significant qualitative leaps in the history of social organization.

Some observers ascribe the same potential transformative power to the Internet. The similarity is that the network has overcome a series of persistent barriers—access, geography, time, and space—to the diffusion of knowledge. The significant difference is the speed with which Internet use has become widespread, thanks mainly to ICT advances in areas such as connectivity (which produces widespread access) and usability (which allows for a user-friendly environment). The result is that the Internet today is accessible to virtually all strata of society.

While the ultimate potential of the Internet has yet to be defined, the transformative contributions to education are already quite substantial. These include free and instant access to sources of knowledge as well as opportunities to improve teaching methods, both in the classroom and at a distance. Taken together, these developments offer the possibility of true lifelong learning, allowing individuals to maintain and renew the knowledge needed to cope with a rapidly changing context.

No less important has been the way new technologies have enabled the overcoming of socioeconomic gaps and even centuries-old isolation, opening up underdeveloped regions to modernity. For example, in Latin America, mobile telephony, in its various forms, has enabled vast territories and communities to join an

interconnected world, effectively bypassing the massive investments that fixed line networks would have required.

Living longer . . . and better

Decades of sustained economic growth and technological and scientific progress are transforming the demography of the planet. People are living longer and healthier lives, and most countries are witnessing steady—in some cases spectacular—increases in the level and standards of living. Ironically, the healthier people get, the more concerned they become about everything related to health. In fact, recent surveys identify healthcare as the issue that arouses the greatest concern among citizens in many countries.

Constant advances in the treatment of diseases, surgical procedures, and pharmaceuticals have much to do with the improvements. But new information technologies play an important role as well. These include the introduction into the healthcare system of tools such as the generation of medical records in real time from any location, remote diagnostics and telemedicine applications, and processes that generate electronic prescriptions that increase the efficiency of prescribing and help reduce pharmaceutical expenditures.

The aging of societies, in the West as well as the East, is forcing a new focus on continuous improvement of efficiency in spending and the quality of patient services. Although this is primarily a budget imperative, it also meets the needs of citizens for the most advanced care possible for their health and personal welfare.

ICT holds great potential for continued progress in both the cost and quality of healthcare. Networks encourage the proliferation of new techniques; immediate access to the results of clinical trials and innovative therapies; and the interchange of experiences, both in diagnosis and in treatment. This constitutes one more field where technology enables the availability and access to sources of knowledge, in contrast to the old situation where knowledge—and in this case, superior healthcare—was exclusively available to a few or, at best, a particular country.

In other words, in healthcare, as in other issues, technology and communications networks allow a global system to replace a regional or local one—with profound benefits for society.

The hour for e-government

A third area where information technology has transformative implications is in relations between the government and the governed. Here the field is very broad, with many different scenarios and possibilities. But overall, there are enormous opportunities for improving the quality and lowering the costs of services provided by government.

The majority of countries are on track to banish to the archives of history the need for face-to-face administrative proceedings, with enormous consequent savings of time, effort, and cost. There are many examples of implementation of e-government programs that have quickly led to greater efficiency and effectiveness.

Moreover, just as in education and health, technological innovation is constantly generating new options and opportunities for the provision of governmental services. Even forms are changing: in many cases technology allows for a new kind of public-private collaboration, or even the full privatization of certain kinds of services.

But, although all this is important, the progressive adoption of e-government acts as an incentive for the adoption of ICT in society as a whole. This provides clear benefits for a country's competitive position and, consequently, for its welfare and prosperity.

Conclusion: The road to travel

Most people are not fully aware of how a wide range of technological equipment, tools, services, and applications has been incorporated into and changed their daily lives. Indeed, it is hard to remember how we coped before these technologies became part of our reality.

For example, only a few decades ago, our ability to communicate depended on where we were. When we moved away from home or office, we were—literally—out of touch in ways that are almost unimaginable today. While some might feel nostalgic about the benefits of not being located, the reality is that technology has provided the option, not the obligation, to be always connected. What we do with our connections is up to us, which is why technology needs to be understood as fundamentally a liberating force, not a determining one.

This cursory review of the technological advances of the past several decades leads to an inescapable conclusion: we almost certainly have much yet to discover. In light of the transformation we have already experienced, it is improbable that the next decades will not see further significant discoveries or, for that matter, that the innovation dynamic in ICT will substantially diminish. Indeed, the known pipeline is already full and promising, and constantly being refilled.

The idea, however, is not to seek innovation for innovation's sake. Technology has profoundly and positively reshaped the world in which we live—for individuals and for whole societies. To put it colloquially: technology has been changing our lives . . . and it has been for the better.

Notes

1 See, for example, Katz 2009—a paper that largely focused on the situation and prospects of major Latin American countries.

2 World Bank 2009.

3 Nokia 2008.

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CHAPTER 1.5

The Growing Possibilities of Information and Communication Technologies for Reducing Poverty

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During the past few years, a growing number of poor people have benefited from improved access to interactive communication. The rapid uptake of mobile telephones, even in remote locations of low-income countries, has radically increased the potential for information and communication technologies (ICT) to play a constructive role in the fight against poverty. At the same time, the role of the poor in this context is also transforming, increasingly shifting from one of passive consumption of ICT toward one of active use and participation in the production if ICT goods and services, thus giving greater importance to ICT in development and poverty reduction strategies.[1] This chapter highlights some innovative applications that can make a tangible difference and improve the livelihoods of rural and urban poor.

The mobile revolution and the poor

From the perspective of the poor, the most relevant development during the past decade has been the rapid diffusion of mobile telephony. The International Telecommunication Union (ITU) estimates that the total number of mobile subscriptions will reach 5 billion in the course of 2010.[2] Average global mobile subscription penetration at the end of 2009 was estimated to be 68 percent (see Figure 1).

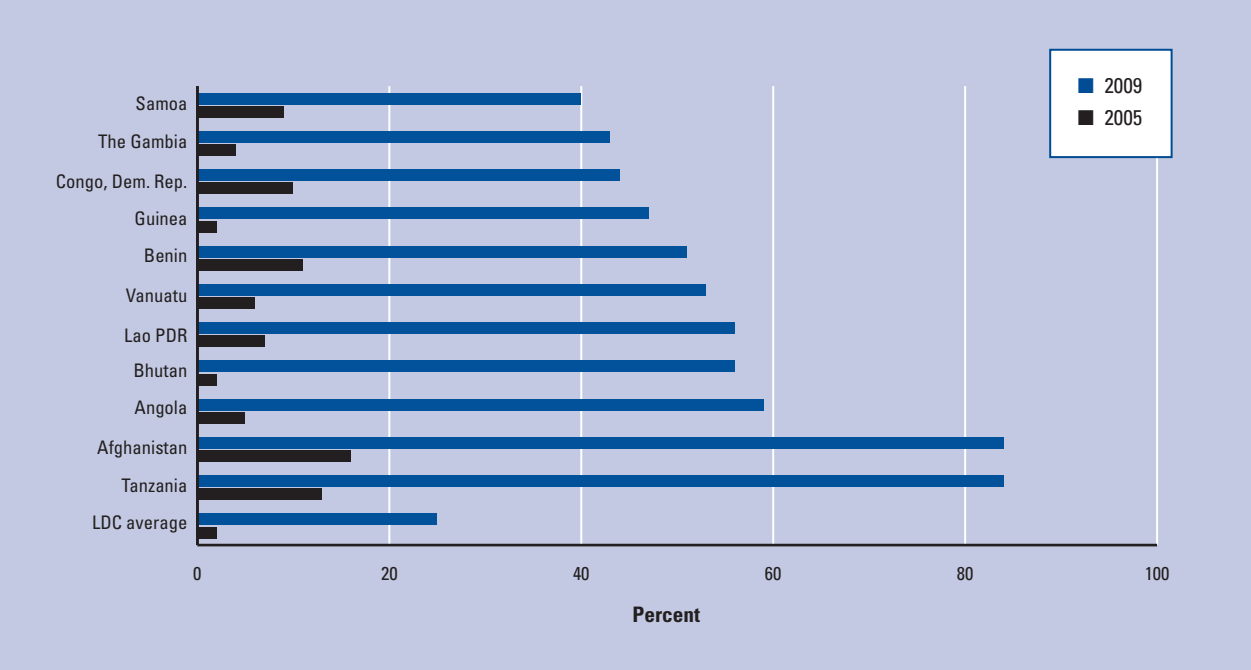
Among the 49 least developed countries (LDCs),[3] average mobile penetration rose from 2 subscriptions per 100 population in 2005 to 25 subscriptions per 100 population in 2009 (Figure 1). In some of these countries, the growth rate has been truly remarkable. In the Democratic Republic of Congo, for example, penetration surged from 5 to 59 percent, and in Guinea it shot up from 2 to 56 percent.

The penetration level of mobile devices in the LDCs is much higher than it is for other technologies, such as fixed telephony, Internet, and broadband (Figure 2). For example, a person living in a developed country is, on average, 600 times more likely to have access to fixed broadband than one living in an LDC.[4]

In rural areas, although mobile penetration is improving, it is not keeping pace with the increase of penetration in urban areas. In Rwanda, for example, almost half of all urban households have a mobile phone but less than one in ten rural households have one. At the end of 2008, just over half of the rural population in the LDCs was covered by a mobile signal—suggesting that there is still some unfinished business. In rural areas, increased access to mobile phones and associated applications and services can have a particularly important effect because fixed telephony is typically lacking.

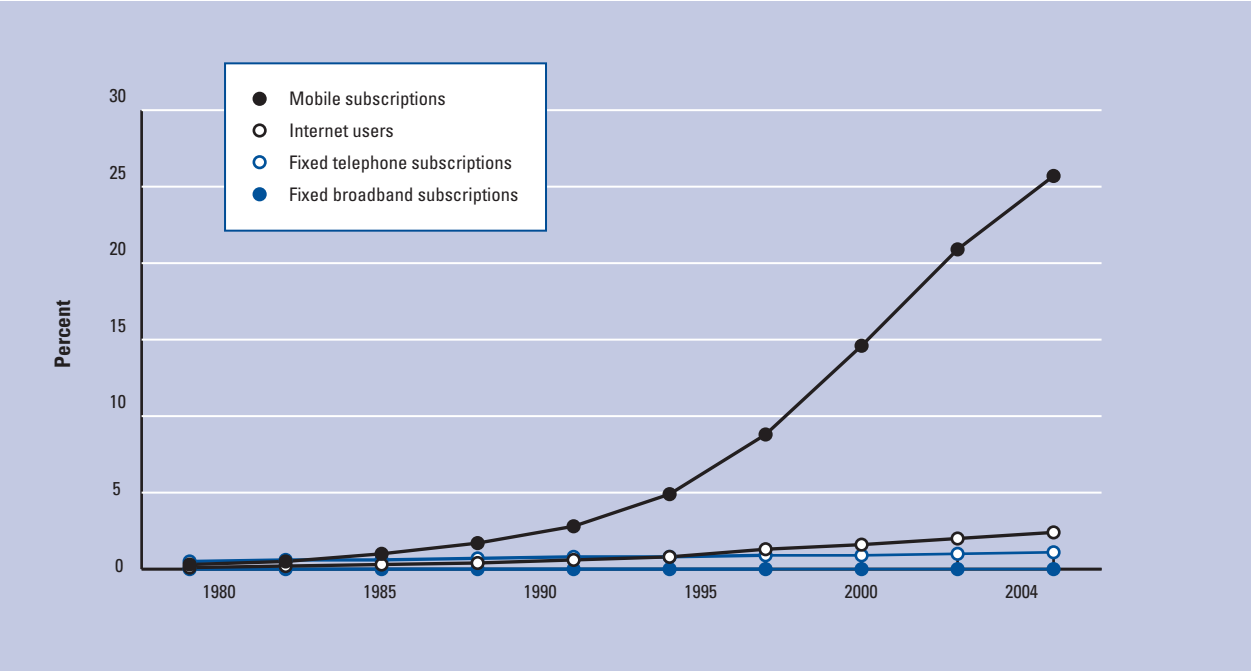
The scope for ICT to improve the lives of the poor has expanded thanks to the emergence of many new and innovative applications and services, especially those linked to mobile telephones. Mobiles are already widely used for voice communication and short message service (SMS); increasingly they are also used to access the

Figure 1: Mobile penetration in selected LDCs, 2005 and 2009



Source: UNCTAD, based on data from ITU World Telecommunication/ICT Indicators database.

Figure 2: Penetration of selected ICT in LDCs per 100 population, 2000–09



Source: UNCTAD, based on data from ITU World Telecommunication/ICT Indicators database.

Box 1: Kilimo Salama: Insuring small farmers with mobile phones in Kenya

This product was developed from the partnership between several enterprises and one public institution: Syngenta (a Swiss agri-business enterprise), Safaricom (a mobile phone operator in Kenya), UAP Insurance, and the Kenyan Meteorological Department. When farmers buy seeds, fertilizers, or other agro-chemicals—even in small quantities—they can also buy insurance against weather unfavorable to their crops. In case of drought or excessive rain, insured farmers are entitled to compensatory payments made effective through M-PESA, the mobile-money transfer service run by Safaricom. To acquire an insurance policy, farmers must be registered with one of the weather stations and pay an additional 5 percent of the cost of inputs purchased. Mobile phones are used to send confirmations of the insurance contract, to collect contract coverage details, and to send out compensatory payments when due.

As of September 2010, 11,000 farmers were covered by the program. The first payouts were triggered when weather stations in one district observed rainfall totals for the current season that were below average.

A major advantage with this system is that it avoids lengthy claims processes. By using M-PESA, the program can disburse payments to farmers without them lodging any claim at all. The information obtained from the weather stations is objective and therefore reduces the moral hazard problem that is otherwise present in many insurance situations. In addition, the ability to transfer compensation payments directly over the phones to the farmers concerned has made it possible to make very small payouts, which otherwise would have been prohibitively expensive.

Source: UNCTAD, based on information provided by Kilimo Salama.

Internet. In Kenya, for example, 99 percent of all Internet subscribers accessed the Internet from mobile phones in June 2009. Mobile-money services are another important application with major implications for the poor. Many low-income economies are under-banked. For almost all, existing data show a higher rate of penetration for mobile telephony than for commercial bank accounts. According to the Consultative Group to Assist the Poor (CGAP), about 1.7 billion of people without a bank account will have a mobile phone by the end of 2010.[5]

In more and more developing countries, people without bank accounts can use their phones to make person-to-person payments, transfer money, and make pre-paid purchases. As of early 2010, there were 61 known mobile-money services in 35 countries, 13 of them LDCs. These services allow for lower transaction costs and easier, cheaper, and safer money transfers to remote locations. CGAP studies show that mobile-money services are, on average, 19 percent cheaper than similar services offered by formal banks. Of particular relevance to the poor is that this difference is even larger for small transactions.

With the appearance of M-Kesho in Kenya, another landmark in mobile-money was achieved. M-Kesho (*kesho* means "tomorrow" in Swahili) allows people not only to place money in electronic wallets, but also to earn interest on savings and to receive a loan.[6] The partnership between Safaricom and Equity Bank has enabled customers to access true bank accounts through their mobile application for depositing and transferring money. The partnership became a viable business option thanks to a change in the policy of the Kenyan Central Bank. In late April 2010, it issued new agent banking regulations that permit local banks to engage in handling money transfers and product promotion, such as receiving account applications through mobiles, although these applications must be approved by a bank staff member. These new regulations paved the way for banks to begin utilizing platforms such as M-Kesho.

Extending mobile-money services to the illiterate remains a challenge because transfers are transmitted and confirmed through SMS. In Afghanistan in 2010, the mobile operator Roshan started testing interactive voice recognition technology to guide users through transactions in English, Dari, or Pashto. Meanwhile, another Afghan mobile phone operator, MTN, has approached the gap in mobile phone use differently by focusing on expanding mobile use among women through setting up women-only retail stores. This solution responds to the needs of local customers where tradition prohibits women from interacting with men who are not relatives. Women currently constitute 18 percent of Afghan mobile phone subscribers.[7]

Another novel application is the provision of mobile micro-insurance. Take the Kilimo Salama scheme (this means "safe farming" in Swahili), which was launched in March 2010 and grants weather-indexed insurance to small-scale farmers in the Kenyan Rift Valley (Box 1).[8] Similar schemes are also reportedly emerging in other parts of Africa, such as Mali and Burkina Faso.

ICT in enterprises and the poor

Sustained and equitable growth is necessary for making substantial progress in reducing poverty. Consequently, enterprises play a crucial role in this endeavor. They can help reduce poverty in two main ways: through direct income generation, and through diversified and more secure employment opportunities. From a poverty-reduction perspective, it is important to focus attention on enterprises that provide for the greatest involvement of the poor—typically, these are small and micro-enterprises. Subsistence-based enterprises support those pushed into economic activity by the lack of other income-generating opportunities. They form the majority of enterprises in low-income countries, and most are in rural areas making use of natural resource inputs (e.g., farming and fishing). There are also growth-oriented enterprises in poor communities. Earnings from such activities are an important source of income, especially for those who have climbed above the poverty line.

Poverty has an important informational dimension. Poor people often lack access to information that is vital to their lives and livelihoods, including weather reports, market prices, and income-earning opportunities. Such lack of information adds to the vulnerability of the people concerned. In terms of livelihood strategies, information plays a dual role: informing and strengthening the short-term decision-making capacity of the poor themselves, and informing and strengthening the longer-term decision-making capacity of intermediaries that facilitate, assist, or represent the poor. The contribution of ICT to poverty reduction through enterprise lies in its power to give poor women and men access to improved information and better communications to help them build assets for better living conditions. The introduction of ICT to the enterprise sector can contribute to productivity growth, innovation, economic transformation, and, ultimately, improved standards of living.

In UNCTAD's *Information Economy Report 2010,* two ways in which ICT in enterprises can benefit the poor were considered. The first is through use of ICT in enterprises of direct relevance to the poor, notably farmers, fishermen, and other micro-enterprises in low-income countries. The second occurs when the poor are directly involved in the sector, producing ICT goods and services.

ICT use in enterprises

Micro-enterprises in low-income countries are rapidly adopting mobile phones as key tools for advancing their commercial activities. Take mountainous Bhutan as an example. In this country, one of the world's poorest, mobile phone use has transformed the everyday lives of dairy farmers. The phones help them obtain information about market prices and stay in direct contact with customers. The result is increased income and less waste, as farmers can sell their output for higher prices and ship only sufficient milk to meet demand. Mobile phones have also led to reduced travel and waiting times, enabling the farmers to organize their work more efficiently. The government of Bhutan recognizes the business potential of the phones and has launched a mobile-based information service for the farmers.

The Bhutan example is far from isolated. There are an increasing number of similar observations, ranging from grain traders in Niger, who have benefited from lower transaction and information search costs as a result of mobile phone use, to women-led farming cooperatives in Lesotho.[9] In Ghana and India, mobile phones have become critical equipment for fishermen and fishmongers, helping to make markets more efficient and improving the livelihoods of the fishermen. Similarly, for women's weaving micro-enterprises in Nigeria, mobile phone use reduced transaction costs and saved time and money for the weavers by eliminating travel that previously had been needed to locate buyers and negotiate prices.

Many micro-enterprises also gain from new mobile-money services. In Afghanistan, for example, within one year from its launch, M-Paisa—a mobile-based system providing micro-finance to small enterprises—had acquired 120,000 registered subscribers and 2,500 micro-finance clients. Benefits of mobile-money transfers are particularly relevant in this country because moving cash through the country is risky, expensive, and time consuming.

It is too soon to assess the impact of mobile micro-insurance applications on poverty. However, the potential is considerable. Micro-insurance can contribute in important ways to poverty reduction since farming activities are highly susceptible to weather, price variability, and health risks. When not insured against adverse weather conditions, farmers tend to use as few inputs as possible to minimize the risk of losses.[10] This practice inevitably results in less-productive yields. In addition, it is difficult for uninsured farmers to obtain credit for buying fertilizers and seeds. It is important to explore in greater detail the scope that mobile solutions to micro-insurance have to transform farm activities in low-income countries.

ICT is most valued by entrepreneurs when tangible benefits accrue from greater efficiencies—particularly those that relate to supporting two-way information flows with key customers or suppliers. Given that most enterprises in developing countries serve local and regional markets, such efficiencies are gained primarily through a better use of basic business communications. Mobile phones are the most frequently cited business tool used by micro-enterprises for several reasons. First, they are most accessible and relatively inexpensive. Second, they allow for two-way communication. Third, their use does not require the ability to read and write. Finally, they are sufficient to meet the basic needs of the users: to obtain vital information and to communicate

along the supply chain. New mobile applications, such as mobile-money and mobile micro-insurance, are added advantages.

But the spread of mobile phones has also opened new opportunities to serve the needs of rural enterprises through combinations of different technologies. The above can be effective because it has the potential to leverage the benefits of several technologies. One study has identified 63 such initiatives currently underway on the African continent.[11] A specific example of the potential for different technologies to support information gathering for farmers is the Collecting and Exchange of Local Agricultural Content (CELAC) project, which serves seven districts of rural Uganda. It seeks to share crop and animal farming good practices that have worked for farmers. The project makes use of mobile SMS as well as other multi-media communications, including online and hard copy newsletters written in both English and Luganda, the most widely spoken local language. The project has a database of phone numbers of farmers, community development workers, and agricultural extension workers to whom agro-related information is sent every Monday. The use of community radio call-in programs is also integrated into the service, as is the use of drama on video and DVD to portray the farming practices and their challenges. Besides farmers, CELAC engages former agricultural extension workers as knowledge brokers to help in the collection and dissemination of traditional methods that work, including sharing information with other affiliates (e.g., the Women of Uganda Network) that are able to translate the material into other local languages to help farming micro-enterprises based in other districts.

Another example is Warana Unwired in India, which is a scaled initiative to address market access constraints for sugarcane farmers. Initially, sugar mill cooperatives made use of computer databases and an Internet-based system for disseminating information on pricing, payment schedules, and quantity of sugar demanded. Information was accessible to the farmers through village kiosks. However, the portal fell into disuse and has recently been replaced with a new mobile-based system for disseminating information that is less vulnerable to power cuts, more accessible to farmers, and more cost-effective. The "unwired" system generated both financial gains and more intangible livelihood assets. Farmers saw savings in transportation costs (to and from the centers); an increased transparency of information in the supply chain, which contributed to improved trust between farmers and purchasers; and an enhanced ability to use ICT. The re-launched project was based on the reality of existing ICT use patterns: in India, on average only 5 in 100 population use the Internet but there are 44 mobile subscriptions per 100 population, a common situation for low-income countries.

Involvement of the poor in the production of ICT

An aspect that has hitherto received little attention is the role of the poor in the production of ICT goods and services. Nonetheless, ICT can contribute to poverty reduction through various channels. The ICT sector can offer jobs and income-generating opportunities and, in some cases, create entirely new livelihoods. There is growing anecdotal evidence that the mobile revolution, in particular, has opened new opportunities for the poor to create new income-generating jobs.

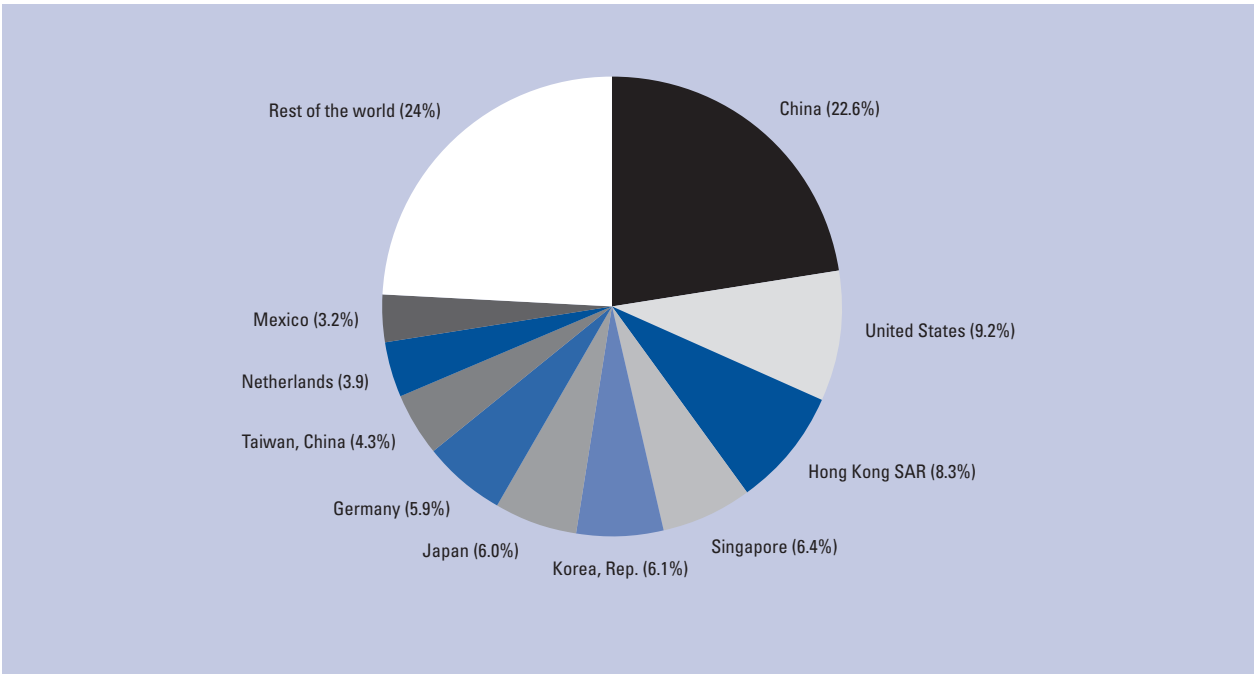
The part of the ICT sector with arguably the greatest direct involvement of poor people, which is spreading rapidly in many low-income countries, is related to ICT micro-enterprises. Throughout the developing world, there is a proliferation of shops and market stalls selling used and new mobile phones; kiosks that offer mobile phone applications and content; and activities such as installation, setup, and various repair services. Selling airtime or mobile-money services on the streets or in shops engages millions of people in low-income countries.

There are relatively low barriers to entry for some of the activities conducted in this field, making it possible for people with limited skills to participate. The simplest mobile card selling or vending jobs can typically be conducted by people with few formal skills and capabilities. In Gambia, for example, disabled street beggars were offered the opportunity to work part-time for Gamcel, one of the mobile telecommunications operators.[12] As authorized dealers, rising in economic stature and earning above-average wages, they felt empowered to participate in society. The simple activity of selling mobile subscriptions in this case helped to reduce poverty and improve the living conditions of the people involved.

ICT micro-enterprises in the informal sector often complement enterprises in the formal sector by selling goods and services that are better adapted to low-income consumers. In Ghana, for example, ICT micro-enterprises have played an important role in extending connectivity to remote areas not well covered by the established operators. However, ICT micro-enterprises are exposed to volatility and risk, and returns on investment are often low, forcing entrepreneurs to draw on other sources of income as well.

When considering ICT micro-enterprises as a new source of livelihood, the sustainability of different business models should be kept in mind. By the time a particular technology, intervention, or business model has proved successful in one context, its relevance elsewhere may have been overtaken by events. The "village phone" service developed by Grameen Phone in Bangladesh (and replicated in other countries) illustrates this point. While it initially allowed rural women to establish micro-enterprises reselling capacity on mobile phones, the business model became less sustainable as more and more people had phones of their own.

Figure 3: Global exports of ICT goods by market share of top exporters, 2008



Source: UNCTAD, based on Comtrade data.

Thus, coping with changing business environments requires the ability of entrepreneurs to adapt and identify other, sometimes related, opportunities. Thanks to the importance of networks and close interaction with other informal and formal enterprises, the opportunities for ICT micro-enterprises to develop are greater in urban settings. In rural areas, the scope for creating livelihoods around such activities appears to be more limited. A detailed study of village payphone micro-entrepreneurs in Ghana led the author to conclude that the involvement of the poor in the mobile industry may best be considered as a livelihood diversification strategy.[13] This is because micro-entrepreneurs, particularly in a fast changing telecommunications environment, are particularly susceptible to industry shocks.

Other parts of the ICT sector also hold opportunities for the poor, but these are typically unevenly distributed. For most low-income countries, telecommunications services may be the part of the ICT sector offering the greatest opportunities for employment creation. In contrast, ICT manufacturing is characterized by high concentration of global production and exports, significant economies of scale, and high barriers to market entry for new countries and companies. Its contributions to poverty alleviation are mainly confined to those countries—mainly in Asia—that have successfully managed to develop an internationally competitive ICT industry.

In China, the world's largest exporter of ICT goods (Figure 3), ICT manufacturing has now expanded to employ millions of migrant workers, who transfer significant funds from urban to rural areas. At the end of June 2009, there were about 150 million migrant workers within China, of whom 97 percent had reportedly found a job. It has been estimated that 17 percent of these jobs are in electronics and other ICT manufacturing.[14] In absolute numbers, this would correspond to some 25.5 million ICT manufacturing jobs for migrant workers.

ICT and poverty reduction: Some policy recommendations

Although evidence of positive effects from the spread of mobile phones is growing, improved ICT access does not guarantee a reduction in poverty. As with other goods and services, increased ICT ownership is likely to be associated with higher levels of income as well as other resources and capabilities required for their effective use. There is always a risk that ICT adoption increases disparities between more established and better resourced enterprises and those that are less well endowed. Against this background, UNCTAD advocates for a holistic poverty-focused approach to ICT and enterprise in order to seize the many new opportunities that are appearing, as well as to address potential pitfalls.

A poverty-focused approach to ICT and enterprise must seek to identify and facilitate economic growth in ways that are socially inclusive. Policymakers need to support ICT adoption and use at lower levels of economic activity and sophistication if they wish to address the enterprise requirements of the poorest social groups.

This means that adequate attention should be paid to subsistence-based enterprises. Where market-based solutions can be found, interventions are more likely to prove sustainable. In addition, long-term public support is likely to be required to address market failures in the delivery of information or services to subsistence-based enterprises with very low purchasing power.

An important lesson emerging from research is that policies need to reflect the diversity of ICT, enterprises, and the poor. ICT varies in terms of its accessibility to the poor, its functionality, and its user requirements. Many people who run micro-enterprises in low-income economies cannot read or write, and they may have only restricted access to electricity. Therefore, support programs need to make innovative use of voice-based telecommunications interfaces and of proxies such as infomediaries. Moreover, the need for information and other inputs varies depending on the size, industry, and market-orientation of enterprises. As a result, so does the extent to which different enterprises may benefit from improved access to specific technologies. In the same way, the poor differ in the degree and nature of their poverty: they may live in urban or rural areas and they may vary with regard to literacy and other capabilities. The poor are also distinguished from one another by gender and by their surrounding natural and political environments. All these factors mean that—to be effective and reach intended beneficiaries—policy interventions must be demand-driven and context-specific.

A first step should be for governments and development agencies to ensure the further expansion of mobile coverage to those areas that are not yet covered by a mobile signal. In countries where monopoly or duopoly are holding back further investment in mobile networks, there may also be a need to take steps to inject greater competition in the market. In nine LDCs, mobile penetration is still only 10 percent or less. A lack of competition generally tends to result in higher prices and less widespread coverage, in turn inhibiting demand. In the medium term, enhancing access to broadband technologies is also important.

A second consideration is to make mobile as well as other ICT services affordable to the poor. High costs can be a significant barrier to take-up and usage, especially among those who have very little or almost no income. The relative burden is often higher for low-income users because the services are offered at the same price to everyone. There is a strong correlation between affordability and penetration. The most affordable mobile user charges have been observed in South Asia, where Indian operators, for example, have some of the lowest "prepaid" prices. Operator revenues are generated using low tariffs but high volume. For example, while operators in India in 2009 reported about US$4 in average revenue per user, it was about US$12 in Benin and US$25 in Angola.[15] Unsurprisingly, Indian subscribers spend much more time talking on their mobiles.

Where markets are competitive, operating companies can seek to facilitate usage at low-income levels through an array of mechanisms. Regulators can encourage operators to address low-income users in a variety of ways, including the following:

- *Long period for inactivity.* Prepaid validity should be for the longest possible period of time since many of the poor have fluctuating incomes and may not be able to make calls on a regular basis.

- *Per-second charging.* The standard method of pricing calls is a per-minute basis. A number of operators have adopted per-second charging, which benefits poorer users since they can make shorter calls without paying a full minute's tariff.

- *Nationwide tariff.* Many countries have a single tariff for mobile calls that applies to all domestic locations. This eliminates domestic long distance and roaming surcharges, benefitting consumers.

- *Low denomination recharge.* Offering low denomination recharges ensures that the poorest do not have to tie up funds in unused prepaid credit.

- *Friends and family.* Offering the option of free or lower cost calls to a few selected numbers benefits poor users.

The commercialization of used handsets also contributes to lowering the barrier to mobile communications services. A study of five Asian countries found that some 30 percent of low-income subscribers were using second-hand mobile phones.[16]

Improved mobile access at increasingly affordable rates—partly the result of cheaper imports of technology—and new service models are facilitating access for people without large or predictable incomes. This has furthermore allowed for greater involvement of enterprises in developing countries in ICT-related innovation processes.[17] Such involvement is likely to enable the adaptation of ICT systems (which were first developed outside these communities) to the specific situation prevailing in low-income economies. It is already giving rise to innovations such as the development of "simpler" versions of mobile phones and computers, the use of dual SIM cards, new ways of communicating with a phone without having to pay for the call ("missed call"), and the use of airtime as currency.

The lack of electricity is a significant barrier to ICT take-up for the poor in developing countries, particularly in rural areas. This is less of a problem for technologies that use batteries (such as radio) or mobile handsets that can be recharged using car batteries. However, it poses a challenge for computers. A lack of electrical power also raises costs since infrastructure such

Box 2: Jigyasha 7676: The mobile helpline for farmers in Bangladesh

Jigyasha 7676 of Banglalink—the second largest mobile operator in Bangladesh and a subsidiary of the Egyptian company, Orascom Telecom—is a helpline that provides information and advisory services to small famers in Bangladesh. The service is offered in collaboration with Katalyst.[1]

Before the helpline was launched, several actions were taken, including a careful market assessment to determine the feasibility of the service. Extensive promotion was also carried out to raise awareness of its availability. Since its launch in December 2008, anybody having a Banglalink connection can call Jigyasha 7676 and seek responses to queries from a database that has content related to 67 agricultural subsectors. The database is regularly updated with validated content. This material is integrated in a content management system, which is delivered through a call center.

The response has been very positive. At the end of 2009, some 100,000 calls were received on average every month, with a high rate of stated customer satisfaction. About half of total callers said that they would call again to obtain information to help with livelihood problems.

Source: UNCTAD, based on information provided by Katalyst.

Note

1 The purpose of the Katalyst project is to improve the competitiveness of business in Bangladesh by developing more effective markets for business services. For further information, see http://www.katalyst.com.bd/.

as wireless base stations must be powered by more expensive diesel generators. ICT access will inevitably be restricted, particularly among the poor and small and micro-enterprises in rural areas, until solutions are found for providing stable and affordable electricity.

Government services should make better use of mobile phones in supporting enterprise growth. In Bangladesh, a helpline set up to offer information and advisory services to small farmers with mobile phones now receives 100,000 calls every month (Box 2). In Africa, there are few examples of such services to date,[18] but the rapid growth of mobile access suggests that it would be sensible for governments to take a fresh look both at how business support services of this kind can be delivered and at specific requirements for assistance.[19] In doing so, governments should consult both subsistence-based and growth-oriented enterprises about their needs and their communications preferences to ensure that services are tailored most effectively to meet demand.

It is high time for the development community to revisit the scope for ICT in enterprises to bring benefits to the poor. Interventions need to be rooted in today's realities—including the needs and circumstances of micro-enterprises and the actual communications environment available to them—and in realistic assessment of future prospects. Unfortunately, only a few bilateral donors (including Finland) have retained specialist units with expert personnel devoted to ICT for Development (ICT4D). There is therefore a risk that the potential of ICT—particularly as a cross-cutting development tool—will be undervalued within development agencies, and that knowledge and experience will be poorly collated and diffused. Against this background, development agencies need to consider how they can stay abreast of rapid developments taking place within ICT4D and ensure that the potential of ICT is given adequate attention within their programs.

The United Nations Secretary-General has clearly indicated the need to better harness new technologies if we are to accelerate progress toward meeting the Millennium Development Goals:

> New technology-based solutions that did not exist when the Goals were endorsed can and should be leveraged to allow for rapid scaling up. The most important of these technologies involve use of mobile telephones, broadband Internet, and other information and communications technologies.[20]

One way to take up this challenge is to ensure that ICT and enterprise policies are better reflected in national development and poverty reduction strategies (PRSs). In recent years, governments and development agencies have improved the quality of dialogue concerning allocation of multilateral and bilateral resources. The coordination of development assistance among development agencies themselves has also improved. Greater coherence among national development strategies, including PRSs, and development partner support—for example, through the United Nations Development Assistance Frameworks (UNDAFs)—should improve the likelihood that resources will be focused on agreed priorities.

Regrettably, ICT does not feature prominently in many of the PRSs that act as frameworks for bilateral and multilateral assistance. The potential of ICT and enterprise has been insufficiently explored both in national development programs and in country programs negotiated by governments with donors such as the European Union and international financial institutions such as the African Development Bank. As noted, there is no requirement at present to consider the information and communications sector or ICT4D in the UNDAF preparation process.[21] As a result, in a 2009 review by

the United Nations Economic Commission for Africa of 20 UNDAFs in that continent, it was found that only two included ICT-related projects.

At the same time, governments and development agencies alone cannot deliver on the promise of ICT for poverty reduction. The private sector is crucially important as the primary source of infrastructure investment and service innovation. Citizens and enterprises have shown themselves to be innovative in appropriating technologies and services to meet their needs. Governments and development actors need to learn from this example and provide interventions that help the private sector and civil society to seize opportunities created by recent technology developments. Successful projects aimed at enhancing the productive use of ICT by enterprises have often seen the involvement of multiple stakeholders acting in partnerships.

With access increasingly reaching poor producers in low-income countries, the possibilities for ensuring that ICT contributes to poverty reduction are much greater than before. We need to seek to make the most of the many new opportunities that are emerging.

Notes

1 UNCTAD 2010.

2 ITU 2010.

3 The least developed countries (LDCs) are a group of countries that have been identified by the United Nations as "least developed" in terms of their low gross national income (GNI), their weak human assets and their high degree of economic vulnerability. See http://www.nationsonline.org/oneworld/least_developed_countries.htm for further information.

4 UNCTAD 2010.

5 Morawczynski and Pickens 2009.

6 Mas 2010.

7 GSMA Development Fund and Cherie Blair Foundation for Women 2010.

8 See Ogodo 2010.

9 Vincent and Cull 2010.

10 IFPRI 2009.

11 Gakuru et al. 2009.

12 Ahonen 2009.

13 Sey 2008.

14 Duan and Zhang 2009.

15 UNCTAD 2010.

16 Zainudeen et al. 2007.

17 Heeks 2009.

18 Donner 2009.

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CHAPTER 1.6

Meeting the Decade's Challenges: Technology (Alone) Is Not the Answer

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As we look ahead to the next 10 years, it is clear that both business and society at large face some pretty daunting challenges. For example, many businesses will be banking on revenue growth fueled primarily by emerging markets, where products sell at a fraction of their developed-economy prices. Companies in countries with aging workforces will struggle to leverage the entrepreneurial energy of younger labor pools in places such as China and India. If successful, that leverage will complicate efforts to get beyond the mixed blessing of today's nascent but jobless economic recovery in Europe and the United States.

Challenges such as these will play out against a backdrop of problems that bedevil not just business but society as a whole: environmentally unsustainable growth, inadequate education and healthcare, and political instability. Just as we begin to get a handle on some of these problems, they will be overtaken by new ones, as yet unimagined.

Information and communication technologies (ICT) can help us meet these cascading challenges.

For starters, the spread of ICT throughout the developing world—continuing the trend documented in this and previous editions of *The Global Information Technology Report*—will distribute more broadly fundamental services such as education and healthcare. Transformational technologies such as mobile and cloud computing—along with other technologies that are, again, as yet unimagined—will spawn solutions to specific business problems. But ICT in isolation will offer little value. In order to spark the innovation and enable the implementation of new technologies to solve big problems, we need to transform all of today's organizations: business, nonprofit, and governmental.

We need to realize that most of the value that an organization creates for itself and its stakeholders originates not at headquarters but on the front lines, in the "value zone" where individual employees interact with individual stakeholders. In order to energize those value-creating employees, we need to create a culture of transparency that engenders their trust. We need to rethink the traditional organizational hierarchy, making managers as accountable to employees as those employees are to their bosses. In short, we need to activate and enable the *catalysts* for creating and delivering innovative technology-based solutions—our people.

This chapter will briefly review the potential of transformational ICT and then explore how organizations can unlock that potential by empowering and encouraging their employees.

The potential of transformational ICT

The past decade offers abundant evidence of the beneficial impact that technology can have, in ways both big and small. As described in last year's *Report,* for example, the Spanish government has used ICT as a tool for creating

greater cohesion in a society of significant social and cultural diversity and with highly autonomous local governments. Among the successes are accessible, citizen-centric healthcare and public administration services.[1]

Other benefits of technology are on a much smaller scale. In India, nearly 20 million new mobile phone subscribers sign up every month, nearly one-third of them in rural areas, including remote villages with no electric services.[2] The spread of this technology changes people's lives for the better in a variety of ways.

Fishermen in the southwestern state of Kerala, for example, once had to rely on local brokers and hope their catch would sell at a decent price. If all the local fishermen had a good day, they were likely to find low prices in their home market—or even end up dumping their catch into the sea if demand for the perishable product had been met before they arrived. With the advent of mobile phones, they could compare bids from local brokers while still at sea—or check the situation at nearby ports, where the day's catch may not have been so bountiful and brokers might be offering higher prices.[3]

Mobile phones are also enabling social networks, including some quite different from the vast system of, say, a Facebook. Along the tense border between India and Pakistan, someone will climb a tower and call out the name of a favorite Bollywood song. Then someone on the other side who hears the request will use his mobile phone to call in the request to the local radio station, which broadcasts the song for listeners on both sides of the border.

ICT has also been a source of major value creation in the business world over the years, completely transforming many industries by revolutionizing their business models and removing obstacles to growth. FedEx used mainframe technology and centralized processing to create a next-day delivery service in the United States and globally.[4] Ebay's auction system changed the way individuals buy and sell from one another and created thousands of independent online businesses.[5] Apple used technology to turn an industry liability—music piracy and unauthorized file sharing—into the iTunes music store, radically changing the face of the company and the industry.[6]

In the coming years, transformative technology developments will continue to remove barriers to progress and generate tremendous and often non-monetary value for businesses, nongovernmental organizations, governmental agencies, and society as a whole. For example, the continuing integration of networking, processing, and sensor technologies will enable wireless systems that link the physical world to digital data networks in fields ranging from medicine to security. Other technology breakthroughs will further the automated delivery of healthcare, the efficient management of electric grids, and the global development of complex products such as aircraft. Across the board, technology—and ICT in particular—will continue to enhance productivity, benefitting both shareholders and customers of countless businesses.

The catalyst for transformational ICT

Transformational technologies on their own will not be sufficient to meet the challenges of the coming years. We cannot rely only on the "what" of ICT to solve problems. We need also to focus on the "how" of inventing and implementing those technologies. We need to activate the human catalysts that will unlock technology's potential.

The innovation that creates transformational ICT, and the innovative ways of applying it, typically take place in the context of an organization. So if we want to realize the full business and societal benefits of new technologies, we need to transform our organizations so that the people in them become engaged in the difficult and creative work required to tackle a major challenge.

HCL Technologies has experimented over the past five years with just this kind of organizational reinvention, learning that success is not based so much on what technology services a company provides but on how it delivers them. This experiment has yielded some lessons about creating a structure and environment for fostering innovation and using its output to solve problems and create value.[7] The key takeaways from HCL's experiment include:

Recognize your "value zone"

In the industrial economy of the past, the locus of value creation in most companies was manufacturing or distribution or, in some cases, research and development. But in a knowledge economy characterized by services, or by commodity products differentiated by the service package and customer experience that surrounds them, the value zone has shifted.

In most cases, significant value is now created at the interface between a company's employees and its customers, whether these are individual consumers or the employees of the customer companies. This is also true for most social and governmental agencies: the value zone is where the organization's people directly interact with their individual beneficiaries or constituents.

Why is it important to identify the location of the value zone? Because this is where mutually beneficial innovations emerge, through the give-and-take of conversation and interactions between an organization's employees and the people that organization serves. This is where problems are solved—problems that might be specific to the situation but that typically are representative of larger issues. Those problems are typically not solved unilaterally by the company or the social or governmental agency. Increasingly, they are solved collaboratively.

Recall the well-known case of Lego and the launch of its Mindstorms programmable toy robot. Within weeks of the product hitting the market, customers basically hijacked it, reverse-engineering the firmware and developing additional software to program the robot. Instead of resisting hackers' alterations to its product, Lego encouraged customer extensions of the Mindstorms line and ultimately worked with users to create the second-generation product.[8]

Such collaborative innovation takes place, on a smaller scale, thousands of times a day among individuals working in the value zone. It is here that potentially transformational technology can be put to innovative use in countless ways, activated by individuals working across organizational boundaries. But that will happen only if organizations recognize the tremendous importance of the individuals working in the value zone and are structured to not only permit but to encourage innovation there.

Create trust through transparency

Individuals in the value zone will not seek and then seize value-creating opportunities if they do not care about the organization they work for. They will not care about the organization they work for if they do not trust it or its leaders. And they are unlikely to feel much trust if the organization is a place of secrets.

If organizations want their employees to commit themselves to constant innovation and value creation, they need to look for ways to increase transparency—whether it involves throwing open the financial books or posting executives' 360-degree reviews on the company intranet.

An open and transparent organization is particularly important as younger employees—those of the so-called Gen Y or Millennial Generation—enter the workforce. Used to the open book of their friends' lives on social networking sites, people in this generation find the lack of transparency in most organizations unnatural if not completely demotivating.

The trust fostered by transparency is crucial during the adoption of a transformational ICT. No matter how many business or societal problems a technology solves, it is likely to face resistance within an organization because of the wrenching changes it will impose on the way people do their jobs. Getting buy-in for implementation of the technology will be particularly difficult if people mistrust their own leaders and organization.

The acute need for transparency is a sign of the times. The breakdown of trust between employees and their organization's management is one of the most distressing consequences of the economic downturn. It prevents organizations from tapping an immediately available resource—their own people—that could revitalize business and society.

In the case of HCL, it was found that candor fostered employee trust, which in turn helped the company improve its performance even during the economic downturn. HCL was one of the few information technology (IT) service providers to grow during this period, with revenues increasing more than 20 percent year over year during the depths of the recession.[9]

As the economy started to decline, many global corporations assumed that management had all the answers—and those corporations certainly were not going to share them until absolutely necessary. By contrast, HCL Technologies turned to its employees and asked, "What can we do to get through this? How can we reduce costs, increase revenues, retain customers?"

The thousands of responses the company received led to initiatives that were shared with employees and then carried out. Though some underperforming employees were laid off, HCL Technologies increased its overall headcount, including in the United States and Europe. And as economic conditions improved, the company found itself not with a dispirited and fearful workforce but instead with one that was engaged and ready to pursue new growth opportunities.

Invert the organizational pyramid

The traditional organization, with its hierarchical pyramid and well-oiled but inflexible systems, is simply not equipped to creatively tackle tomorrow's formidable array of challenges. It is not set up, for example, to spot an opportunistic, even serendipitous, use of a new technology that fully capitalizes on that technology's transformational potential.

One way to increase the chance of identifying unusual value opportunities is to turn the standard organizational hierarchy, or at least aspects of it, upside down. The aim is to formally acknowledge and then provide support for those individuals working in the value zone, the people who grapple with problems in collaboration with customers or other stakeholders.

In this approach, managers who in the traditional hierarchy were "superior" to the frontline employees now are charged with ensuring that their subordinates have the support needed to generate value, both for the organization and for the customers or other stakeholders it serves. Functional managers in areas such as human resources and IT, who often answered only to senior managers, now also are accountable to the value-creating frontline employees. Although this "value pyramid" is turned upside down, the traditional "control pyramid" remains in place for formal governance purposes; the two pyramids together create a star-shaped organizational structure.

Besides formalizing the importance to the organization of employees in the value zone, this topsy-turvy system accomplishes several goals, as detailed below.

For one thing, it aims to ensure that maximum value is created for the customers. HCL Technologies' approach is dubbed "employees first, customers second" only because, by giving top priority to frontline

employees and ensuring they have the resources needed to solve customers' problems, customers fare better than they would otherwise.

The structure also is designed to increase employees' engagement by giving them both the opportunity and the responsibility to take action on behalf of a customer without requiring layers of bureaucratic approval and second-guessing by those higher ups in a chain of command. Employees have to seize this opportunity, though; it will not be handed to them by their managers.

Sometimes their enthusiasm puts them in direct conflict with company practices—to the ultimate benefit of all. Not long after the US consumer electronics retailer Best Buy acquired Geek Squad, a small firm that offered technical support to home computer users, the company built an elaborate wiki to make it easy for the rapidly growing ranks of technicians to swap service tips. It was an innovative tool seemingly well suited to the temperament of the geeky technicians—except that no one used it. Why? The technicians were ignoring the company-endorsed wiki in favor of another collaborative technology: massively multiplayer online games such as Battlefield 2. As they roamed through virtual worlds trying to destroy their enemies, team members would exchange bits of advice or discuss new ways to tackle customer problems. Some of these resulted in new Best Buy service or product offerings.[10]

Responsibility for initiating organizational change, as well as for innovation, is also pushed down the ranks (or, in the hierarchy of the inverted "value pyramid," up the ranks). As in a democracy, those at the grassroots level are as much the harbingers of change as the leaders at the top. Everyone is not always in complete agreement about the need for change or how to carry it out. But, again as in a democracy, they are charged with being active participants in the process.

Nurture new leaders

The upending of the traditional hierarchy also frees up possibilities for collaborative thinking and action, the kind needed to find solutions to problems made increasingly complex by the accelerating explosion of information. Instead of a few individuals with all the answers holding leadership positions, different people—which ones depends on the situation and individual talents—step forward to lead efforts to solve problems. Though not always in a leadership role, everyone is always prepared to lead. And that includes younger employees or those who might not fit the traditional leadership profile.

Consider an initiative at IBM, in which young employees volunteered to work—in addition to their regular jobs—on developing services for people at the bottom of the economic pyramid in developing countries. The program started out as a business development initiative, but it became a *de facto* leadership development initiative—one with the potential to identify and develop leaders who were globally aware, passionate about a value-driven project, and able to work collaboratively. Such people might not have been identified by the typical "high-potentials" training program, but as volunteers, they effectively self-selected themselves as potential leaders.[11]

Such an initiative leaves the traditional leader at the top of the organization with the crucial job of enabling and encouraging these new leaders at every level.

Conclusion

The reinvention of traditional organizational structures described here is likely to become increasingly important over the next decade. These new configurations will allow people in these organizations to serve as the catalysts that allow future technologies to transform business and the world. More broadly, these new organizational structures will unleash individuals' innovative drive and leadership talents to meet the challenges—technology related or not—of the next and subsequent decades.

Notes

1 See Lanvin et al. 2010.

2 Telecom Regulatory Authority of India 2010.

3 Jensen 2007.

4 FedEx, "FedEx Timeline."

5 Walker 2005.

6 Apple Inc. 2008.

7 This story is recounted in Nayar 2010.

8 Seybold 2006.

9 HCL Technologies 2010. Revenues in the quarter ending June 2010 were up 21.5 percent compared with the quarter ending June 2009, as measured in US dollars. They were up 17.8 percent as measured in Indian rupees. The difference in percentage results from the different dollar-rupee exchange rates at the beginning and the end of the period.

10 Tapscott and Williams 2008.

11 Hill 2008.

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CHAPTER 1.7

Localization 2.0

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Transformation 1.0—the convergence of information and communication technologies (ICT) that gathered momentum through the 1990s—has had a dramatic and well-documented impact on the way the world lives, works, and does business.

But while it may be tempting to think that the world has become a global village where everyone is free to express his or her views on an equal footing and organizations are free to trade with one another as they wish, the reality not only remains rather different, it is perhaps becoming ever more different as our understanding and use of the new technologies at our disposal extend and mature.

Rightly, people expect ICT and global networks to enrich their cultures and their senses of identity, not obliterate them. Organizations and governments feel much the same when it comes to ways of doing business, legislation, and so on.

The next wave of transformation—Transformation 2.0—must address such expectations head on, going beyond "localization 1.0"—the adaptation of ICT products and services to different languages, character sets, and so on—to "localization 2.0"—a new level of adaptation that fits them to local laws, customs, and cultures.

This chapter expands on the issues that need to be addressed as the ICT industry moves forward, and provides examples of how forward thinkers are beginning to tackle them. In particular, it focuses on how the new era of localization will allow organizations to have the best of both worlds—to be both local and global at the same time.

Le plus ça change

Back in the 1980s, some 25 years ago, there was relatively little need for communication or information technology (IT) products and services to be localized. There were notable exceptions—BT among them—but communication service providers generally operated as state-owned monopolies. Naturally, they designed everything—their products and services, as well as the associated delivery and support systems—in ways that appealed to the populations they served and that worked as their customers would expect. Much the same was true of IT, a great deal of which was supplied by national champions. Again, the result was that products and services were inherently localized—designed to meet the specific needs of the communities and countries in which they were sold.

The ICT industry has changed dramatically since then. The commercial landscape has been transformed. Monopolies have been lost, IT businesses have merged, and global footprints have become the order of the day. The technologies involved are radically different as well. They linger on in some organizations, but the proprietary operating systems and divergent networking

technologies of the past are rapidly being swept away. To all intents and purposes, they have been replaced by industry-standard operating systems Windows and UNIX, the Internet Protocol (IP), and so on.

These changes have made the world both simpler and more complex, as follows:

- simpler because "everything" is now based on standard platforms and IP; and
- more complex because this standardization has enabled an explosion of new devices, new software applications, new ways of doing things, and new things to do.

Compounding the complexity is the fact that the world is far from a homogenous place. There are big differences not only in the languages people speak and the alphabets in which they write, but also in cultures, thought processes, ways of doing business, legislation, and much more besides. To operate effectively, multinational corporations have had to overcome such differences. Even when their headquarters are not in the United States, the United Kingdom, or another English-speaking country, many have established English as their *lingua franca* and adopted Western norms when it comes to business practice.

When it comes to lower tiers of business—to national champions and small- and medium-sized enterprises (SMEs)—and consumers, the situation remains very different. Thanks to the Internet, smaller businesses have become as much a part of the global economy as multinational corporations. Many now have customers spread all over the world. Others are key components of supply chains that stretch from their home countries to factories and retail outlets on the far side of the planet. At their heart, however, they remain very much part of the countries in which they are based, operating from boardroom to shop floor according to local cultures and traditions.

It has become common to talk about world citizens and the global village, but consumers are even more the "children" of the cultures in which they grew up. Tech-savvy early adopters may be prepared to adapt their ways to accommodate the vagaries of the networked information applications currently on the market, but those who follow them will expect the devices they are offered to fit more smoothly into the fabric of their everyday lives. There may be an application for that, but is there an application for me?

Going local

The conclusion of the above for the ICT industry seems clear: to operate successfully all over the world, one has to be aware of the differences between countries and cultures, to be understanding of them and ready and willing to adapt one's products, services, and ways of doing business to meet local needs. That is, there is the need to localize one's offer.

Thus far, localization has focused on the basics—on adapting user interfaces, translating documentation, providing help lines in different languages, and so on. This is a start, but it does not get over the fact that the underlying product or service does the same thing in the same ways.

Think of this as localization 1.0—a first-generation approach to the adaptation of ICT products and services. It has tended to happen in three phases:

- First, products were internationalized: designed to meet the requirements of *all* the markets in which they would have been sold.
- Then they were localized: for example, by enabling and disabling options, plugging in alternative modules (dictionaries, for example), and so on.
- Finally, local infrastructure was put into place to sell and support them, in the form of sales material, product documentation, contact centers, and so on.

The world moves on

At this stage, it is important to note that the very meaning of "local" is changing. In the past, the relationships between countries and cultures were clear. Things were fuzzy at the edges but, by and large, both were defined by geographic borders. Germans lived in Germany, Chinese in China, and so on.

The relationship today is much looser. Countries have become home not just to their indigenous populations, but also to significant communities from other parts of the world that are fiercely protective of their own languages and cultures. This complicates matters for the ICT industry quite considerably.

Simple assumptions—that people in England speak English, for example—can no longer be made. The number of people who may want to buy products or use services that are linguistically and culturally localized to countries other than that in which they are based is increasing all the time. Nor can the industry assume that people who buy products that are linguistically and culturally localized to, say, the Japanese market, are bound by data protection and other laws that apply in Japan. Users can be culturally Japanese but legally American, for example.

Other, equally significant, changes are afoot in the world of business. As the BRICS economies mature and the costs of doing business in them rise,[1] work is moving to other locations—Africa and South America, for example—and new trade routes are opening up as a result.

Technically, global networks can now make any application available anywhere anyone chooses. Organizations are keen to exploit the opportunities this has created. In particular, many are replacing the separate ICT infrastructures that have historically served their

operations in different countries or territories with common platforms that deliver a standard set of applications and services worldwide. The advent of cloud computing and the "as-a-service" model, which makes it easier and cheaper for organizations to equip their employees with the tools they need, is accelerating this trend.

Such changes bring the higher-level differences mentioned earlier—those in cultures, thought processes, ways of doing business, legislation, and so on—to the fore. There is no one-size-fits-all solution when it comes to information security, for example, as recent disputes between Arab and Asian governments and Research in Motion,[2] the Chinese government and Google,[3] among others, have made abundantly clear.

The "great rebalancing" (as McKinsey called it) of the global economy that is occurring as emerging economies contribute more growth than developed ones will doubtless exacerbate the situation.[4] Perhaps it will be Chinese or Indian languages and business practices that become the standards for global corporations in years to come. We will have to wait and see but, in the meantime, it seems that there is an obvious conclusion that needs to be drawn from recent experience and acted on: just because technology *can* deliver the same service everywhere does not mean that it should.

So what is the answer? The age-old axiom, "when in Rome, do as the Romans do," should apply not just to people or organizations, but also to the technologies they use. This implies a new level of localization—call it *localization 2.0*—that adapts ICT products and services more fully to local market expectations and needs, accommodating variations in attitudes, approaches, laws, and regulations in a way that values differences and respects them rather than attempting to sweep them away.

This view is quite widespread. CSOFT International Limited, a US company that helps businesses localize their products, points out that "the global market is not an extension of the US and must not be treated as such. Beyond basic language translation, products must be considered in terms of cultural differences. Failing to take notice of such differences can result in embarrassing, albeit humorous, miscommunications at best; or insults and loss of business at worst."[5] And the recently retired Chief Executive Officer of British supermarket chain Tesco, Sir Terry Leahy, put the company's success in Asian markets down to the fact that it had sought to build businesses there, not an empire. "We didn't want to export what made us strong in our home market," he said. "From the outset we didn't have an imperial outlook. You have to be comfortable adapting to fit in."[6]

Commercially, BT's thinking and approach are similar to that of Tesco. The company has strong local operations not just in the United Kingdom, but in other European countries and, more recently, in Brazil as well. Complementing these, BT works with a global network of more than 100 strategic partners and distributors to meet customers' needs worldwide. The strategy has proved to be highly successful. Organizations such as the Spanish Ministry of Foreign Affairs, Caixa Galicia, Commerzbank, Deutsche Post DHL, Munich Re, PaperlinX Europe, Sasol, and Syngenta come to BT specifically because it combines a strong locally adapted presence in their home countries with the global reach they need to connect operations worldwide.

Localization 1.0

Technically, the level of localization required to match products and services to countries and cultures varies quite considerably. Until quite recently, the task was relatively simple and straightforward.

Consider basic phone services, for example. The tones used to indicate conditions on lines—whether the number called is ringing, engaged, or unavailable—might need to be changed to localize services to particular countries, as might any recorded announcements. Otherwise, people expect phones to work in the same way all over the world. The user interface needs to be different, but the functionality behind it remains the same. Much the same has been the case for computer hardware and software applications. There are occasions when modifications are needed to meet the requirements of different cultures and regulatory regimes. When Apple devotees attempted to import iPads compliant to US standards into Israel, they were confiscated by customs officials concerned that, because the signals they transmitted were stronger than permitted by Israeli regulators, they would "trample the wireless connections of other users."[7] By and large, however, the approach up to now has been focused on basics such as languages and character sets.

Online, the search engine company Google has taken a similar approach as it has extended its services around the world. It has created sites in 190 domains, covering a complete alphabet of countries from Ascension Island to Zimbabwe.[8] And its user interface has been translated into a total of 130 different languages, from Afrikaans to Zulu.[9]

Overall, the company has clearly made a significant commitment to meeting the needs of different communities around the world, but some commentators have questioned whether it has gone far enough. They point to the fact that Google is not the dominant search engine in every country it serves, and that this might be because its minimalist interface does not appeal as much to, say, Indian audiences as it does elsewhere. Rediff—a Mumbai-based provider of online news, information, communication, entertainment, and shopping services—appears to have been more successful at meeting the needs of such audiences, both at home and elsewhere, largely as a result of having tailored its services to meet its home country's particular needs. This highlights the

need for companies in the ICT industry to take a more sophisticated approach to localization—one that, as suggested earlier, goes beyond the basics to look at cultural, legal, regulatory, and other aspects of adapting products and services for use by diverse communities in different parts of the world.

Localization 2.0

The following examples illustrate the multi-dimensional challenge suppliers of ICT products and services face today as they extend their reach around the world.

Alternative desktops

It is tempting to think that, translated into the right language, the desktop user interface found on most computers these days would meet everyone's needs.

However, as those working on the One Laptop Per Child (OLPC) project pointed out when their first product was about to be launched in 2007, an interface based on a desktop metaphor does not necessarily make sense in places such as African classrooms, where students frequently do not have desks to begin with.[10]

To meet the needs of its target "customers"—disadvantaged children in developing countries—the OLPC team decided it needed to take a fresh approach. It developed Sugar, an interface that is more about relationships between people and applications than filing systems and trash cans. The first thing children see when they turn on their low-cost PC is a map showing who else is online in their neighborhood, clustered around icons representing the things they are doing or working on.[11]

The Taiwanese computer company, ASUS, reached a similar conclusion when it launched an entry-level netbook PC it thought (mistakenly as it worked out) would be used more by schoolchildren than adults. It equipped them with an alternative "desktop" interface designed with younger and less-experienced users in mind.

The interesting thing here is that, while the interfaces were very different, the applications to which they provided access were in many cases the same. This meant that, in principle at least, children using OLPC machines in, say, Africa could interact with others using standard PCs, ASUS netbooks, and other platforms in developed countries such as Europe and the United States. Equally, they were just as able to explore the Internet as peers using computers equipped with other, more conventional user interfaces.[12]

Alternative devices

It would be wrong to single out children as requiring different interfaces to online services, of course. There are also significant differences in the methods adults use to access them, some of which are the result of differences in the ways in which telecommunications services have evolved in different markets.

Conducted by Norwegian web browser developer Opera Software, a 2010 survey of mobile phone users worldwide found that more than 90 percent of Generation Y users in Nigeria, South Africa, and Indonesia used mobile phones more often than desktop or laptop computers to access the Internet. In the United States, the figure was much lower—51 percent.[13]

Given the significant differences between the two classes of device—most obviously, the size of the screens with which they are equipped and the availability or not of keyboards—such variations in the ways in which users interact with online services will clearly have a big impact when it comes to deciding what is best practice for their design in different countries.

Regulatory considerations

The global reach of today's digital networks makes it possible for applications to be delivered from large-scale data centers to desktops, notebooks, and mobile devices all over the world.

Multinational corporations were quick to take advantage of the opportunity to replace the regional provision of applications and services with global solutions delivered from central locations. More recently, others—both business and consumers—have followed suit, switching from applications they either run in-house or install on individual PCs to services delivered online from data centers in the cloud.

Technically, there are few limits. Provided sufficient network capacity exists and its use is appropriately controlled, the response times users experience will differ little regardless of their location or that of the data center that "generates" the services they use. On this basis, one could argue that localization is simply a matter of matching the language "spoken" by the user interface to that of the user, much as Google adapts its search service to suit the different communities it serves.

However, there are legal and regulatory considerations that both users and providers of cloud services (and their in-house equivalents) must take into account. Prominent among these are the data protection regulations that apply in different parts of the world, many of which place strict limits on the movement of personal data about customers and citizens collected by companies and government organizations. For example, such data can be transferred outside the European Economic Area only if the country to which they are destined has laws and regulations in place to ensure they will be adequately protected.

To comply with such regulations, organizations that want to use cloud services must know not just what measures providers have taken to keep any data transmitted to them safe and secure, but where their data centers are located. In addition, organizations must obtain adequate assurances that providers will not arbitrarily move the applications they are using from

data centers that are "in region" as far as data protection legislation is concerned to others elsewhere.

Providers must similarly adapt their services to the requirements of regulatory regimes. Take Microsoft, for example—technically, it could deliver its online services from a single global data center, but to make its services available to customers within the European Union it opened a facility in Dublin in 2009.[14]

Even within Europe, the regulatory situation is complex. In November 2010, Microsoft CEO Steve Ballmer highlighted the problem, calling on the European Union to provide clearer rules on privacy and data retention. To emphasize why rules needed to be clear, he used the fictitious example of a Swedish company that delivers a healthcare application from data centers in Finland to consumers in the United Kingdom. "There needs to be a single framework," said Ballmer. "We need to know what the responsibilities and obligations are."[15]

Customer support

Another area of ICT in which global organizations need to think carefully before adopting one-size-fits-all solutions is customer contact.

No matter how conversations take place—and today the customer has a wide range of media from which to choose—there are situations that can be resolved only by talking to someone. That someone needs to have in-depth knowledge of a country's geographies, business practices, customs, and prevalent ICT.

Factors such as the way customers are greeted, as well as if and how attempts to up-sell can be made, may need to be changed from region to region. It might be acceptable in the United States to greet customers by using their first names, for example, but this will not be the case all over the world.

Local laws and regulations may also have an impact. In some jurisdictions, people may have to opt in to receive mailings; in others, they may have to be given the option to opt out. Likewise, it might be legal to offer certain services—for example, the sale of alcohol—to people aged 18 in some countries, but only to people aged 21 or more in others.

Data protection laws must also be taken into account—especially with regard to where data about customers may be held—and it is important to remember that the remit of such laws can extend well beyond the countries in which they are set. State of California law SB1386, for example, requires any organization that believes unencrypted data it holds about someone living in the state might have been acquired by an unauthorized person to notify the individual concerned, regardless of where the organization is based.

Avatars

Looking ahead, the need for localization may soon need to extend to the body language of avatars used in customer service and other applications.

People in different parts of the world use gestures of the head to mean different things, for example. In India and other South Asian countries, people tilt their heads from side to side in arcs to indicate they are in broad agreement with what a speaker is saying. Elsewhere, they might nod their heads or throw them back. Facial expressions, eye movements, the way one holds one's arms, and other aspects of body language differ from culture to culture.

Conclusion

As we have discussed in the course of this chapter, there are different ways of going global.

One way seeks to impose one-size-fits-all solutions everywhere it goes, sees differences in customs and legislation as inconveniences that should be swept away in the interests of free trade, level playing fields, and so on. This is the approach Sir Terry Leahy, the recently retired CEO of British supermarket chain Tesco, described as "imperial."

The other way to go global is to become "multi-local"—to fit in wherever you go, but at the same time be present everywhere around the world that your customers need your products and/or services. To adopt this approach itself and enable its customers to do the same, the ICT industry needs to take a far broader view of the localization task, extending it to address the laws, customs, and cultures of the countries its businesses serve.

Amply supported by localization 1.0—the business of adapting ICT products and services simply by changing the languages they work in, the character sets they use, and so on—the former approach may have been appropriate when developed countries dominated consumption of ICT products and services, the *lingua franca* of multinational corporations was predominantly English, and the business practices they used were those that have evolved in the West.

But the balance of global trade is changing fast, accelerated by the recession that hit the United States, Europe, and other developed economies hard in 2008. As a result, it is inevitable that the language of global commerce will change over time, most likely to become more diverse. ICT providers looking to protect and/or grow their businesses would be well advised to adopt a broader view of localization than many do today. The other reason why a more sophisticated approach to localization is becoming essential is that the use of ICT products and services is spreading much further through populations than it did in the past, moving beyond early adopters prepared to adapt their ways to the technologies available to a mass market of users that expect technologies to adapt to them, not the other way around.

Not long ago the perceived wisdom, and the output of many futurologists both scientific and creative, was that IT would accelerate global homogeneity—

particularly when it came to consumer behavior. The paradox is that as IT services have become more standardized and ubiquitous, so has the belief that IT should and can adapt to the way we live and work. Indeed, products and services that fail to adapt to the situations in which they are used have increasingly short life spans. The reason? Users decide it is easier to live without them.

The empires of the past waxed and waned based on their ability to impose themselves on or adapt to the many cultures over which they held sway. This chapter concludes that the longevity of the Internet-fueled consumer empires of the 21st century will similarly depend on their ability to adapt to different cultures, and that this will in turn be dictated by their willingness to adopt localization 2.0—a broader localization strategy than is the norm in the ICT industry today.

Notes

1 The BRICS are Brazil, Russia, India, China, and South Africa.

2 Sagani 2010; Gokhale and Kumar 2010.

3 BBC News 2010.

4 Bisson et al. 2010.

5 CSOFT no date.

6 Stevenson 2010.

7 Wagborn 2010.

8 Wikipedia Template: Google.com.

9 Wikipedia: Google Search.

10 Perry 2007.

11 DeKoenigsbert 2007.

12 There are limits when it comes to who can connect to whom and who can access what, of course, not all of which are the result of the availability of restricted connectivity or other technical constraints. According to the OpenNet Initiative, in September 2010, more than a dozen countries were blocking access to certain Internet sites for political, social, or security reasons.

13 Opera Software 2010.

14 Microsoft 2009.

15 Kirk 2010.

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CHAPTER 1.8

Transformation 2.0 for an Effective Social Strategy

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In addition to its impact on our pocketbooks and wallets, the global economic crisis has undermined our confidence in many of the organizations to which we traditionally turn for leadership, support, and assistance in troubled times.

We are all familiar with the problems: high levels of unemployment, increased need for public services, aging populations, rising budget deficits, falling tax revenues, and political divisiveness. Pulled in several directions at once, governments and organizations are hard pressed to mount effective responses to the many urgent challenges facing them. These issues, while largely confined to Western economies, are also affecting many developing countries and hampering the growth-centered policies of a number of nations aspiring to play a larger role in the global economy.

Government agencies, departments, and ministries tend to respond to volatility and uncertainty in three general ways.

First, there are those with knee-jerk reactions, who respond by halting programs or instituting cutbacks to alleviate anxiety, even when those actions adversely affect service levels for citizens, increase unemployment, and negatively impact the country's competitiveness.

Second, there are those who take a wait-and-see approach and operate as though it is "business as usual," waiting for a return to "normal." What they are not acknowledging is that the current times are the new normal, and that the old times will not come back.

Third, there are leaders and organizations who view this moment in history as providing a prime opportunity for building a stronger future and preparing better systems for supporting the needs of citizens in a rapidly evolving global economy.

It is in this third group that we place our hope. Among the members of this group are the visionary leaders and thinkers who actively promote innovation and transformation as essential components of comprehensive solutions. They see the potential of leveraging newer technologies to improve the lives of citizens and strengthen the bonds of society. In a way, they are the true natural supporters of the information and communication technologies (ICT) Transformation 2.0 agenda.

In this chapter, we will refer to many government and public-sector agencies from around the world that fall into this third, forward-looking category. But first we will touch on the history of analytic decision making and discuss its evolution in the public sector. After providing an inspirational list of examples, we will conclude by helping envisage a future where data-driven decision making can play an importnat role in transforming governments and societies. Our goal is to inspire readers with these ideas and proactively work to leverage analytics as the doorstep to the digital age.

Box 1: Understanding where to improve

For governments to tackle the monumental changes they face, one must gather, identify, and get insight into different roads to improvement. Looking at static reports and doing things the way they were done before is moving backward. Improvements should result from the following approaches:

1. *Reduce non-core tasks.* Outsource where you can: examples include road building, facilities improvements, communications, and computer hardware.
2. *Improve tasks that cannot (or will not) be outsourced.* Such tasks include managing inspection agencies and introducing new, horizontal tax-collection principles.
3. *Invest in business case-like opportunities that generate new (indirect) income.* Examples include new areas of foreign investments as well as soft infrastructure improvements in labor laws or educational reform.
4. *Invest in business case-like opportunities that generate innovative new services.* One example is a 360-degree service for citizens with the local government as the front office.

These approaches can be used to improve healthcare, public safety, and quality of life—and many of the other areas discussed in the main text.

The evolution of data-driven decision making

Since the inception of the ICT age, data management has been one of its cornerstones. However, its place, role, and usage have evolved quite dramatically. The recent evolution of data management can be broken into three distinct periods. During the first period, the private sector largely drove the adoption of new technologies and processes for quantitative analysis. During the second period, the public sector began using analytic technologies and applied many of the lessons learned in the private sector. At the same time, the private sector intensified its efforts to leverage the increasing amounts of data being generated, captured, and stored.

Today, we are just embarking on the third period, in which both the private and the public sectors are investing heavily in analytic capabilities and driving the development of newer techniques and technologies, including high-performance computing, data integration, and complex event processing. In many areas, governments are realizing that, with the help of these technologies, they too can be a source of innovation and change—and they can partner with private organizations and their own citizens to transform society together.

Not every organization embraces change at the same pace. The reasons for resisting change are myriad, and many are deeply rooted in the human psyche. However, we are clearly at a point in history where newer technologies can help us fulfill our responsibilities as leaders in an increasingly complex world.

There is a clear consensus that one of the most significant traits of the Transformation 2.0 age is the exponential use of billions of sensors, computers, mobile phones, and other tools by private individuals, associations, corporations, and governments all over the world. These smart devices cover every possible aspect of our everyday lives. In turn they are producing a staggering quantity of data, largely exceeding the current storage capacity. Interestingly, a fair number of these data are the result of individual uses of ICT, which represents a clear break from the past. No geographies are spared by this trend. As shown by a recent study produced by TNS, "When looking at behavior online, rapid growth markets such as Egypt (56 percent) and China (54 percent) have much higher levels of digital engagement than mature markets such as Japan (20 percent), Denmark (25 percent) or Finland (26 percent)."[1]

One of the key issues increasingly looming for the ICT community is the need to make sense of this data explosion, and, in particular, the need for governments and public institutions to rethink their policies and programs based on hard and undisputable data. Success in that field will ensure that the Transformation 2.0 agenda is a winning one.

The role of analytics in Transformation 2.0

For many years now, the science of data management has provided us with numerous tools for improving the way we make decisions, allocate resources, and monitor the progress of the projects and programs we undertake.

In the past, the major challenges of data management often centered on collection, storage, retrieval, and reporting. Now that these challenges have been largely overcome, the next logical step is extracting value from the data themselves. Or, putting it more bluntly, having data is nice, but using data is better.

Analytics—software and processes that effectively convert data into actionable insights—is poised to play an increasingly valuable role in the Transformation 2.0 era. Analytics enables us to transform mountains of data from meaningless bits and bytes into valuable information that we can put to work in a variety of ways.

Most important, we can use analytics to spot patterns and predict future trends with far greater accuracy than ever before. For many years, data management has been a backward-looking process. Thanks to analytics, data management is now a forward-looking process. To use a trivial analogy, data management has been like trying to drive your car while peering in the rearview mirror.

Now, with analytics, you can imagine driving your car while looking ahead through the windshield.

Analytics gives you the ability to see forward, peek into the future and make meaningful judgments that result in better outcomes. In times of constrained public spending and increased public pressures, we believe that analytics has a crucial role to play in that regard, notably for governments (see Box 1).

Data-driven strategies for a better world

Smart, sustainable societies need strategies that enable governments, nonprofits, and businesses to work cooperatively and productively. When these strategies are in place, the results are impressive: increased safety, a greater sense of well-being, and an improved quality of life for all citizens.

In the past, many of these results were achieved through various combinations of ad hoc programs and initiatives. The general belief was that even the most intractable problems could be resolved with the proper mixture of good intentions and adequate funding. But intuition, instinct, and gut feelings have proved insufficient for coping effectively with the challenges and complexities of modern societies. Globalization—together with economic, social, and political tensions—has placed intense pressures on governments, agencies, and nonprofits to accomplish more with fewer resources.

In a world whose needs are increasingly measured in gigabytes, terabytes, and exabytes, the ability to achieve results requires rational, logical strategies that are built on firm foundations of science and fact. Sorting fact from fiction is the natural role of the data scientist, a new breed of knowledge worker who uses sophisticated analytic techniques to crunch through mountains of data in search of the truth. We believe the data scientist will play an increasingly important role in the Transformation 2.0 age, mirroring the role of the programmer in the Transformation 1.0 period.

We look now at some specific examples of how advanced data analytics is helping organizations improve healthcare, reduce crime, improve public safety, and increase transparency into government services, among its other achievements.

Transformation 2.0 for healthcare

The Swedish healthcare system is often held up as a successful example of universal care. Today, continued healthcare reforms in Sweden focus on giving patients full authority to choose healthcare providers. Referred to as *free-choice reforms,* goals for these programs include improving access to care and providing better services for the amount of money spent.

To succeed, the reforms require new analytic systems for multiple stakeholders, including providers, politicians and officials, healthcare and social service payers, and patients. Each of these groups will benefit from monitoring tools that assist informed decision making. The changes will also require county councils and purchasing offices to forecast healthcare needs, visualize the supply capabilities, compare outcomes at multiple medical facilities, and simulate that on new payment models. Healthcare providers will need tools for benchmarking and for visualizing where to establish new centers to meet unfulfilled healthcare needs. Politicians will need reporting solutions to review the overall effects of reform on areas such as patient satisfaction, financial effects, patient pathways throughout the system, care quality, and access to care. Ultimately, the success of a free-choice program hinges on the ability of patients to make informed choices about their healthcare and healthcare providers—and those choices will be enabled by analytics.

Transformation 2.0 for fighting drug abuse

As any public servant knows, the best efforts to help people in need often require cooperation from multiple agencies and organizations. When those agencies can share data in their efforts to solve problems, they can often make improvements more quickly and provide help to even more constituents.

One successful example is the London Borough of Croydon's Drug and Alcohol Action Team (DAAT), a multiagency effort that uses analytic software to achieve better results in its efforts to:

- get more people into drug treatment,
- reduce drug-related crime, and
- empower the local community to resist drug misuse.

In particular, analytics enables DAAT to deliver services more effectively and to target the borough's resources where they can have the biggest impact. As a multiagency public-sector partnership, Croydon's DAAT unites representatives from the local council, health service, police and criminal justice system, and volunteers. Analytics helps DAAT plan treatment modernization services that deliver effective treatment structures for substance misuse and ensure that the efforts of local agencies and cross-agency projects are integrated successfully.

Analytic software also helps DAAT to automate statutory "Green Reports" for the National Drug Treatment Monitoring System as well as key performance indicator reporting against national Home Office targets. As a result, operational effectiveness at the local level is improved by cutting administration time from over a week down to half a day.

Transformation 2.0 for tax collection

In its role as a tax collection agency, the Bureau of Internal Revenue (BIR) in the Philippines is an essential pillar of the nation's economy—it generates 70 percent

of the government's income. In the late 1990s, tax collection was in freefall, resulting in lower governmental revenues and higher budget deficits. To successfully fulfill its mission and to effectively turn around the tax revenue collection process, the BIR turned to analytics. The use of analytics helped the BIR improve tax administration by analyzing and processing a large number of transactions across sales and purchases of the entire taxpayer base. This project was called RELIEF (Reconciliation of Listing for Enforcement). During the initial implementation of the RELIEF project, the BIR experienced an amazing turnaround, achieving what amounted to a 400 percent return on its investment.[2]

The BIR also established the Revenue Watch Dashboard (RWD) program and the Local Government Unit Revenue Assurance System (LGU RAS). The RWD allows key officials at the BIR to continuously monitor the progress of collection, identifying any unusual pattern of tax declarations, long-running and unresolved notices, and audits. The LGU RAS is a web-based revenue-monitoring tool that provides data matching capability and uncovers intelligence through local government data. The system uncovers non-registrations, mis-declarations, under-declarations, non-filers/stop-filers, and fictitious identities. Both programs have received praise for increasing transparency into government activities while at the same time improving effectiveness.

Transformation 2.0 for international development

Powerful analytic software might seem a low priority for deeply impoverished nations, where safe water is scarce and electricity for computers is unreliable at best. But it could make all the difference in the world.

Under an innovative program managed by Statistics Norway, the country's central agency for official statistics, a growing list of underdeveloped nations receive analytics software for building and supporting statistical capacity, enabling governments to support the fundamental needs of their populations.[3] Through its international development division, Statistics Norway has cooperated with sister organizations in developing countries for more than a decade and contributed to the development of their statistical systems and capacity building. This contribution involves strengthening the skills of individuals as well as developing the national statistical offices as institutions.

High-quality statistics contribute to economic growth, poverty reduction, good governance, democracy building, and international comparability. The partnership program offers low-income or low-middle-income analytics software, and Statistics Norway provides staff members to travel to the recipient country and remain on-site to provide the necessary installation and knowledge transfer so the statistics offices can identify their populations' needs and disseminate the information to the necessary government, public, private, and nonbusiness organizations.

Five countries—Eritrea, Uganda, Albania, Malawi, and Moldova—have currently received analytics and are working with on-site Statistics Norway staffers.

Transformation 2.0 for energy management

In Eastern Denmark, the Elkraft System has the overall responsibility for the electricity supply. Electricity must be used at the same moment it is produced, or the surplus product goes up in smoke. Any imbalance can be expensive and, in the worst case, the reliability of supply is threatened.

Elkraft has 16 partners responsible for making sure that the consumption and production of energy remains in balance. Every day of the year, the partners must report planned consumption and production of electricity—including wind turbine power—to Elkraft. This forms the plan for anticipating power consumption and producing the right amount of electricity, hour by hour over a 24-hour period.

Several years ago, Copenhagen Energy was approved by Elkraft as a balance partner. Annually, Copenhagen Energy handles up to 3 terawatts per hour, corresponding to 3 billion kWh, or approximately 10 percent of Denmark's annual electricity consumption. The company relies on sophisticated data analytics to predict the next day's consumption of electricity hour by hour. Copenhagen Energy quickly recouped their investment because its newer analytics-based forecasting solution is faster, better, and less expensive than its previous system, which involved external forecasting services. In fact, the solution was up and running in just two months and forecasting accuracy has doubled.

Transformation 2.0 for disaster response

When disaster strikes, anything governments can do to provide aid quickly is a huge relief to citizens. Currently, the International Organization for Migration (IOM) is applying analytics to enhance efforts to help millions left homeless by the worst floods in Pakistan's history. The floodwaters, likened by the UN Secretary General to "a slow-moving tsunami,"[4] started in the north of the country in early August 2010, and swept southward toward the Arabian Sea in a wave of destruction. The IOM provides displaced flood victims with tents, plastic sheets, blankets, and household items lost to the floods. It handles incoming flights of aid donations, receives relief items and ensures they clear customs. It also works with the government's National Disaster Management Authority alongside more than 40 local and international agencies to distribute aid to people most in need. The IOM is using analytics to better manage and share data with partner agencies providing emergency shelter. For example, the agency is developing a structured data repository that can handle such analyses as behavioral trends, forecasting, and creating multidimensional views

of data that can be shared with humanitarian and other UN agencies.

The innovative public-private partnership will explore additional uses of analytics and develop tools to aid in humanitarian disaster response worldwide. These tools could become the foundation of a valuable and freely accessible institutional archive of coordinated activities.

Transformation 2.0 for managing citizens' needs

Analytics will open the door to a new age in which governments and organizations function more efficiently, more openly, and more effectively to serve the needs of all citizens (see Box 2). Analytics can empower individuals, increase transparency, and create new opportunities in a rapidly changing world.

When we talk about that modern theme of improving citizen insight, we are not just talking about reports and figures. We are talking about using analytics to reveal true insight into the needs of citizens, with a focus on increasing efficiency without compromising effectiveness. Areas that can have the most impact on citizen insight include creating a single view of the citizen, providing the citizen with a coherent window into government functions and enabling individual, real-time interaction. For example, the People's Association plays an important part in Singapore's nation-building efforts. It creates opportunities for people from all walks of life to meet and form friendships essential to mutual trust and cooperation. By encouraging people to take ownership of their community, the People's Association brings people together to create a more cohesive and resilient Singapore. Because the People's Association offers such a wide range of community activities through a network of more than 1,800 grassroots organizations, the agency collects a huge amount of information about participants, such as the sorts of activities each of them enjoys as well as demographic information.[5]

Working with an enterprise-wide intelligence platform, the People's Association puts those valuable data to use for analyses that help the agency hone its community-outreach efforts.

Transformation 2.0 for public safety

Data integration is a key to public safety in the current world. Governments that can combine multiple databases to better understand crime are seeing real and fast impact on citizens' stability and safety, improving the trust that citizens have for them. The Gloucestershire Constabulary, one of 43 police forces in the United Kingdom, has used this approach to reduce crime and improve citizen trust.[6]

The data integration solution helps Gloucestershire to ensure the quality and accuracy of data; the insights gained inform the police force's management, governance, and performance. Recent results have borne out Gloucestershire's approach. When Her Majesty's Inspectorate of Constabulary assessed all 43 police forces in 2010, it highlighted the way Gloucestershire has reduced overall crime in the last two years, with notable success against violence and robbery, and achieved excellent detection rates.[7] It also indicated that public confidence is improving, a finding backed by the British Crime Survey that showed an increase from 45.8 to 51.5 percent in the number of Gloucestershire people confident that their police and council were effectively dealing with anti-social behavior and crime.[8]

Transformation 2.0 for social network analysis

One especially exciting emerging area in analytics is that of social network analysis. By looking at historical data (contact information, addresses, telephone numbers, acquaintances, and referrals) associated with various types of transactions, investigators are able to recognize behaviors that might indicate fraud or other kinds of criminal activities.

Banks, for example, can use social network analysis to undercover patterns of fraud. They accomplish this by linking transactional data with demographic information—as well as the times at which the transactions

Box 2: Four ways to improve government transparency

Governments are under more pressure than ever to become more transparent, collaborative, and participatory—all traits seen as best practices for sound public finances, good governance, and overall fiscal integrity. The public, too, is demanding increased visibility into government decision making, particularly regarding where and how taxpayer money is spent—and with what results. If one can access timely, accurate, and relevant data, one can:

1. *Create a single version of the truth* by consolidating data from all relevant sources, cleansing the data and transforming them so that they are ready for analysis.
2. *Gain insight into the long-term economic impact of expenditures* and make better, more reliable decisions with large-scale forecasting and optimization.
3. *Clearly communicate the value and results of programs* by developing a performance management system that has meaningful, targeted outcome measures.
4. *Provide valuable insights and essential decision-support information* to stakeholders and policymakers by delivering accurate and timely reports on spending and program effectiveness.

occurred—and creating a social graph that identifies communities or groups of connected people within the network. These communities could be friends or family groups who live in separate homes—or groups of individuals organized to commit fraud or money laundering.

In California, Los Angeles County is using social network analysis to identify fraudulent activities, enhance investigations, and prevent improper payments to those who would take advantage of the public assistance system. The solution detects suspicious activity and then prioritizes and routes the resulting alerts to the appropriate decision makers. The county uses social network analysis to uncover previously hidden linkages among participants and providers engaged in fraud to facilitate the investigation, capture, and display of key information pertinent to a case. The technology can actually detect and prevent fraud before it occurs by using patterns and characteristics associated with fraud to create models that score individuals on the likelihood they will commit fraud in the future.

Transformation 2.0 for improving quality of life

Organizations such as the Danish National Board of Health use analytics to provide better patient care at a lower overall cost—and to dispel potentially harmful myths quickly. The board uses an active information technology (IT) strategy in order to, among other things, give Danes access to statistical information on health and illness. The latest access point is a website where Danes can find statistical information relating to such subjects as hospital treatments, incidences of cancer, number of births, and causes of death.[9]

The board develops and uses a wide range of registers within the health sector that are used for health monitoring and planning, as well as research and administration. On the basis of the extensive data contained in the registers, the board compiles comprehensive health statistics that are now available online. Statistical information previously only appeared one or more times a year in publications on the Internet or in book form; now there is access to dynamic data around the clock. The information is developed and updated continuously. The users themselves are, to a large extent, able to define tables and determine the graphic presentation, or transfer the data to Excel spreadsheets and process it further.

Politicians and administrators are able to make use of the website as a tool for submitting important questions regarding the healthcare sector. They are able to screen local information in order to investigate why a particular illness pattern looks the way it does in their own part of the country. This can provide the inspiration for a particular effort locally if, for example, there is an over-representation of specific illnesses. Or one can view things from a financial angle and look at the connections between the hospitals' staffing and activity levels. The website makes it possible to create tables with regard to relevant factors such as gender, age, geography, and diagnoses, among others. The website is also very user-friendly, and the objective is to make health data available to everyone, and not just specialists.

Transformation 2.0 for managing and mitigating climate change

The Hague in the Netherlands is using analytics to calculate the CO_2 emissions in the city and set strategies for reducing them. This is not as easy as it sounds. The Hague's council organization—in other words, city government operations—became CO_2-neutral effective as of January 1, 2010. As a town, The Hague wants to be climate-neutral by 2050. The interim objective is for emissions across the city to be reduced by 30 percent by 2020. These ambitions have been included in a strategic plan.

According to The Hague's Climate Policy Advisor, *climate-neutral* means the municipality will be generating 70 percent of its energy requirements in a CO_2-neutral way; the remaining 30 percent will be compensated for in The Hague Climate Fund. The council organization's emissions have been established using an energy and emissions management tool that is part of a larger sustainability management solution. Initial analysis of current energy usage amounted to 41,000 tonnes of CO_2 equivalents. This is an amount that cannot easily be eliminated or compensated for, and it was in fact an impossible task before the implementation of the analytics solution.

In some cases, the information for this solution was not exactly easy to come by. The fuel information relating to The Hague's 550 city vehicles was largely available via the lease companies, but these companies each used various different systems. The energy usage within the buildings was harder to map. Managers could supply only outdated, fragmented details in many cases, or the data were applicable to different years. What remained was a very rough estimate. Although the estimate was sufficient as a starting point, officials believe that unequivocal and reliable information was needed to effectively safeguard the project's progress. Robust data analytics is essential to this goal.

Acting on the data

Of course, the real objective of all these programs and initiatives is to improve the lives of citizens. Leaders strive to provide higher levels of safety, security, and well-being for the people who have placed their trust in them.

Analytics cannot replace judgment. Nor can it replace an innate sense of right and wrong. But analytics can help leaders and policymakers make better decisions that lead to better results for more people. The most important thing is not only to capture information and knowledge about citizens but also act on it.

Governments everywhere harness analytics to propel themselves forward into the digital age, and it is very encouraging to see more leaders becoming advocates for analytics and using this tool now to start building a better future.

There are also practical political reasons for using analytics: without the transparent view of effectiveness that data analysis provides, social projects are not understood as contributing to national and international progress. Without data that verifies program results, social projects can inspire internal competition for limited resources, and—in some cases—the projects themselves are seen as the proximate cause of social unrest and disagreement. Intelligent analysis can support civil stability by transparently showing progress toward mutual goals. When properly planned, tracked, and measured using advanced data analysis, projects can yield a much higher probability for success at significantly reduced costs. Advanced data analysis can help to remove the speculation, the assumptions, and the hidden reality in order to accurately evaluate the feasibility of a project and understand the critical role of human performance in its successful implementation.

Governing data in a Transformation 2.0 world

The rise of data science coincides with another phenomenon: the rapid convergence of cloud, mobile, and social computing. As more and more people use technology to interact with each other and with organizations, the data created by these myriad interactions will continue growing. Adding grid computing and super computers to the mix will only accelerate the arrival of a globally networked society that lives—virtually, at least—in the cloud.

Thanks to the growing ICT use over the past 30 years, data have become an intrinsic part of our lives. Web-based services for consumers, corporations, and citizens are growing extremely rapidly. Reports show that the global amount of data created, collected, and shared in 2009 grew by 62 percent. In 2010, it is estimated that 1.2 zettabytes have been created and shared.[10] In 2020, this number should reach 35 zettabytes.[11]

These vast quantities of data have different origins: commercial, personal, and governmental—but they represent only one of the catalysts for innovation. More than machines, data are at the core of many of today's business and personal real-time interactions. Entire business strategies are established around data to better run supply chain processes, fine-tune their pricing strategies, improve relationships with customers, calculate risks and fight fraud rings, or optimize maintenance cycles, to name but a few of their uses. The development of the so-called Internet of Things—the trend toward connecting objects to the web by tracking and sensor devices that log and transmit data in real time—will also contribute to the preeminence of data in the business world.

The exponential rise of social networking brings another dimension to this issue. Hundreds of millions of people worldwide use social networking sites on a daily basis, and the amount of information they post has largely contributed to the current explosion of data. The proliferation of mobile devices, from smartphones to netbooks, is adding to this situation as an increased number of these devices can be used as data points to support a number of applications, ranging from geo-location or determining an address to evaluating pollution levels.

New ways of using the existing global ICT infrastructure is reinforcing this trend. Cloud computing, for instance, is a powerful example of a service that allows data to be exploited seamlessly by organizations, independent of their size, their geographical location, or their reliance on a huge infrastructure. The role cloud computing can play to help emerging economies leapfrog to higher levels of technological and economic development is among the positive examples of cloud computing potential.

In this context of rapid technological evolution, which is such a crucial element for supporting global growth, the debate around data privacy is very much topping the agenda of policymakers and business leaders worldwide. In Europe, in the United States, and in organizations at the global level—such as the Organisation for Economic Co-operation and Development, the International Organization for Standardization, and so on—privacy principles, guidelines, and regulations are debated, or will soon be.

While there are no doubts that regulations and global guidelines governing data privacy must be in accordance with fundamental rights and civil liberties and reflect the current technological state of play, they also must foster the digital economy and its positive impacts for citizens, consumers, and society as a whole. Protecting privacy and encouraging the flow of global data are not exclusive objectives. On the contrary, they need to go hand in hand, so the maximum number of people can harness the possibilities offered by digital technology to make their personal and professional lives better.

Without adequate policies, strategies, and tools to manage increased flows of information through government, there is a risk of compromising the privacy and safety of its intended beneficiaries. The balance must involve citizen empowerment and engagement in the information life cycle.

Conclusion: Looking ahead

As we move forward into the era of transforming governments and societies, the possibilities afforded by new information technologies for collaboration, personalization, and productivity gains will continue to influence government thinking. Wikipedia, Facebook, and Google

are only a few of the many platforms now enabling many-to-many, bottom-up engagement, co-production, and innovation. These platforms are rich with information about citizens' needs, and ideal for working together to develop short- and long-term solutions to society's problems.

The Internet is increasingly becoming the central nervous system of our economies and societies. In this new world, the roles of citizens, businesses, and governments are shifting and the boundaries between state and society, government departments, and even citizen collectives and businesses are becoming increasingly blurred. Mobile Internet increases access and accelerates the pace of change. In such circumstances, perhaps the government is just a node in a network of actors who cooperate and collectively gather, provide, and exploit necessary information for these services.

There is an opportunity to reinvent government by intensifying its interaction with civil society, but government leaders need to ask themselves some fundamental questions about how they collect, analyze, and exploit data in this new world. We are only just beginning to realize the transformative potential of analytics in enabling social and economic innovation.

Analytics is not a panacea, but it is part of the solution. At a time of diminished resources, heightened expectations, and a seemingly inexhaustible supply of data, analytics can help us make the best of what we have.

The timing seems especially propitious for emerging and developing economies. Unlike their more developed cousins, these are not burdened by cumbersome legacy systems and aging infrastructures. Newer technologies (such as cloud, mobile, and social computing) can enable these emerging economies to leapfrog over older economies and leverage the potential of analytics to accelerate the pace of projects and programs in both the public and private sectors. As seen in the examples cited above, analytics can do more than just crunch numerical data—analytics can be used to plan, predict, model, monitor, evaluate, and optimize the multitude of processes and operations required to develop, launch, and manage large-scale projects successfully.

Some have said that what oil was to the 20th century, data will be to the 21st century. If that comparison is valid, then analytics is the refinery that transforms the raw material of data into something of tangible value.

Notes

1 TNS 2010.

2 FutureGov Asia Pacific 2009.

3 SAS 2009.

4 guardian.co.uk 2010.

5 SAS 2011b.

6 SAS 2010b.

7 HMIC 2010.

8 Ipsos MORI 2007.

9 SAS 2010a. See www.sst.dk.

10 A zettabyte equals 1 trillion gigabytes or 1,000 exabytes. To use a metaphor most consumers would understand, it would take 250 billion DVDs to store 1 zettabyte of data.

11 IDC 2010.

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CHAPTER 1.9

Creating a Fiber Future: The Regulatory Challenge

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Policymakers across the telecommunications industry want a regulatory framework that will stimulate competition in the industry while maintaining individual players' incentives to invest in network and service improvements. Industry regulators aim for a regulatory balance between competition and investment that maximizes consumer and social benefits. But as technologies and investment costs change, that point of balance moves.

Broadband technologies and investment costs are a case in point. For as long as broadband services have run largely on existing copper-based networks, regulators have focused on encouraging competition to spread those benefits as widely as possible by requiring incumbent operators to share their networks with new service providers. Now, however, fiber technologies with higher bandwidth speeds can potentially offer broadband services with far greater economic, consumer, and social benefits. Governments want fiber networks with national coverage so that all their citizens can enjoy high-speed broadband services. Operators want to build fiber networks, too, because revenues and profits from their existing networks are declining and fiber networks could potentially be a source of new income streams and lower costs. Yet fiber networks are hugely expensive to build and will be difficult to afford on a nationwide scale without some kind of regulatory concessions or subsidies from government. So, in order to maximize consumer and social benefits from high-speed broadband services, telecommunications policymakers may need, temporarily, to shift their focus from stimulating competition to facilitating the massive investment required to roll out fiber networks with national coverage.

This chapter explains the pressures on operators to build fiber networks, the related economic and regulatory obstacles standing in their way, and what those countries with widespread fiber networks have done to overcome those obstacles.

Reasons to build fiber networks

Incumbent operators have powerful reasons to build fiber networks. These vary from country to country, but in general fall into three categories: first, governments want fiber networks for their potential to accelerate economic development and improve productivity. Second, competitive pressures from cable operators, niche fixed players, and mobile operators are mounting on fixed operators in voice and high-speed broadband markets. Third, fixed operators need to reduce costs if they are to continue to compete successfully against leaner and more efficient operators. The three categories of reasons are explored in greater details below.

Governments and the economic benefits of fiber

Governments are keen to have nationwide high-speed broadband networks for their potential economic

Table 1: The role of fiber networks in national agendas

Role	Description	Examples
Improve country's image	Governments want to position their countries as technology leaders to: • look better/faster and differentiate themselves from other competing nations • be seen as technologically advanced in order to attract FDI	Singapore Hong Kong SAR Qatar United Arab Emirates Malaysia
Remedy market failures	Governments want to directly invest and supply fiber networks when the private sector fails to do so	Australia Singapore
Increase spending	Building fiber networks will help governments spend money in infrastructure while at the same time incentivizing consumer demand, especially in times of economic crisis	United Kingdom United States

Source: McKinsey analysis.

benefits: recent research shows an annual GDP increase of 0.6 to 0.7 percent for every 10 percent increase in broadband penetration.[1] As well as promoting economic growth, fiber networks help governments address other points high on their national agendas (Table 1). For instance, having a fiber network improves a country's image, making it appear quicker to adopt new technologies than competing nations and so more attractive to foreign investors. This has been the experience of countries including the United Arab Emirates, Singapore, Malaysia, and Qatar. According to the European Commission, fast and ultra-fast broadband access could have a similar revolutionary impact on people's lives as railways did more than 100 years ago, enabling digital innovation across businesses, health, and education. Second, it helps governments—as it has done in Australia and New Zealand—address market failures by investing directly in the fiber networks and taking care of the supply of high-speed Internet when the private sector has not done so. Third, investing in fiber networks meets the macroeconomic policy objective of governments in some countries that are emerging from the recent economic crisis to invest in useful infrastructure as a means of stimulating overall demand in the economy, as in the United Kingdom and the United States.

Competitive pressure from mobile and cable operators

The fixed industry is facing growing economic pressure to find new income streams as consumers use competing mobile and cable connections to access more and more services. Wireline operators across Europe saw their access line accounts fall from 192 million in 2004 to 146 million in 2008, an average yearly decline of 7 percent (Figure 1). This trend is having a strong knock-on effect on revenues and profitability: the industry in Europe lost around €20 billion in revenues from 2004 to 2008 and €5 billion in profits over the same period. The same trend is apparent in most other countries around the world, as increasing numbers of users close their fixed voice accounts for the greater flexibility and ubiquity of mobile phone services.

The competitive pressure on fixed operators is even greater in countries that have cable infrastructure because cable companies can offer broadband speeds of up to 100 Mb/s if they have the latest DOCSIS 3.0 technology. In some countries, including Portugal and the United States, traditional fixed operators have responded by investing in fiber access technologies and are seeing their revenues increase as a result.

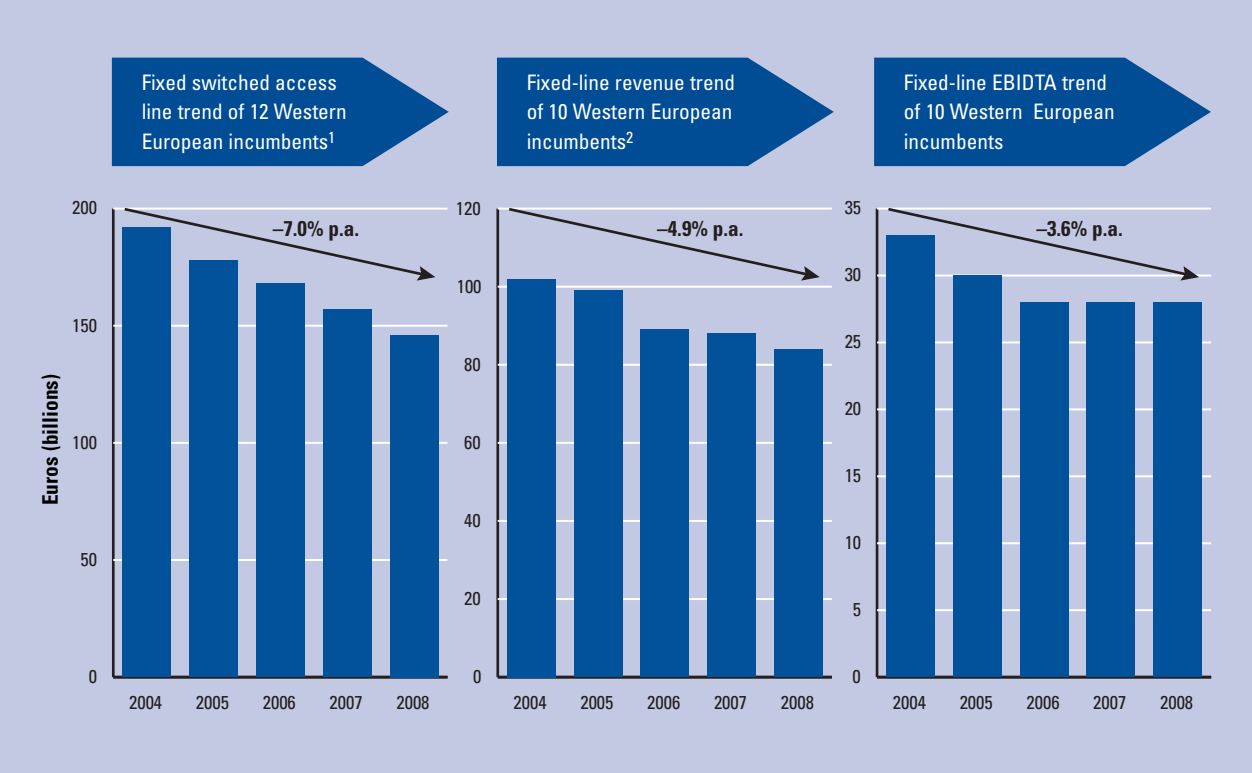
The range and attractiveness of services that high-speed broadband networks can deliver mean they represent potentially significant new revenue streams for operators that can afford to roll them out. In Western Europe, for example, although operator revenues from fixed voice services are forecasted to fall from US$132 billion in 2006 to US$115 billion in 2015, revenues from fiber based revenues will increase from US$2 billion to 26 billion for the same period (Figure 2).

However, fixed incumbents must invest in fiber access technologies soon if they are to invest in them at all, because of the continuing decline in their revenues and profits. If fixed operators continue to lose access lines and revenues at the same rate as they have for the past five years, industry cash flows could be too weak to support any major investment in fiber access technologies.

Need to reduce costs

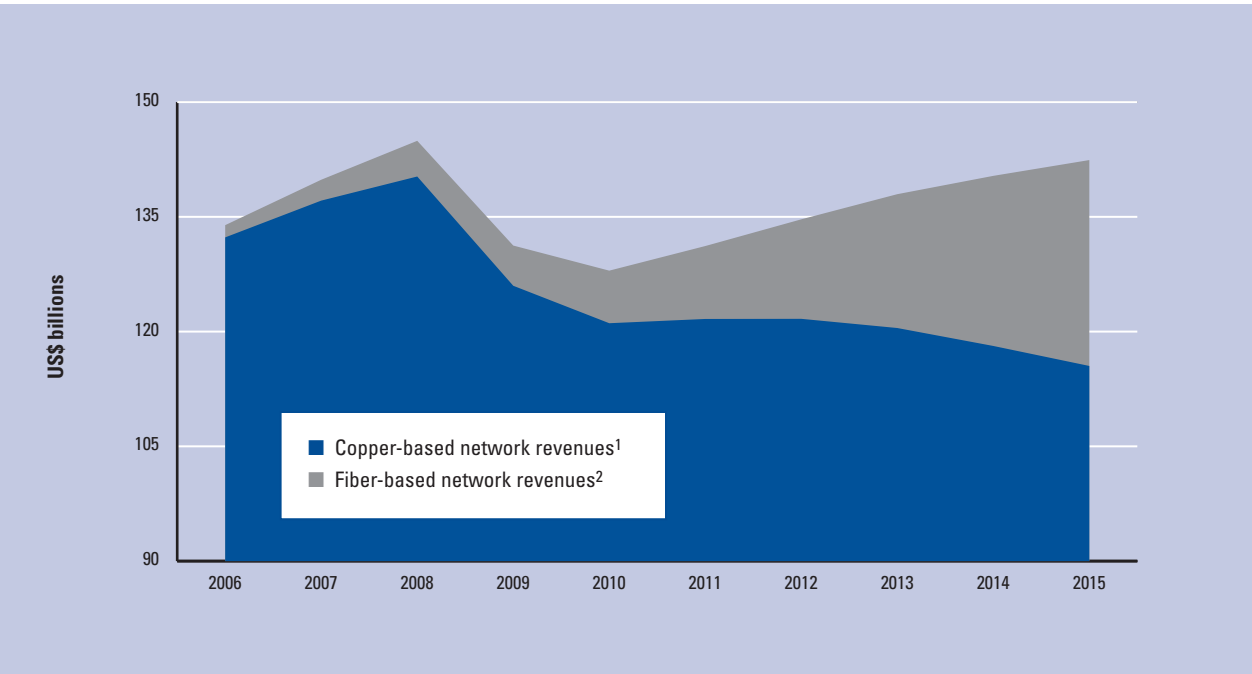
Fixed operators are also under increasing pressure to reduce their costs in order to compete with younger, nimbler competitors. Deploying fiber could transform their cost structures, potentially saving up to 80 percent

Figure 1: Number of access lines, revenues and EBIDTA margins for fixed-line industry incumbents in the EU12, 2004–08



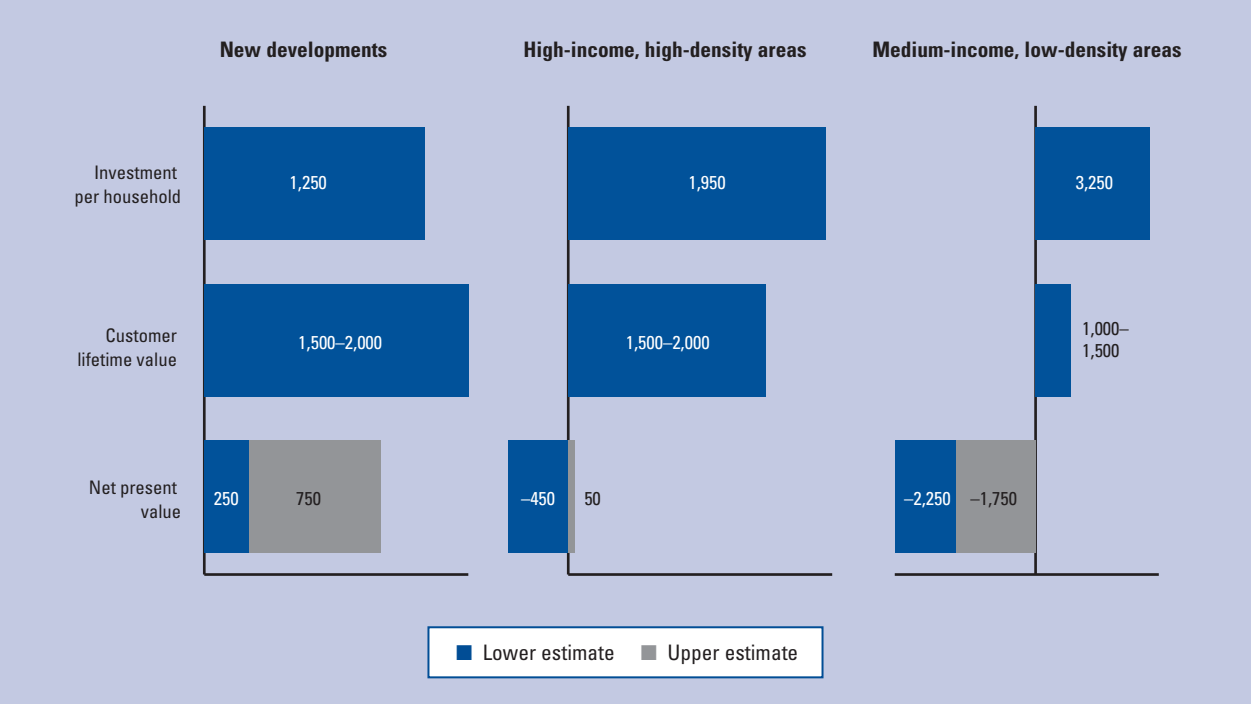
Source: McKinsey analysis.
Notes: *EBIDTA* refers to earnings before interest, depreciation, taxes, and amortization. The compound annual growth rate (CAGR) is the shown above the black arrows; CAGR figures are the average yearly decrease for this trend. The EU12 countries are Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia.
[1] Domestic fixed lines for major European incumbents.
[2] Domestic fixed business of major European incumbents.

Figure 2: The impact of fiber networks on the revenue model of the industry: Industry revenues in fixed voice and data, EU countries (US$ billions)



Source: Pyramid Research, 2010.
[1] These are revenues based on copper access networks (metered voice, voice access, and broadband); they include fixed PSTN telephony.
[2] These are revenues based on fiber networks, which include fiber broadband and IPTV.

Figure 3: Fiber investments and returns, by area type (US dollars per household)



Source: McKinsey analysis.
Notes: Margin for voice services is 70 percent, for ADSL is 45 percent, for IPTV is 30 percent, and for WACC is 15 percent. The figure assumes a 30 percent household penetration. The gap between the investments required and the customer value is large in an HSBB investment and hence will require a long payback time of around 20–25 years. The bars are not to scale.

of their operating costs, mainly at the core and access levels of the network. However, operators are unlikely to realize most of these potential cost reductions until after their copper networks have been shut down completely.

Operational savings at the network core will come from eliminating legacy equipment and introducing soft switches, reducing floor space, simplifying network management processes and cutting maintenance costs. The remaining 30-40 percent of the potential reduction in operating costs will come from savings at the access level. Networks will need fewer, smaller exchanges, reducing their real estate costs. Installing modern and efficient equipment will also enable them to reduce their power consumption.

Obstacles to a widespread fiber rollout by fixed operators

Given these reasons, operators should be looking forward to rolling out fiber networks. However this is not always the case, as two linked challenges are limiting their ambitions. First, the scale of investments required to upgrade copper networks to fiber-to-the-home (FTTH) is enormous, making the investment side of the business case for fiber, especially for nationwide rollouts, very challenging. Second, the returns are also uncertain. As with any new technology, operators face some risk that consumers may not immediately take up their high-speed broadband offers. More important for the uncertainty of returns, however, is regulatory uncertainty. Each operator's business case for a fiber network depends on securing a stable income stream from the network to justify the massive investment. A stable income in turn depends on a certain regulatory regime giving operators rights to a predictable income flow from the network. But in many countries, regulatory frameworks governing the deployment of fiber networks are not yet stable. The main challenges involved in rolling out fiber networks are covered below.

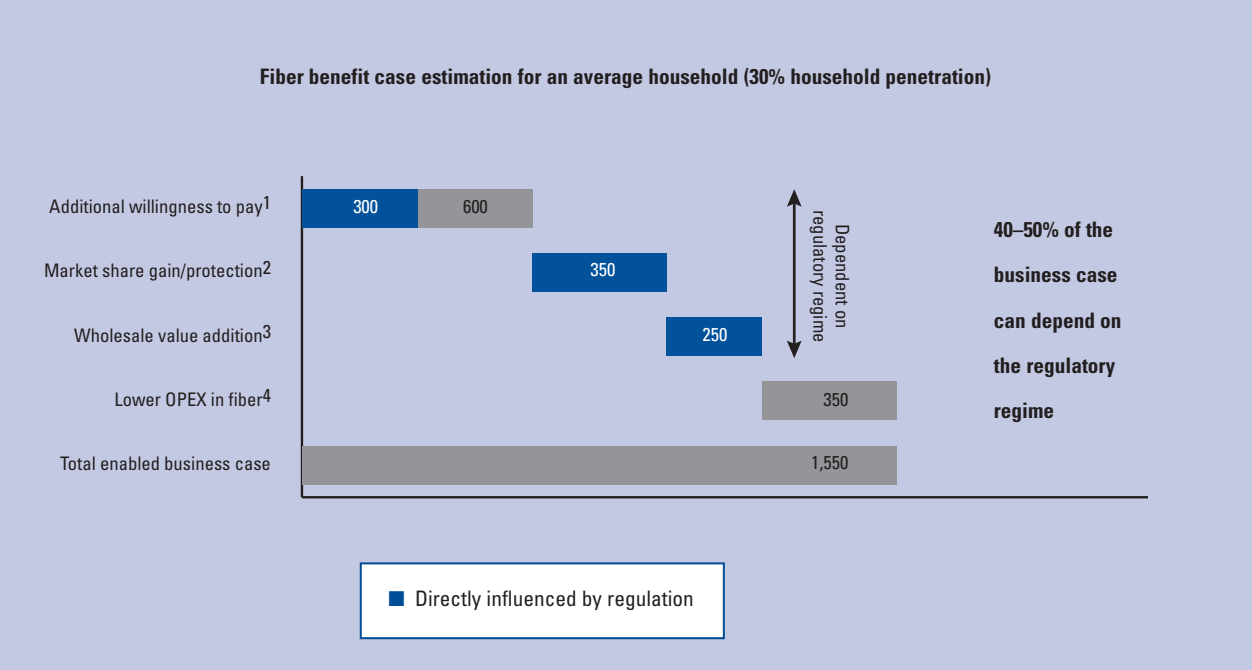
The challenge of the economics of fiber

Fiber networks are expensive to build. The European Union estimated recently that the cost of building fiber networks with a connection speed of at least 30 Mb/s to all households in its territory and connection speeds of 100 Mb/s to at least half of all households could require investment of between €180 and €270 billion.[2] In Australia, the government expects to invest $A43 billion in deploying a national broadband network.[3]

For network operators, the high costs of rolling out fiber networks present a particularly complex economic challenge. Fiber networks built in heavily populated, high-income areas could yield modest positive returns for the network operator, although even in these areas there are the risks concerning the speed and extent of consumer take-up. In lower-density, lower-income areas, however, there is rarely any financial rationale for a private investor to roll out new fiber infrastructure.

Figure 3 shows that market forces on their own will stimulate investment in fiber network coverage only

Figure 4: Investment (euros per household, CAPEX equivalent)



Source: McKinsey analysis.
Notes: This analysis considers incumbent operators with both fixed and mobile business.
[1] Based on premium on retail price of €12/month (average over time, including inflation).
[2] Based on increased/protected market share and defended wholesale charges.
[3] Change from passive to active wholesale products.
[4] Forced migration to new fiber network (shut down PSTN).

in the few areas where this makes economic sense for private operators, notably greenfield, upmarket building developments where fiber deployment costs are relatively low. Private operators in emerging markets such as China, India, or the Middle East are therefore likely to roll out fiber networks of substantial size because of the natural expected expansion and upgrading of housing stock in these markets.

In more developed markets, however, where greenfield housing developments are now rare, with market forces alone it will take decades to upgrade the infrastructure to FTTH. Only in high-income, high-density areas or in areas where several infrastructure players compete will FTTH be deployed. Operators will likely roll out to most other areas a variety of lower-speed broadband options in the short term, such as broadband delivered via fiber-to-the-curb (FTTC).

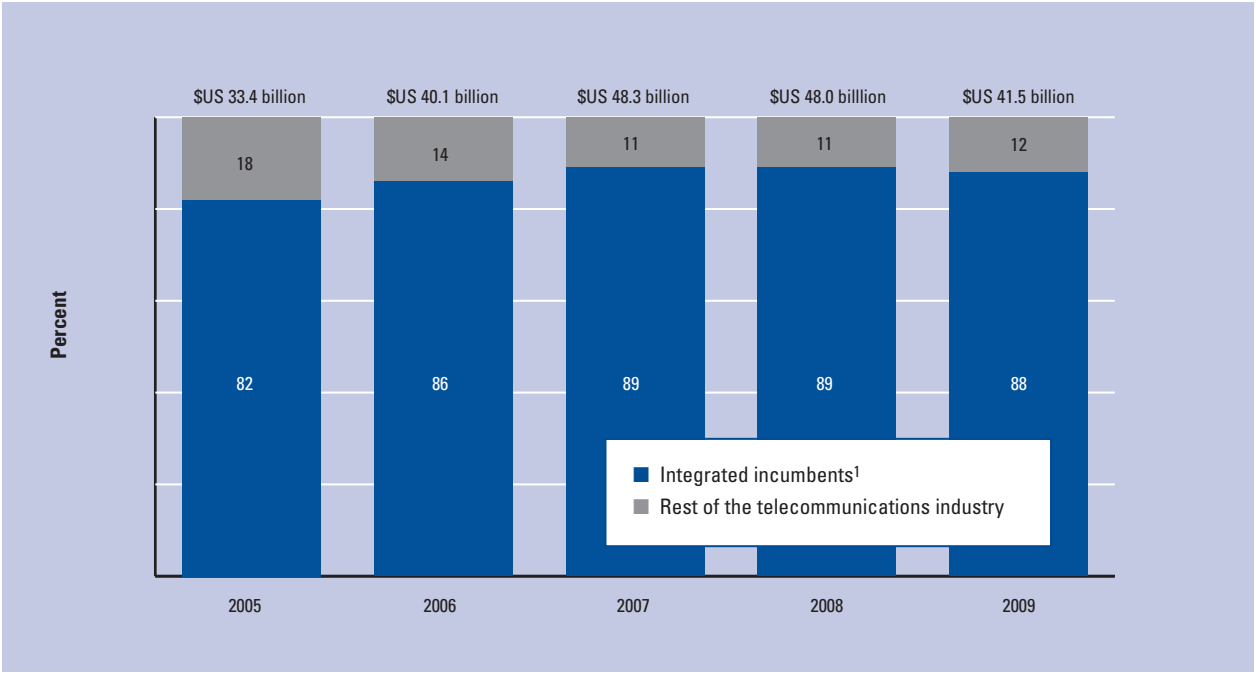
Regulatory uncertainty

Regulations governing fiber access networks need to take into account the economic challenges for operators of deploying such networks, especially the enormous investment costs and demand risks. Consistent regulation is a necessary condition for investment in such an uncertain market context. But operators in many regions face continuing uncertainty about whether and how regulators will grant competitors access to newly built fiber networks, making returns from investment in fiber networks difficult to calculate. Telecommunications executives around the world are concerned that, absent clear regulations enabling a robust calculation of the payoff, their approaches to investors for capital to build fiber networks will fail.

Figure 4 shows how heavily an operator's business case for deploying fiber depends on the regulatory regime. Regulation influences an operator's return on its fiber investments because it may affect consumers' willingness to pay for connection, control prices on new services, or delay savings from improved operational costs by delaying the transition from copper to fiber networks. As a result, 40 to 50 percent of a European incumbent operator's potential average return per household on investing in a fiber network depends on regulatory decisions.

Operators fear that regulators will apply to new fiber networks the old approach to broadband regulation, enforcing a wholesale regime that allows competitors to use an incumbent's network infrastructure. This kind of approach is likely to cap prices that incumbent operators can charge for wholesale fiber, significantly limiting the value of their investment in the network. Indeed, in those countries that have adopted such an approach, there has been less investment in new fiber infrastructures than governments have desired because of uncertainty about the future income streams that incumbents will earn from their investment. On the other hand, if regulators make rules to protect incumbents from competition on their new fiber networks for a given period, they can risk creating another monopoly.

Figure 5: Distribution of US telecommunications companies capital expenditures, 2005–09



Source: Bloomberg online database, October 2010.
Notes: The "market" for investments is driven by the incentives given to a few. Approximately 90% of these investments in the telecommunications industry in the United States are made by its 4 largest companies
[1] Verizon, AT&T, Sprint, and Qwest.

Regulators' respect for a framework that promotes broadband competition is understandable. Over the past 15 years, the competition focus has worked well, reducing prices for most services, opening up networks, reducing cross subsidies, and increasing real consumer choice. But such an approach—combined with increasingly intense competition from mobile services and cable operators and the massive investment required to build fiber infrastructure—has made investment in fixed networks less attractive to incumbents just when governments want to have national fiber networks to boost economic performance.

The scale of investments required for fiber networks introduces an additional complication to fiber regulation, namely that very few industry players are of a scale that can make these investments. To illustrate, from 2005 to 2009, around 90 percent of total investments in network infrastructure in the United States were made by the four largest integrated operators in the country (Figure 5). Even operators of this size may need some additional incentive from government, in the form of a subsidy or regulatory advantage, to make the business case for building a fiber network stack up.

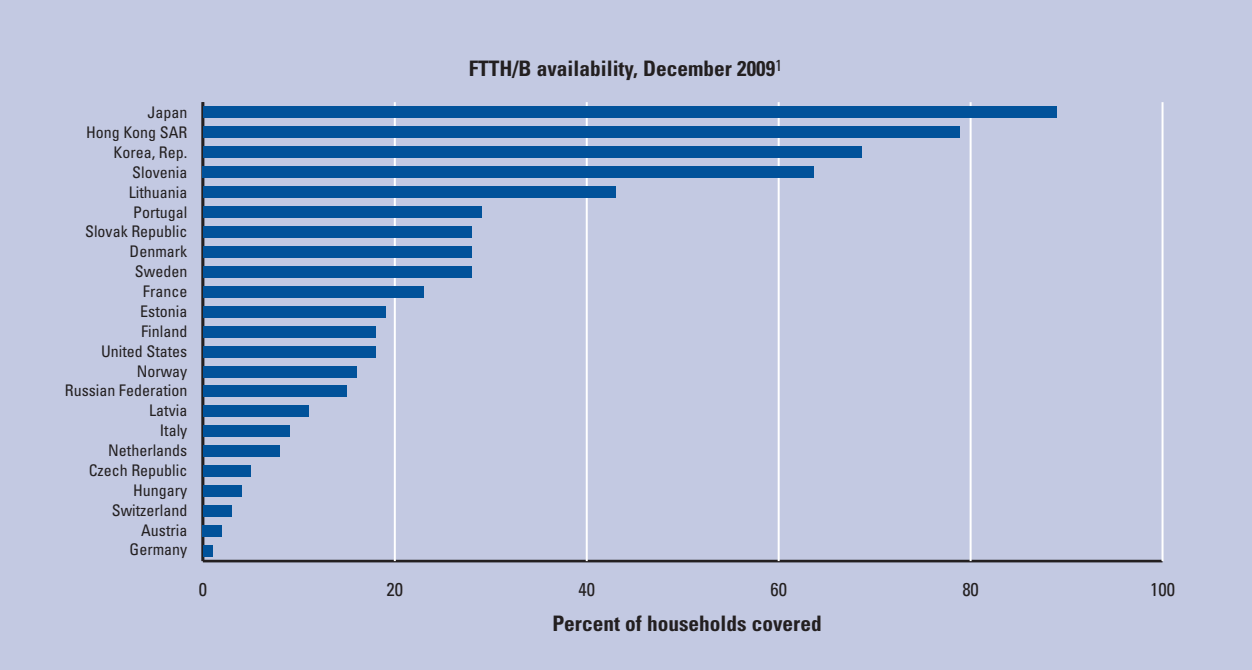
These changes in the broadband market context call for a regulatory approach that balances the need for investment more carefully against the need to support competition. Such an approach would recognize that new technologies are providing consumers with multiple means of access to voice and data services, changing competitive intensity in the industry and altering network economics. Policymakers may need to consider offering tailored incentives to a very few, large industry players. Adapting regulatory frameworks to the new market situation may mean increased revenues for some operators in some areas, at least for a while, to stimulate investment in the fiber networks.

Regulators are already beginning to shift their focus. In the European Union, for example, Viviane Reding, former European Commissioner for Information Society and Media, stated "It is very important that the conditions to invest exist and regulatory certainty is one of those conditions. Today, the regulatory landscape in Europe is unfortunately heavily fragmented in this respect."[4] This fragmentation may be one of the reasons that European countries lag behind their peers in investments in fiber. In countries with an investment-friendly regulatory approach to fiber, such as Japan, Hong Kong and Korea, Rep. (Korea), fiber rollouts are more advanced (Figure 6).

Regulatory conditions for investment in fiber

Operators and policymakers everywhere are trying to find new regulatory compromises with the industry. Among the regulatory approaches so far devised to stimulate implementation of next-generation fiber networks, only two have resulted in widescale success: the first is to underpin returns by giving the investing operators exclusive rights to use their completed network, as in the United States; the second is to reduce the investment cost to incumbent operators by subsidizing investment in network construction, and then enforcing shared wholesale access to the completed network, as in

Figure 6: Deployment of fiber networks in advanced telecommunications markets



Source: FTTH Council, 2009.
Notes: *FTTH/B* is fiber-to-the-home/building.
[1] Or latest available date.

several Asian countries. A third scenario of open access with subsidies may be emerging in the European Union, though it is so recent that its success cannot yet be gauged. This section outlines these three regulatory approaches (Figure 7).

Exclusive rights to exploit new network assets: United States

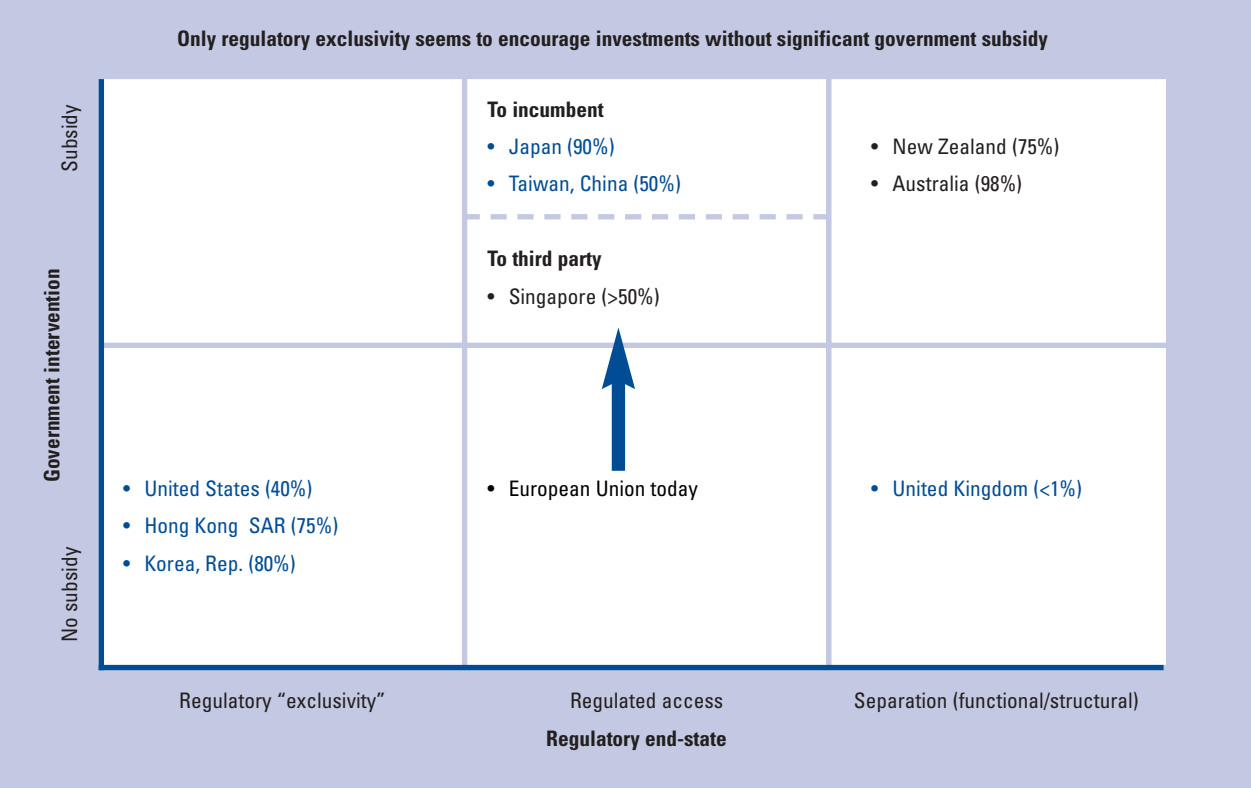
In parts of the United States and a few other countries, the rollout of new high-speed networks has been encouraged by infrastructure competition. If two competing networks exist in the same area and one operator invests in an upgrade to increase the speeds it can deliver to customers, this places pressure on the other operator to invest in an upgrade to offer comparable speeds or risk losing customers.

Infrastructure-based competition has emerged in countries such as the United States where legacy cable television networks operate alongside the copper telephone network. When these cable or hybrid fiber coaxial (HFC) networks were first built, they were dedicated to providing television services and did not compete with telephone networks. Then cable technology developed so it could deliver not only television but voice and Internet services at the same time. Cable and telecommunications operators found themselves with competing infrastructures, and have subsequently sought to match each other's performance. As the speeds available over cable have outstripped those that copper can deliver, telecommunications companies have rolled out optical fiber closer and closer to homes of customers in order to deliver comparable performance over an ever shorter copper "last mile." The latest generation of cable technologies, DOCSIS 3.0, delivers speeds that have pushed the telecommunications companies to start connecting fiber all the way to the customer premises, doing away entirely with copper and enabling much faster speeds.

Where separately owned networks already exist, governments have tried to encourage their owners to invest in building new high-speed networks by granting them exclusive rights to exploit their newly deployed assets. In 2004, the Federal Communications Commission (FCC), the US regulatory authority, proposed that new fiber networks servicing the mass market would not be required to provide unbundled access to competitors. This contrasts with the much stronger unbundling requirements placed on copper networks under the US Telecommunications Act of 1996. The FCC felt that the strength of existing competition between cable and copper infrastructure allowed for a weaker access regime, and thus would stimulate the construction of new parallel network infrastructure without harming competition.

This form of exclusivity, along with competitive pressure from cable operators rolling out DOCSIS 3.0, provided the impetus for the construction of fiber-to-the-premises (FTTP) networks by Verizon and fiber-to-the-node (FTTN) networks by AT&T. In 2004 Verizon began deploying a US$23 billion FTTP network capable of delivering up to 50 Mb/s download speeds and 20 Mb/s upload speeds. The network had passed 10 million premises by September 2009. In total,

Figure 7: Approaches to widescale fiber access deployment



Source: McKinsey analysis.
Note: Countries highlighted in blue reflect actual coverage; countries in black reflect planned coverage.

17.2 million households, or 15 percent of the United States, had been covered by FTTP deployments in September 2009, compared with only 180,000 homes at the time the access holiday was granted. Some 5.3 million US homes have now been connected to FTTP; 1.5 million homes were connected in 2009. Since 2004, AT&T has been rolling out an FTTN network capable of delivering download speeds of 18 Mb/s and upload speeds of 1.5 Mb/s. By the start of 2009, the network had passed 17 million households, and had plans to pass 30 million by the end of 2011.

Exclusivity guaranteed by regulation stimulates the expansion of high-speed broadband coverage because a guaranteed monopoly of services offered over the infrastructure means the investing operator is able to recoup its investment more easily. This advantage is likely to stimulate coverage in areas where building a network would have been uneconomic for operators if they had to allow competing service providers to use the network they had built on its completion, as is the rule under open-access regimes.

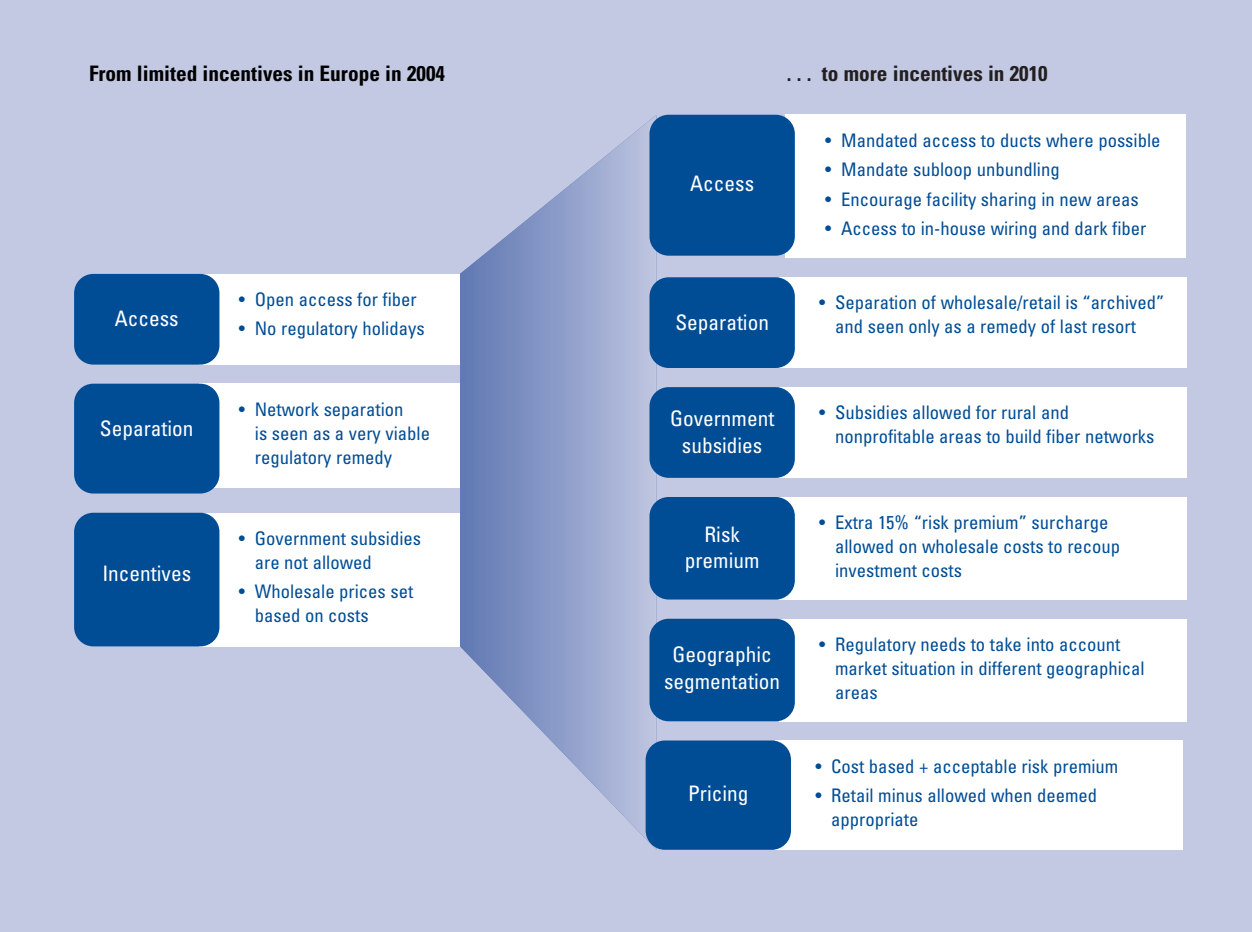
Achieving greater network coverage in this way entails a trade-off with some of the other benefits of competition. Markets that have infrastructure-based competition with no open-access regime tend to have higher prices for lower broadband service speeds than similar markets that do mandate open access. Furthermore, a regulatory "exclusivity" regime by itself is not enough to encourage operators to extend high-speed broadband coverage to areas that will still be uneconomic to serve even for a monopoly provider: even with this benefit, both AT&T's and Verizon's high-speed networks have targeted high-income households. The United States has tried to address this challenge by investing US$7.2 billion of government money in rolling out high-speed broadband infrastructure to areas that are essentially uneconomic for private operators to serve.

Government-sponsored upgrade with open access: Japan

Japan has the second-fastest average broadband speeds in the world, after Hong Kong, and the second highest penetration rate of FTTH, after Korea, at 34 percent of households. Most of this fiber network has been built by the incumbent Nippon Telephone and Telegraph (NTT), taking advantage of a package of tax incentives from the government that includes such elements as accelerated depreciation and deductions for business users, as well as low-cost loans.

The regulator mandated open access on copper in 1999, with wholesale prices set low to reflect the low costs of operating and maintaining a fully depreciated network. These measures encouraged strong competitors to develop in the DSL market, and broadband penetration grew from below 1 percent in 1999 to 66 percent in 2009. Competitive pressures from DSL, cable operators, and new smaller fiber players eventually compelled

Figure 8: Evolution of the EU copper regulatory approach



Source: McKinsey analysis; European Union, 2009.

NTT to develop an FTTP network; today, fiber is the dominant broadband access technology in Japan, having overtaken cable in mid 2008. However, the government clarified the regulatory framework that would govern the network before NTT started to raise the investment required.

NTT is required to grant access to the fiber network, but prices set by the regulator are high enough to guarantee adequate returns to NTT on its investment and prevent competitors from undercutting NTT's retail price. Regulated wholesale fiber access prices at approximately US$55 per user per month are four to five times higher than copper local loop, reflecting the fact that the network is not yet fully depreciated. This leads to retail prices of US$63 per month for an uncapped 100 Mb/s connection. The Japanese regulatory agencies take an active, adaptive approach and were reassessing the access regime and prices in 2010.

Through subsidies and incentives, Japan's government aimed to make FTTH available to over 90 percent of Japanese premises by 2010 as part of its *Ubiquitous-Japan* Internet policy launched in 2006.[5] By December 2008, 87 percent of premises had been reached.

Evolution of the European regulatory framework

The European Union's experience illustrates the challenges regulators face in deciding how to regulate competitor access to fiber networks in a way that does not discourage investment in their development.

In 2004, there were limited incentives for operators in the European Union to build fiber networks. The "old copper" regulatory framework was applied to fiber: no regulatory reliefs for fiber networks were granted; wholesale access to fiber networks was widely mandated; enforced separation of wholesale and retail networks was seen as a powerful remedy against the dominance of incumbent operators in fixed networks, which were allowed no kind of subsidies or price flexibility on their wholesale access products.

Six years later, the European Commission has exchanged the old regulatory framework for one that recognizes the need to stimulate large-scale fiber investments differently (Figure 8). Changes to the old regulatory framework are aimed at increasing incentives for network operators to invest in fiber networks. The requirement for operators to separate their wholesale and retail businesses has been relegated to a remedy of last resort against dominance. Operators are allowed

to charge a 15 percent premium over copper wholesale access prices for fiber wholesale access, reflecting their higher investment risk. Governments are allowed to subsidize the roll-out of fiber networks to rural and unprofitable areas, and operators can adapt pricing regimes to different market contexts in different geographical areas. Last, the new regulations allow more flexibility on pricing on wholesale products.

Conclusion

It is too soon to say whether the new regulatory approaches, such as the EU one, offer sufficient incentives and certainty to operators to stimulate the large-scale investments in fiber networks needed, but it is certainly a start in that direction.

It is clear that business as usual will not work. More innovative ways of collaborating among local and national governments, operators, and regulators will be required. Broadly, governments can act to spur demand for high-speed broadband among citizens, provide investment support for industry players, and—perhaps most important of all—put forth a compelling vision of the economic benefits of a "high fiber" future. Regulators need to find the right ways, within their economies, to balance the need for competition against the creation of an investment-friendly environment.

Fixed-line operators can recover falling revenues and improve their operating costs by deploying fiber networks. But the investments that such networks require are so large that regulatory support of some kind is essential to guarantee that they are able to make a positive business case. Regulators need to manage carefully any shift in their regulatory focus from competition to investment incentives, in order to get the balance right. But they must also avoid continuing regulatory uncertainty, which is delaying the investment in fiber networks that all sides of the industry want. Incumbent fixed operators are mindful of their duty to work with other stakeholders in the industry—government, policymakers, and competitors—to achieve national aspirations. But to achieve national fiber network coverage, governments and policymakers may need to re-examine their current approach to regulation.

Notes

1 Beardsley et al. 2010.

2 European Commission 2010.

3 Australian Government 2010.

4 Reding 2008.

5 Izumi 2006.

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CHAPTER 1.10

The Emerging World's Five Most Crucial Words: "To Move Money, Press Pound"

RAM MENON, TIBCO Software Inc.

Perched 4,000 feet above sea level—up in thin air, where marathoners like to train—Embu is a town nestled in the foothills of Mount Kenya. Each September, much of this land blazes with colors of the Jacaranda—a tree that blooms in clusters of lush blue corollas. But not every square mile is so blessed. In 2010, a shortfall of rain northeast of Nairobi left farmers with fields of young crops destroyed. Fortunately, their balance sheets escaped a similar fate. Although the drought wrecked investments in quality seeds, costly fertilizers, and other high-grade inputs, insurance payouts came faster than "fast." They came in *real time,* on an as-needed basis, through a remarkable initiative called M-PESA.

A joint venture between Vodafone and Kenyan mobile-operator Safaricom, M-PESA is one of many mobile-money programs surfacing in Africa and Asia to cure the root of financial hardship across the emerging world: the challenge of moving money from sender to receiver.[1] With mobile money—funds transferred with a touch on a keypad—rising supplies of cash are now reaching these financially starved areas, where they are fueling consumption, sustaining businesses, and strengthening nations by tightening their weakest links: fragile rural economies.

It is no stretch to say that sending cash to the countryside can lift the fortunes of an entire nation—a cause and effect embodied by the Kenyan town of Embu. It works like this: reimburse rural farmers for lost investments in farm inputs and you demonstrate a capacity to provide swift financial protection, the kind that will encourage farmers *across Kenya* to make bold investments of their own. As for "swift financial protection," Safaricom defines it well: "The efficiency of any economy relies on how quickly resources can move from 'point A' to where they are needed most and will be put to best use. It continues: "Since money is the engine that powers trade, its efficient movement is vital to supporting evolving economies. This is especially true in emerging nations where formal money-movement infrastructures like banking are just beginning to take shape."[2]

Just beginning, indeed. Consider this: when residents of the Maldives lost their savings in the tsunami of 1994—a storm that ravaged the island nation—it was not because they had sunk them into assets later destroyed in the flood. Instead, the losses involved cash: funds Maldivians had stuffed into mattresses because they lacked access to banks. When the tsunami hit, a people's life savings were literally washed away.

There is an urgent need to extend the reach of financial services worldwide, where, by the World Bank's count, some 2.7 billion people lack access to banking. Take Kenya's case: although it is the financial hub of eastern and central Africa, at least a third of its population remains beyond banking's reach.[3] Some do not qualify for accounts. Others—the literacy-challenged, for example—rarely want them. Even in South Africa—

a middle-income nation with a strong financial system—only 60 percent of adults use banking services.[4] But a mobile phone is a different story. Nearly 100 percent of all South African adults own a mobile phone, a group that includes many who are unbanked.[5] Could mobile phones hold the key to democratizing access to financial services?

Here is a strong clue: in the developing world, no instrument is of greater value. Over 2.2 billion mobile phones are now in use across the emerging world[6]—a number that will skyrocket as developing nations drive over 80 percent of all new subscriptions worldwide.[7] The economic effect is dramatic. Waverman et al. show that in a typical emerging nation, adding an additional 10 mobile phones per 100 population boosts per capita GDP growth by 0.59 percent.[8]

Little wonder, then, that home-grown mobile operators in China, India, Africa, and the Middle East now meet or exceed their Western counterparts in size. Their influence will only grow; led by India, they will accelerate their push to turn developing nations into hotbeds of mobile telecommunications. Indeed, they are paradigms of disruptive innovation, delivering robust service to low-spending customers eschewed by Western carriers.

All of which begs the question: what makes emerging markets so ripe for mobile penetration? The Nielsen Company sheds light on this question by accounting for the difference between Internet adoption and mobile phone adoption. "Internet penetration for established economies follows a fairly typical pattern," claims a posting to *nielsenwire,* "rising with income levels, and requiring a threshold of around $20,000 of per capita GDP to achieve 50% penetration. Not so for mobile communication. First, mobile penetration often exceeds 100% because people own multiple mobile phones. Second, while mobile phone penetration also rises with per capita GDP, it happens earlier, and faster, than Internet adoption. Instead of a $20,000 threshold, in many countries mobile phone penetration exceeds 50% percent with a per capita GDP as low as $5,000."[9]

Nielsen estimates that over the next five to ten years, mobile penetration will rise to some 140 phones per 100 inhabitants—even in nations of very low per capita GDP—and then rise gradually with income. "At that point," anticipates Nielsen, "the gap in mobile communication between developed and emerging economies will have largely disappeared, although some differences in technological sophistication will remain. In fact, within emerging markets, mobile communication may actually foster greater business and GDP growth, creating a feedback loop which will further boost mobile penetration."[10] The upshot is clear: in emerging markets, mobile technology is a means of disruptive growth by which mobile banking will leapfrog online financial activity. Moreover, by bringing the unbanked into banking, it will enable real-time money management and encourage the growth of savings.

What follows is a brief but vivid look at mobile money across the emerging world, with particular emphasis on its transformative power, the key challenges that must be tackled to fully leverage its potential, and the next transformational waves of this undeniable sea change.

Mobile money: Big potential from a small handset

By all measures—financial, social, and even cultural—the mobile phone has become the Trojan horse for change in the emerging world: it is inexpensive, personal, connected, and ubiquitous. Here, a handset offers more than voice and text and music and gaming. It offers *sustenance:* mobile agricultural advice, healthcare support, and money transfer. The latter is especially compelling. Mobile telephony has spawned mobile money, turning small, local retailers into the equivalent of bank branches. In bringing banking services to those who have never seen the inside of a bank, it creates a stepping stone to formal financial services for billions of people with no accounts, credit, or insurance.

M-PESA (*pesa* is Swahili for *money*) is mobile money's gold standard: a Kenyan service enabling those with no bank account to move money, receive cash, and pay bills (utilities and others) through a mobile phone. By making it possible for Nairobi's migrant laborers to send money back home, for instance, it serves technology's new imperative to reach beyond original intent; in this case, creating *banking for the unbanked*—an application of mobile telephony more tectonic than first imagined. There is a name for the financial, commercial, and societal sea changes spawned by audacious new applications of information technologies: *Transformation 2.0.* Its champions know that in operating enterprises large and small, in nations fully developed and newly emerging, success means managing a new reality; one limned by three tenets:

1. In the 21st century, opportunities and threats come with exponentially more data and must be managed in exponentially less time than ever before.
2. Seizing the opportunities and dismantling the threats is best done pre-emptively, in the most malleable moments before they emerge.
3. The capacity to strike pre-emptively requires a 21st century data infrastructure—one that is agile and operates in real time, and thus is capable of operating in context.

Context is at the heart of Transformation 2.0, and for good reason: if raw data show what is, contextual data show what is next. When the right information

finds the right place at the right time, managers can act pre-emptively to solve the toughest problems across the board—from operating a complex business to advancing global security or enabling the sustainability of Kenyan farmers. This would account for what happened in Kenya's Embu on September 21, 2010. Armed with contextual data in the form of real-time rainfall reports from local weather stations, local microinsurer Kilimo Salama approved compensation for struggling farmers the moment precipitation levels dropped below average. It did not wait for the crops to die because it knew what was coming. The result: with instant financial protection, Kilimo Salama did more than pre-empt crippling losses for many Kenyan farmers. It enabled them—and emboldened them—to invest moving forward.

By every measure, M-PESA is a transformative wave. Launched in 2007, it is the world's first commercial mobile money transfer system, developed to meet the banking needs of people outside the formal financial system. The technology consists of a service platform that integrates a mobile wallet with Safaricom's rating, billing, and provisioning systems. Subscribers of Safaricom register for the service by completing a simple form and showing identification. Once registered, the carrier replaces the mobile customer's SIM card with an M-PESA-enabled SIM and links the phone number to an electronic account—the e-wallet. To load money on the wallet, the user visits the nearest M-PESA agent—17,652 small retailers fill the role—and deposits cash there, which is stored as "e-float." Backed 100 percent by liquid deposits held by Safaricom in fully regulated commercial banks, e-float is the virtual currency used to move money to other people, pay bills, or purchase airtime, via an encrypted SMS. A deposit, or *cash-in transaction,* entails a real-time transfer of e-float from the M-PESA agent to the customer in exchange for cash given to the agent. A withdrawal, or *cash-out transaction,* requires that the customer transfer e-float to the agent and receive cash in exchange. Those on the receiving end of a mobile-money transfer do not need to own a mobile phone to cash out. As an alternative to cashing out, they may use e-float to pay bills, purchase healthcare, buy groceries, and more.

This bears repeating: M-PESA and platforms like it attack the root cause of economic hardship across much of the developing world. It is not a shortage of funds that limits emerging populations from buying goods, paying bills, and receiving government or employer payments. Rather, it is the inability to move money promptly and reliably from sender to receiver, especially when receivers inhabit remote areas, as many do. In markets where infrastructures are poorly developed—where moving cash by couriers is risky, expensive, and inefficient—the problem is more the "velocity" of money than its supply. Enter telecommunications network operators, whose adaptations of mobile technology can deliver financial services quickly, securely, and at low cost.

Safaricom says it this way: "Traditionally, most money never reached its destination with the same level of frequency and efficiency as it does now with M-PESA. Given the high costs and risks involved in money-transfer methods used before—like bus couriers or informal messenger systems—one had to lump the cash, often by month, before it could be sent home. With the advent of M-PESA, this money can be remitted in real-time on an as-needed basis. Also, it is much cheaper and less risky compared to bus couriers prone to pilferage. The end result is that more money is getting into rural economies, fueling consumption and giving a new lease of life to small businesses in these areas. The sum total of these gains fuels the national economy."[11]

As M-PESA grows, and its counterparts emerge elsewhere in the developing world, their success will be assured only to the extent that their operations are transparent and protected from abuse. Entrenched banking interests, often loathe to see their physical branches and ATMs rendered moot by mobile money, will likely do all they can to slow the march of this initiative. To remain viable, mobile-money systems must stay sufficiently liquid and demonstrably transparent. This is no easy feat.

Liquidity: The core challenge

"De-materializing" cash into mobile e-float offers a life-changing benefit—money that moves in real time at reduced risk—but not without steep challenges. The first of these challenges involves the economics of liquidity: keeping agents stocked with cash and e-float so that they can meet customers' needs for deposits and withdrawals. Cash-in transactions cause agents to pay out e-float, while cash-out transactions cause them to accumulate e-float. The trick is to maintain balance: if agents perform too many cash-in transactions (deposits) they will eventually run out of e-float. If they perform too many cash-out transactions (redemptions of e-float) they will run out of cash. In either case, the agent must rebalance liquidity: convert the excess e-float into cash or vice versa. To buy or sell e-float, agents must deposit or collect the appropriate amount of money in (or from) the telecommunications network's account at any of the custodial banks supporting the mobile-money system. It normally takes one or two days for such transactions to settle. This imposes a high working-capital cost on agents, who must maintain a sufficient balance of e-float to accommodate their potential liquidity needs for up to two days.

For poor people operating in a cash economy, whose income comes in the form of small lumps of cash, being able to cash in and out easily is a precondition for participating in a mobile-money system. A keen perspective on this challenge comes from the Bill &

Melinda Gates Foundation, which supports mobile-money programs through its initiative called Financial Services for the Poor. It says, "[Mobile money] retail [agent] outlets are bridges between the entrenched cash-based exchange system and the new electronic payments cloud. This network of bridges needs to be sufficiently dense geographically to offer the necessary convenience to all customers, and sufficiently resilient [liquid] to meet whatever cash or e-float needs customers may have at any time."[12]

The International Finance Corporation agrees. This investment advisory, a member of the World Bank Group, explores mobile-money liquidity in its report, *Bridges to Cash: The Retail End of M-PESA*. It asserts: "Proper liquidity management of the retail [agent] network goes to the heart of the usefulness and trustworthiness of the [mobile-money] proposition. For the retailers, keeping customers supplied with e-float and cash is central to their business."[13]

What headway is being made to meet this critical challenge of balancing liquidity? In Tanzania, where Vodacom Tanzania, a joint venture between Vodafone and Telkom South Africa, launched mobile money in 2008, the system taps aggregators (which they call *master-agents*) to recruit agents and manage their floats, transporting cash for the agent if necessary. The master-agent receives a flat fee for each new agent and a percentage of each agent's commissions, giving him or her an incentive to sign up high-quality agents who will actively transact. To overcome the time lag in settling account-to-account transfers at Tanzanian banks—lag that undermines the prompt replenishment of electronic value—Vodacom Tanzania has accelerated the process by establishing a line of credit for master-agents. Under this system, master-agents can draw on a pool of interest-free electronic value to refill the e-float of an agent once they are satisfied that the agent has transferred value back to the master-agent's account. Master-agents repay the loan once they have converted the agent's cash into electronic value.

In nearly every mobile-money market, operators stipulate minimum values of cash and e-float that agents must maintain. Mobile Money Exchange, GSMA's online community for those interested in mobile money, asks the requisite question: How can operators assess whether a potential agent has the means to maintain the required amount of e-float? Discovery often begins with the mobile carrier: do the agent's airtime sales reflect a retail operation that is healthy and liquid? In turn, carriers offering mobile-money services in partnership with banks can leverage their banking partner's skills in evaluating merchants who are seeking to become mobile-money agents. "And in cases where the retailer [agent] is a current client of the bank," says GSMA in its 2010 Annual Report, "operators can make use of the data gathered over the course of the relationship between the bank and the retailer. For instance, MTN Mobile Money in Ghana works with nine bank partners, each of which leverages its knowledge of existing clients to help identify suitable agent candidates."[14]

How does Safaricom help M-PESA agents strike the crucial balance of cash and e-float? To safeguard liquidity, the mobile carrier has appointed a number of super-agent banks with branch networks throughout Kenya, so that agents can get consistent access to e-float. These include the Commercial Bank of Africa (Kenya's largest privately owned bank) and Kenya Commercial Bank (one of the three largest commercial banks in Kenya). And to ensure transparency—to safeguard against money laundering and other risks—all transactions are recorded, customers are required to produce original forms of personal ID, and transactions are executed only with the agreement of both parties. Says Safaricom of its dedication to transparency: "Working with regulators like the Central Bank of Kenya and the Communications Commission of Kenya, we ensure that M-PESA operates at the highest levels; that we are in synch with global best practices in Anti-Money-Laundering and Know-Your-Customer banking regulations. Our first priority is to operate at the highest level of integrity and efficiency."[15]

Efficiency will be key as Safaricom strives to meet soaring demand—demand that has exceeded even the company's own expectations. And for good reason: in a nation of 38 million people, only 4 million of whom have a bank account, over 13 million Kenyans now belong to M-PESA, and their collective cash transfers equal 11 percent of the nation's GDP.[16] Even more impressive is this: M-PESA's reach down Kenya's socio-economic ladder is extensive and growing; in short, the program is getting better at reaching those who need it most. Evidence comes from a recent study: "While the representation of all segments of the income distribution in profile of users has grown, the proportional growth has been highest among those at the bottom. For example, the bottom quartile of the income distribution accounted for just 10 percent of users in 2008, but 14 percent in 2009. [At the same time] the share of users from the richest 25 percent of households accounted for 34 percent of users in 2009, down from 37 percent in 2008." Also significant is the fact that M-PESA is reaching women. "While only 38 percent of users were female in 2008," report Jack and Suri, "that number grew to 44 percent by 2009."[17] But what of the ultimate litmus test: is there evidence that M-PESA is actually boosting the financial health of Kenyan households? The answer is "Yes," says their study. "It appears that households with access to M-PESA are better able to protect themselves against the downside risks associated with job loss, harvest or business failure and poor health."[18]

Other markets and mobile carriers have taken notice. MTN, Africa's largest mobile operator, has launched a mobile-money service in Uganda in conjunction with Standard Bank. It is fine-tuning the service before rolling it out across the continent. And in South Africa,

after having launched the initiative in Tanzania and Afghanistan, Vodacom has teamed up with a local financial institution to target the 26 million people with no access to banking.

To India and beyond

Perhaps no one has captured the ethos of mobile money better than Arun Sarin, former CEO of Britain's Vodafone Group Plc. "When [people] have access to money to do basic things," he said of Vodafone's work to enfranchise the unbanked, "they become economic engines in their own right."[19] Perhaps no market demonstrates this ideal more dramatically than Sarin's native India, where in less than five years the market for value-added mobile services has skyrocketed from Rs 2,850 crore to Rs 11,860 crore, approximately US$2.6 billion.[20] It is no wonder, then, that India should find itself in the mix where the mobile phone has become a medium for financial transactions.

Actually, it might be more apt to say that India leads the mix where the mobile phone has become a medium for financial transactions. Consider this: in India alone, there were 670 million mobile customers by August 2010; a number that is growing rapidly by 10 million a month.[21] Much of the growth in Indian mobile money will come from the Interbank Mobile Payment Service, which was launched in November 2010 by the National Payment Corporation of India along with seven banks that comprise some of the nation's largest: the State Bank of India, the ICICI Bank, the Union Bank of India, the Bank of India, the Yes Bank, the Axis Bank, and the HDFC Bank.

Beyond India, mobile money programs are also expanding rapidly. In June 2010, Vodafone announced the launch in Fiji of M-PAiSA Mobile Money Transfer service. Initially, M-PAiSA will serve mainly as a vehicle for loan disbursements and repayments from microfinance institutions, with customers being able to receive loans and make payments through their mobile phones. "But in time," says Vodafone spokesman Shalendra Prasad, "people will be able to pay for utilities such as electricity, water or television using the M-PAiSA service." Fiji's Prime Minister, Commodore Voreqe Bainimarama, offers an endorsement of this own: "With the use of mobile-phone technology, M-PAiSA will enable unbanked, non-saving and geographically isolated Fijians to participate in the mainstream financial sector of the country." [22]

More than a trend, mobile money is a juggernaut. In November 2010, both Vodafone and the Norwegian telecommunication company Telenor announced plans to expand their mobile-money menus in emerging markets to include new services such as savings accounts, micro-credit lending, insurance, and international remittances. Vodafone has been enabling international mobile-money remittances since 2009, when, in conjunction with Qatar's Doha Bank, it gave thousands of Filipinos living in Qatar the capacity to send money to remote areas of their country of origin.[23] Over 200,000 Filipinos now live and work in Qatar. By the close of 2009, their remittances home exceeded US$185 million.[24]

In Haiti, a collaborative effort by Scotiabank and Digicel—the Caribbean's largest mobile telecommunications operator—has spawned Tcho Tcho Mobile, a mobile-money program launched in November 2010 to an initial market of 20,000 users. After a three-month pilot, the service will be expanded nationwide.[25]

In Cambodia, WING Cambodia is taking flight as among the newest mobile-money services in the world. Of the nation's 15 million people, only half a million have bank accounts while three million own mobile phones. Turning this device into a fiscal pipeline to Cambodia's rural economy is what WING looks to achieve through mobile money. "Urban to rural corridors are essential to us," said WING Cambodia Managing Director Brad Jones. "We started out targeting Cambodia's 350,000 garment industry workers in 300 or so factories, focusing on a simple payroll product."[26] Customers are mainly blue-collar urban workers who send money to rural family members.

And back in Kenya, Safaricom is making more news, expanding M-PESA to work as a savings account as well. Over 20 percent of M-PESA users now employ the service simply to store money and earn interest.[27] The savings service—named *M-KESHO* and established in partnership with Kenya's Equity Bank—has effectively opened 750,000 new bank accounts in Kenya since launching in May, 2010, with deposits totaling nearly US$11 million.[28]

The next waves of this sea change

Micro-savings, micro-payments, micro-credit, and micro-insurance: these are the next transformational waves of mobile money. They are washing ashore nowhere more forcefully than in India and Brazil. In India—a cash economy where credit cards are confined to a fraction of the population, debit cards are used to withdraw cash from ATMs, and Internet payments have yet to gain traction—mobile-based micro-payments have transformative value. Micro-payments are mobile-to-mobile transactions: payments for anything from a trip to the cinema to the remuneration of school fees. All one needs is the mobile number and the Mobile Money Identifier (MMID) of the payee, and sums as small as US$1.00 can be transferred in an instant from the payer's account to that of the payee. "In the not too distant future, one could envisage that a taxi would have its mobile number and MMID painted on the vehicle and a customer could pay the fare through a mobile phone, avoiding any cash"; this from Dr. Ashok Jhunjhunwala, a Professor in the Department of Electrical Engineering at the Indian Institute of

Technology. "Similarly," he writes, "small and large shops would have their mobile numbers and MMIDs displayed and a customer could make mobile payment. It will be great to see the day when vegetable vendors can be paid in this manner."[29]

The same may be said of Brazil, where shoppers do not yet have the capacity to "press pound" for a pound of onions. The use of mobile money remains relatively low in Brazil, where only 5 percent of users make payments via a mobile phone. Still, there is a reason that the annual Mobile Money Summit took place in Rio de Janeiro in May 2010: Brazil is a very promising market for mobile money. Revenues from value-added mobile services tallied R$8 billion (US$3.6 billion) there in 2009, reports Acision—a world leader in mobile data—producing a growth rate of 40 percent for the year. Only one Latin American market came in higher: Venezuela, at 52 percent.[30]

Latin America is ripe for mobile money. While 80 percent of Latin Americans carry a mobile phone, only 30 percent have access to basic financial services.[31] In Brazil, interest in mobile services is particularly high: 71 percent of those interviewed in a recent survey say they would use their mobile phone as a credit or debit card.[32] The services that intrigue them include making payments via mobile, mobile ticketing, mobile banking, and transferring money through mobile telephony. The following driver of usage is also acknowledged by industry resource Mobile Money for the Unbanked: "Latin American migration to the United States has been the most dynamic migration pattern in the world. As the largest recipients of cross-border remittances, unbanked customers in nations such as Mexico and Brazil are in a strategic position to take advantage of mobile-money services combined with branchless banking."[33]

Conclusion

"We keep our promises and pay out fast." These are the words of James Wambugu of African micro-insurer UAP, whose M-PESA payments covered Embu's farmers when drought struck their fields in October 2010.[34] "Fast" is the operative word, one that not only characterizes the relative speed of payment, but also describes the rate at which transformative technologies such as mobile money will revolutionize the emerging world. Indeed, the pace of transformation is expected to be so quick that Safaricom discounts the luxury of time. Safaricom puts it this way: "The developing world has emerged as a major consumer of high-tech solutions. Demand is so great that these nations may not have the luxury of experiencing what the developed world has enjoyed: a phased approach to massive technological change."[35] Their learning curve will clearly be steep.

Mobile money is transformative technology that turns the unbanked into the bankable, the uninsured into the insurable, and the unlendable into the loan-worthy. In the process, it serves the 21st century's greatest imperative for business and technology: to seize opportunities and address threats in context. In the case of mobile money, the context is clear: it is about insuring farmers *before* droughts cripple them, sending money to villages *before* cupboards go bare, and extending credit so that emerging entrepreneurs can strike while the iron is hot. Across developing nations, this mobile message beckons: press pound to move money and change the world.

Notes

1 It is widely acknowledged that the leading pathology of developing economies is money's impaired velocity: the inability to move it quickly and safely into areas where financial institutions typically do not exist.

2 Emailed comments from Washington Onyango Akumu, Public Relations Manager, Safaricom; November 17, 2010.

3 CGAP 2009.

4 FinScope South Africa 2009 consumer survey; underwritten by FinMark Trust, South Africa.

5 Smith 2009.

6 Terry Kramer, Strategy Director, Vodafone Group Plc, speaking at the Mobile World Congress, Barcelona, Spain, September 2009.

7 In 2000, developing nations accounted for a quarter of the world's 700 million mobile phones. By the start of 2009, their share had exploded to three-quarters of a world total that, by then, exceeded 4 billion handsets. Juniper Research 2010.

8 Waverman et al. 2005.

9 Bala 2010.

10 Bala 2010.

11 Emailed comments from Washington Onyango Akumu, Public Relations Manager, Safaricom; November 17, 2010.

12 Eijkman et al. 2009.

13 Eijkman et al. 2009.

14 GSMA 2010.

15 Emailed comments from Washington Onyango Akumu, Public Relations Manager, Safaricom; November 17, 2010.

16 Microfinance Africa 2010.

17 Jack and Suri 2010.

18 Jack and Suri 2010.

19 Sarin 2008.

20 Kohli 2010.

21 Pahwa 2010.

22 See http://www.microcapital.org/microcapital-brief-vodafone-launches-m-paisa-mobile-money-transfer-service-in-fiji/.

23 mobithinking.com, December 2010.

24 mobithinking.com, December 2010.

25 TeleGeography 2010.

26 See http://www.mobile-money-transfer.com/mmt_global/mmtex12?phpMyAdmin=513c4b9414a6t38cff6f1

27 Mas and Radcliffe 2010.

28 Mas 2010.

29 Jhunjhunwala 2010.

30 See http://www.acision.com.

31 Mobile Industry Review 2010.

32 TelecomPaper 2010.

33 See http://mmublog.org/?s=Mobile+Money+Spotlight+on+Latin+America.

34 Omondi 2010.

35 Emailed comments from Washington Onyango Akumu, Public Relations Manager, Safaricom; November 17, 2010.

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Part 2

Best Practices in Networked Readiness: Selected Case Studies

CHAPTER 2.1

Costa Rica's Efforts Toward an Innovation-Driven Economy: The Role of the ICT Sector

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Costa Rica represents an interesting case study for countries looking to design national strategies to develop the information and communication technologies (ICT) sector as a driver for long-term growth and competitiveness. Indeed, the country is notable among the economies of its kind for the success obtained in this respect. According to Monge-González and Hewitt:

> . . . relative to the size of its population . . . Costa Rica's ICT sector is larger than those of most other Latin American countries, and even those of the Czech Republic and New Zealand, which have important ICT sectors and higher per capita GDPs than Costa Rica. . . . Costa Rica has 156 ICT firms per million people, while Chile, Mexico, and the Czech Republic have 129, 12 and 20, respectively; available data also show that some countries, such as Uruguay and New Zealand, have relatively larger ICT sectors than Costa Rica (679 and 1,840 firms per million people, respectively).[1]

The country also scores remarkably well in different international assessments benchmarking national performances in a number of aspects related to ICT development. The World Bank's *World Development Indicators 2010* placed Costa Rica as the fourth-largest technology-exporting country in the world,[2] with high-tech exports representing 39 percent of its total exports in 2008,[3] surpassed only by the Philippines (66 percent), Singapore (51 percent), and Malaysia (40 percent). It also ranked 4th out of 139 countries in the foreign direct investment (FDI) and technology transfer components of the Global Competitiveness Index (GCI) 2010–2011.[4]

To get a sense of the sector's importance for Costa Rica's economy, consider that 705 domestic and multinational firms operated in Costa Rica's ICT sector in 2007, according to data provided by the Costa Rican Trade Promotion Agency PROCOMER and the local ICT Chamber CAMTIC. These data follow the standard definition by which the ICT sector is comprised of four subsectors: Hardware/Components,[5] Software Products,[6] Direct ICT Services,[7] and ICT-enabled Services (ITES).[8] Almost half of these firms (350, or 49.7 percent) were dedicated to direct services, more than a third (255, or 36.2 percent) to software development, 9.2 percent to IT-enabled services (65), and 5 percent (35) to Hardware/Components. In 2007, they employed 2.4 percent of the Costa Rican labor force and generated US$2.806 billion in sales; their production represented 10.6 percent of Costa Rican GDP and their exports accounted for 28.8 percent of the country's total exports.[9] In terms of the sector's sales, 91 percent were for exports, the components subsector represented 69 percent, 18 percent IT-enabled services; 8 percent software development and 5 percent direct services (see Table 1).

Box 1 also provides an overview of ICT firms by names and their establishment year.

Table 1: Total annual sales of ICT subsectors, 2007

Subsector	US$ millions	Percentage
COMPONENTS	**1,926**	**69**
Domestic	0	0
Exports	1,926	100
DIRECT SERVICES	**142**	**5**
Domestic	84	59
Exports	58	41
IT-ENABLED SERVICES	**517**	**18**
Domestic	26	5
Exports	491	95
SOFTWARE DEVELOPMENT	**221**	**8**
Domestic	130	59
Exports	91	41
TOTAL ICT SECTOR	**2,806**	**100**
Domestic	240	9
Exports	2,566	91

Source: Monge-González and Hewitt, 2010.

Box 1: ICT firms established in Costa Rica in recent years

Firms

- Components Manufacturing Plant: INTEL Costa Rica (1997).

IT-enabled Services (Shared services)

- Procter & Gamble GBS (1999), Western Union Global Service Center (GSC) (1998), Baxter (2004), Astra Zeneca (2008), British American Tobacco (2006), Chiquita Brands (2003), Citi Business Services (2008), DHL (2007), Dole (2005), INTEL SS (2006).

Back offices

- Hewlett Packard (BPO) 2004, IBM (2004), LL Bean (1989), Pacific West (2000).
- Entertainment & Media (E&M): AvVenta (2005), Software Design: Align Technologies (2001).

Contact services

- SYKES (1999), Hewlett Packard (ITO) (2004), Teletech (2006), Amazon 2008, ACE (2008), BA Continuum (2007), Convergys (2004), Dell (2002), Fujitsu (2006), Stream International (2002).

Most IT companies have operations and offices in Costa Rica: Microsoft, Oracle, CISCO, IBM, and many others.

Source: CINDE, 2010.

Behind Costa Rica's success are three major public policies that have fostered the rapid and sustainable growth of the ICT sector: continuous public investment in education, a reduction of internal taxes on and trade barriers to technological products, and solid foreign trade and FDI platforms.

This case study aims to provide an overview of the ICT sector in Costa Rica, its progress over time, and its contribution to the national economy. It examines the success factors for its rapid and sustainable growth, the current challenges, and the agenda addressed by the Presidential Council on Competitiveness and Innovation.

Success factors in the evolution of the ICT Sector

Costa Rica started building the foundations for its ICT sector development in the late 1980s with the creation of the National Program of Educational Informatics (NPEI), the reduction of internal taxes on computers, and, later, by signing the Information Technology Agreement (ITA), a multilateral trade liberalization instrument. By the end of the 1990s, ever since Costa Rica made it a priority of its FDI policies to be a desirable location for ICT companies, the country has demonstrated a competitive advantage in its ability to attract ICT companies.

In comparison with other nations that focused their competitiveness and development strategy on ICT development (such as Singapore, Ireland, China, Malaysia, and India), Costa Rica's approach to developing its ICT sector has been more one of indirect policies,[10] implementing general public policies rather than specific ones from the very beginning. These policies created a favorable environment for the emergence of the ICT sector, building on and fostering some of the country's competitiveness strengths. First, investing in human capital created a pool of healthy and qualified laborers, who are key for attracting FDI and for ICT companies. Second, foreign trade liberalization policies, export promotion, and FDI attraction represented key incentives for the establishment of many ICT companies in Costa Rica. Third, early pioneering measures to facilitate the population's access to informatics (including the creation of the NPEI and the reduction of internal taxes on and trade barriers to technological products) promoted ICT readiness and diffusion in the country. Fourth, the country's political stability, favorable business climate, and central location were crucial elements for attracting FDI.

Table 2: Costa Rican labor force by educational level, 1976 and 2008

Educational level	1976 (percent)	2008 (percent)
College degree	5.2	19.7
Completed secondary school	5.2	11.7
Partial secondary school	16.3	25.1
Completed primary school	28.5	27.6
Partial primary school	34.6	13.1
No formal education	10.2	2.8

Source: Jimenez et al., 2010, pp. 198–99.

Table 3: Labor force by educational level: Costa Rica vs. developed countries, 2001–05 average

Educational level completed	Developed countries (percent)	Costa Rica (percent)	Developing countries (percent)
College degree	28	17	13
Secondary school	52	18	23
Primary school	19	58	50

Source: Jimenez et al., 2010, pp. 198–99.

Human capital policies

Costa Rica is well known for its high human development levels—as reflected in its Human Development Index (HDI) score for 2011—0.725, higher than the average worldwide and regional (Latin American and the Caribbean) ones (which are 0.624 and 0.706, respectively).[11]

The country has consistently invested in health and education as a part of its development strategy, strongly believing in the key role these play as basic competitiveness enablers. It ranked 22nd out of 139 countries on the health and primary education pillar of the GCI 2010. Its HDI subindex scores for health, education, and income in 2010 were 0.936, 0.630, and 0.646, respectively, out of 1. In 1980, its HDI was 0.599, already higher than the Latin American average of 0.578 that same year. Since then, it rose by 0.6 percent annually.

Healthcare and social security

Costa Rica has a universal healthcare system and a strong social security structure, established by law in 1941 with the creation of the Costa Rican Social Security Fund Institute (Caja Costarricense de Seguro Social, or CCSS). The system is financed by mandatory contributions of the state, employers, and employees. The health system includes medical treatment (illness and maternity) and retirement (disability, old age, and death).

The CCSS has the primary responsibility of providing healthcare services to the population and has a coverage of 89.7 percent. Its network is comprised of more than 30 hospitals and more than 250 clinics throughout the country.

In 2009, life expectancy at birth in the country was 79.1 years; the infant mortality rate (under 12 months) was 8.8 (per 1,000 population).[12]

Education

In the 19th century, Costa Rica embarked on a pioneering reform to change its educational system, its funding, and its coverage. By 1869, the political constitution already stated that primary education was mandatory and free. The country allocated resources to build up an educational system, and its illiteracy rate dropped from 90 percent to 58 percent by the end of the 19th century. Investment in education continued during the 20th century, and Costa Rica achieved universal primary education by the 1950s. After this, efforts focused on secondary school. However, the economic crisis of the early 1980s undermined the country's educational achievements. It took 20 years of systematic investments to return to pre-crisis levels.

In the 1990s, a constitutional reform guaranteed that public expenditure on education should be no lower than 6 percent of GDP. As of today, the political constitution mandates that primary and secondary education is free until 11th grade and mandatory until 9th grade.

As a consequence, Costa Rica can count on more educated workers than it could two decades ago. In 1976, 5.2 percent of Costa Ricans had a university degree compared with 19.7 percent in 2008, while 5.2 percent had completed high school in 1976 versus 11.7 percent in 2008 (see Table 2).

Costa Rica's competitive advantages in primary education are also reflected in the GCI 2010–2011 rankings out of 139 countries for primary education enrollment (where the country ranks 1st), the quality of the educational system (22nd), and the quality of primary education (33rd).

Notwithstanding the above, the country faces educational challenges as it moves toward becoming an innovation-driven economy. Costa Rica's labor force has lower educational levels than developed countries. Almost half of developed countries' labor forces have high school degrees, while this is only a fifth (18 percent) for Costa Rica. More than a fourth of developed countries' work forces (28 percent) have university degrees versus 17 percent in Costa Rica. Its labor force structure is still closer to that of developing countries (Table 3).

Foreign trade and FDI promotion policies

After the debt crisis of the early 1980s, Costa Rica started to move from an economic development model based on import substitution to one based on export

promotion. It adopted several measures to liberalize trade, deregulate the economy, and reduce the anti-export bias.

Over the last 25 years, the country has created a solid platform of institutions and regulations to consolidate these processes, as follows:

- the establishment of the Ministry of Foreign Trade (1986);
- the creation of the investment promotion agency (Coalición Costarricense de Iniciativas para el Desarrollo, or CINDE), the first in Latin America;[13]
- the establishment of the free trade zone (FTZ) regime (1990);
- accession to the General Agreement on Tariffs and Trade (GATT, 1990),
- membership in the World Trade Organization (WTO) and an active participant since the mid 1990s; and
- eight free trade agreements (FTAs) are currently in force (the United States-Dominican Republic-Central America Free Trade Agreement, or US-DR-CAFTA, and the FTAs with Canada, Mexico, Chile, and Panama, among others).

These FTAs, which regulate trade with 13 partners, have allowed for total exports of US$9.323 billion, according to 2010 Ministry of Trade data. Once the most recent FTAs signed with China, Singapore, and the European Union come into force, Costa Rica will have 42 preferential trade partners, representing 85.3 percent of Costa Rica's total exports and 79.5 percent of total imports covered by preferential trade schemes.[14]

Companies are encouraged to start up operations under the FTZ regime (export manufacturing, export trade, and export service companies or organizations engaged in scientific research). Benefits can include exemption on import duties, raw materials, components and capital goods, corporate income tax, export taxes, local sales and excise taxes, taxes on profit repatriation, capital taxes, and no restrictions on profit repatriation or foreign currency management. In addition, this regime offers expedited on-site customs clearance and the possibility of selling to exporters within Costa Rica.

Facilitating citizens' access to informatics: The NPEI, the Omar Dengo Foundation, and measures to facilitate imports and use of ICT products

In 1986, a presidential mandate created a high-level committee with the purpose of studying best practices for introducing computers in public schools in Costa Rica. In 1987, the NPEI and the Omar Dengo Foundation (ODF) were created to meet several goals. These included improving the quality of teaching, familiarizing the population with informatics, creating better-prepared Costa Ricans for the future, reducing the country's technological gap with respect to developed nations, democratizing access to science and technology, promoting the development of cognitive processes, and stimulating creativity and logical thinking.[15] Although most educational informatics experiences throughout the world have been at the secondary school level, the program in Costa Rica started at the primary school level, a groundbreaking decision for those times. The reason for this was to stimulate the logical thinking of students from primary school onward.

In 2010, the NPIE and the ODF covered 62.3 percent of the public educational system: 60.2 percent in primary education and 68.3 percent in secondary school.

On a related note, in 1987, the government significantly reduced the internal taxes imposed on computers, as one of the measures designed to facilitate the population's access to informatics. In the 1990s, Costa Rica joined GATT. It also became a founding member of the WTO and an early supporter and signatory of the Information Technology Agreement (ITA), a multilateral trade liberalization instrument. ITA covers a wide range of IT products, including computers and computer peripheral equipment, electronic components including semiconductors, computer software, telecommunications equipment, semiconductor manufacturing equipment, and computer-based analytical instruments. ITA's original participants eliminated tariffs as of January 1, 2000, on a wide range of IT products, and modified their WTO schedules of tariff concessions accordingly.

Moreover, the US-DR-CAFTA's E-Commerce Chapter introduced the digital product concept along with important measures to impede the creation of trade barriers to this type of product. The Singapore FTA and Mexico FTA amendments are replicating these measures.

Political stability and business-friendly climate

Since the army was abolished in 1948, Costa Rica has peacefully celebrated 17 democratic electoral processes as well as 17 changes of administration. As indicated by the World Bank's Worldwide Governance Indicators 2009, Costa Rica's position on the percentile rankings is 65.1 on political stability, 62.7 on rule of law, and 70 on control of corruption, where 0 is the lowest ranking and 100 the highest. The country ranks 3rd out of 17 Latin American countries in all three indicators. Political stability, rule of law, and human capital are vital determinants of the business climate, and these factors are key differentiators that have made Costa Rica unique in Central and Latin America since the 1970s. As a result, many multinational companies established their Central America regional headquarters in Costa Rica—technol-

ogy suppliers as well as demanders of technology—and this occurred outside the FTZ incentives regime. This is the case for Microsoft and Coca Cola, among others.

Externalities from ICT multinational firms: Knowledge spillovers and ICT knowledge transfer in Costa Rica

The economic literature has paid increasing attention to the role of FDI in fostering the productivity of domestic firms in developing countries. A widely accepted argument in this regard is that foreign firms from developed countries typically enjoy technological superiority and strong management capabilities, and their technologies and management practices can be transferred to or imitated by domestic firms in emerging markets. There is some empirical evidence that multinationals might have generated knowledge transfer and spillovers to the Costa Rican economy, notably labor turnover spillovers.[16] Monge-González found that 32 percent of ex-workers of FTZ multinationals were hired by local companies.[17] This is 15,139 out of 46,864 workers during the 2001–07 period who moved from FTZ multinational firms to domestic firms. Half of those workers (49 percent) were absorbed by large local companies and the other half (51 percent) by small- and medium-sized enterprises. Another study found that a significant number of workers have moved from multinational firms located in the country either to work in a domestic ICT firm or to start an ICT business of their own.[18] According to the authors, 47 percent of the domestic ICT firms examined have at least one owner who previously worked for a multinational firm in Costa Rica. In the case of employees currently working at local ICT companies, 26 percent of managers, 9 percent of engineers, and 5 percent of developers surveyed had previously worked for multinationals in Costa Rica. More than half of domestic ICT firms have multinationals as clients in Costa Rica, and 27.6 percent of local suppliers of multinationals have at least one owner who worked for a multinational before.

Four types of commercial relationships between multinationals and local ICT firms can be observed in Costa Rica. These involve the local firms acting as ICT wholesalers or distributors; retailers to final users; value-added resellers (VARs), which provide third-party products and services to final users as parts of packages that also include the VAR's own products and services; or representatives—usually not selling directly but providing local points of contact for firms and individuals. Wholesalers and VARs tend to be associated with the widest range of benefits.

> Domestic companies report important benefits from these commercial relationships with MNC [multinational corporation] ICT companies, such as training in sales and marketing techniques and information about current or possible clients, special events for network formation between domestic ICT companies involved with the same multinational ICT companies and increased visibility for local partners.[19]

Target ICT public programs and policies

In contrast to some other countries, Costa Rica does not have public policies guaranteeing access to financial instruments other than loans (notably seed capital, venture capital, and equity markets) for ICT firms, a demand-driven educational system, or government-funded technology parks. There are, however, a few initiatives funded by the Inter-American Development Bank or the World Bank, such as those that provide incentive for ICT startups and incubator programs for ICT companies. Examples are ParqueTec, Yo Emprededor, CIETEC, and Link Inversiones (venture capital).

The regulation to facilitate innovation and access to credit to small and medium technology-based businesses (Law 8262) has not produced significant results yet.

Key challenges going forward

After a careful analysis of Costa Rica's strengths and weaknesses when it comes to moving from an efficiency-driven to an innovation-driven economy,[20] the new Costa Rican authorities adopted a structured strategy to ensure the coordination of efforts needed to successfully tackle the pending challenges in this field. Thus, in May 2010, Executive Decree 36.024 created the Presidential Council on Competitiveness and Innovation (PCCI), with an agenda for 2010–14 focused on the following five areas:

1. human capital and innovation,
2. foreign trade and FDI,
3. capital markets and financial reforms,
4. infrastructure (telecommunications, electricity, transportation, ports, and airports), and
5. regulatory reform and red tape reduction.

The PCCI provides guidance, advice, and coordination of public policies in the above areas. It also designs plans, goals, and objectives; and ensures the monitoring of the progress made. Its functions include, in the areas for which it is responsible, proposing strategic objectives, sectoral targets, and indicators of achievement; developing specific action plans; collaborating in the implementation of specific action plans defined by the government; designing policies and guidelines that regulate the activities of the institutions involved, upon approval of the executive branch or the President of the Republic. The PCCI is also in charge of proposing mechanisms for controlling and following up on action plans and assisting in their implementation; coordinating the respective technical secretariats and establishing

mechanisms to integrate the views of various stakeholders on issues of importance and linked to its areas of responsibility in a participatory manner.

The remainder of this section will examine in detail the main measures adopted in the framework of the PCCI agenda for 2010–14.

Human capital and innovation goals

Important strides have been made in recent years in the field of education, including an increase in high school enrollment rates, particularly for lower-income groups. The Ministry of Education's Plan (MEP) for 2010–14 aims to universalize pre-school and high school education, to double the number of technical high schools, to continue investment in English-speaking skills, to increase Internet access in schools up to 85 percent, and to develop students' attitudes toward knowledge and problem solving, including math and science education.

Foreign trade and FDI

The Costa Rican authorities continue to make progress on the foreign trade front. This is clear in the pending legislative approval of FTAs with China, Singapore, and the European Union as well as with Korea and Peru. In addition, stronger efforts to fully leverage the treaties that have already been signed, as well as strategies for attracting FDI, have been put in place. Costa Rica has envisioned, as one of its goals for the period 2010–14, the attraction of US$9 billion in FDI.

Capital markets and financial reforms

The country has begun to create new financial instruments to support entrepreneurial endeavors, especially for technology-based firms. In particular, the creation of seed capital is being fostered, based on the new law of the Banking System for Development (Law 8634) adopted in 2008. This law allows the Costa Rican authorities to use resources in a trust for the development of small- and medium-sized enterprises and the creation of capital seed and venture capital (Chapter III, Article 16). In addition, the country is working on changes to the institutional framework and incentives to improve the general functioning of its capital market.

Telecommunications

The telecommunications market was opened in 2008. A 1963 law granted the concession to a state-owned company, which was the sole operator. The 2008 Opening Telecommunications Law created a National Telecommunications Fund (FONATEL) out of concessions fees with the purpose of promoting universal access to ICT and reducing the digital divide. In particular, the law focused on providing broadband Internet to underserved communities (either urban or rural areas) and to public schools and high schools of the NPEI, public healthcare institutions, and public entities. In 2009, the Telecommunication Strategic Plan established two major priorities for FONATEL: connectivity to rural schools and technical secondary schools. In 2010, a memorandum of understanding between the Telecommunications Regulation Authority SUTEL and MEP detailed specific goals.

The current administration is committed to continuing with the implementation of telecommunications reforms. On January 2011, an executive decree granted mobile phones concessions to two private companies, allowing private participation for the first time. It also has the goal of universalizing citizens' access to broadband Internet and reducing the divide among regions. Between the second half of 2005 and the second half of 2009, Costa Rica's broadband connections increased from 48,570 to 308,520. This represented 95 percent of the 2010 goal of 325,000 connections. Costa Rica achieved a broadband penetration of 6.9 accounts per 100 inhabitants.[21] The country still lags behind other more connected countries and regions: for instance, in 2010 broadband penetration was 30 percent in the United States and Europe and around 25 percent in South and East Asia.

Conclusion

Costa Rica has been no doubt successful in developing its ICT sector, benefitting from its comparative advantages such as its high level of human development, appropriate trade policies, favorable business environment, and political stability. In order to confront the important competitiveness challenges ahead, the country has created a Competitiveness and Innovation Council led by the President. Its structure and its operations are based on international best practices. This effort is a key element for the coordination of activities among public and private institutions to overcome the deficiencies identified in infrastructure (mainly telecommunications), human resource development (secondary and tertiary education enrollment), financial market development (new financial instruments), and deregulation (excessive red tape).

The experience of Costa Rica in promoting the development of a dynamic ICT sector suggests that it is important to work on the fundamentals in order to attract foreign companies and develop local enterprises in the sector. Among the main policies adopted over the years in this field, the development of human resources, free access to technologies, political and macroeconomic stability, and trade liberalization and access to international markets, as well as continuously ensuring a favorable business climate should all be noted. Any country that wishes to venture into this sector should focus on these elements.

Notes

1 Monge-González and Hewitt 2010, p.7.

2 World Bank 2010, p. 340.

3 *High-tech exports* is defined as products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. World Bank 2010, p. 343.

4 World Economic Forum 2010.

5 *Hardware/Components* is defined as firms that carry out activities related to the design, manufacture, assembly, and/or sale of ICT hardware (for computers, telephones, network devices, etc.).

6 *Software Products* is defined as firms that carry out activities related to the creation and sale of relatively standardized software applications and tools, which may be designed to be used by organizations operating in specific sectors of the economy ("vertical" applications), by a wide variety of organizations ("horizontal" applications), or by individuals.

7 *Direct ICT Services* is defined as firms that offer consulting, support, training, development of custom-made software components, systems integration, and configuration, or any one of a large number of other services related to the creation, implementation, and maintenance of information and/or telecommunications systems.

8 *ICT-enabled Services* is defined as firms that provide services that are not necessarily directly related to ICT services and products (such as "business processes outsourcing"), but whose delivery to clients is enabled by telecommunications and computer networks.

9 Monge-González and Hewitt 2010, p. 47.

10 The economic literature distinguishes two types of science, technology, and innovation policies: explicit and implicit policies. The first group includes research and development (R&D) grants, R&D tax credits, university-industry collaboration projects, public research labs, and intellectual property. The second type refers to more general measures such as trade, fiscal, financial, competition, and labor market policies. Countries can either rely on one type or combine both approaches.

11 The HDI is a composite indicator that serves as a frame of reference for both social and economic development elaborated by the United Nations Development Programme and published since 1980 in the *Human Development Report*. It combines indicators of life expectancy, educational attainment, and income into a composite human development index. The HDI sets a minimum and a maximum for each dimension, called *goalposts,* and then shows where each country stands in relation to these goalposts, expressed as a value between 0 and 1.

12 MIDEPLAN 2010, p. 50.

13 CINDE was established and funded by USAID in 1982 as a private, nonprofit organization.

14 Ministerio de Comercio Exterior, COMEX 2010, Exposición Ministra Anabel González.

15 ODF 2007.

16 According to Saggi (2002), there are three potential channels of knowledge spillovers: demonstration effects, labor turnover, and vertical linkages. Demonstration effects happen when local firms adopt technologies introduced by multinational firms through imitation or reverse engineering. Labor turnover occurs when workers trained or previously employed by the multinational transfer important knowledge to local firms by switching employers or when they contribute to technology diffusion by starting their own firms. Vertical linkages occur when multinationals transfer technology to firms that are potential suppliers of intermediate goods or buyers of their own products. See Zhang et al. 2010.

17 Monge-González 2010.

18 Monge-González and Hewitt 2010.

19 Monge-González and Hewitt 2010, pp. 20–26.

20 For a detailed explanation of different stages of economic development, see Sala-i-Martin et al. 2010.

21 CAATEC 2010.

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CHAPTER 2.2

Growing Talent for the Knowledge Economy: The Experience of Saudi Arabia

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The Saudi National e-Government Program, YESSER, was launched to provide better government services, enhance efficiency and effectiveness in the public sector, and contribute to creating a Saudi information and knowledge-based society. Simultaneously, a large number of regulatory and policy actions focused on fostering competitiveness and establishing a business environment supportive of information and communication technologies (ICT) were adopted (see Box 1). These combined efforts constitute a strategy designed to rapidly introduce effective e-government concepts in the largest Middle Eastern country by taking on best practices and avoiding pitfalls other nations experienced while remaining focused on developing Saudi expertise to engage and lead in the technology sector. Many successes have been attained in a short time, but also many lessons have been learned while pursuing excellence.

In its first five years of operation, YESSER achieved progress on two important fronts: implementing robust shared services that ensure secure government information flows and the delivery of secure online services,[1] and providing organizational infrastructure to help government agencies successfully develop and implement their e-Government Transformation Plans—the transformation of traditional services to online ones, with the consequent benefits in terms of convenience, timeliness, and lower costs.[2]

The Saudi National e-Government Program is entering its second five-year phase as of 2011. It will continue to build on the technical achievements made thus far, but with a renewed focus on creating a skilled workforce. The development of Saudi human capital is at the center of the next five-year plan as the country continues to advance toward the next generation of a technology-enabled government and knowledge society.

The purpose of this chapter is to outline the journey of a nation that entered the e-government race a little later than most, yet is responsibly executing strategies to advance rapidly. The chapter considers Saudi Arabia's route through the building of advanced infrastructures, deploying effective governance mechanisms, and incorporating the practices of "continuous improvement" by addressing the "human factor"—often the most challenging part of any e-government transformation—into its actions and future direction. The Saudi e-government journey is taken, by a young nation with deep cultural and societal traditions, on an ambitious time scale and with a high degree of determination from its leadership. It provides an interesting example for other economies around the world faced with similar challenges.

Public-sector transformation and skills growth

When Saudi Arabia launched YESSER in 2005, the main objectives of the program were to raise the productivity and efficiency of the public sector and to provide better

Box 1: Saudi Arabia's ICT development

With a population of approximately 28 million and an area of over 2 million square kilometers, Saudi Arabia is the largest country in the Middle East. Its economy is petroleum based, with roughly 75 percent of budget revenues and 90 percent of export earnings coming from the oil industry. It is therefore not surprising that the Saudi authorities have granted priority to diversifying and modernizing their economy, starting in 1999 with the privatization of the power and telecommunications industries.

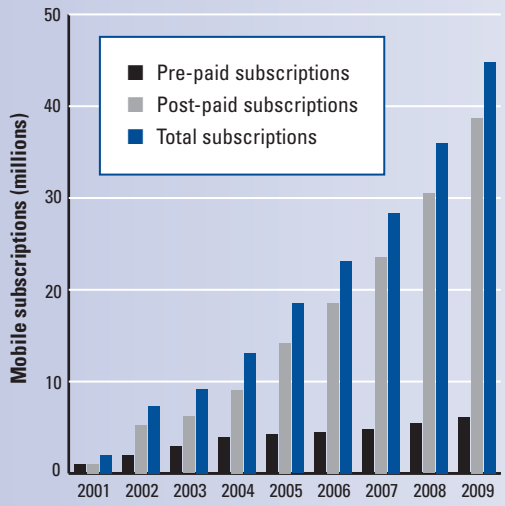
Everywhere, developments in the ICT industry continue to accelerate, bringing about a great variety of services with better quality and more secure uses. Service providers are adapting their strategies and reordering their priorities to satisfy new requirements of customers, be they individuals or organizations. As the world rapidly evolves, access to a modern ICT infrastructure, supported by strong regulation and active competition, is key to reducing geographic and cultural barriers and furthering knowledge that helps to bridge gaps between cultures, economies, and societies. Saudi Arabia has not been insulated from these global trends. The state of its ICT sector is now very advanced. The evolution to a more competitive environment has resulted in greater investment, more service providers, a variety of innovative services, improved quality, lower costs, and greater accessibility—all of which have had a positive impact on employment and the national economy.

Increased competition in the telecommunications sector has resulted in better service offerings and customer care, and reduced prices and subscription charges (see Figure A). By the end of 2009, the total number of mobile subscriptions stood at just under 45 million, up from only 2.5 million in 2001 when the Communications & Information Technology Commission (CITC) was established. Mobile penetration by the end of that year stood at 175 percent, as compared with 67 percent for the world average, 57 percent for developing countries, and 114 percent for developed countries.

Broadband penetration was also promoted and new regulations in the area of regulatory frameworks for mergers, acquisitions, and bankruptcy in the ICT sector were adopted. Moreover, programs to support the country's ICT industry were launched; these included the introduction of tariff regulations, anti-spam guidelines, and an awareness campaign to foster the correct use of ICT products and services. All necessary requirements in building an affordable and trusted service provider environment were put in place as the broader public-sector e-transformation efforts were launched.

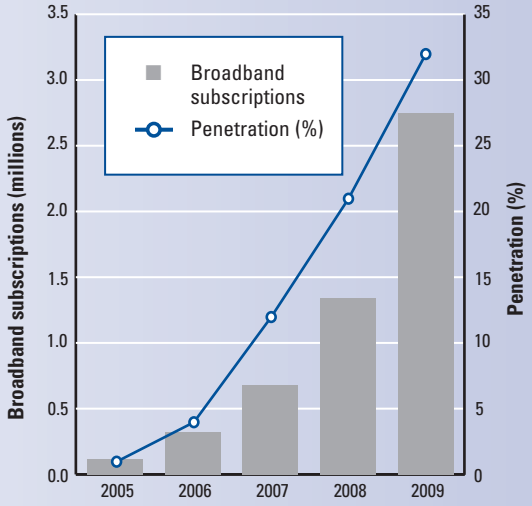
Broadband subscriptions in Saudi Arabia have grown 86-fold from 2006 to 2009, bringing the total number of subscribers to 2.75 million from 32,000 (Figure B). This indicates that about a third of households has now broadband connections. Even though there has been tremendous broadband usage/growth in the past few years, the potential for further growth is there, as some parts of the country remain underserved by broadband services.

Figure A: Mobile subscriptions, 2001–09



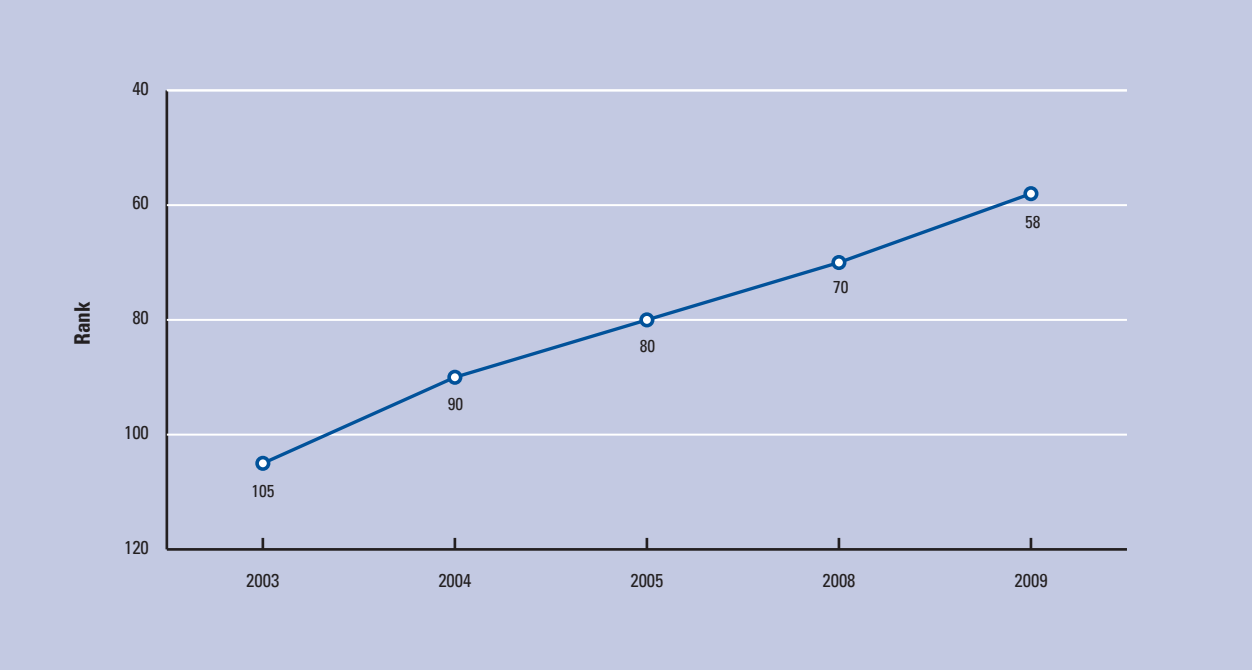
Source: YESSER, 2010.

Figure B: Growth of the Saudi broadband market, 2005–09



Source: YESSER, 2010.

Figure 1: Saudi Arabia in the United Nations' e-government assessment, 2003–10



Source: http://www.unpan.org/egovkb/global_reports/08report.htm.

and easier access to services for individuals and businesses alike.

The initiative consisted of a National e-Government Strategy and Action Plan covering the period 2006 to 2010. Leadership of the strategy and action plan was assigned to the nation's e-government program, YESSER, a directorate within the Ministry of Communications and Information Technology (MCIT).[3]

Significant progress has been made since 2005, as reflected in Saudi Arabia's ranking in United Nations e-government survey (Figure 1).

Over 1,000 e-services, ranging from informative to transactional, are now available on the national portal. There is good support for e-government at the most senior levels.

But there is still need for improvement to increase the speed of implementations and build on the momentum that has been established. Critical to enabling and facilitating progress is YESSER's operating strategy, which is designed to anticipate government needs and respond with new services that fill a wide variety of skill gaps. This organic development is characteristic of YESSER's evolution; it has gone from developing the core infrastructure to becoming a knowledge- and skill-based enabling organization. However, ongoing e-transformation surveys and governance feedback revealed greater human competency needs. These emerging needs were not ignored as the second five-year e-government strategy and action plan were developed.

The plan consists of four strategic themes, as follows:

- build a sustainable e-government workforce,
- improve the experience of the public in their interactions with government,
- develop a culture of collaboration and innovation, and
- improve government efficiency.

Of the six workstreams designed to achieve these goals, the one devoted to human resources development has been identified as the most critical. Entitled "Human Capital, Communications and Change Management (HCCCM)," this workstream aims at ensuring that the leadership, communications, and resources required to achieve the second action plan are in place.

Three critical factors have been identified for the success of this plan:

- the implementation of improved human capital and communications practices,
- the leadership of e-government by government agencies, and
- the regular measurement of the progress made by the strategy.

Human capital management (HCM) is the number one priority for the second action plan. There is a

critical need to identify options for increasing the number of skilled and experienced people available to lead the delivery of e-government in the country.

Leadership by individual government agencies is also crucial to the success of e-government: leadership in the implementation of e-services, in the use of shared infrastructure, and in communication with employees and the public. The e-government committee established within each government agency is responsible for:

- developing a vision and e-government strategy in support of the second action plan,
- publishing a roadmap of e-services,
- advising the Office of Strategy Management (OSM) about progress on the roadmap on quarterly basis,
- participating in collaborative and joint initiatives with other agencies both within the sector and with YESSER when involved in national applications, and
- providing leadership within the agency and within a sector when required.

Four agencies have a particular role in supporting the success of the second national e-government action plan: the Ministry of Finance, the Ministry of Civil Service, the MCIT, and the CITC. The changes that will result from the second action plan will affect all government agencies. Implementing these changes will need to be coordinated among the agencies.

Measuring the progress of the strategy against the goals of the second action plan will be undertaken by the OSM, which will emphasize the importance of working across agencies and sharing experiences. The roles of the OSM include the following:

- maintaining oversight of progress based on monthly reports by the relevant project manager and aggregating the results into a dashboard report,
- developing indicators for tracking progress against strategic objectives,
- maintaining relationships with sector strategies and tracking their alignment with the national e-government strategy on an annual basis,
- assessing the content of e-government strategies prepared by agencies,
- developing risk mitigation approaches and maintaining the risk register, and
- reporting to the Steering Committee each quarter on progress against milestones and on strategic objectives measures and risk management.

The OSM will build capacity to undertake these roles across all the initiatives in the second action plan, covering both YESSER projects and e-government projects undertaken by agencies.

E-government success is fundamental to the government transformation and the development of Saudi Arabia as an information economy. The Saudi government also recognizes that e-government initiatives are as much about changing people, culture, and public administration as they are about technology. The general strategies outlined above attempt to address human capacity development through a number of mechanisms. However, the starting point for implementation emerges from effective management of change and all that it requires: leadership, communication, and training.

From vision to implementation: Nurturing change and leadership

The implementation of the Saudi e-Government Strategy and Action Plan will require monumental changes in government processes, technologies, organizational design, and job roles. The most important factor for success is the ability to institute change.

After a comprehensive assessment of concerns, four top areas of focus emerged for government improvement. These are:

- development of a sustainable workforce,
- providing a better experience for citizens when dealing with government,
- collaboration and innovation, and
- increased government efficiency.

To achieve improvements in those strategic areas, there needs to be a major shift—a long-term and government-wide shift—in the way government agencies think and behave. Building the capacity for this shift is not like installing a new system or technology. It is a complete transformation in the way each agency operates, leads, and motivates its people. It requires individuals to learn new skills, take on new roles, and work to new performance standards. The rest of this section will explore the main dimensions of the transformation required.

Confronting the need for change

Saudi citizens experience customer service and online services in their personal lives and their interactions with private-sector organizations. They have a right to expect similar levels and channels of service from the government, and it has now become key for every public-sector employee to deliver service excellence to their public. More importantly, e-government becomes a vehicle for developing the nation's future.

Although the financial resources necessary for establishing e-government have been allocated, achieving international standards is difficult. Traditional work

methods, based on ingrained social and cultural values, need to change if end-users are to be enabled to exercise their preferences. Significant change that will transform the very fabric of work design and execution across the public sector is required. This will be achieved through a series of initiatives that have been designed to ensure that the necessary changes are managed as a structured program of work.

The themes of the Saudi Change and Capacity Building initiative are meant to drive:

- a common approach for leadership of e-government across agencies,
- a qualified and skilled pool of resources to meet e-government demands,
- agencies that work together to share knowledge and experience, and
- recognition of the e-government workforce as a high-performing and motivated community of government employees.[4]

Creating Saudi Arabia's capacity building and change programs

To deliver on these themes, the Second Saudi Action Plan has identified 22 strategic objectives that cover all aspects of e-government. The Human Capacity Building and Change set of initiatives are focused on supporting the following six strategic objectives related to the leadership and the workforce:[5]

1. to establish and maintain an effective and skilled workforce of people working on e-government,
2. to maintain e-government leadership by ministers and senior executives across agencies,
3. to create a new culture across the e-government workforce using performance- and achievement-based human capital management,
4. to increase e-government awareness among all government employees,
5. to improve collaboration and increase knowledge exchange and sharing of experience between agencies, and
6. to build capacity for e-government research and innovation.[6]

Leading change through connected leadership

The Second National e-Government Action Plan will deliver value as a well-defined but demanding business/technology strategy. However, it is the capacity and competencies of the executive leadership that will determine their success.

It is not primarily the number or quality of individual executive leaders that determines organizational success, but—more importantly—it is the ability of formal and informal leaders to work together in the support of e-government goals. Such a concept is termed *connected leadership:* leaders act together in groups and across agency boundaries to implement strategies, solve problems, respond to threats, adapt to change, and support innovation. Delivery on promised concepts cannot be realistically projected without ensuring that all members of government learn and understand the concept of transformation and understand also how each member must contribute. To accomplish this requires comprehensive training.

Figure 2 shows how the leadership development strategy is both related to and driven by the e-government strategy and tied to e-government results. It also makes clear that the development of leaders should be thought of systemically, not simply as a curriculum composed of programs.

Saudi leadership development strategy reflects the challenges and content inherent in the context of the transformation needed for the workforce in this particular country. A unique approach has to be taken to address the special cultural environment of Saudi Arabia, which makes "off-the-shelf" executive development programs or experiences inadequate. A strong link among e-government strategy, leadership strategy, and leadership development strategy is essential. By providing an understanding of these crucial factors, the YESSER program is offering a fitting response in this regard.

Transformative training strategy

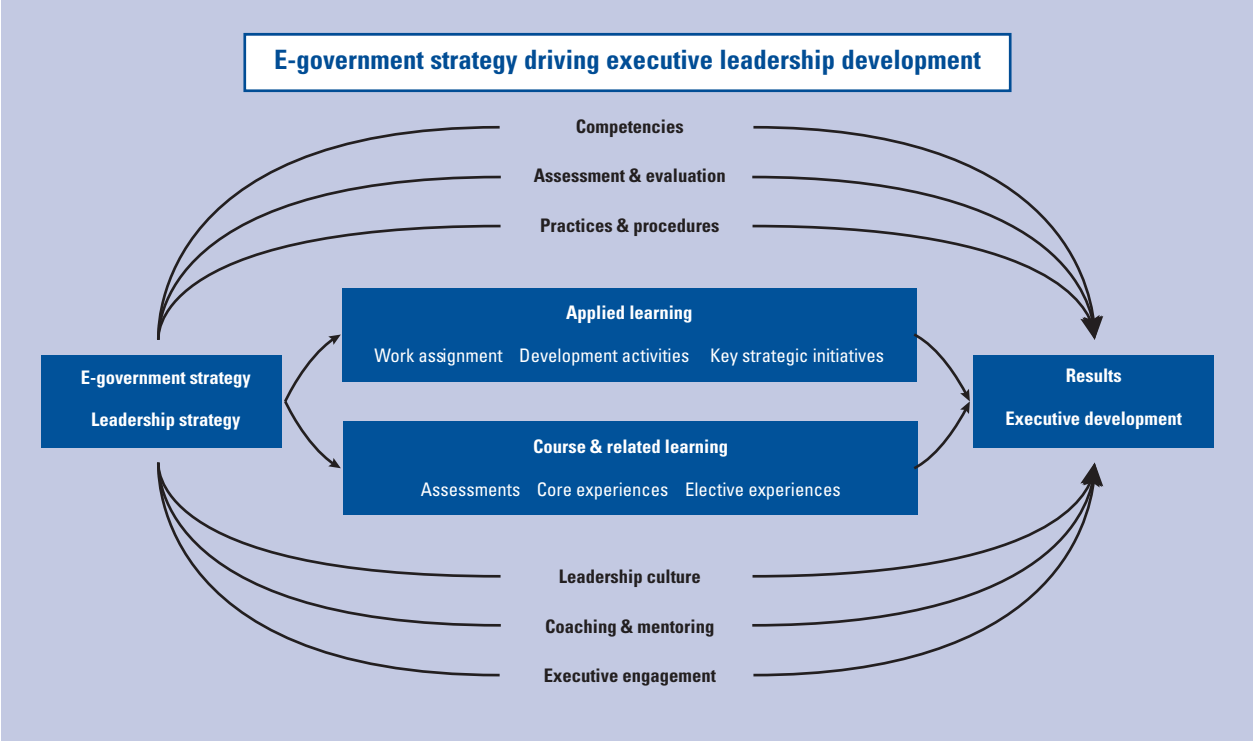
CITC's 2009 annual report projects a significant shortfall in skilled people across the ICT sector in Saudi Arabia;[7] this shortfall is even worse for those qualified to implement the e-government program. Agencies consistently report a significant shortage of skills as a primary constraint to implementation progress. The development of ICT professionals needs priority attention, and a training strategy has been designed to respond to these impediments.

There are currently estimated to be up to 5,000 program and project employees, employed by over 250 agencies, dispersed throughout the country.[8] The second Action Plan creates a demand for many additional staff to implement and maintain the project nationally.

In addition to training technical staff, the strategy covers the training of business leaders in agencies, equipping them with the skills and expertise to provide the necessary leadership for the changes they will face. Without focused, timely training, agencies will continue to struggle to effectively implement their e-government projects.

Successful implementation of the training strategy demands a significant transition to needs-based training and on-the-job learning through competency reinforcment.

Figure 2: Leadership development strategy from the National e-Government Strategy and Action Plan, 2011–15



Source: YESSER, 2010.

This will be a change in culture for both the agency and the individual, and will involve raising awareness, observing the results of targeted training, and establishing support networks.

Above all, this new culture of technical, managerial, and leadership learning must be driven by effective executive leadership. To accomplish these objectives, the YESSER Center for Excellence and Research and Development (CERD) is being strengthened to serve as a focal point for all program related learning activities (see Box 2).

Factors of change in the public sector

In the context of e-government, the target is "Better services for Saudi citizens." This means determining the drivers of citizen satisfaction with government services, assessing how current services measure up to these drivers, and understanding the role of e-government in meeting these expectations for improvement. Extensive surveys have been conducted to determine what satisfies the Saudi e-government consumers and what is most important for serving their needs. Based on this knowledge, public managers can build a change plan for their agency, using tools and resources developed for use on a government-wide basis, as outlined in the initiatives.

A national change management initiative has been collaboratively designed to support ministers and executives within government agencies to enhance their ability to champion the rationale for change. Elements of this initiative include:

- articulating the vision and case for change by clearly and regularly communicating through a variety of executive support mechanisms,
- delegating and holding senior managers accountable for ensuring that projects actually happen and positive effects are realized,
- enhancing program and agency intellectual capacity and competency, and
- driving cultural change and demonstrating new management systems and leadership behaviors that embody the new e-government values.

Human capital management: Preparing and equipping the Saudi workforce

Saudi government employees need more training to develop capability in support of e-transformation. E-government is one aspect of a wider set of changes needed to improve customer service in government, and many other countries have included e-government as part of a broader service-improvement program.

The change program will be assisted by the introduction of suitable rewards and incentives. The opportunity to learn from others who have introduced change successfully in government is another effective method of accelerating change. This approach is being instituted in significant ways. For example, the Saudi e-Government award Enjaz was entirely organized and designed to reward "change characteristics" and incentivize others to pursue Saudi best practices to accelerate

and communicate successful results of changed processes and collaborative efforts in "Serving People Better."[9]

Within YESSER, a Change Management Program (CMP) has been designed to remedy the acute skill shortage and competency levels in the area of e-government, as well as to mitigate market compensation sensitivities. Two chief elements define the core goals of the program:

1. Training, which is so vital to e-government design, implementation, and maintenance, is given a strategic emphasis. Contemporary, proven mechanisms are responding to the magnitude and complexity of ensuring the right competencies for thousands of affected employees.
2. Culture definition programs offered through CMP contribute to a better alignment of employee attitudes. Human capital experts will be deployed to provide guidance and coaching at program and agency levels.

Successful change will require a steady flow of citizen and employee feedback to allow YESSER and agency leaders to verify the success of the change program and shape any revisions to it. A stakeholder analysis has been conducted and is used as the foundation for building a communications strategy and plan.

In summary, the development of the training and leadership strategy is based on collaboration with all leaders and recipients of the training. It will be a dynamic process, fueled and intensified as the understanding of national importance is absorbed and sparks new innovation, as indicated in Figure 3.

CERD will orchestrate learning content for all core programs and customize them according to agency segments. Training initiatives for employees involved in e-government will be designed and delivered at a national level as well as for an individual agency. This will be guided by effective operating concepts, as follows:

National learning concept: The national training strategy will provide a broad core framework within which agencies can identify their training needs in relation to the e-government program. Appropriate content and delivery channels will be nationally enabled to deliver requisite and consistent training to all staff, as required.

This national strategic model draws attention to three different levels at which the learning strategy needs to operate:

1. *Knowledge, skills, and information:* These comprise the facts, the regulatory issues, and technical as well as managerial and executive knowledge and information about procedures and processes.
2. *Project behaviors:* These include what individuals need to be able to do in order to implement the practice and spirit of the agency's e-government projects.
3. *Culture and commitment:* These concern the medium- to long-term development of attitudes, especially at senior levels, that will ensure agencies are being proactive in implementing the spirit of the learning strategy.

To ensure consistency throughout the development of the learning strategies, CERD will offer central support from subject experts. Such support will include the design and provision of core material that allows flexible delivery—for example, classrooms, mobile learning centers, conferences, and e-learning or computer-based training options.

Agency learning concept: Agencies must respect the importance of alignment between training and their overall vision and e-government action plan. Training can

Box 2: The YESSER Center of Excellence for Research and Development

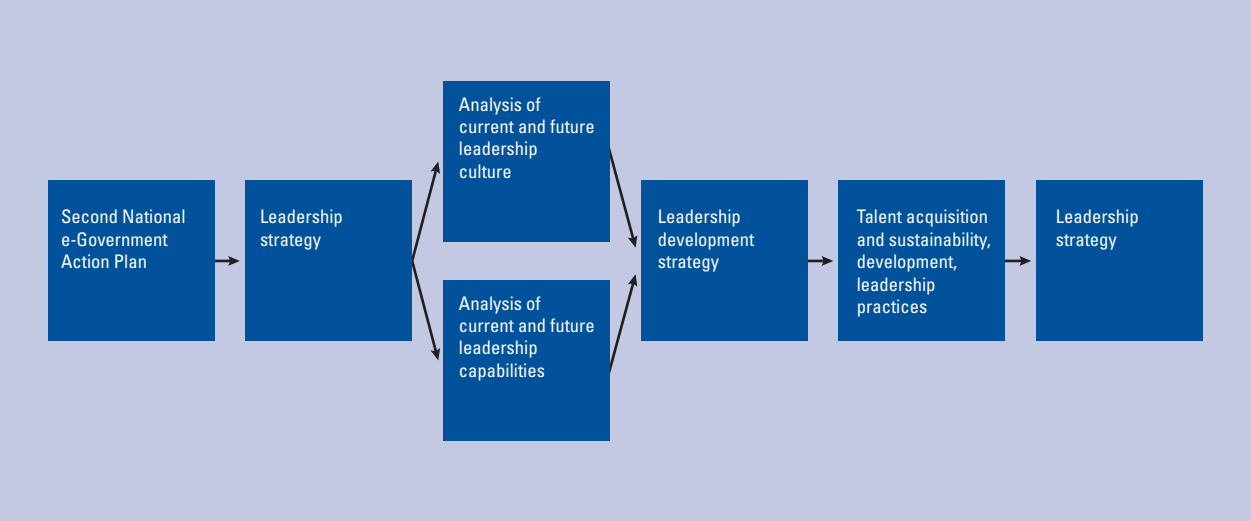
The YESSER Center of Excellence for Research and Development (CERD) will offer accredited and non-accredited training programs and courses to all affected employees. CERD will operate in parallel with existing Ministry of Civil Service offerings, while its e-government-specific curricula will augment those offered by the Institute of Public Administration in Saudi Arabia.

Several other programs focused on growing ITC and e-government capabilities, such as the Future Experts Program and CIO Workshops, are currently underway. However, the size of Saudi government (approximately 1 million employees) and the extent of the demand for talent calls on further investment in training across a broad spectrum of needs.

This training strategy, championed by the CERD, is sensitive to these competing demands on staff and resources. The strategy provides guidance to ensure that investment in e-government training is focused on producing efficient and effective results. More specifically, it clarifies the need for training and identifies those who should receive particular levels of training.

At the agency level, establishing clear training objectives will provide the foundation of effective training and development. With support from the CERD, every agency will be required to set clear objectives for its competency training.

Figure 3: Leadership strategy development process



Source: YESSER, 2010.

create the capabilities needed to implement and sustain e-service delivery. The agency training strategy must define how these capabilities will be developed so that learning is seen as supporting its strategy.

Clear statements must be made by managers in each agency to reinforce the view that staff development is vitally important. Such statements provide a vision of learning and investment in staff development that can dramatically increase the level of employee recruitment, engagement, performance, and innovation.

Individual agencies are identifying what training is essential, preferential, or desirable within the available resources. Each agency is creating a training plan that aligns with its project and service delivery imperatives. The starting point for this is to reference the vision and e-government action plan of the agency, and then to capture any gaps evidenced by applying a project and employee performance planning and review cycle as well as project job holder competency models in order to produce a defensible time- and priority-based training needs analysis.

Figure 4 sets out the relationship between the role of YESSER in facilitating agency project training needs analysis and core learning delivery.

This design model creates consistent, global best practice training needs analysis and core learning to all government agencies nationally.

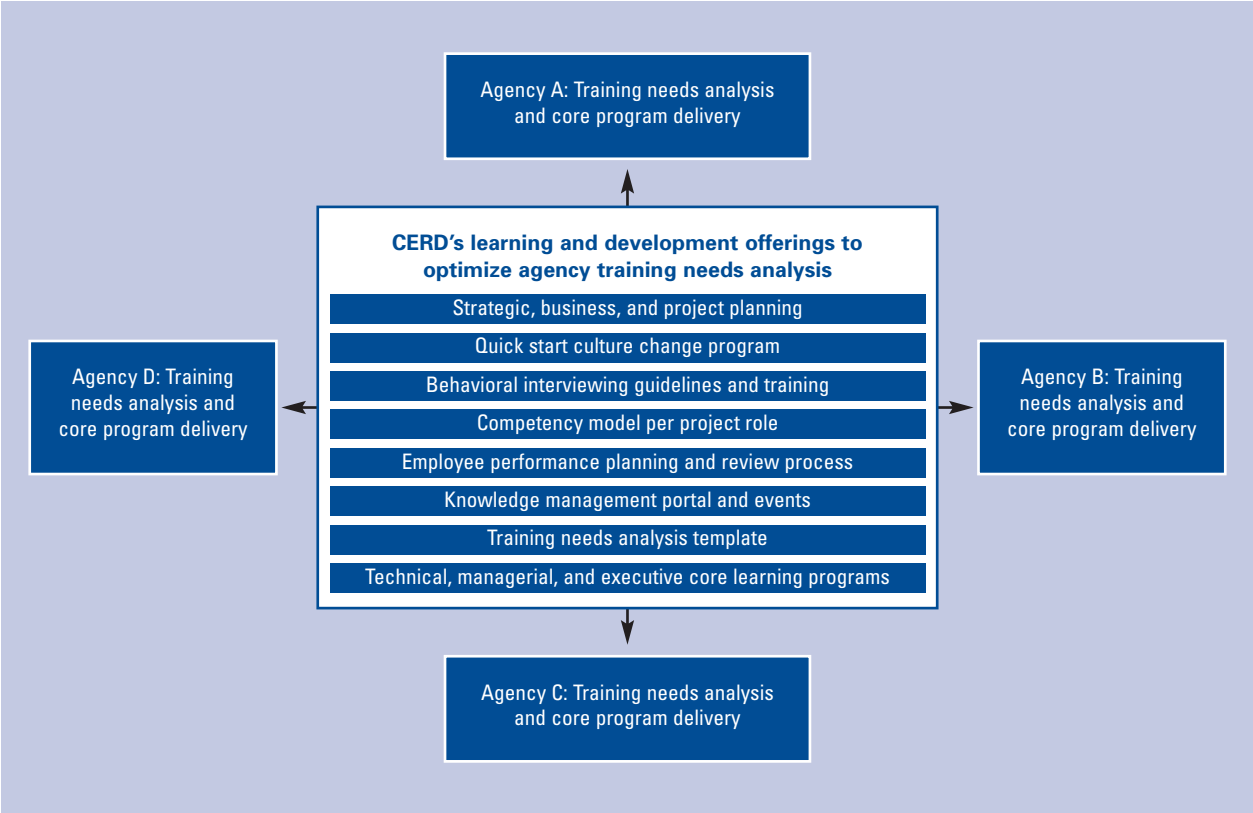
Conclusion: The way forward

There can be no underestimating the task at hand for Saudi Arabia and its growing needs for developing a sleeker and well-equipped IT workforce. Pinning these growth strategies for ITC competency development to e-government brings many advantages to the country. Creating a friendlier, easier-to-use set of e-services improves access to government while growing awareness of the need for higher technical competencies internal to government operations. It also places new service-level expectations on the private providers working with government agencies. All of these efforts are focusing on meeting higher user expectations.

At the same time, the ability of national public entities and private businesses to consider IT skills as a part of the bigger whole of meeting the national strategic goals needed to compete in a global knowledge-based economy will remain one of its major strengths in the future. The experience of YESSER is remarkable in such a context. By considering and promoting e-government not just as a set of measures to bring more public services online, but as a transformative tool to improve the relationship among government, business, and citizens, YESSER had to develop specific human resources policies and design innovative ways to attract and retain talents within its own team.

Today, the experience gathered by Saudi Arabia in this area cannot be a source of inspiration only for other parts of the government, but also for other countries around the world. Combining this experience with the latest advances made in other contexts (in the area of curricula, global knowledge economy skills, and skills for innovation, for example) represents yet another potential source for huge benefits to Saudi economy and society.

Figure 4: Core competency training delivery and agency training needs analysis



Source: YESSER, 2010.

Notes

1 Notably the Government Service Bus (GSB) to provide common information exchange protocols, and the Government Secure Network (GSN), a dedicated secure network linking government agencies.

2 Examples include the e-Services Department to help agencies identify key services they need to transform to online services, the YESSER Consulting Group to help agencies define their projects through proven frameworks such as the development of an enterprise architecture, the integration and development of units of onboard agencies that are information providers or consumers to the GSB/GSN, and many others.

3 See http://www.yesser.gov.sa/en/MechanismsandRegulations/strategy/Pages/default.aspx.

4 See http://www.yesser.gov.sa/en/BuildingBlocks/Pages/capacity_building_initiative.aspx.

5 See http://www.yesser.gov.sa/en/MechanismsandRegulations/strategy/Pages/default.aspx.

6 See http://www.yesser.gov.sa/en/MechanismsandRegulations/strategy/Pages/default.aspx.

7 See http://www.citc.gov.sa/NR/rdonlyres/37A65D75-BB3B-4263-B566-2B9726C60DF4/0/CITC_Annual_Report_2009_En.pdf.

8 The Ministry of Civil Service advised in September 2010 that there are 16,094 employees in IT job classifications, of whom 11,625 are employed in data entry, and 1,327 are women.

9 See Enjaz descriptions, available at http://www.yesser.gov.sa/en/Award/Pages/about_eAward.aspx.

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CHAPTER 2.3

A National Plan for Broadband in the United States

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In early 2009, the US Congress directed the US Federal Communications Commission (FCC) to develop a plan to ensure that every American has "access to broadband capability." That planning exercise resulted in *Connecting America: The National Broadband Plan* (NBP) issued in March 2010,[1] which we discuss in this chapter.[2]

For the purposes of the Plan, *broadband* means high-capacity Internet access and the associated networks, devices, content, and applications.[3] The NBP describes broadband development as "the great infrastructure challenge of the early 21st century,"[4] in part because of the Internet's role as a general purpose technology—that is, a technology that has the potential to spread through the economy and bring about generalized productivity gains.[5] From a public policy perspective, the NBP highlighted in particular the idea that broadband is not an *end,* but rather a *means* for furthering national purposes, such as improving education, healthcare, energy efficiency, public safety, and the delivery of government services. As such, there are four main ways in which the government can influence the development of broadband: (1) ensuring robust competition; (2) efficiently allocating assets that the public sector controls or influences (such as spectrum and public infrastructure); (3) encouraging the deployment, adoption, and use of broadband in areas where the market alone is not enough (such as areas where the cost of deployment is too high to earn a return on private capital or where households cannot afford to connect); and (4) providing firms and consumers with incentives to extract value from the use of broadband, particularly in sectors that further national purposes, such as those mentioned above (education, healthcare, and so forth).

The National Broadband Plan: Main themes

Creating the NBP required the FCC to apply long-standing principles of economics and regulatory policy to an important and emerging sector of the communications industry to encourage the deployment, adoption, and usage of broadband. Below we provide an overview of some important themes in the NBP.

Ensuring robust competition

The modern trajectory of US federal communications policy has been directed toward creating and protecting competitive communications services markets. This goal can be in conflict with the fact that important sectors of the communications industry have long been thought to possess natural monopoly features, which is a familiar basis for regulation. Most importantly, economies of scale and density in the deployment of residential wireline

The views expressed here are those of the authors, not necessarily those of the FCC or any individual Commissioner. Nor are they necessarily those of the team that was responsible for the development of the National Broadband Plan.

infrastructure mean that both telephone voice service and cable video service have each traditionally been viewed as natural monopolies, at least over the "last mile" between the house and the first switch. For this reason, local residential telephone service has traditionally been subject to rate regulation, and basic cable prices may also be regulated. It can, however, be difficult to regulate natural monopolies in communications industries for a number of reasons. Some of these are discussed in the following sections.

Changing technology and demand

First, technological change—a notable feature of communications since at least the development of the telegraph and radio—may alter the scope of the natural monopoly. During the latter half of the 20th century, for example, the development of microwave technologies for transmitting telephone calls made competition possible in long-distance services, which (like local telephone service) had been regulated as a natural monopoly.

A similar phenomenon is occurring today with the convergence of the technologies for providing voice and video, as they both become merely data packets. With two wires to the typical US household (the cable television line and the telephone line), it is possible that the last mile could support two broadband providers at anticipated levels of future demand. And if users come to view wireless technologies—whether mobile or fixed—as wireline substitutes for data and video services (as they increasingly do for voice services), residential data transmission services could develop an even more competitive market structure.

But other, less competitive, scenarios are possible, and the NBP views future broadband market structures as highly uncertain.[6] Because mobile wireless technologies appear more likely to be constrained in bandwidth than wireline technologies, the extent to which mobile wireless service will substitute for wireline service depends in part on how demand evolves. If demand shifts more to high-bandwidth, low-latency applications than to mobile applications, the two services may better be viewed as complements rather than substitutes. In addition, all wireless broadband technologies, whether fixed or mobile, may be more prone than wireline to the possibility that congestion would degrade quality or raise marginal cost.

Moreover, even if wireless technologies become important substitutes for wireline broadband, it is unclear how much competition that sector will provide. In the United States, most of the leading wireless service providers also offer wireline services,[7] which may dampen their incentive to have wireless services compete aggressively and substitute for wireline services.

The NBP also points to a substantial uncertainty about the extent of future competition among wireline broadband providers. By one forecast, 11 percent of households in 2012 will have only one broadband wire to the home, another 45 percent of households will choose between a cable provider that offers high-speed service and a telephone provider that has not upgraded beyond DSL service to offer broadband on high-capacity fiber, and 30 percent more will choose between a cable provider with high-speed service and a telephone provider that has upgraded only to fiber-to-the-node (essentially the neighborhood) and not to fiber-to-the-home.[8] If this forecast proves correct, 86 percent of households may have limited wireline competition for high-bandwidth broadband services.[9]

Uncertainty about regulatory outcomes

Uncertainty about the scope of a natural monopoly creates a number of problems for a regulatory agency. The most obvious problems involve the difficulties of conducting a cost-benefit assessment of potential policy actions when the probabilities and social benefits or costs of a range of possible outcomes are hard to assess. In modern times, the FCC, spurred by Congress, has generally tried to err in favor of choosing policies that aim to encourage competition.[10]

In addition to evaluating uncertainty about the likely costs and benefits of alternative regulatory decisions, the regulator must consider the costs and benefits of delay. A regulator, like a firm that makes an investment decision under uncertainty, obtains an option value from delaying its decision. Waiting until uncertainty about the world is clarified avoids the possibility of locking in what could turn out to be a suboptimal regulatory strategy, and thus avoids inducing firms to make sunk investments conditional on that strategy.

But regulatory delay also creates costs. When a firm's investment decisions would vary with the regulator's choice of strategy and involve substantial sunk costs, uncertainty as to regulation can lead firms to defer investments—in this case potentially slowing the deployment of broadband technology. With respect to residential broadband competition, the NBP seeks to resolve this trade-off by boosting the prospects for wireless competition (through spectrum and other policies discussed below) while simultaneously delaying regulatory action in favor of collecting better data to monitor trends.[11] This approach permits the FCC to act later to foster competition if it seems viable or to regulate as necessary if the last mile of the emerging broadband industry turns out to have natural monopoly characteristics or competition is otherwise limited.

Efficient allocation of assets that the public sector controls or influences

The public sector establishes rules for the allocation and use of spectrum and oversees access to infrastructure—such as poles, conduits, rooftops, and right-of-way—that is used by the private sector in the deployment of broadband networks. Ensuring these assets are allocated and managed efficiently can lower barriers to providing

broadband service, and the NBP contains an extensive discussion of each.

Use of spectrum

Spectrum is an essential input into wireless communication. It is scarce in the sense that there is a fixed range of useable frequencies, although technological developments such as cell splitting have made it possible over time to use the spectrum that has been set aside for communications more intensively and to use a wider range of spectrum for that task. Still, given today's technology, the existing allocations of spectrum, and the ongoing rapid growth rate of wireless services, the NBP takes the view that it is essential to make additional spectrum available for wireless broadband.

New technologies and changing FCC priorities have led in the past to alterations in the way spectrum is used—for example, to facilitate the introduction of mobile phones or digital television. The best use of spectrum may change from one decade to the next, which raises the importance of developing mechanisms to identify higher-valued uses and to reallocate spectrum to those uses.

Input scarcity and changing valuations are not by themselves necessarily reasons for regulation; the allocation and reallocation of scarce resources may be what markets do best. But spectrum usage raises unusually complex coordination problems that may justify regulatory intervention to support the market. In particular, spectrum must be allocated in a way that avoids interference across frequency bands and across geographic boundaries. Moreover, it may be necessary technologically, or at least confer substantial cost savings, to permit spectrum users to employ contiguous blocks of frequencies (across both frequencies and geographic regions). Markets may not successfully move underutilized spectrum to higher-value uses even if incumbents are permitted greater flexibility in spectrum use because of the need to assemble large contiguous blocks for new uses and the incentives of incumbents to hold out for a significant share of the gain.

The coordination difficulties that arise from interference may be exacerbated by the path dependence that arises from past investments. For example, had satellite radio broadcasters chosen to deploy more expensive receivers that are more resistant to interference, it might now be possible to allow higher limits on the power that is employed by users of adjoining spectrum blocks, increasing the value of that adjoining spectrum.

The NBP's spectrum discussion is premised on a view that recent technological change has likely made wireless services a higher-valued use for some spectrum, at appropriate frequencies, than its current use. The NBP notes a range of reallocation possibilities, including changes in the use of some spectrum that is now allocated to satellite, broadcast television, and federal uses. To determine whether this is so, and to reallocate spectrum if it is, the NBP encourages the use of market mechanisms.[12]

One NBP proposal is already moving forward: the FCC has proposed changing the rules regarding spectrum that is allocated to mobile satellite uses in order to facilitate the deployment of complementary terrestrial networks that share the frequency, thereby enhancing spectral efficiency and coverage in urban areas or inside buildings, where the satellite signal is attenuated or unavailable.[13] This particular spectrum is tied to mobile satellite services because its allocation is coordinated internationally, and thus generally lies beyond the ability of the FCC to alter on its own.

Another spectrum reallocation problem that is highlighted in the NBP involves broadcast television spectrum. If some other use, such as wireless broadband, now has a higher value than does broadcast television for some of that spectrum, and if today's broadcasters are not the best parties to provide the alternative service, the spectrum could be put to better use by encouraging the movement of spectrum from the broadcasters to other firms. To find out whether this switch makes sense and, if it does, to facilitate it, the NBP proposes developing a market mechanism that would permit incumbent broadcasters to receive compensation if they voluntarily release spectrum by discontinuing over-the-air broadcasting or if they "channel share" (multicast on the same channel) with other broadcasters.[14] If any spectrum is voluntarily given up by broadcasters, moreover, that spectrum must then be repacked into contiguous geographic and frequency blocks to make it more valuable for alternative uses.[15] Finally, the repackaged spectrum must be auctioned to new providers.

The NBP contemplates developing an "incentive auction" mechanism to accomplish these tasks.[16] As a design problem, it poses several challenges. It is necessary to develop a procedure for constructing both a supply curve (from the broadcasters) and a demand curve (by bidders such as broadband providers) in order to clear the market, while simultaneously defining the scope of the repackaged product. This might be accomplished simultaneously in a single exchange. Alternatively, it might be accomplished sequentially, by first conducting a reverse auction to determine the cost of clearing spectrum and then conducting a forward auction for cleared spectrum. By combining information from both auctions, spectrum would be cleared up to the point where the value of a spectrum unit in the new use in a particular market equals the cost of clearing that unit, subject to the requirement of maintaining an acceptable amount of over-the-air broadcasting.

Finally, the NBP proposes reallocating some spectrum that is now devoted to federal uses. That spectrum might include a block that could be combined with other spectrum that is now available in order to make a more valuable package for auction.[17] On a related note, the NBP proposes encouraging the reallocation of

spectrum that is not licensed for flexible use—whether used by governmental entities or private firms—by seeking the authority to impose fees on that spectrum that reflects its opportunity cost.[18] Such fees promise to induce licensees to use spectrum more efficiently and perhaps, in consequence, reduce their holdings, making more spectrum available for other uses.

Access to infrastructure

Just as wireless networks use publicly owned spectrum, wireless and wireline networks alike rely on cables and conduits attached to public roads, bridges, poles, and tunnels. Securing rights to this infrastructure is often a costly and time-consuming process—notably because of the need to navigate permitting and zoning rules. Indeed, the NBP estimated that, in the United States, the expense of obtaining permits and leasing pole attachments and rights-of-way can amount to 20 percent of the cost of fiber optic deployment. To improve access to infrastructure and thereby improve the business case for deploying and upgrading broadband networks, the NBP recommended that federal, state, and local governments focus on two areas: first, improving the utilization of existing infrastructure to ensure that network providers have easier access to poles, conduits, ducts, and rights of way. Second, facilitating the placement of broadband infrastructure on property managed by the government, which could have an enormous impact on broadband deployment given that the federal government alone owns nearly one-third of the land area of the United States and owns or leases space in 8,600 buildings nationwide.

Having already taken action in some areas, such as the siting of wireless towers, the FCC recently launched a "Broadband Acceleration Initiative" to complete the implementation of these recommendations.[19]

Encouraging broadband deployment, adoption, and use

Another feature of communications markets also provides an additional basis for some regulatory initiatives contained in the NBP, namely the large external benefits that are generated by the provision of communications services. These benefits go beyond network effects (demand-scale economies arising from each consumer's increased opportunities to interact with others),[20] and include innovation and economic growth, recognizing the Internet's role as a general purpose technology.[21] They also include non-market values such as enhancing free speech and fostering civic engagement.

All of these external benefits will likely grow as technology increasingly permits rapid transmission of data, and not simply voice and video communications services. These external benefits, along with distributional considerations, historically led regulators to subsidize voice telephony services for lower-income users and those for whom the cost of supplying service is high (such as rural users) to maximize the number of users on the network. Decades ago, US regulators sought to encourage increased telephone subscribership through a system of implicit subsidies. The regulated monopolist, which offered a full range of telephone services, set low rates for local telephone service, particularly for residential customers in high-cost and rural areas (as through geographic rate averaging). Under this scheme, the higher rates for long-distance service and for business customers covered a relatively large share of the fixed, joint, and common costs of telephone system operation. Moreover, telephone providers were subjected to universal service or carrier-of-last-resort obligations, and compensated for providing this service by setting higher prices to their customers (particularly, again, business and long-distance customers).

The shrinking natural monopoly led Congress in 1996 to introduce competition into local telephone service, putting pressure on this informal regulatory compact. The cross-subsidies were not sustainable against partial line entry by firms that were cherry-picking to undercut prices on high-margin services. In consequence, regulators have been led to unwind the old cross-subsidies and to replace them with direct transfers to subsidized customers or the carriers that serve them, paid for by service charges on all customers. The NBP recommends that the FCC examine the possibility of using market-based mechanisms, perhaps including reverse auctions, to minimize the costs of providing subsidized service.[22]

Voice traffic is increasingly provided in the same way as other data, and data providers now include cable, wireless, and satellite companies as well as traditional telephone firms. Accordingly, the NBP proposes extending the modern approach to providing universal service from telephony to broadband by introducing a new program that focuses on subsidizing broadband infrastructure buildout in high-cost areas that are unlikely to be served by the private sector.[23] To fund these programs, the NBP proposes broadening the requirement for contribution to the universal service fund beyond the current base.[24]

With respect to adoption and usage, the NBP notes that roughly 35 percent of Americans (roughly 80 million adults) do not use broadband at home, and these non-users are generally older, poorer, less educated, and more likely to be part of a minority group than those with a home connection. As part of the NBP's fact base, the FCC commissioned the largest ever survey of non-adopters, which found three major barriers to adoption: (1) cost of service and/or devices; (2) digital literacy—that is, discomfort with the use of computers or the Internet; and (3) perceived relevance of the content that is available online. Accordingly, the NBP proposed a series of initiatives to address each of these barriers, many of which have been adopted since its release. They range from explicit subsidies to make broadband more affordable for low-income households

to the creation of a "Digital Literacy Corps" to promote community awareness and usage of broadband and the promotion of online content targeted toward groups such as older Americans.

Finally, consumer protection is another aspect of regulation that can affect broadband adoption and usage.[25] If the market does not provide consumers with inexpensive, clear, and reliable information, and the government can do so without bearing or imposing substantial costs—for example, by requiring disclosure—consumers may be able to match purchases better with their preferences.[26] If, in addition, buyers are able to search more effectively among sellers, firms may experience more elastic demand for their products, leading to lower consumer prices. These are not the only possible consequences of improving the information that is available to buyers—the increased information exchange could instead reduce seller discounting, for example[27]—but it is likely, in general, that improved seller disclosure will benefit buyers.[28] Consumer protection also involves policing deceptive seller marketing practices, discouraging seller fraud, and protecting consumer privacy when market forces such as seller reputations are inadequate to do the job on their own.

The NBP highlights several areas in which consumer information appears less than ideal, given the ease in which it could be provided. It emphasizes that actual broadband speeds are less than half the advertised speed.[29] To address this problem, it calls on the FCC to establish technical standards for key attributes of broadband performance, measure how broadband providers stack up against the standards, and publish the results.[30] The FCC has already begun to do so.[31]

Using broadband to further national purposes

In requesting the NBP, Congress recognized that broadband service is not an end in itself, but rather that explicit actions may need to be taken to ensure that its full value is realized by incorporating the benefits it brings into other social and economic activities. Congress directed that the NBP include a "plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety and homeland security, community development, healthcare delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes."[32]

Over one-third of the plan is devoted to describing how broadband can improve the performance of each of these sectors and recommending actions to increase use, private sector investment, and innovation. The main areas of focus are summarized below, and we refer the reader to the NBP itself for more details:

Healthcare: Ensure that healthcare providers have access to broadband, that regulatory barriers to innovation in areas such as wireless medical devices and electronic record keeping are removed, and that data and analytics that could improve patient care are enabled by broadband connectivity.

Education: Improve connectivity to schools and libraries, and accelerate online learning by enabling the creation of digital content, increased digital literacy, and the adoption of broadband-enabled devices and services.

Energy: Focus on broadband enabling the nation's energy infrastructure, including broadband enabling the electricity grid ("smart grid") and unleashing innovation in homes and buildings—for example, by making energy consumption and efficiency data readily available.

Public safety: Deploy a robust nationwide mobile broadband network for public safety use, and develop and deploy next-generation emergency alert systems.

Economic opportunity: Encourage broadband-enabled access to job training and placement programs and ensure that small businesses and entrepreneurs have adequate access and applications to realize potential productivity gains.

Government and civic engagement: Make government more open and transparent online, and improve government performance and operations through cloud computing, cyber security, and online service delivery.

Conclusion

The FCC's National Broadband Plan contains much more than has been discussed here, although the core of the plan involves the traditional concerns of economic regulation: targeting limited government intervention to address market failures in order to create and support a robust competitive marketplace for communications services. One year after its release, most of the Plan's recommendations are in the process of being implemented, although as its authors note:

> *"The Plan is in beta and always will be. Like the internet itself, the plan will always be changing—adjusting to new developments in technologies and markets, reflecting new realities, and evolving to realize the unforeseen opportunities of a particular time. As such, implementation requires a long-term commitment to measuring progress and adjusting programs and policies to improve performance."*[33]

Notes

1 FCC 2010a.

2 This chapter was adapted, with permission, from an earlier work by the same authors published in the *Review of Industrial Organization*. See Baker and de Sa 2010.

3 Although the NBP does not explicitly define *broadband,* it sets a broadband availability target for universal access at 4 Mb/s actual download speed and 1 Mb/s actual upload speed. The median actual download speed today is 5–6 Mb/s for fiber and cable and 1.5 Mb/s for DSL. See FCC 2010a, Chapter 8.

4 FCC 2010a, pp. xi, 29.

5 See Bresnahan and Trajtenberg 1995.

6 FCC 2010a, Chapter 4.

7 Of the four national wireless providers, Verizon and AT&T also offer wireline telephone services, and Sprint's current 4G wireless partner, Clear, is co-owned by large cable television companies. Only T-Mobile does not have a US wireline affiliation.

8 FCC 2010a, p. 42, Exhibit 4-G.

9 More generally, the extent of growth in demand for high-speed applications will likely affect whether and how quickly different cable providers upgrade to higher speed technologies, telephone providers upgrade from DSL to fiber, and wireless providers build out 4G networks. Under some scenarios, these providers could differentiate—some offering higher-speed services with others unable to do so, which would limit competition for high-speed broadband.

10 This bias may in part reflect the traditional public choice concern that large regulated incumbent firms may have greater ability to influence political processes than do small rivals, entrants, and consumers, and consequently may capture regulatory agencies to act in their private interest.

11 The NBP recommends that the government make more spectrum available for wireless providers (FCC 2010a, Recommendation 4.1) and that it collect and analyze more information about broadband availability, penetration, prices, churn, and bundles offered by service providers (FCC 2010a, Recommendation 4.2). The FCC issues an annual report analyzing the competition in the mobile wireless industry; see, for example, FCC 2010c.

12 FCC 2010a, Chapter 5.

13 FCC 2010d, 2010a, Recommendation 5.8.4.

14 Although spectrum is a public asset, and the government has the legal right to reallocate it at will, incumbents are generally treated as though they have quasi-property rights in their spectrum license in order to provide appropriate incentives for licensees and their customers to make long-term investments. Reallocation under such circumstances requires that compensation is paid to the incumbent licensee. If compensation is set through negotiation, the process of spectrum reallocation could become mired in bargaining impasses; if it is set through regulatory determination, it will likely involve substantial administrative costs. A market mechanism employs a third approach: enlisting competition to determine the appropriate level of compensation. For more information on this proposal see FCC 2010a, Recommendation 5.8.5.

15 In principle one could imagine delegating the repacking to a market mechanism, but such a mechanism is difficult to devise, particularly when the optimal scope of spectrum packages (both in terms of geography and frequency) varies with the use to which the spectrum would be put.

16 FCC 2010a, Recommendation 5.4.

17 FCC 2010a, Recommendation 5.8.3; see Obama 2010.

18 FCC 2010a, Recommendation 5.6.

19 FCC 2011.

20 FCC 2010a, p. 29, Box I-1.

21 By one account, the Internet is in select company, joining technologies such as printing, the steam engine, the factory system, railways, electricity, and the computer as one of only twenty-four "transforming general purpose technologies" developed over the entire span of human history (Lipsey et al. 2005, p. 133).

22 FCC 2010a, p. 145 and n.79.

23 FCC 2010a, Recommendation 8.2.

24 FCC 2010a, Recommendation 8.10.

25 Armstrong 2008; Beales et al. 1981.

26 Bar-Gill and Stone (2009) argue that disclosures can discourage firms from taking advantage of systematic consumer misjudgments about their mobile phone usage.

27 Improved information to buyers could also undermine certain outcomes in which informed consumers benefit from the presence of uninformed buyers (Armstrong 2008, pp. 119–25).

28 Albæk et al. 1997; Baker 1996.

29 FCC 2010a, p. 21.

30 FCC 2010a, Recommendations 4.3 and 4.4.

31 For example, the FCC's Consumer Broadband Test application enables consumers to test the speed of their broadband connection and other quality attributes (FCC n.d., Consumer Broadband Test).

32 FCC 2010a, p. 193.

33 FCC 2010a, p. XV.

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CHAPTER 2.4

Broadband Developments in Europe: The Challenge of High Speed

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The broadband market of the European Union (EU) is the largest in the world, with 128.3 million lines and some European Member States topping the ranks in terms of penetration rates worldwide. The fixed broadband penetration rate in the European Union as a whole was 25.6 percent in July 2010 and continued to grow.[1] Most broadband lines in Europe are currently based on xDSL technologies,[2] but new access technologies such as mobile, cable, and fiber are emerging. The deployment of high-capacity broadband, however, is still limited in Europe, with only 30 percent of lines offering speeds above 10 Mb/s and only 0.5 percent above 100 Mb/s. To stimulate development, the European Union has committed to achieve ambitious high-speed targets. By 2020, half of European households should subscribe to at least 100 Mb/s, and 30 Mb/s should be available for all.[3] These targets are enshrined in the *Digital Agenda for Europe,*[4] the European Commission's strategy for a flourishing digital economy, as well as in *Europe 2020,*[5] the Commission's growth strategy for the next decade.

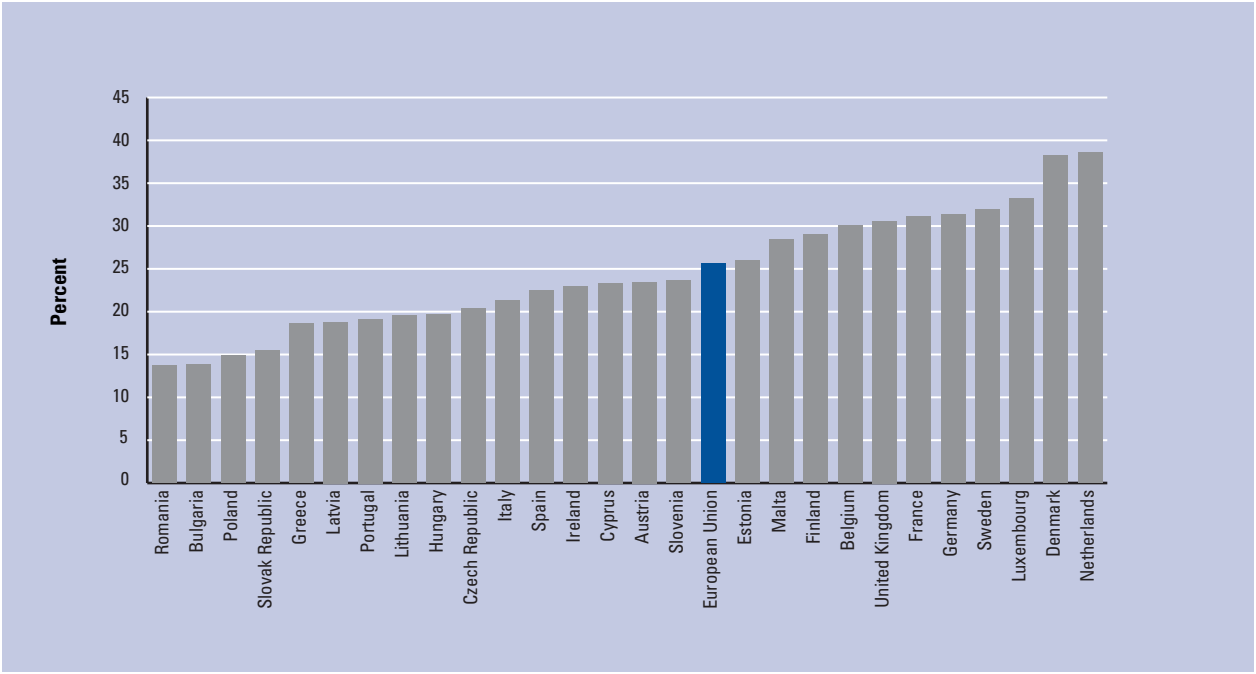
This chapter describes the broadband developments experienced in the European Union in recent years. Its objective is to frame the current political debate and the EU broadband policy in its own context, which often differs from those of other economies. It will first look at growth in the fixed and mobile broadband markets and emphasize differences across Member States, and then frame these developments in the international context. A few challenges will be highlighted, such as the difficulties encountered in migrating toward higher speeds and the uncertainty of business models. These challenges are currently keeping investment back, but some new practices are being tried in a number of countries. The chapter will then note that broadband development in Europe has also been stimulated by the implementation of the regulatory framework for electronic communications. Since July 2003, the incumbents' market share in the fixed broadband market has been declining, stabilizing at around 44 percent in 2010, while local loop unbundling (LLU) is the principal means by which new entrants can offer retail DSL services (about three-quarters of new entrants' xDSL lines are provided through LLU).[6] Last but not least, the matter of rural broadband and state aid issues and the ongoing political debate will be analyzed.

Recent trends in the growth of fixed broadband lines

Broadband markets in 2010 continued to grow, although more slowly than in previous years. In July 2010, there were 128 million fixed broadband lines (with 9 million new lines added during the previous year), and the average

The views expressed by the author are purely personal and do not necessarily reflect the official position of the European Commission.

Figure 1: Fixed broadband penetration, July 2010



Source: Communications Committee.
Note: The Communications Committee has been established under the Framework Directive 2002/21/EC and assists the European Commission in carrying out its executive powers under the regulatory framework for electronic communications. The committee furthermore provides a platform for an exchange of information on market developments and regulatory activities, including the collection of broadband data through National Regulatory Authorities by way of a common methodology applied across the European Union. The data are collected twice a year, and the latest publication can be found at http://ec.europa.eu/information_society/newsroom/cf/item-detail-dae.cfm?item_id=6502&language=default.

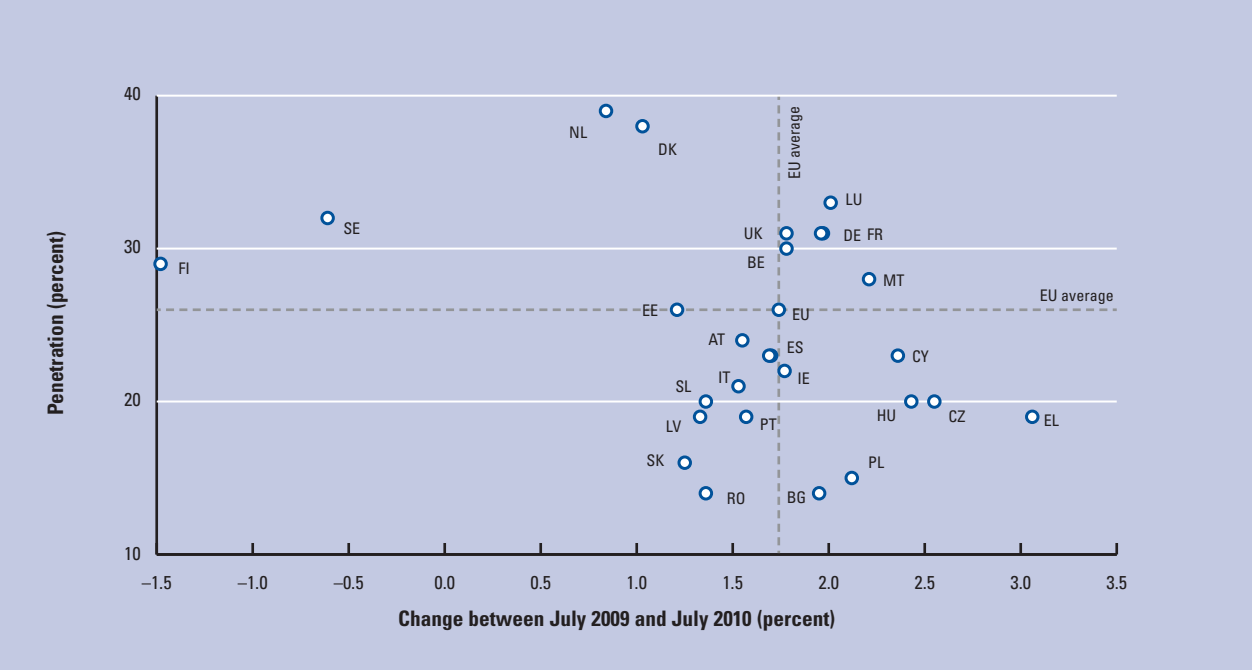
fixed broadband penetration rate in the European Union reached 25.6 percent, as compared with 23.9 percent one year earlier (see Figure 1).[7] Nevertheless, the growth rate is slowing down and has reached its lowest point of the last five years. In a number of cases, markets appear to be approaching maturity, which sometimes is caused both by changes in the population and by consumers substituting fixed with mobile broadband access. This seems to be the case in countries such as Finland and Sweden (Figure 2). In contrast, France and Germany—which together account for 36 percent of the EU broadband market—saw an increase of 2 percentage points in fixed broadband subscribers. Hence it appears that there is still some potential for growth even in countries with relatively high penetration.

Growth in countries where broadband markets are known to be far from mature also shows a mixed picture. Greece had the highest year-on-year increase in fixed broadband lines (3.1 percentage points). Cyprus, the Czech Republic, and Hungary are also catching up with the EU average. However, growth rates in the Slovak Republic, Romania, Latvia, and Lithuania were well below the EU average, and they continue to fall further behind. Despite these disparities, the broadband gap—that is, the difference between the highest and the lowest levels of penetration in the European Union—decreased, and was 1.6 percentage points lower in July 2010 than a year earlier.

Household data, a good proxy for the growth potential of broadband markets, show that there is still a high proportion of EU households that do not have a broadband connection (Figure 3). In the Netherlands, Denmark, and Sweden, fewer than 25 percent of households have no broadband connection, but in the EU overall, on average, close to 40 percent of households do not. The most important reasons not to subscribe to broadband are little need, lack of adequate skills to use it, too high subscription prices, and insufficient availability.

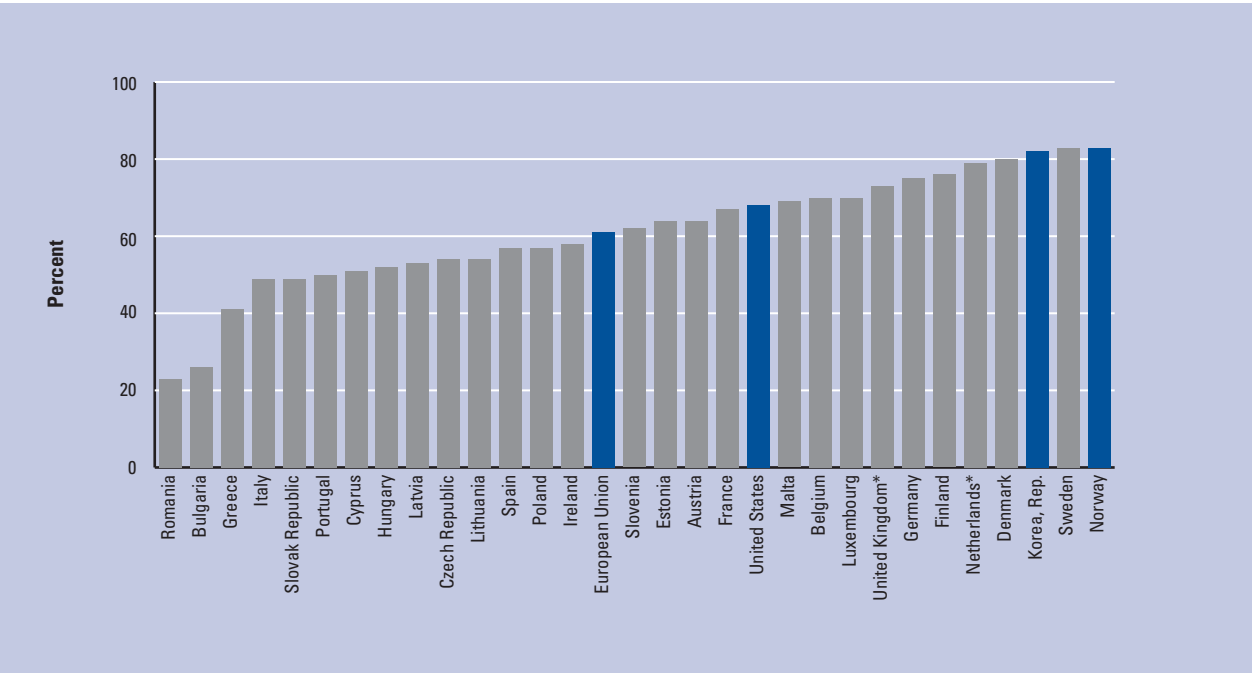
Developments in the fixed broadband market are accompanied by the emergence of mobile broadband usage. Progress in the uptake of mobile broadband was significant in a number of EU countries in 2010. Although the penetration of dedicated mobile broadband cards was only 6.1 percent of the EU population in July 2010, the market is growing rapidly (over 50 percent growth in mobile broadband cards between July 2009 and July 2010). Finland and Austria have experienced particularly fast developments (with penetration rates of 21.5 percent and 16.7 percent, respectively), with users currently moving from fixed to mobile broadband. The estimated number of dedicated mobile broadband cards (30.5 million) corresponds to about a quarter of all fixed broadband connections. Meanwhile, spectrum for fourth-generation mobile Internet has already been auctioned in several EU countries, including

Figure 2: Fixed penetration rate and growth, July 2010



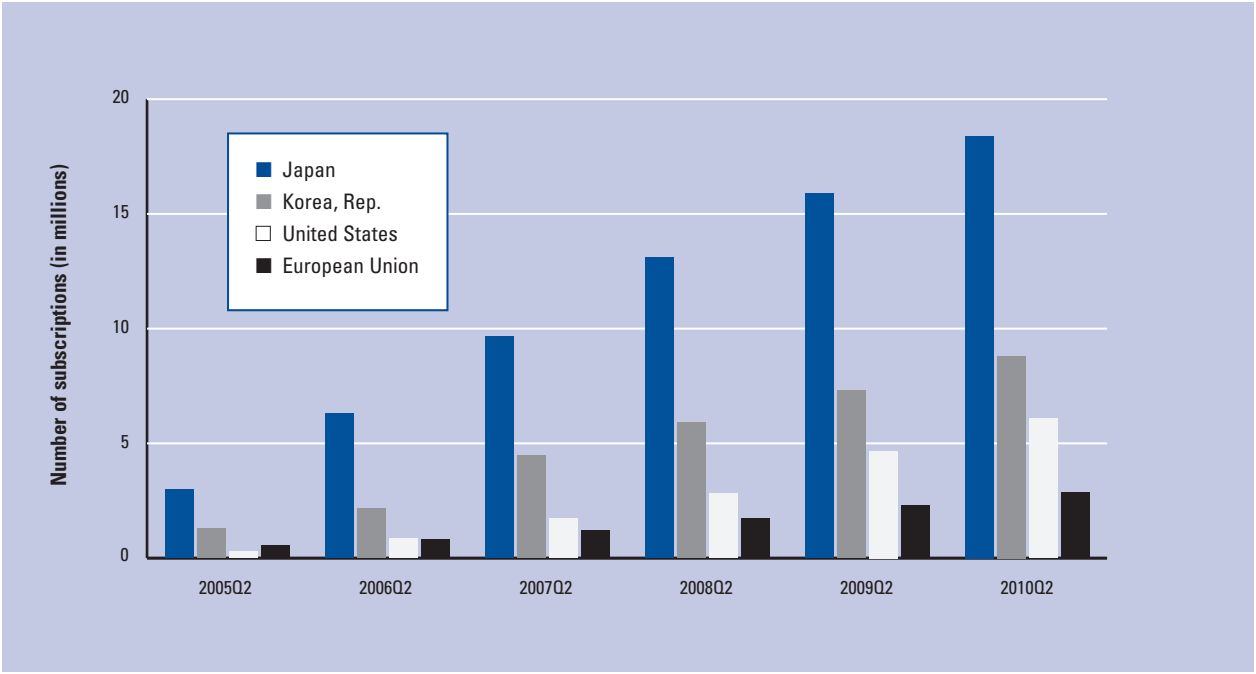
Source: Communications Committee.
Note: AT = Austria, BE = Belgium, BG = Bulgaria, CY = Cyprus, CZ = Czech Republic, DE = Germany, DK = Denmark, EE = Estonia, EL = Greece, ES = Spain, EU = European Union, FI = Finland, FR = France, HU = Hungary, IE = Ireland, IT = Italy, LT = Lithuania, LU = Luxembourg, LV = Latvia, MT = Malta, NL = Netherlands, PL = Poland, PT = Portugal, RO = Romania, SE = Sweden, SI = Slovenia, SK = Slovak Republic, UK = United Kingdom.

Figure 3: Fixed broadband household penetration, Q2 2010



Source: Eurostat Community Survey on ICT usage by Households and Individuals, 2010. Available at http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/introduction.
Notes: Data for the United States, Norway, and Korea refer to Q2 2009. Blue bars indicate the EU average and non-EU countries.
* Estimated data.

Figure 4: FTT*x* deployment in the European Union, the United States, Japan, and Korea, Rep.



Source: European Commission services on the basis of Point Topic database.
Note: Figures include FTTH and FTTB + LAN.

Sweden, Finland, Germany, Austria, the Netherlands, Denmark, and Estonia.

An international comparison of European uptake

Both in fixed and mobile broadband, the European Union continues to be the largest broadband market in the world, and some EU Members exhibit the highest penetration levels worldwide. The Netherlands and Denmark continue to top the league, followed by Sweden and Luxembourg, along with a group of four non-EU countries—Switzerland, Norway, Iceland, and Korea, Rep. (Korea). On average, the European Union is catching up with the United States in terms of uptake (1.6 percentage point difference in January 2010 compared with 2.7 percentage points one year earlier). This is the result of a strong reduction in the uptake experienced by the United States in 2010.

Despite the satisfactory penetration rates, most EU broadband lines are based on xDSL technologies, and average speeds are usually lower than in other developed countries with high broadband penetration rates. Fiber technologies have been spreading at a very low pace in the European Union compared with the United States and especially with Korea and Japan, where more than half of users already subscribe to fiber-based access technologies (FTT*x*; see Figure 4).[8]

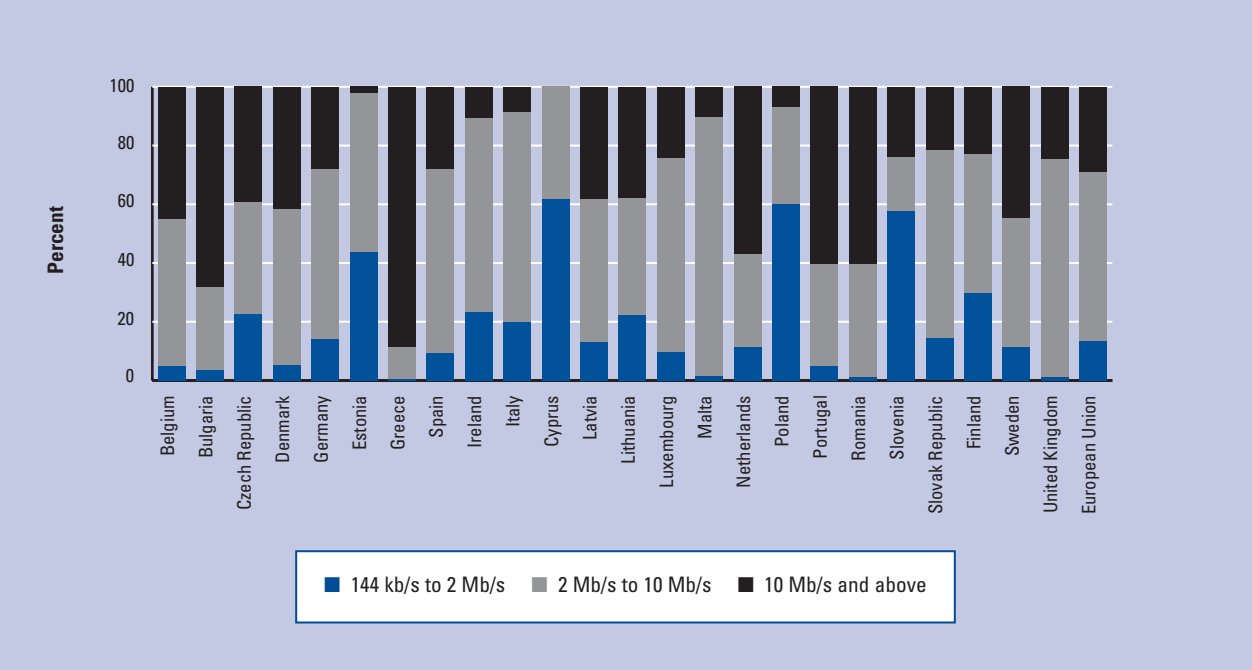
The pattern of high-capacity broadband deployment appears different in advanced markets relative to emerging markets. In Japan, the United States, Korea, and Taiwan, growth appears to be largely driven by operators' efforts to persuade DSL and cable subscribers to switch to FTT*x*, whereas in less-developed markets such as Russia and China, large numbers of first-time broadband customers have signed up for FTT*x*, often because it is the only technology available to them. This pattern may enable currently less-developed markets to leapfrog the advanced broadband economies.

The emergence of high-speed broadband

xDSL continues to dominate the EU broadband market, although its share of the market in January 2011 had slightly decreased to 78 percent from 80.8 percent in January 2006. In the first half of 2010, 65.5 percent of new lines were provided by means of xDSL technologies and 35.5 percent were connections using other types of technologies, an increase of 5.7 percentage points over the year before.

In the fixed broadband market, the largest relative growth was experienced by broadband lines based on fiber-to-the-home (FTTH), fiber-to-the-building (FTTB), and fiber + LAN, which together increased by more than 25 percent, admittedly from a lower base than xDSL or cable modem lines. DOCSIS 3.0 has also emerged as a powerful driver of high-speed broadband and is acting as a competitive threat to incumbents. The cost of upgrading cable capabilities to DOCSIS 3.0 is

Figure 5: Share of fixed broadband lines by speed, July 2010



Source: Communications Committee.
Note: Data for France, Hungary, and Austria are not available.

lower than the cost of upgrading to other access technologies, and this offers cable a competitive advantage in areas where it is already deployed. The reach of cable in Europe, however, is limited; in areas where cable is not present, the search for competitive threats to the incumbents' business model is open.

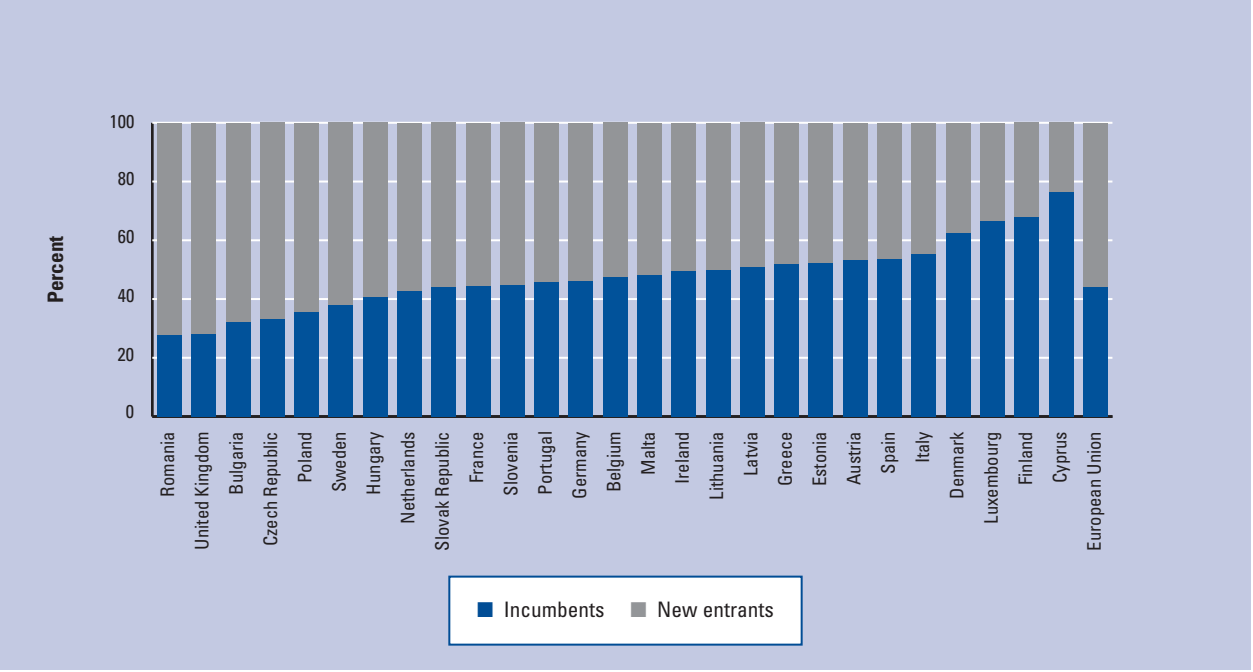
The deployment of high-speed broadband across EU countries is likely to follow completely different patterns. In Romania, Bulgaria, Lithuania, and, to a lesser extent, in Estonia, Latvia, the Slovak Republic, and the Czech Republic, the deployment of fixed broadband lines is very much based on fiber access and confirms the propensity of new Member States to leapfrog more mature markets in terms of technology.

As of July 2010, 87 percent of the broadband lines in the European Union were above 2 Mb/s, up from 81 percent a year earlier (Figure 5). There is a clear trend toward higher speeds. The Member States that made faster progress toward speeds greater than 10 Mb/s were Greece, the United Kingdom, and Luxembourg. Only 4.5 percent of the broadband lines in the European Union are at least 30 Mb/s, while 0.5 percent of the lines are at least 100 Mb/s.

New services such as high-definition television, videoconferencing, and cloud computing need much faster Internet access than is now generally available in Europe. Households making simultaneous use of multiple video Internet channels, with a young generation permanently connected and an increased uptake of image-based public services, characterize tomorrow's needs. To satisfy needs and match world leaders such as Korea and Japan, Europe should be equipped with download rates of 30 Mb/s for all its citizens, with at least 50 percent of European households subscribing to Internet connections above 100 Mb/s by 2020. The *Digital Agenda* aims to turn this ambition into reality by stimulating investments and proposing a comprehensive radio spectrum plan. It sets very specific targets to equip Europe with 21st-century infrastructure by 2020.

With regard to broadband retail prices, higher speeds are accompanied by a general trend toward more affordable prices. The median price for standalone services with download speeds between 2 and 4 Mb/s in the EU27 countries slightly decreased in 2009. For broadband lines with speeds between 4 and 8 Mb/s, prices decreased significantly in the newer Member States while remaining more stable in the rest of the European Union. The trend is accompanied by a rise in the number of bundled offers, which often have the advantage of putting a cap on retail prices but risk locking in customers and reducing churn. As of December 2009, it was estimated that 38 percent of households subscribed to bundled services (up from 29 percent two years earlier). Bundled service packages are especially popular in the Netherlands, Denmark, Estonia, and France, with more than 50 percent of subscriptions. In December, 2009, 57 percent of Internet access services were provided by means of a bundled package.[9]

Figure 6: Fixed broadband lines, operator market shares (July 2010)



Source: Communications Committee.

Selected European experiences in fiber-based access technologies

Italy is currently one of the largest FTTH markets in Europe, with more than 2.5 million homes passed and 348,000 fiber subscribers at the end of December 2010.[10] Two important recent initiatives radically increase FTTH penetration: Fibre for Italy—a co-investment partnership among Fastweb, Vodafone, and Wind—and Telecom Italia's plan. The Fibre for Italy project is aimed at reaching 20 million people in Italy's 15 largest cities by 2015, and a pilot including 7,000 households has been launched in Rome. Telecom Italia is planning to connect 138 cities with FTTH/B by 2018. Furthermore, seven Italian telecommunications operators (including Telecom Italia) are also slated to partner up to create a national open access FTTH network in areas where no operator has yet scheduled fiber roll-out.

In the United Kingdom, BT plans to invest up to £2.5 billion in fiber broadband covering two-thirds of premises until 2015, through both very high speed DSL (VDSL) and FTTH. BT declared that there was a need for public-sector funding to cover the final third of premises, and the plan was not viable otherwise. Virgin Media has started to roll out DOCSIS 3.0 at 100 Mb/s on their existing cable network to 12.7 million homes. In the first phase, they aim to cover parts of London, southeastern United Kingdom, and Yorkshire by mid 2012.

Portugal aims for 100 percent fiber penetration. The Portuguese government has reached an agreement with three of the country's main telecommunications operators on the deployment of FTTH, and a line of credit has been made available by the government to support the operators' investments. In addition, public tenders have been launched to ensure that rural areas will be covered, and they have recently been cleared under EU state aid rules. Portugal Telecom, the incumbent operator, plays a key role in fiber deployment and covered 1 million households by the end of 2009.

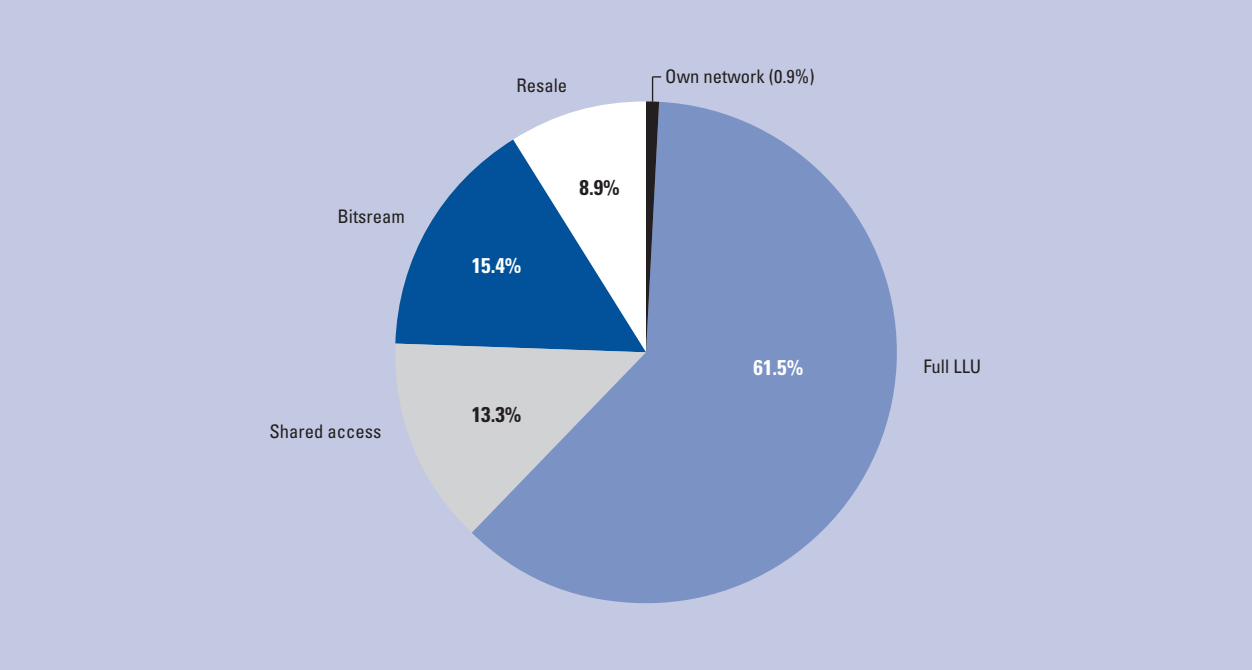
Lithuania is the European leader in FTTH penetration. As of June 2010, more than 20 percent of households were connected. As for uptake, penetration stood at close to 16 percent. In addition, Lithuanian operator TEO LT is planning to invest €27.8 million to extend fiber coverage to half of the population.

Competition dynamics in the DSL market

The market share (determined by the number of subscribers) of the incumbent fixed operators since July 2003 has followed a downward trend, which is now stabilizing around 44 percent of the broadband market. In some cases, incumbents are even regaining market shares.

The smallest incumbent's market share is in the United Kingdom and Romania. Despite the general

Figure 7: New entrants' xDSL lines by type of access in EU countries, July 2010



Source: Communications Committee.
Note: In the case of fully unbundled lines, a copper pair is rented to a third party for its exclusive use. In the case of shared access lines, the incumbent continues to provide telephony service, while the new entrant delivers high-speed data (Internet) services over that same local loop.

downward trend in the European Union, incumbents did increase their market share by more than 2 percentage points in Malta, Portugal, Austria, Latvia, and Belgium between July 2009 and July 2010 (see Figure 6).

In the EU xDSL market, the incumbents had a market share of 55 percent in July 2010. Local loop unbundling (fully unbundled lines and shared access) has recorded growth and has become the main form of wholesale access for new entrants, with 74.9 percent of DSL lines, up from 71.4 percent in July 2009. New entrants' use of bitstream access for local loop unbundling in the provision of broadband services has gone down by only 1.5 percentage points since July 2009.[11] The share of lines based on resale, a type of access suited to new low-investment entrants, has shrunk by 2 percentage points over the last year (Figure 7).

Along with platform-based competition, effective sector regulation has been a key factor in driving competition in Europe, in particular in those countries where DSL is the predominant technology. Sector regulation has fostered competition and growth in the DSL market, thus significantly lifting the broadband market.

Resale (the sale of repackaged services by entrants) is nowadays used only in a limited number of Member States (in particular in the United Kingdom, Germany, and Luxembourg, but also in Belgium, Sweden, Denmark, and the Netherlands). In almost all other EU countries, local loop unbundling or bitstream is the predominant means of access. The EU average hides large differences between EU Member States, which is partly caused by diverse regulatory approaches in the broadband wholesale market but also by different patterns of infrastructure deployment.

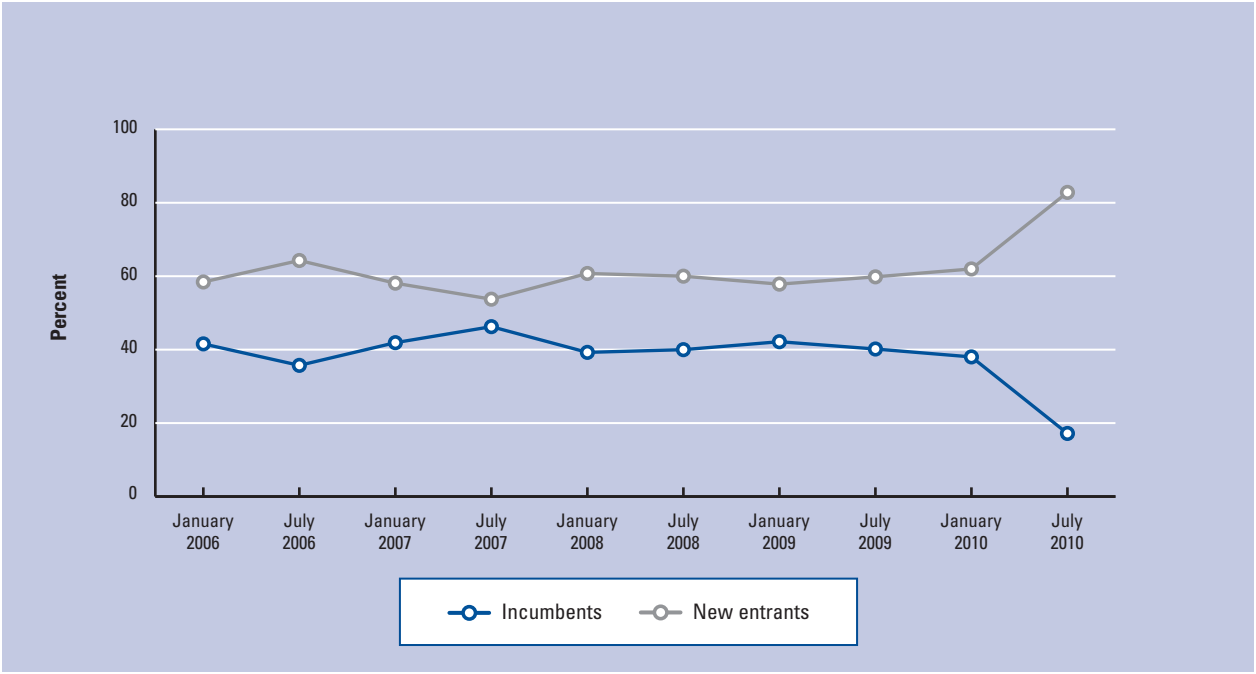
For example, in the cases of Bulgaria and Romania, because of the absence of PSTN-based infrastructure, competition is based on cable modem networks and in fiber + LAN. xDSL lines represent only around 30 percent of all broadband retail lines, and new entrants rent hardly any PSTN lines from the incumbent. In the Czech Republic, only 38 percent of broadband lines are based on xDSL, with fixed wireless access and cable modem predominating. Alternative operators rent only 5 percent of all fixed broadband lines from the incumbent operator. Similar situations are found in Latvia, Lithuania, Estonia, the Slovak Republic, and Malta, where the incumbent operator largely controls the xDSL market. With the exception of the Slovak Republic, in none of these countries is xDSL the predominant technology.

As for the total fixed broadband market, the new entrants have provided over 80 percent of net additions in the first half of 2010 (Figure 8).

Broadband coverage in rural areas

One of the reasons why xDSL is the dominant access mode is that plain old telephone service networks, on

Figure 8: Net additions of fixed broadband lines by operators in the European Union, January 2006–July 2010



Source: Communications Committee.

which xDSL technologies operate, are very widely available. For this reason, xDSL coverage has been considered a fair proxy for broadband coverage in Europe.[12] At the end of 2009, xDSL access was available to 94.4 percent of the combined urban and rural EU population, up from 92.7 percent of the population one year earlier. xDSL coverage in rural areas alone, on the other hand, reached only 80 percent. Only six Member States had xDSL coverage below 90 percent (Figure 9). In Bulgaria, Romania, and Cyprus, rural coverage was still below 50 percent at the end of 2009, although Romania and Cyprus have made significant progress since the previous year.

Although investments for high-speed and very high-speed broadband networks should primarily be driven by private operators, public funding can play a crucial role in extending broadband coverage in areas where market operators have no plans to invest. The European Commission has adopted "Community Guidelines for the application of State aid rules in relation to rapid deployment of broadband networks."[13] The primary objective of these Guidelines is to foster a wide and rapid roll-out of broadband networks while at the same time preserving the market dynamics and competition in a sector that is fully liberalized. The Guidelines also specify that whenever state aid is granted to private operators, the aid must foster competition by requiring the beneficiary to provide open access to the publicly funded network for third-party operators. They also contain specific provisions concerning the deployment of next-generation access (NGA) networks, allowing public support to foster investment in this strategic sector without creating undue distortions of competition.

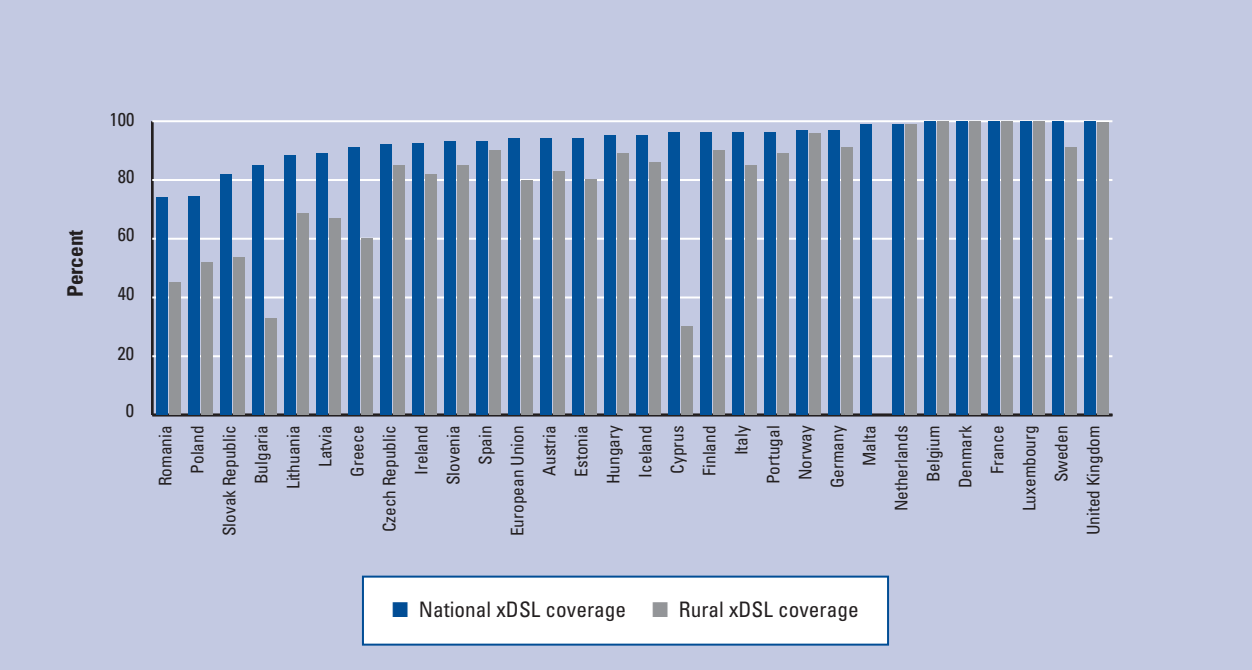
In particular, the Guidelines explain how public funds can be channeled for the deployment of basic broadband networks as well as NGA networks to areas where private operators do not invest. They outline the distinction between competitive areas ("black" areas) where no state aid is necessary, and unprofitable or underserved areas ("white" and "gray" areas) in which state aid may be justified, if certain conditions are met. This distinction is then adapted to the situation of NGA networks by requiring funding authorities to take into account concrete investment plans by telecommunications operators to deploy such networks in the near future. A number of crucial safeguards (such as detailed mapping, open tender, open access obligation or technological neutrality, and claw-back mechanisms) are laid down in the Guidelines in order to promote competition and avoid crowding out private investment.

In line with the Guidelines, in 2010 the European Commission has approved the use of over €1.8 billion in public funds for broadband development through 20 decisions in, among others, Catalonia, Finland, and Bavaria.

The political debate

In the past few years, the political debate in Europe has evolved around the desirability of an advanced,

Figure 9: xDSL national and rural coverage, December 2009



Source: European Commission Services on the basis of a study by Idate for the European Commission.

high-speed broadband infrastructure fit for the 21st century. Most of the investment needed is expected to come from the private sector. In reality, the market has been very cautious about the move because the costs of deployment are significantly higher than they are for legacy broadband.

Several operators blame uncertainty surrounding regulatory approaches and uncertainty about demand to justify lack of investment. Most revenues are currently raised through voice traffic, and business models regarding data are not yet clear-cut. In a flat-rate-based Internet protocol environment, an increase in traffic does not automatically translate into an increase in revenues. This has an impact on operators' profitability and their capacity to invest in expanding their network capacity. Operators are thus searching for new and sustainable business models—not only through traffic management and/or by modifying price schemes, but also by focusing on applications, services, and content.

Meanwhile, the European Commission has taken active steps to clarify the regulatory environment as well as to propose concrete measures to stimulate the deployment of high-speed broadband. It has adopted a comprehensive package comprising:

- A Commission Recommendation on regulated access to NGA networks that sets out a common regulatory approach for access to new high-speed fiber networks.[14] This Recommendation requires national telecommunications regulators to ensure an appropriate balance between the needs to encourage investment and to safeguard competition, and will provide increased regulatory clarity to all market players, which is necessary to stimulate investment in high-speed and ultra-high-speed broadband. The Telecommunications Framework Directive (2002/21/EC) requires Member States to ensure that their regulatory authorities take the "utmost account" of the Commission Recommendation, justifying any departure from it.

- A Commission proposal for a Decision by the European Parliament and Council to establish a five-year policy program to promote efficient radio spectrum management and, in particular, to ensure that sufficient spectrum is made available by 2013 for wireless broadband (which will significantly contribute to bringing fast broadband connections to people in remote areas and to making innovative services available across Europe).[15] Efficient and competitive use of spectrum in the European Union will also support innovation in other policy areas and sectors, such as transport and the environment.

- A Broadband Communication that sets out a coherent framework for meeting the *Digital Agenda*'s broadband targets and, in particular, outlines how best to encourage public and private investment in high- and ultra-high-speed broadband

networks.[16] It calls on EU Member States to introduce operational broadband plans for high- and ultra-high-speed networks with concrete implementing measures. It also provides guidance on how to cut investment costs and indicates how public authorities may support broadband investment, including making better use of EU funds.

While commercial players are expected to invest in more densely populated urban areas, public authorities can support development with subsidies in more rural areas and, most importantly, by considering cost-cutting measures. Given the high costs of civil engineering, the European broadband policy emphasizes ways to facilitate investment and remove bureaucratic obstacles to achieve more with less. Possible cost-cutting measures include, among other things: (1) mapping the suitable infrastructure; (2) ensuring that civil engineering works involve potential investors and exploit synergies among all network infrastructures; and (3) clearing rights of ways.

To maximize the policy impact, European Member States are expected to develop national plans focusing both on the cost-cutting measures above as well as on the use of community funds (such as regional and rural development funding) in disadvantaged areas. Finally, other important *Digital Agenda* policies are crucial for strengthening developments in digital skills and the single digital market, which states that demand must be in place to ensure a vibrant digital future for Europe.

Conclusions

Europe has experienced extraordinary growth in broadband roll-out and uptake in the last decade. More than 60 percent of households and 90 percent of enterprises are connected to broadband, enjoying the Internet experience. Despite these good results, fostered also by a favorable regulatory environment, recently uptake has been slow and deployment of NGA has only begun. The *Digital Agenda* has set Europe up to make a quantum leap to equip itself with the 21st century infrastructure it needs. To reach its ambitious targets, it has called for the development of a comprehensive policy, based on a mix of technologies, that focuses on achieving universal broadband coverage (with Internet speeds gradually increasing to 30 Mb/s and above) and on fostering the deployment and uptake of NGA networks, allowing connections above 100 Mb/s.

In 2010, the European Commission published a broadband Communication that laid out a common framework for actions at the EU and Member State level, including the strengthening of the regulatory framework through an NGA recommendation, the proposal of a European Spectrum Policy Programme, the rationalization of the funding instruments, and the definition of national targets through comprehensive broadband plans.[17] The Commission will monitor developments through the *Digital Agenda Scoreboard*, to be published in June 2011.

Notes

1 Penetration rate based on population.

2 *xDSL* is the family of digital subscriber lines, technologies that provide digital data transmission over the wires of a local telephone network. The *x* summarizes different characteristics: ADSL (Asymmetric DSL), SDSL (Symmetric), VDSL (very fast), and so on.

3 EC 2010a.

4 EC 2010a.

5 EC 2011.

6 *LLU* is the process where incumbent operators make their local network available to other companies. Alternative operators or "entrants" are then able to upgrade individual lines using xDSL technology to offer broadband services directly to the customer.

7 Number of fixed broadband lines per 100 population.

8 *Fiber-to-the-x* (FTT*x*) is a generic term for broadband architectures that uses optical fiber to replace all or part of the metal local loop used for last-mile electronic communications. The generic term generalizes several possible configurations of fiber deployment (*FTTN* = fiber-to-the node), *FTTC* = fiber-to-the curb, *FTTB* = fiber-to-the building, *FTTH* = fiber-to-the home . . .), all starting with *FTT* but differentiated by the last letter, which is substituted by an *x*.

9 EC 2006.

10 FTTH Council Europe 2011.

11 *Bitstream access* refers to the situation where an incumbent makes an access link available to third parties, to enable them to provide high-speed services to customers. This type of access does not entail any third-party access to the copper pair in the local loop.

12 The term *DSL coverage* refers to the percentage of the population that depends on a local exchange equipped with a digital subscriber line access multiplexer, or DSLAM.

13 European Union 2009.

14 EC 2010d.

15 EC 2010b.

16 EC 2010c.

17 EC 2010c.

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Part 3

Country/Economy Profiles

How to Read the Country/Economy Profiles

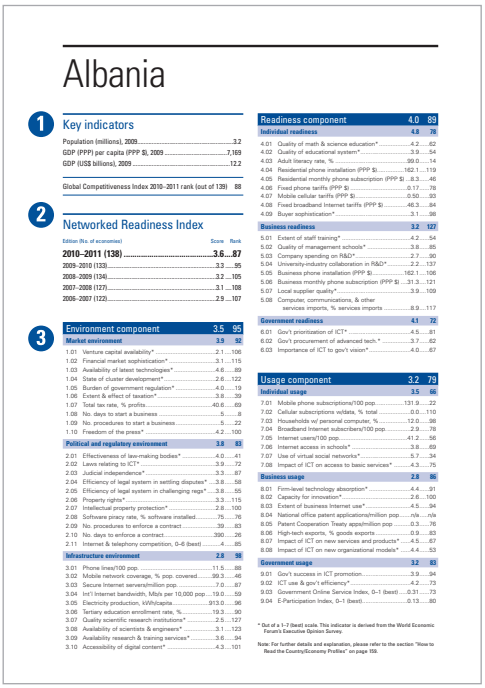
ROBERTO CROTTI, World Economic Forum

The following pages present the profiles of the 138 economies covered by *The Global Information Technology Report 2010–2011*. They provide a picture of the level of ICT development of an economy by grouping information under the following sections:

1. Key indicators: population in millions of inhabitants, gross domestic product (GDP) valued at purchasing power parity (PPP) per capita, and gross domestic product (US$ billions).[1] Also shown is the Global Competitiveness Index 2010–2011 rank.[2]

2. Overall Networked Readiness Index (NRI) ranking and score for 2010–2011 and for the previous four editions.

3. Detailed scores and rankings for the three component subindexes, the nine pillars, and the 71 variables of the NRI. The numbering of the variables matches that of the Data Tables found at the end of the *Report,* which provide descriptions, rankings, and scores for all the variables. The variables derived from the 2009 and 2010 editions of the World Economic Forum's Executive Opinion Survey are identified by an asterisk (*). These variables are always measured on a 1-to-7 scale (where 1 is the lowest score and 7 is the highest). For those indicators not derived from the World Economic Forum's Executive Opinion Survey, the scale is reported next to the title. The section "Technical Notes and Sources" at the end of the *Report* provides further details on each indicator, including its precise definition, method of computation, and full sources. Note that for the sake of readability, the years were omitted. However, the year of each data point is indicated in the corresponding table. For more information on the framework and computation of the NRI, as well as on the Executive Opinion Survey, please refer to Chapter 1.1.


Albania

1 Key indicators

Population (millions), 2009 ..... 3.2
GDP (PPP) per capita (PPP $), 2009 7,169
GDP (US$ billions), 2009 ..... 12.2

Global Competitiveness Index 2010–2011 rank (out of 139) 88

2 Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**87**
2009–2010 (133)	3.3	95
2008–2009 (134)	3.2	105
2007–2008 (127)	3.1	108
2006–2007 (122)	2.9	107

3 Environment component 3.5 95
Market environment 3.9 92
1.01 Venture capital availability* 2.1 106
1.02 Financial market sophistication* 3.1 115
1.03 Availability of latest technologies* 4.6 89
1.04 State of cluster development* 2.6 122
1.05 Burden of government regulation* 4.0 19
1.06 Extent & effect of taxation* 3.8 39
1.07 Total tax rate, % profits 40.6 69
1.08 No. days to start a business 5 8
1.09 No. procedures to start a business 5 22
1.10 Freedom of the press* 4.2 100
Political and regulatory environment 3.8 83
2.01 Effectiveness of law-making bodies* 4.0 41
2.02 Laws relating to ICT* 3.9 72
2.03 Judicial independence* 3.3 87
2.04 Efficiency of legal system in settling disputes* 3.8 58
2.05 Efficiency of legal system in challenging regs* 3.8 55
2.06 Property rights* 3.3 115
2.07 Intellectual property protection* 2.8 100
2.08 Software piracy rate, % software installed 75 76
2.09 No. procedures to enforce a contract 39 83
2.10 No. days to enforce a contract 390 26
2.11 Internet & telephony competition, 0–6 (best) 4 85
Infrastructure environment 2.8 98
3.01 Phone lines/100 pop. 11.5 88
3.02 Mobile network coverage, % pop. covered 99.3 46
3.03 Secure Internet servers/million pop. 7.0 87
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop. 19.0 59
3.05 Electricity production, kWh/capita 913.0 96
3.06 Tertiary education enrollment rate, % 19.3 90
3.07 Quality scientific research institutions* 2.5 127
3.08 Availability of scientists & engineers* 3.1 123
3.09 Availability research & training services* 3.6 94
3.10 Accessibility of digital content* 4.3 101

Readiness component 4.0 89
Individual readiness 4.8 78
4.01 Quality of math & science education* 4.2 62
4.02 Quality of educational system* 3.9 54
4.03 Adult literacy rate, % 99.0 14
4.04 Residential phone installation (PPP $) 162.1 119
4.05 Residential monthly phone subscription (PPP $) 8.3 46
4.06 Fixed phone tariffs (PPP $) 0.17 78
4.07 Mobile cellular tariffs (PPP $) 0.50 93
4.08 Fixed broadband Internet tariffs (PPP $) 46.3 84
4.09 Buyer sophistication* 3.1 98
Business readiness 3.2 127
5.01 Extent of staff training* 4.2 54
5.02 Quality of management schools* 3.8 85
5.03 Company spending on R&D* 2.7 90
5.04 University-industry collaboration in R&D* 2.2 137
5.05 Business phone installation (PPP $) 162.1 106
5.06 Business monthly phone subscription (PPP $) 31.3 121
5.07 Local supplier quality* 3.9 109
5.08 Computer, communications, & other services imports, % services imports 8.9 117
Government readiness 4.1 72
6.01 Gov't prioritization of ICT* 4.5 81
6.02 Gov't procurement of advanced tech.* 3.7 62
6.03 Importance of ICT to gov't vision* 4.0 67

Usage component 3.2 79
Individual usage 3.5 86
7.01 Mobile phone subscriptions/100 pop. 131.9 22
7.02 Cellular subscriptions w/data, % total 0.0 110
7.03 Households w/ personal computer, % 12.0 98
7.04 Broadband Internet subscribers/100 pop. 2.9 78
7.05 Internet users/100 pop. 41.2 56
7.06 Internet access in schools* 3.8 69
7.07 Use of virtual social networks* 5.7 34
7.08 Impact of ICT on access to basic services* 4.3 75
Business usage 2.8 86
8.01 Firm-level technology absorption* 4.4 91
8.02 Capacity for innovation* 2.6 100
8.03 Extent of business Internet use* 4.5 94
8.04 National office patent applications/million pop. n/a n/a
8.05 Patent Cooperation Treaty appl/million pop 0.3 76
8.06 High-tech exports, % goods exports 0.9 83
8.07 Impact of ICT on new services and products* 4.5 67
8.08 Impact of ICT on new organizational models* 4.4 53
Government usage 3.2 63
9.01 Gov't success in ICT promotion 3.9 84
9.02 ICT use & gov't efficiency* 4.2 73
9.03 Government Online Service Index, 0–1 (best) 0.31 73
9.04 E-Participation Index, 0–1 (best) 0.13 80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Notes

1 The source for population is the World Bank's *World Development Indicators Online* (December 2010) and the International Monetary Fund's *World Economic Outlook Database* (October 2010 edition), from which GDP figures are also sourced.

2 For more information about the Global Competitiveness Index, refer to the World Economic Forum's *The Global Competitiveness Report 2010–2011*.

List of Countries/Economies

Albania

Key indicators

Population (millions), 2009	3.2
GDP (PPP) per capita (PPP $), 2009	7,169
GDP (US$ billions), 2009	12.2
Global Competitiveness Index 2010–2011 rank (out of 139)	88

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**87**
2009–2010 (133)	3.3	95
2008–2009 (134)	3.2	105
2007–2008 (127)	3.1	108
2006–2007 (122)	2.9	107

Environment component	3.5	95
Market environment	**3.9**	**92**
1.01 Venture capital availability*	2.1	106
1.02 Financial market sophistication*	3.1	115
1.03 Availability of latest technologies*	4.6	89
1.04 State of cluster development*	2.6	122
1.05 Burden of government regulation*	4.0	19
1.06 Extent & effect of taxation*	3.8	39
1.07 Total tax rate, % profits	40.6	69
1.08 No. days to start a business	5	8
1.09 No. procedures to start a business	5	22
1.10 Freedom of the press*	4.2	100
Political and regulatory environment	**3.8**	**83**
2.01 Effectiveness of law-making bodies*	4.0	41
2.02 Laws relating to ICT*	3.9	72
2.03 Judicial independence*	3.3	87
2.04 Efficiency of legal system in settling disputes*	3.8	58
2.05 Efficiency of legal system in challenging regs*	3.8	55
2.06 Property rights*	3.3	115
2.07 Intellectual property protection*	2.8	100
2.08 Software piracy rate, % software installed	75	76
2.09 No. procedures to enforce a contract	39	83
2.10 No. days to enforce a contract	390	26
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.8**	**98**
3.01 Phone lines/100 pop.	11.5	88
3.02 Mobile network coverage, % pop. covered	99.3	46
3.03 Secure Internet servers/million pop.	7.0	87
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	19.0	59
3.05 Electricity production, kWh/capita	913.0	96
3.06 Tertiary education enrollment rate, %	19.3	90
3.07 Quality scientific research institutions*	2.5	127
3.08 Availability of scientists & engineers*	3.1	123
3.09 Availability research & training services*	3.6	94
3.10 Accessibility of digital content*	4.3	101

Readiness component	4.0	89
Individual readiness	**4.8**	**78**
4.01 Quality of math & science education*	4.2	62
4.02 Quality of educational system*	3.9	54
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	162.1	119
4.05 Residential monthly phone subscription (PPP $)	8.3	46
4.06 Fixed phone tariffs (PPP $)	0.17	78
4.07 Mobile cellular tariffs (PPP $)	0.50	93
4.08 Fixed broadband Internet tariffs (PPP $)	46.3	84
4.09 Buyer sophistication*	3.1	98
Business readiness	**3.2**	**127**
5.01 Extent of staff training*	4.2	54
5.02 Quality of management schools*	3.8	85
5.03 Company spending on R&D*	2.7	90
5.04 University-industry collaboration in R&D*	2.2	137
5.05 Business phone installation (PPP $)	162.1	106
5.06 Business monthly phone subscription (PPP $)	31.3	121
5.07 Local supplier quality*	3.9	109
5.08 Computer, communications, & other services imports, % services imports	8.9	117
Government readiness	**4.1**	**72**
6.01 Gov't prioritization of ICT*	4.5	81
6.02 Gov't procurement of advanced tech.*	3.7	62
6.03 Importance of ICT to gov't vision*	4.0	67

Usage component	3.2	79
Individual usage	**3.5**	**66**
7.01 Mobile phone subscriptions/100 pop.	131.9	22
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	12.0	98
7.04 Broadband Internet subscribers/100 pop.	2.9	78
7.05 Internet users/100 pop.	41.2	56
7.06 Internet access in schools*	3.8	69
7.07 Use of virtual social networks*	5.7	34
7.08 Impact of ICT on access to basic services*	4.3	75
Business usage	**2.8**	**86**
8.01 Firm-level technology absorption*	4.4	91
8.02 Capacity for innovation*	2.6	100
8.03 Extent of business Internet use*	4.5	94
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.3	76
8.06 High-tech exports, % goods exports	0.9	83
8.07 Impact of ICT on new services and products*	4.5	67
8.08 Impact of ICT on new organizational models*	4.4	53
Government usage	**3.2**	**83**
9.01 Gov't success in ICT promotion	3.9	94
9.02 ICT use & gov't efficiency*	4.2	73
9.03 Government Online Service Index, 0–1 (best)	0.31	73
9.04 E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Algeria

Key indicators

Population (millions), 2009	35.0
GDP (PPP) per capita (PPP $), 2009	6,885
GDP (US$ billions), 2009	139.8
Global Competitiveness Index 2010–2011 rank (out of 139)	86

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**117**
2009–2010 (133)	3.0	113
2008–2009 (134)	3.1	108
2007–2008 (127)	3.4	88
2006–2007 (122)	3.4	80

Environment component	3.0	125
Market environment	**3.2**	**131**
1.01 Venture capital availability*	2.4	80
1.02 Financial market sophistication*	2.4	132
1.03 Availability of latest technologies*	4.2	108
1.04 State of cluster development*	2.5	125
1.05 Burden of government regulation*	2.3	131
1.06 Extent & effect of taxation*	3.7	56
1.07 Total tax rate, % profits	72.0	129
1.08 No. days to start a business	24	86
1.09 No. procedures to start a business	14	126
1.10 Freedom of the press*	4.1	110
Political and regulatory environment	**3.2**	**123**
2.01 Effectiveness of law-making bodies*	2.8	111
2.02 Laws relating to ICT*	2.7	123
2.03 Judicial independence*	2.8	111
2.04 Efficiency of legal system in settling disputes*	3.3	92
2.05 Efficiency of legal system in challenging regs*	3.1	99
2.06 Property rights*	3.6	105
2.07 Intellectual property protection*	2.7	104
2.08 Software piracy rate, % software installed	84	94
2.09 No. procedures to enforce a contract	46	121
2.10 No. days to enforce a contract	630	94
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.8**	**101**
3.01 Phone lines/100 pop.	7.4	101
3.02 Mobile network coverage, % pop. covered	81.5	110
3.03 Secure Internet servers/million pop.	0.5	121
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	131
3.05 Electricity production, kWh/capita	1,098.6	91
3.06 Tertiary education enrollment rate, %	24.0	86
3.07 Quality scientific research institutions*	3.1	95
3.08 Availability of scientists & engineers*	4.5	43
3.09 Availability research & training services*	3.4	105
3.10 Accessibility of digital content*	3.6	122

Readiness component	4.0	86
Individual readiness	**4.8**	**72**
4.01 Quality of math & science education*	3.6	83
4.02 Quality of educational system*	2.9	116
4.03 Adult literacy rate, %	72.6	113
4.04 Residential phone installation (PPP $)	74.7	69
4.05 Residential monthly phone subscription (PPP $)	4.2	22
4.06 Fixed phone tariffs (PPP $)	0.17	76
4.07 Mobile cellular tariffs (PPP $)	0.22	34
4.08 Fixed broadband Internet tariffs (PPP $)	30.8	51
4.09 Buyer sophistication*	2.9	108
Business readiness	**3.8**	**82**
5.01 Extent of staff training*	3.5	102
5.02 Quality of management schools*	3.8	91
5.03 Company spending on R&D*	2.6	105
5.04 University-industry collaboration in R&D*	2.9	118
5.05 Business phone installation (PPP $)	74.7	51
5.06 Business monthly phone subscription (PPP $)	4.2	8
5.07 Local supplier quality*	3.9	105
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**3.4**	**116**
6.01 Gov't prioritization of ICT*	4.3	92
6.02 Gov't procurement of advanced tech.*	2.9	122
6.03 Importance of ICT to gov't vision*	3.1	123

Usage component	2.4	129
Individual usage	**2.7**	**102**
7.01 Mobile phone subscriptions/100 pop.	93.8	72
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	9.5	104
7.04 Broadband Internet subscribers/100 pop.	2.3	82
7.05 Internet users/100 pop.	13.5	95
7.06 Internet access in schools*	2.5	124
7.07 Use of virtual social networks*	5.3	59
7.08 Impact of ICT on access to basic services*	3.5	124
Business usage	**2.1**	**138**
8.01 Firm-level technology absorption*	3.9	127
8.02 Capacity for innovation*	2.3	124
8.03 Extent of business Internet use*	3.2	137
8.04 National office patent applications/million pop	2.4	76
8.05 Patent Cooperation Treaty apps/million pop	0.1	92
8.06 High-tech exports, % goods exports	0.0	122
8.07 Impact of ICT on new services and products*	2.9	135
8.08 Impact of ICT on new organizational models*	2.6	137
Government usage	**2.4**	**130**
9.01 Gov't success in ICT promotion	3.6	112
9.02 ICT use & gov't efficiency*	3.4	121
9.03 Government Online Service Index, 0–1 (best)	0.10	125
9.04 E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Angola

Key indicators

Population (millions), 2009	17.3
GDP (PPP) per capita (PPP $), 2009	6,181
GDP (US$ billions), 2009	74.5
Global Competitiveness Index 2010–2011 rank (out of 139)	138

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**2.9**	**133**
2009–2010 (133)	n/a	n/a
2008–2009 (134)	n/a	n/a
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	2.8	135
Market environment	**3.0**	**134**
1.01 Venture capital availability*	1.8	128
1.02 Financial market sophistication*	2.5	128
1.03 Availability of latest technologies*	3.4	137
1.04 State of cluster development*	2.2	136
1.05 Burden of government regulation*	2.0	136
1.06 Extent & effect of taxation*	4.1	30
1.07 Total tax rate, % profits	53.2	108
1.08 No. days to start a business	68	128
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	3.9	118
Political and regulatory environment	**3.5**	**106**
2.01 Effectiveness of law-making bodies*	3.4	74
2.02 Laws relating to ICT*	2.9	118
2.03 Judicial independence*	3.0	101
2.04 Efficiency of legal system in settling disputes*	2.9	119
2.05 Efficiency of legal system in challenging regs*	3.2	89
2.06 Property rights*	2.9	129
2.07 Intellectual property protection*	2.6	119
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	46	121
2.10 No. days to enforce a contract	1011	126
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**1.9**	**136**
3.01 Phone lines/100 pop.	1.6	120
3.02 Mobile network coverage, % pop. covered	40.0	126
3.03 Secure Internet servers/million pop.	2.1	100
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.2	126
3.05 Electricity production, kWh/capita	215.8	119
3.06 Tertiary education enrollment rate, %	2.8	131
3.07 Quality scientific research institutions*	1.5	138
3.08 Availability of scientists & engineers*	2.9	133
3.09 Availability research & training services*	2.7	132
3.10 Accessibility of digital content*	3.4	129

Readiness component	3.6	127
Individual readiness	**3.2**	**135**
4.01 Quality of math & science education*	1.6	138
4.02 Quality of educational system*	2.0	138
4.03 Adult literacy rate, %	69.6	117
4.04 Residential phone installation (PPP $)	87.9	88
4.05 Residential monthly phone subscription (PPP $)	17.6	98
4.06 Fixed phone tariffs (PPP $)	0.44	121
4.07 Mobile cellular tariffs (PPP $)	0.34	69
4.08 Fixed broadband Internet tariffs (PPP $)	239.2	127
4.09 Buyer sophistication*	2.7	119
Business readiness	**3.7**	**88**
5.01 Extent of staff training*	4.4	38
5.02 Quality of management schools*	1.8	138
5.03 Company spending on R&D*	2.7	88
5.04 University-industry collaboration in R&D*	2.4	135
5.05 Business phone installation (PPP $)	87.9	67
5.06 Business monthly phone subscription (PPP $)	17.6	77
5.07 Local supplier quality*	2.7	138
5.08 Computer, communications, & other services imports, % services imports	72.2	2
Government readiness	**3.9**	**85**
6.01 Gov't prioritization of ICT*	4.0	109
6.02 Gov't procurement of advanced tech.*	4.2	34
6.03 Importance of ICT to gov't vision*	3.4	107

Usage component	2.4	130
Individual usage	**2.2**	**122**
7.01 Mobile phone subscriptions/100 pop.	43.8	118
7.02 Cellular subscriptions w/data, % total	6.3	71
7.03 Households w/ personal computer, %	5.6	113
7.04 Broadband Internet subscribers/100 pop.	0.1	114
7.05 Internet users/100 pop.	3.3	124
7.06 Internet access in schools*	1.8	136
7.07 Use of virtual social networks*	3.9	122
7.08 Impact of ICT on access to basic services*	4.2	82
Business usage	**2.3**	**129**
8.01 Firm-level technology absorption*	3.7	129
8.02 Capacity for innovation*	1.7	138
8.03 Extent of business Internet use*	3.9	126
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.1	93
8.06 High-tech exports, % goods exports	n/a	n/a
8.07 Impact of ICT on new services and products*	3.4	128
8.08 Impact of ICT on new organizational models*	2.7	133
Government usage	**2.6**	**126**
9.01 Gov't success in ICT promotion	n/a	n/a
9.02 ICT use & gov't efficiency*	3.5	117
9.03 Government Online Service Index, 0–1 (best)	0.34	63
9.04 E-Participation Index, 0–1 (best)	0.07	105

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Argentina

Key indicators

Population (millions), 2009	40.1
GDP (PPP) per capita (PPP $), 2009	14,525
GDP (US$ billions), 2009	310.1
Global Competitiveness Index 2010–2011 rank (out of 139)	87

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**96**
2009–2010 (133)	3.4	91
2008–2009 (134)	3.6	87
2007–2008 (127)	3.6	77
2006–2007 (122)	3.6	63

Environment component 3.4 100

Market environment 3.2 130

1.01	Venture capital availability*	1.9	123
1.02	Financial market sophistication*	3.4	103
1.03	Availability of latest technologies*	4.7	82
1.04	State of cluster development*	3.6	62
1.05	Burden of government regulation*	2.6	122
1.06	Extent & effect of taxation*	2.2	136
1.07	Total tax rate, % profits	108.2	133
1.08	No. days to start a business	26	88
1.09	No. procedures to start a business	14	126
1.10	Freedom of the press*	3.7	124

Political and regulatory environment 3.4 115

2.01	Effectiveness of law-making bodies*	2.2	129
2.02	Laws relating to ICT*	3.1	110
2.03	Judicial independence*	2.6	122
2.04	Efficiency of legal system in settling disputes*	2.6	129
2.05	Efficiency of legal system in challenging regs*	2.3	136
2.06	Property rights*	2.7	133
2.07	Intellectual property protection*	2.5	125
2.08	Software piracy rate, % software installed	71	70
2.09	No. procedures to enforce a contract	36	54
2.10	No. days to enforce a contract	590	81
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 3.7 55

3.01	Phone lines/100 pop.	24.3	53
3.02	Mobile network coverage, % pop. covered	94.1	84
3.03	Secure Internet servers/million pop.	19.7	60
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	23.2	56
3.05	Electricity production, kWh/capita	2,914.1	63
3.06	Tertiary education enrollment rate, %	67.7	19
3.07	Quality scientific research institutions*	4.1	46
3.08	Availability of scientists & engineers*	4.0	76
3.09	Availability research & training services*	4.5	42
3.10	Accessibility of digital content*	4.5	91

Readiness component 3.9 98

Individual readiness 4.8 79

4.01	Quality of math & science education*	3.2	105
4.02	Quality of educational system*	3.3	89
4.03	Adult literacy rate, %	97.7	50
4.04	Residential phone installation (PPP $)	76.8	77
4.05	Residential monthly phone subscription (PPP $)	6.8	41
4.06	Fixed phone tariffs (PPP $)	0.04	18
4.07	Mobile cellular tariffs (PPP $)	0.61	111
4.08	Fixed broadband Internet tariffs (PPP $)	61.4	92
4.09	Buyer sophistication*	3.5	66

Business readiness 4.2 49

5.01	Extent of staff training*	3.8	78
5.02	Quality of management schools*	5.3	16
5.03	Company spending on R&D*	3.0	72
5.04	University-industry collaboration in R&D*	3.8	53
5.05	Business phone installation (PPP $)	76.8	58
5.06	Business monthly phone subscription (PPP $)	13.2	51
5.07	Local supplier quality*	4.4	74
5.08	Computer, communications, & other services imports, % services imports	32.7	62

Government readiness 2.7 135

6.01	Gov't prioritization of ICT*	3.0	135
6.02	Gov't procurement of advanced tech.*	2.7	129
6.03	Importance of ICT to gov't vision*	2.6	135

Usage component 3.1 85

Individual usage 3.5 65

7.01	Mobile phone subscriptions/100 pop.	130.3	25
7.02	Cellular subscriptions w/data, % total	4.4	75
7.03	Households w/ personal computer, %	37.6	59
7.04	Broadband Internet subscribers/100 pop.	10.6	46
7.05	Internet users/100 pop.	34.0	67
7.06	Internet access in schools*	3.0	110
7.07	Use of virtual social networks*	5.2	69
7.08	Impact of ICT on access to basic services*	3.1	135

Business usage 2.9 82

8.01	Firm-level technology absorption*	4.4	93
8.02	Capacity for innovation*	3.0	62
8.03	Extent of business Internet use*	4.6	83
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.4	75
8.06	High-tech exports, % goods exports	2.7	60
8.07	Impact of ICT on new services and products*	4.3	86
8.08	Impact of ICT on new organizational models*	4.1	69

Government usage 2.9 101

9.01	Gov't success in ICT promotion	2.9	129
9.02	ICT use & gov't efficiency*	3.2	130
9.03	Government Online Service Index, 0–1 (best)	0.41	43
9.04	E-Participation Index, 0–1 (best)	0.20	56

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Armenia

Key indicators

Population (millions), 2009	3.3
GDP (PPP) per capita (PPP $), 2009	4,983
GDP (US$ billions), 2009	8.5
Global Competitiveness Index 2010–2011 rank (out of 139)	98

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**109**
2009–2010 (133)	3.2	101
2008–2009 (134)	3.1	114
2007–2008 (127)	3.1	106
2006–2007 (122)	3.1	96

Environment component	3.2	114
Market environment	**3.5**	**119**
1.01 Venture capital availability*	1.8	130
1.02 Financial market sophistication*	3.1	112
1.03 Availability of latest technologies*	3.9	126
1.04 State of cluster development*	2.6	123
1.05 Burden of government regulation*	3.1	90
1.06 Extent & effect of taxation*	3.4	83
1.07 Total tax rate, % profits	40.7	70
1.08 No. days to start a business	15	61
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	3.6	126
Political and regulatory environment	**3.1**	**125**
2.01 Effectiveness of law-making bodies*	3.0	98
2.02 Laws relating to ICT*	3.0	114
2.03 Judicial independence*	2.6	117
2.04 Efficiency of legal system in settling disputes*	3.1	103
2.05 Efficiency of legal system in challenging regs*	3.0	102
2.06 Property rights*	3.7	97
2.07 Intellectual property protection*	2.7	106
2.08 Software piracy rate, % software installed	90	103
2.09 No. procedures to enforce a contract	49	128
2.10 No. days to enforce a contract	285	11
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**3.0**	**88**
3.01 Phone lines/100 pop.	20.4	64
3.02 Mobile network coverage, % pop. covered	87.8	97
3.03 Secure Internet servers/million pop.	7.5	84
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.2	123
3.05 Electricity production, kWh/capita	1,919.6	82
3.06 Tertiary education enrollment rate, %	34.2	68
3.07 Quality scientific research institutions*	3.0	102
3.08 Availability of scientists & engineers*	3.7	93
3.09 Availability research & training services*	3.0	123
3.10 Accessibility of digital content*	4.1	104

Readiness component	3.9	97
Individual readiness	**5.1**	**52**
4.01 Quality of math & science education*	3.8	73
4.02 Quality of educational system*	3.0	114
4.03 Adult literacy rate, %	99.5	10
4.04 Residential phone installation (PPP $)	61.8	54
4.05 Residential monthly phone subscription (PPP $)	5.7	32
4.06 Fixed phone tariffs (PPP $)	0.08	45
4.07 Mobile cellular tariffs (PPP $)	0.23	37
4.08 Fixed broadband Internet tariffs (PPP $)	61.8	93
4.09 Buyer sophistication*	3.4	75
Business readiness	**3.1**	**129**
5.01 Extent of staff training*	3.3	115
5.02 Quality of management schools*	2.9	129
5.03 Company spending on R&D*	2.4	126
5.04 University-industry collaboration in R&D*	2.8	123
5.05 Business phone installation (PPP $)	74.1	49
5.06 Business monthly phone subscription (PPP $)	24.7	102
5.07 Local supplier quality*	3.8	116
5.08 Computer, communications, & other services imports, % services imports	8.3	119
Government readiness	**3.6**	**104**
6.01 Gov't prioritization of ICT*	4.5	82
6.02 Gov't procurement of advanced tech.*	2.6	133
6.03 Importance of ICT to gov't vision*	3.7	92

Usage component	2.6	111
Individual usage	**2.6**	**108**
7.01 Mobile phone subscriptions/100 pop.	85.0	82
7.02 Cellular subscriptions w/data, % total	1.4	99
7.03 Households w/ personal computer, %	10.2	101
7.04 Broadband Internet subscribers/100 pop.	0.2	108
7.05 Internet users/100 pop.	6.8	112
7.06 Internet access in schools*	3.0	106
7.07 Use of virtual social networks*	4.2	113
7.08 Impact of ICT on access to basic services*	3.8	117
Business usage	**2.6**	**107**
8.01 Firm-level technology absorption*	4.0	120
8.02 Capacity for innovation*	3.0	65
8.03 Extent of business Internet use*	4.1	112
8.04 National office patent applications/million pop	37.6	43
8.05 Patent Cooperation Treaty apps/million pop	1.6	55
8.06 High-tech exports, % goods exports	1.4	72
8.07 Impact of ICT on new services and products*	3.7	121
8.08 Impact of ICT on new organizational models*	3.6	107
Government usage	**2.7**	**124**
9.01 Gov't success in ICT promotion	3.7	107
9.02 ICT use & gov't efficiency*	3.6	109
9.03 Government Online Service Index, 0–1 (best)	0.17	110
9.04 E-Participation Index, 0–1 (best)	0.04	117

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Australia

Key indicators

Population (millions), 2009	22.0
GDP (PPP) per capita (PPP $), 2009	38,663
GDP (US$ billions), 2009	994.2
Global Competitiveness Index 2010–2011 rank (out of 139)	16

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.1**	**17**
2009–2010 (133)	5.1	16
2008–2009 (134)	5.3	14
2007–2008 (127)	5.3	14
2006–2007 (122)	5.2	15

Environment component 5.4 13

Market environment 5.1 14

1.01	Venture capital availability*	3.8	12
1.02	Financial market sophistication*	6.1	11
1.03	Availability of latest technologies*	6.1	22
1.04	State of cluster development*	4.1	35
1.05	Burden of government regulation*	3.4	59
1.06	Extent & effect of taxation*	3.6	65
1.07	Total tax rate, % profits	47.9	94
1.08	No. days to start a business	2	2
1.09	No. procedures to start a business	2	3
1.10	Freedom of the press*	6.3	16

Political and regulatory environment 5.9 7

2.01	Effectiveness of law-making bodies*	5.7	4
2.02	Laws relating to ICT*	5.5	11
2.03	Judicial independence*	6.3	9
2.04	Efficiency of legal system in settling disputes*	5.4	12
2.05	Efficiency of legal system in challenging regs*	5.0	13
2.06	Property rights*	5.9	14
2.07	Intellectual property protection*	5.6	14
2.08	Software piracy rate, % software installed	25	5
2.09	No. procedures to enforce a contract	28	11
2.10	No. days to enforce a contract	395	29
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 5.2 14

3.01	Phone lines/100 pop.	42.4	24
3.02	Mobile network coverage, % pop. covered	99.0	48
3.03	Secure Internet servers/million pop.	1,212.2	4
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	54.6	41
3.05	Electricity production, kWh/capita	12,084.0	11
3.06	Tertiary education enrollment rate, %	77.0	13
3.07	Quality scientific research institutions*	5.6	10
3.08	Availability of scientists & engineers*	4.5	45
3.09	Availability research & training services*	5.3	20
3.10	Accessibility of digital content*	5.7	33

Readiness component 4.9 26

Individual readiness 5.2 39

4.01	Quality of math & science education*	4.9	24
4.02	Quality of educational system*	5.2	12
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	42.7	34
4.05	Residential monthly phone subscription (PPP $)	15.2	86
4.06	Fixed phone tariffs (PPP $)	0.22	95
4.07	Mobile cellular tariffs (PPP $)	0.64	114
4.08	Fixed broadband Internet tariffs (PPP $)	21.7	17
4.09	Buyer sophistication*	4.4	16

Business readiness 4.7 25

5.01	Extent of staff training*	4.8	20
5.02	Quality of management schools*	5.3	17
5.03	Company spending on R&D*	4.1	23
5.04	University-industry collaboration in R&D*	5.1	13
5.05	Business phone installation (PPP $)	42.7	22
5.06	Business monthly phone subscription (PPP $)	28.9	115
5.07	Local supplier quality*	5.5	16
5.08	Computer, communications, & other services imports, % services imports	26.7	74

Government readiness 4.8 25

6.01	Gov't prioritization of ICT*	5.3	37
6.02	Gov't procurement of advanced tech.*	4.1	36
6.03	Importance of ICT to gov't vision*	5.0	17

Usage component 4.9 16

Individual usage 5.4 18

7.01	Mobile phone subscriptions/100 pop.	113.8	45
7.02	Cellular subscriptions w/data, % total	50.7	10
7.03	Households w/ personal computer, %	78.1	17
7.04	Broadband Internet subscribers/100 pop.	24.4	21
7.05	Internet users/100 pop.	74.3	20
7.06	Internet access in schools*	5.5	28
7.07	Use of virtual social networks*	6.1	9
7.08	Impact of ICT on access to basic services*	5.0	34

Business usage 3.7 27

8.01	Firm-level technology absorption*	5.9	19
8.02	Capacity for innovation*	4.1	23
8.03	Extent of business Internet use*	5.9	20
8.04	National office patent applications/million pop	119.1	26
8.05	Patent Cooperation Treaty apps/million pop	79.4	21
8.06	High-tech exports, % goods exports	2.5	61
8.07	Impact of ICT on new services and products*	5.2	28
8.08	Impact of ICT on new organizational models*	5.1	23

Government usage 5.5 6

9.01	Gov't success in ICT promotion	4.9	32
9.02	ICT use & gov't efficiency*	5.0	31
9.03	Government Online Service Index, 0–1 (best)	0.77	5
9.04	E-Participation Index, 0–1 (best)	0.91	2

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Austria

Key indicators

Population (millions), 2009	8.4
GDP (PPP) per capita (PPP $), 2009	38,567
GDP (US$ billions), 2009	382.1
Global Competitiveness Index 2010–2011 rank (out of 139)	18

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.9**	**21**
2009–2010 (133)	4.9	20
2008–2009 (134)	5.2	16
2007–2008 (127)	5.2	15
2006–2007 (122)	5.2	17

Environment component	5.1	17
Market environment	**4.8**	**27**
1.01 Venture capital availability*	2.9	43
1.02 Financial market sophistication*	5.6	25
1.03 Availability of latest technologies*	6.4	8
1.04 State of cluster development*	4.6	22
1.05 Burden of government regulation*	3.6	38
1.06 Extent & effect of taxation*	3.6	62
1.07 Total tax rate, % profits	55.5	112
1.08 No. days to start a business	28	93
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	6.2	21
Political and regulatory environment	**5.7**	**14**
2.01 Effectiveness of law-making bodies*	4.4	28
2.02 Laws relating to ICT*	5.5	9
2.03 Judicial independence*	5.8	18
2.04 Efficiency of legal system in settling disputes*	5.1	18
2.05 Efficiency of legal system in challenging regs*	5.2	10
2.06 Property rights*	6.2	7
2.07 Intellectual property protection*	5.7	11
2.08 Software piracy rate, % software installed	25	5
2.09 No. procedures to enforce a contract	25	4
2.10 No. days to enforce a contract	397	31
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**4.9**	**21**
3.01 Phone lines/100 pop.	38.9	28
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	553.8	18
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	203.2	16
3.05 Electricity production, kWh/capita	7,341.2	28
3.06 Tertiary education enrollment rate, %	54.7	38
3.07 Quality scientific research institutions*	5.1	20
3.08 Availability of scientists & engineers*	4.7	30
3.09 Availability research & training services*	5.9	6
3.10 Accessibility of digital content*	6.4	4

Readiness component	4.9	28
Individual readiness	**5.3**	**30**
4.01 Quality of math & science education*	4.7	37
4.02 Quality of educational system*	4.9	24
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	195.3	124
4.05 Residential monthly phone subscription (PPP $)	18.7	103
4.06 Fixed phone tariffs (PPP $)	0.18	79
4.07 Mobile cellular tariffs (PPP $)	0.08	8
4.08 Fixed broadband Internet tariffs (PPP $)	29.1	44
4.09 Buyer sophistication*	4.1	25
Business readiness	**4.8**	**23**
5.01 Extent of staff training*	4.9	14
5.02 Quality of management schools*	4.9	33
5.03 Company spending on R&D*	4.3	18
5.04 University-industry collaboration in R&D*	4.9	18
5.05 Business phone installation (PPP $)	195.3	113
5.06 Business monthly phone subscription (PPP $)	26.5	107
5.07 Local supplier quality*	6.3	1
5.08 Computer, communications, & other services imports, % services imports	37.7	42
Government readiness	**4.6**	**32**
6.01 Gov't prioritization of ICT*	5.2	40
6.02 Gov't procurement of advanced tech.*	4.1	37
6.03 Importance of ICT to gov't vision*	4.6	33

Usage component	4.7	21
Individual usage	**5.4**	**16**
7.01 Mobile phone subscriptions/100 pop.	136.7	20
7.02 Cellular subscriptions w/data, % total	39.3	18
7.03 Households w/ personal computer, %	74.5	19
7.04 Broadband Internet subscribers/100 pop.	22.1	26
7.05 Internet users/100 pop.	73.5	21
7.06 Internet access in schools*	5.8	16
7.07 Use of virtual social networks*	6.1	10
7.08 Impact of ICT on access to basic services*	5.2	27
Business usage	**4.1**	**20**
8.01 Firm-level technology absorption*	6.0	16
8.02 Capacity for innovation*	4.7	11
8.03 Extent of business Internet use*	5.8	24
8.04 National office patent applications/million pop	270.6	9
8.05 Patent Cooperation Treaty apps/million pop	127.9	15
8.06 High-tech exports, % goods exports	9.8	27
8.07 Impact of ICT on new services and products*	5.4	21
8.08 Impact of ICT on new organizational models*	4.7	38
Government usage	**4.5**	**22**
9.01 Gov't success in ICT promotion	4.7	42
9.02 ICT use & gov't efficiency*	5.5	10
9.03 Government Online Service Index, 0–1 (best)	0.48	33
9.04 E-Participation Index, 0–1 (best)	0.50	21

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Azerbaijan

Key indicators

Population (millions), 2009	9.0
GDP (PPP) per capita (PPP $), 2009	9,540
GDP (US$ billions), 2009	43.1
Global Competitiveness Index 2010–2011 rank (out of 139)	57

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**70**
2009–2010 (133)	3.7	64
2008–2009 (134)	3.9	60
2007–2008 (127)	3.7	67
2006–2007 (122)	3.5	71

Environment component 3.7 77

Market environment 4.0 78

1.01	Venture capital availability*	2.9	48
1.02	Financial market sophistication*	4.0	80
1.03	Availability of latest technologies*	4.8	80
1.04	State of cluster development*	3.2	87
1.05	Burden of government regulation*	3.7	31
1.06	Extent & effect of taxation*	3.5	75
1.07	Total tax rate, % profits	40.9	72
1.08	No. days to start a business	8	27
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	3.6	125

Political and regulatory environment 3.8 79

2.01	Effectiveness of law-making bodies*	3.8	51
2.02	Laws relating to ICT*	4.1	55
2.03	Judicial independence*	3.3	86
2.04	Efficiency of legal system in settling disputes*	3.3	93
2.05	Efficiency of legal system in challenging regs*	3.7	61
2.06	Property rights*	3.9	89
2.07	Intellectual property protection*	3.6	62
2.08	Software piracy rate, % software installed	88	100
2.09	No. procedures to enforce a contract	39	83
2.10	No. days to enforce a contract	237	4
2.11	Internet & telephony competition, 0–6 (best)	4	85

Infrastructure environment 3.2 79

3.01	Phone lines/100 pop.	15.9	80
3.02	Mobile network coverage, % pop. covered	99.6	40
3.03	Secure Internet servers/million pop.	1.9	102
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	14.0	67
3.05	Electricity production, kWh/capita	2,821.4	68
3.06	Tertiary education enrollment rate, %	15.8	98
3.07	Quality scientific research institutions*	3.4	77
3.08	Availability of scientists & engineers*	4.0	78
3.09	Availability research & training services*	4.1	66
3.10	Accessibility of digital content*	4.8	70

Readiness component 4.4 49

Individual readiness 4.9 67

4.01	Quality of math & science education*	3.3	100
4.02	Quality of educational system*	3.1	103
4.03	Adult literacy rate, %	99.5	9
4.04	Residential phone installation (PPP $)	196.0	125
4.05	Residential monthly phone subscription (PPP $)	4.9	27
4.06	Fixed phone tariffs (PPP $)	0.00	1
4.07	Mobile cellular tariffs (PPP $)	0.23	36
4.08	Fixed broadband Internet tariffs (PPP $)	95.6	112
4.09	Buyer sophistication*	3.8	41

Business readiness 3.8 83

5.01	Extent of staff training*	4.0	67
5.02	Quality of management schools*	3.2	123
5.03	Company spending on R&D*	2.8	87
5.04	University-industry collaboration in R&D*	3.2	91
5.05	Business phone installation (PPP $)	294.0	126
5.06	Business monthly phone subscription (PPP $)	17.2	72
5.07	Local supplier quality*	4.0	102
5.08	Computer, communications, & other services imports, % services imports	61.7	5

Government readiness 4.6 33

6.01	Gov't prioritization of ICT*	5.3	36
6.02	Gov't procurement of advanced tech.*	4.1	35
6.03	Importance of ICT to gov't vision*	4.4	42

Usage component 3.3 74

Individual usage 3.4 69

7.01	Mobile phone subscriptions/100 pop.	87.8	79
7.02	Cellular subscriptions w/data, % total	28.5	29
7.03	Households w/ personal computer, %	18.2	80
7.04	Broadband Internet subscribers/100 pop.	1.1	93
7.05	Internet users/100 pop.	27.4	79
7.06	Internet access in schools*	3.7	77
7.07	Use of virtual social networks*	5.5	44
7.08	Impact of ICT on access to basic services*	4.5	64

Business usage 2.9 76

8.01	Firm-level technology absorption*	4.9	61
8.02	Capacity for innovation*	3.5	40
8.03	Extent of business Internet use*	4.2	109
8.04	National office patent applications/million pop	25.3	54
8.05	Patent Cooperation Treaty apps/million pop	0.1	85
8.06	High-tech exports, % goods exports	0.0	116
8.07	Impact of ICT on new services and products*	4.4	77
8.08	Impact of ICT on new organizational models*	4.0	71

Government usage 3.5 56

9.01	Gov't success in ICT promotion	5.0	30
9.02	ICT use & gov't efficiency*	4.1	79
9.03	Government Online Service Index, 0–1 (best)	0.32	67
9.04	E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Bahrain

Key indicators

Population (millions), 2009	1.0
GDP (PPP) per capita (PPP $), 2009	27,214
GDP (US$ billions), 2009	20.6
Global Competitiveness Index 2010–2011 rank (out of 139)	37

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.6**	**30**
2009–2010 (133)	4.6	29
2008–2009 (134)	4.4	37
2007–2008 (127)	4.1	45
2006–2007 (122)	3.9	50

Environment component	4.6	30
Market environment	**5.1**	**9**
1.01 Venture capital availability*	3.7	18
1.02 Financial market sophistication*	5.5	26
1.03 Availability of latest technologies*	6.0	29
1.04 State of cluster development*	4.8	14
1.05 Burden of government regulation*	4.0	18
1.06 Extent & effect of taxation*	6.1	1
1.07 Total tax rate, % profits	15.0	7
1.08 No. days to start a business	9	34
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	5.3	62
Political and regulatory environment	**4.7**	**38**
2.01 Effectiveness of law-making bodies*	3.7	59
2.02 Laws relating to ICT*	5.0	27
2.03 Judicial independence*	5.0	33
2.04 Efficiency of legal system in settling disputes*	3.9	57
2.05 Efficiency of legal system in challenging regs*	4.1	44
2.06 Property rights*	5.6	21
2.07 Intellectual property protection*	5.2	22
2.08 Software piracy rate, % software installed	54	40
2.09 No. procedures to enforce a contract	48	127
2.10 No. days to enforce a contract	635	95
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**3.9**	**41**
3.01 Phone lines/100 pop.	30.1	41
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	94.8	41
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	25.2	55
3.05 Electricity production, kWh/capita	14,360.9	8
3.06 Tertiary education enrollment rate, %	29.9	74
3.07 Quality scientific research institutions*	2.8	116
3.08 Availability of scientists & engineers*	4.5	41
3.09 Availability research & training services*	3.9	81
3.10 Accessibility of digital content*	5.9	28

Readiness component	4.9	30
Individual readiness	**5.6**	**15**
4.01 Quality of math & science education*	4.5	44
4.02 Quality of educational system*	4.4	38
4.03 Adult literacy rate, %	90.8	79
4.04 Residential phone installation (PPP $)	65.8	61
4.05 Residential monthly phone subscription (PPP $)	3.8	17
4.06 Fixed phone tariffs (PPP $)	0.07	40
4.07 Mobile cellular tariffs (PPP $)	0.13	15
4.08 Fixed broadband Internet tariffs (PPP $)	32.9	60
4.09 Buyer sophistication*	4.0	33
Business readiness	**3.9**	**67**
5.01 Extent of staff training*	4.9	16
5.02 Quality of management schools*	4.6	45
5.03 Company spending on R&D*	2.7	100
5.04 University-industry collaboration in R&D*	3.3	87
5.05 Business phone installation (PPP $)	71.9	47
5.06 Business monthly phone subscription (PPP $)	8.1	25
5.07 Local supplier quality*	4.4	71
5.08 Computer, communications, & other services imports, % services imports	11.5	113
Government readiness	**5.1**	**14**
6.01 Gov't prioritization of ICT*	5.8	11
6.02 Gov't procurement of advanced tech.*	4.3	21
6.03 Importance of ICT to gov't vision*	5.1	14

Usage component	4.5	27
Individual usage	**4.9**	**29**
7.01 Mobile phone subscriptions/100 pop.	177.1	5
7.02 Cellular subscriptions w/data, % total	13.6	50
7.03 Households w/ personal computer, %	87.0	6
7.04 Broadband Internet subscribers/100 pop.	9.6	48
7.05 Internet users/100 pop.	53.0	40
7.06 Internet access in schools*	5.3	32
7.07 Use of virtual social networks*	5.8	25
7.08 Impact of ICT on access to basic services*	5.6	11
Business usage	**3.1**	**58**
8.01 Firm-level technology absorption*	5.2	48
8.02 Capacity for innovation*	2.9	67
8.03 Extent of business Internet use*	5.7	27
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.0	125
8.07 Impact of ICT on new services and products*	5.0	40
8.08 Impact of ICT on new organizational models*	4.4	50
Government usage	**5.3**	**8**
9.01 Gov't success in ICT promotion	5.3	15
9.02 ICT use & gov't efficiency*	5.5	12
9.03 Government Online Service Index, 0–1 (best)	0.73	8
9.04 E-Participation Index, 0–1 (best)	0.67	11

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Bangladesh

Key indicators

Population (millions), 2009	162.2
GDP (PPP) per capita (PPP $), 2009	1,487
GDP (US$ billions), 2009	94.6
Global Competitiveness Index 2010–2011 rank (out of 139)	107

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**115**
2009–2010 (133)	3.0	118
2008–2009 (134)	2.7	130
2007–2008 (127)	2.6	124
2006–2007 (122)	2.6	118

Environment component 3.2 115

Market environment 4.0 77

1.01	Venture capital availability*	2.2	96
1.02	Financial market sophistication*	3.2	109
1.03	Availability of latest technologies*	4.2	110
1.04	State of cluster development*	3.7	53
1.05	Burden of government regulation*	2.9	101
1.06	Extent & effect of taxation*	3.7	54
1.07	Total tax rate, % profits	35.0	50
1.08	No. days to start a business	19	72
1.09	No. procedures to start a business	7	63
1.10	Freedom of the press*	6.0	28

Political and regulatory environment 3.0 132

2.01	Effectiveness of law-making bodies*	3.0	95
2.02	Laws relating to ICT*	2.6	127
2.03	Judicial independence*	3.4	84
2.04	Efficiency of legal system in settling disputes*	2.9	112
2.05	Efficiency of legal system in challenging regs*	3.0	101
2.06	Property rights*	3.4	112
2.07	Intellectual property protection*	2.6	121
2.08	Software piracy rate, % software installed	91	104
2.09	No. procedures to enforce a contract	41	102
2.10	No. days to enforce a contract	1442	134
2.11	Internet & telephony competition, 0–6 (best)	4	85

Infrastructure environment 2.5 119

3.01	Phone lines/100 pop.	0.9	128
3.02	Mobile network coverage, % pop. covered	90.0	91
3.03	Secure Internet servers/million pop.	0.2	135
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	134
3.05	Electricity production, kWh/capita	154.5	123
3.06	Tertiary education enrollment rate, %	7.0	116
3.07	Quality scientific research institutions*	2.8	115
3.08	Availability of scientists & engineers*	4.0	75
3.09	Availability research & training services*	3.0	126
3.10	Accessibility of digital content*	3.8	112

Readiness component 3.9 104

Individual readiness 4.5 96

4.01	Quality of math & science education*	3.2	104
4.02	Quality of educational system*	3.3	93
4.03	Adult literacy rate, %	55.0	125
4.04	Residential phone installation (PPP $)	218.8	129
4.05	Residential monthly phone subscription (PPP $)	3.0	13
4.06	Fixed phone tariffs (PPP $)	0.03	17
4.07	Mobile cellular tariffs (PPP $)	0.07	6
4.08	Fixed broadband Internet tariffs (PPP $)	128.8	119
4.09	Buyer sophistication*	3.0	106

Business readiness 3.2 124

5.01	Extent of staff training*	3.1	128
5.02	Quality of management schools*	3.8	86
5.03	Company spending on R&D*	2.4	128
5.04	University-industry collaboration in R&D*	2.7	127
5.05	Business phone installation (PPP $)	218.8	118
5.06	Business monthly phone subscription (PPP $)	3.0	5
5.07	Local supplier quality*	4.2	87
5.08	Computer, communications, & other services imports, % services imports	7.6	120

Government readiness 3.9 81

6.01	Gov't prioritization of ICT*	4.8	56
6.02	Gov't procurement of advanced tech.*	3.0	114
6.03	Importance of ICT to gov't vision*	3.9	72

Usage component 2.5 122

Individual usage 2.0 134

7.01	Mobile phone subscriptions/100 pop.	32.3	126
7.02	Cellular subscriptions w/data, % total	0.0	110
7.03	Households w/ personal computer, %	2.2	129
7.04	Broadband Internet subscribers/100 pop.	0.0	123
7.05	Internet users/100 pop.	0.4	137
7.06	Internet access in schools*	2.1	132
7.07	Use of virtual social networks*	3.9	121
7.08	Impact of ICT on access to basic services*	3.9	113

Business usage 2.6 115

8.01	Firm-level technology absorption*	4.2	108
8.02	Capacity for innovation*	2.4	115
8.03	Extent of business Internet use*	4.2	106
8.04	National office patent applications/million pop	0.3	87
8.05	Patent Cooperation Treaty apps/million pop	0.0	98
8.06	High-tech exports, % goods exports	0.8	86
8.07	Impact of ICT on new services and products*	4.0	102
8.08	Impact of ICT on new organizational models*	3.5	116

Government usage 2.9 100

9.01	Gov't success in ICT promotion	3.5	117
9.02	ICT use & gov't efficiency*	3.5	116
9.03	Government Online Service Index, 0–1 (best)	0.36	58
9.04	E-Participation Index, 0–1 (best)	0.10	95

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Barbados

Key indicators

Population (millions), 2009	0.3
GDP (PPP) per capita (PPP $), 2009	22,272
GDP (US$ billions), 2009	3.9
Global Competitiveness Index 2010–2011 rank (out of 139)	43

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.3**	**38**
2009–2010 (133)	4.4	35
2008–2009 (134)	4.4	36
2007–2008 (127)	4.3	38
2006–2007 (122)	4.2	40

Environment component	4.5	31
Market environment	**4.4**	**46**
1.01 Venture capital availability*	2.3	85
1.02 Financial market sophistication*	4.8	48
1.03 Availability of latest technologies*	6.0	28
1.04 State of cluster development*	3.0	95
1.05 Burden of government regulation*	4.3	12
1.06 Extent & effect of taxation*	4.3	20
1.07 Total tax rate, % profits	n/a	n/a
1.08 No. days to start a business	n/a	n/a
1.09 No. procedures to start a business	n/a	n/a
1.10 Freedom of the press*	5.8	40
Political and regulatory environment	**5.0**	**26**
2.01 Effectiveness of law-making bodies*	5.4	7
2.02 Laws relating to ICT*	4.3	47
2.03 Judicial independence*	5.7	19
2.04 Efficiency of legal system in settling disputes*	5.0	21
2.05 Efficiency of legal system in challenging regs*	4.7	22
2.06 Property rights*	5.6	22
2.07 Intellectual property protection*	4.8	29
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	n/a	n/a
2.10 No. days to enforce a contract	n/a	n/a
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**4.3**	**30**
3.01 Phone lines/100 pop.	53.0	11
3.02 Mobile network coverage, % pop. covered	99.9	23
3.03 Secure Internet servers/million pop.	312.7	25
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	139.9	25
3.05 Electricity production, kWh/capita	3,940.4	57
3.06 Tertiary education enrollment rate, %	53.1	41
3.07 Quality scientific research institutions*	4.0	50
3.08 Availability of scientists & engineers*	4.0	69
3.09 Availability research & training services*	4.1	70
3.10 Accessibility of digital content*	5.8	30

Readiness component	4.6	44
Individual readiness	**5.2**	**38**
4.01 Quality of math & science education*	5.3	13
4.02 Quality of educational system*	5.0	15
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	79.2	80
4.05 Residential monthly phone subscription (PPP $)	31.1	135
4.06 Fixed phone tariffs (PPP $)	0.00	1
4.07 Mobile cellular tariffs (PPP $)	0.43	87
4.08 Fixed broadband Internet tariffs (PPP $)	54.5	87
4.09 Buyer sophistication*	3.9	37
Business readiness	**4.1**	**56**
5.01 Extent of staff training*	4.3	42
5.02 Quality of management schools*	5.0	29
5.03 Company spending on R&D*	2.7	98
5.04 University-industry collaboration in R&D*	4.1	40
5.05 Business phone installation (PPP $)	76.7	57
5.06 Business monthly phone subscription (PPP $)	36.0	126
5.07 Local supplier quality*	4.7	56
5.08 Computer, communications, & other services imports, % services imports	27.8	70
Government readiness	**4.5**	**42**
6.01 Gov't prioritization of ICT*	5.4	30
6.02 Gov't procurement of advanced tech.*	3.9	48
6.03 Importance of ICT to gov't vision*	4.2	53

Usage component	3.8	41
Individual usage	**4.5**	**42**
7.01 Mobile phone subscriptions/100 pop.	131.7	23
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	39.6	54
7.04 Broadband Internet subscribers/100 pop.	22.4	25
7.05 Internet users/100 pop.	56.1	38
7.06 Internet access in schools*	5.0	34
7.07 Use of virtual social networks*	5.5	47
7.08 Impact of ICT on access to basic services*	5.2	29
Business usage	**3.7**	**29**
8.01 Firm-level technology absorption*	5.4	34
8.02 Capacity for innovation*	2.7	93
8.03 Extent of business Internet use*	5.3	44
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	332.2	5
8.06 High-tech exports, % goods exports	5.2	45
8.07 Impact of ICT on new services and products*	4.9	48
8.08 Impact of ICT on new organizational models*	4.0	78
Government usage	**3.3**	**70**
9.01 Gov't success in ICT promotion	5.1	26
9.02 ICT use & gov't efficiency*	4.5	55
9.03 Government Online Service Index, 0–1 (best)	0.20	104
9.04 E-Participation Index, 0–1 (best)	0.10	95

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Belgium

Key indicators

Population (millions), 2009	10.8
GDP (PPP) per capita (PPP $), 2009	35,534
GDP (US$ billions), 2009	472.1
Global Competitiveness Index 2010–2011 rank (out of 139)	19

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.8**	**23**
2009–2010 (133)	4.9	22
2008–2009 (134)	5.0	24
2007–2008 (127)	4.9	25
2006–2007 (122)	4.9	24

Environment component 5.0 22

Market environment 4.8 24

1.01	Venture capital availability*	3.3	25
1.02	Financial market sophistication*	5.9	18
1.03	Availability of latest technologies*	6.4	12
1.04	State of cluster development*	4.3	26
1.05	Burden of government regulation*	2.6	120
1.06	Extent & effect of taxation*	2.3	134
1.07	Total tax rate, % profits	57.0	115
1.08	No. days to start a business	4	6
1.09	No. procedures to start a business	3	7
1.10	Freedom of the press*	6.5	10

Political and regulatory environment 5.2 21

2.01	Effectiveness of law-making bodies*	3.3	78
2.02	Laws relating to ICT*	4.9	31
2.03	Judicial independence*	5.2	28
2.04	Efficiency of legal system in settling disputes*	4.0	51
2.05	Efficiency of legal system in challenging regs*	4.1	43
2.06	Property rights*	5.4	26
2.07	Intellectual property protection*	5.1	23
2.08	Software piracy rate, % software installed	25	5
2.09	No. procedures to enforce a contract	26	5
2.10	No. days to enforce a contract	505	56
2.11	Internet & telephony competition, 0–6 (best)	5	62

Infrastructure environment 5.1 17

3.01	Phone lines/100 pop.	43.5	23
3.02	Mobile network coverage, % pop. covered	99.9	23
3.03	Secure Internet servers/million pop.	310.3	26
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	249.5	14
3.05	Electricity production, kWh/capita	8,237.2	23
3.06	Tertiary education enrollment rate, %	63.0	26
3.07	Quality scientific research institutions*	5.7	7
3.08	Availability of scientists & engineers*	5.2	13
3.09	Availability research & training services*	5.8	9
3.10	Accessibility of digital content*	6.1	19

Readiness component 4.9 22

Individual readiness 5.4 27

4.01	Quality of math & science education*	6.2	2
4.02	Quality of educational system*	5.5	7
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	76.1	75
4.05	Residential monthly phone subscription (PPP $)	21.2	114
4.06	Fixed phone tariffs (PPP $)	0.37	114
4.07	Mobile cellular tariffs (PPP $)	0.33	65
4.08	Fixed broadband Internet tariffs (PPP $)	23.1	24
4.09	Buyer sophistication*	4.4	15

Business readiness 5.2 8

5.01	Extent of staff training*	4.9	15
5.02	Quality of management schools*	6.0	4
5.03	Company spending on R&D*	4.3	19
5.04	University-industry collaboration in R&D*	5.2	10
5.05	Business phone installation (PPP $)	76.1	54
5.06	Business monthly phone subscription (PPP $)	21.2	88
5.07	Local supplier quality*	5.9	6
5.08	Computer, communications, & other services imports, % services imports	46.5	21

Government readiness 4.2 58

6.01	Gov't prioritization of ICT*	4.8	61
6.02	Gov't procurement of advanced tech.*	4.0	46
6.03	Importance of ICT to gov't vision*	3.9	69

Usage component 4.5 26

Individual usage 5.1 24

7.01	Mobile phone subscriptions/100 pop.	117.5	42
7.02	Cellular subscriptions w/data, % total	7.2	66
7.03	Households w/ personal computer, %	71.2	26
7.04	Broadband Internet subscribers/100 pop.	29.4	13
7.05	Internet users/100 pop.	76.2	17
7.06	Internet access in schools*	5.8	20
7.07	Use of virtual social networks*	5.8	27
7.08	Impact of ICT on access to basic services*	5.0	36

Business usage 3.8 26

8.01	Firm-level technology absorption*	5.5	28
8.02	Capacity for innovation*	4.7	12
8.03	Extent of business Internet use*	5.6	28
8.04	National office patent applications/million pop	62.0	33
8.05	Patent Cooperation Treaty apps/million pop	93.5	19
8.06	High-tech exports, % goods exports	7.9	30
8.07	Impact of ICT on new services and products*	5.0	42
8.08	Impact of ICT on new organizational models*	4.9	29

Government usage 4.5 23

9.01	Gov't success in ICT promotion	4.4	58
9.02	ICT use & gov't efficiency*	4.3	69
9.03	Government Online Service Index, 0–1 (best)	0.63	17
9.04	E-Participation Index, 0–1 (best)	0.59	17

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Benin

Key indicators

Population (millions), 2009	9.4
GDP (PPP) per capita (PPP $), 2009	1,440
GDP (US$ billions), 2009	6.7
Global Competitiveness Index 2010–2011 rank (out of 139)	103

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**114**
2009–2010 (133)	3.1	111
2008–2009 (134)	3.0	121
2007–2008 (127)	3.0	113
2006–2007 (122)	2.8	109

Environment component	3.3	110
Market environment	**3.7**	**104**
1.01 Venture capital availability*	2.6	62
1.02 Financial market sophistication*	3.3	106
1.03 Availability of latest technologies*	4.2	109
1.04 State of cluster development*	2.4	129
1.05 Burden of government regulation*	3.7	33
1.06 Extent & effect of taxation*	3.2	90
1.07 Total tax rate, % profits	66.0	124
1.08 No. days to start a business	31	98
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	4.9	73
Political and regulatory environment	**3.5**	**105**
2.01 Effectiveness of law-making bodies*	3.5	67
2.02 Laws relating to ICT*	3.1	111
2.03 Judicial independence*	3.3	89
2.04 Efficiency of legal system in settling disputes*	3.7	65
2.05 Efficiency of legal system in challenging regs*	3.4	74
2.06 Property rights*	4.7	54
2.07 Intellectual property protection*	3.0	90
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	42	109
2.10 No. days to enforce a contract	825	114
2.11 Internet & telephony competition, 0–6 (best)	2	119
Infrastructure environment	**2.6**	**113**
3.01 Phone lines/100 pop.	1.4	121
3.02 Mobile network coverage, % pop. covered	82.0	109
3.03 Secure Internet servers/million pop.	0.1	136
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.2	122
3.05 Electricity production, kWh/capita	15.7	135
3.06 Tertiary education enrollment rate, %	5.8	118
3.07 Quality scientific research institutions*	3.3	85
3.08 Availability of scientists & engineers*	4.2	59
3.09 Availability research & training services*	3.9	82
3.10 Accessibility of digital content*	3.8	114

Readiness component	3.8	114
Individual readiness	**3.5**	**133**
4.01 Quality of math & science education*	4.2	60
4.02 Quality of educational system*	4.2	45
4.03 Adult literacy rate, %	40.8	132
4.04 Residential phone installation (PPP $)	414.3	136
4.05 Residential monthly phone subscription (PPP $)	11.6	67
4.06 Fixed phone tariffs (PPP $)	0.26	105
4.07 Mobile cellular tariffs (PPP $)	0.61	110
4.08 Fixed broadband Internet tariffs (PPP $)	228.0	125
4.09 Buyer sophistication*	3.1	90
Business readiness	**3.5**	**105**
5.01 Extent of staff training*	3.5	103
5.02 Quality of management schools*	4.5	50
5.03 Company spending on R&D*	3.4	42
5.04 University-industry collaboration in R&D*	3.1	105
5.05 Business phone installation (PPP $)	754.3	134
5.06 Business monthly phone subscription (PPP $)	11.6	40
5.07 Local supplier quality*	4.3	81
5.08 Computer, communications, & other services imports, % services imports	20.4	95
Government readiness	**4.3**	**54**
6.01 Gov't prioritization of ICT*	4.8	62
6.02 Gov't procurement of advanced tech.*	4.4	20
6.03 Importance of ICT to gov't vision*	3.7	89

Usage component	2.6	116
Individual usage	**2.3**	**119**
7.01 Mobile phone subscriptions/100 pop.	56.3	108
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	2.1	130
7.04 Broadband Internet subscribers/100 pop.	0.0	122
7.05 Internet users/100 pop.	2.2	127
7.06 Internet access in schools*	3.1	100
7.07 Use of virtual social networks*	3.8	123
7.08 Impact of ICT on access to basic services*	3.9	111
Business usage	**2.6**	**108**
8.01 Firm-level technology absorption*	4.1	114
8.02 Capacity for innovation*	3.1	60
8.03 Extent of business Internet use*	4.2	107
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.0	118
8.07 Impact of ICT on new services and products*	4.2	93
8.08 Impact of ICT on new organizational models*	3.4	117
Government usage	**2.8**	**115**
9.01 Gov't success in ICT promotion	4.1	79
9.02 ICT use & gov't efficiency*	3.8	96
9.03 Government Online Service Index, 0–1 (best)	0.12	122
9.04 E-Participation Index, 0–1 (best)	0.07	105

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Bolivia

Key indicators

Population (millions), 2009	10.2
GDP (PPP) per capita (PPP $), 2009	4,451
GDP (US$ billions), 2009	17.5
Global Competitiveness Index 2010–2011 rank (out of 139)	108

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**2.9**	**135**
2009–2010 (133)	2.7	131
2008–2009 (134)	2.8	128
2007–2008 (127)	3.0	111
2006–2007 (122)	2.9	104

Environment component 2.8 136

Market environment 3.1 133

1.01	Venture capital availability*	2.4	78
1.02	Financial market sophistication*	3.0	116
1.03	Availability of latest technologies*	3.8	130
1.04	State of cluster development*	2.8	110
1.05	Burden of government regulation*	3.2	73
1.06	Extent & effect of taxation*	3.0	110
1.07	Total tax rate, % profits	80.0	131
1.08	No. days to start a business	50	120
1.09	No. procedures to start a business	15	129
1.10	Freedom of the press*	3.2	131

Political and regulatory environment 2.8 137

2.01	Effectiveness of law-making bodies*	2.2	128
2.02	Laws relating to ICT*	2.4	135
2.03	Judicial independence*	2.3	128
2.04	Efficiency of legal system in settling disputes*	2.5	135
2.05	Efficiency of legal system in challenging regs*	2.3	134
2.06	Property rights*	2.2	136
2.07	Intellectual property protection*	1.9	138
2.08	Software piracy rate, % software installed	80	86
2.09	No. procedures to enforce a contract	40	94
2.10	No. days to enforce a contract	591	82
2.11	Internet & telephony competition, 0–6 (best)	4	85

Infrastructure environment 2.5 121

3.01	Phone lines/100 pop.	8.2	99
3.02	Mobile network coverage, % pop. covered	45.9	125
3.03	Secure Internet servers/million pop.	4.0	93
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	2.3	93
3.05	Electricity production, kWh/capita	602.0	108
3.06	Tertiary education enrollment rate, %	38.3	61
3.07	Quality scientific research institutions*	2.6	122
3.08	Availability of scientists & engineers*	3.2	119
3.09	Availability research & training services*	3.3	112
3.10	Accessibility of digital content*	3.8	113

Readiness component 3.3 134

Individual readiness 4.0 117

4.01	Quality of math & science education*	2.8	120
4.02	Quality of educational system*	3.1	109
4.03	Adult literacy rate, %	90.7	80
4.04	Residential phone installation (PPP $)	107.6	96
4.05	Residential monthly phone subscription (PPP $)	53.8	137
4.06	Fixed phone tariffs (PPP $)	0.19	88
4.07	Mobile cellular tariffs (PPP $)	0.54	101
4.08	Fixed broadband Internet tariffs (PPP $)	87.8	110
4.09	Buyer sophistication*	2.5	127

Business readiness 3.0 134

5.01	Extent of staff training*	3.3	120
5.02	Quality of management schools*	3.3	118
5.03	Company spending on R&D*	2.7	99
5.04	University-industry collaboration in R&D*	2.8	125
5.05	Business phone installation (PPP $)	143.4	97
5.06	Business monthly phone subscription (PPP $)	53.8	135
5.07	Local supplier quality*	3.7	117
5.08	Computer, communications, & other services imports, % services imports	19.3	97

Government readiness 2.9 131

6.01	Gov't prioritization of ICT*	3.1	133
6.02	Gov't procurement of advanced tech.*	2.9	121
6.03	Importance of ICT to gov't vision*	2.7	132

Usage component 2.6 114

Individual usage 2.5 109

7.01	Mobile phone subscriptions/100 pop.	72.5	94
7.02	Cellular subscriptions w/data, % total	0.2	106
7.03	Households w/ personal computer, %	14.7	86
7.04	Broadband Internet subscribers/100 pop.	2.9	79
7.05	Internet users/100 pop.	11.2	100
7.06	Internet access in schools*	2.6	120
7.07	Use of virtual social networks*	4.6	95
7.08	Impact of ICT on access to basic services*	3.2	131

Business usage 2.5 123

8.01	Firm-level technology absorption*	3.7	134
8.02	Capacity for innovation*	2.7	85
8.03	Extent of business Internet use*	4.1	115
8.04	National office patent applications/million pop	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	0.3	105
8.07	Impact of ICT on new services and products*	3.8	116
8.08	Impact of ICT on new organizational models*	3.6	99

Government usage 2.7 121

9.01	Gov't success in ICT promotion	2.6	132
9.02	ICT use & gov't efficiency*	3.2	131
9.03	Government Online Service Index, 0–1 (best)	0.30	77
9.04	E-Participation Index, 0–1 (best)	0.20	56

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Bosnia and Herzegovina

Key indicators

Population (millions), 2009	3.9
GDP (PPP) per capita (PPP $), 2009	7,634
GDP (US$ billions), 2009	17.0
Global Competitiveness Index 2010–2011 rank (out of 139)	102

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**110**
2009–2010 (133)	3.1	110
2008–2009 (134)	3.2	106
2007–2008 (127)	3.2	95
2006–2007 (122)	3.2	89

Environment component	3.3	106
Market environment	**3.4**	**125**
1.01 Venture capital availability*	1.9	125
1.02 Financial market sophistication*	2.8	122
1.03 Availability of latest technologies*	4.2	115
1.04 State of cluster development*	3.2	81
1.05 Burden of government regulation*	2.8	106
1.06 Extent & effect of taxation*	2.4	131
1.07 Total tax rate, % profits	23.0	16
1.08 No. days to start a business	55	121
1.09 No. procedures to start a business	12	116
1.10 Freedom of the press*	4.4	88
Political and regulatory environment	**3.3**	**118**
2.01 Effectiveness of law-making bodies*	2.2	132
2.02 Laws relating to ICT*	2.6	126
2.03 Judicial independence*	2.6	121
2.04 Efficiency of legal system in settling disputes*	2.3	136
2.05 Efficiency of legal system in challenging regs*	2.3	135
2.06 Property rights*	2.7	132
2.07 Intellectual property protection*	2.2	132
2.08 Software piracy rate, % software installed	66	60
2.09 No. procedures to enforce a contract	37	65
2.10 No. days to enforce a contract	595	84
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.2**	**77**
3.01 Phone lines/100 pop.	26.5	49
3.02 Mobile network coverage, % pop. covered	99.5	43
3.03 Secure Internet servers/million pop.	8.5	81
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	11.9	72
3.05 Electricity production, kWh/capita	3,129.4	61
3.06 Tertiary education enrollment rate, %	33.5	70
3.07 Quality scientific research institutions*	3.0	103
3.08 Availability of scientists & engineers*	3.3	114
3.09 Availability research & training services*	3.0	127
3.10 Accessibility of digital content*	5.0	59

Readiness component	3.7	122
Individual readiness	**4.9**	**64**
4.01 Quality of math & science education*	4.7	36
4.02 Quality of educational system*	3.1	101
4.03 Adult literacy rate, %	97.6	53
4.04 Residential phone installation (PPP $)	123.9	103
4.05 Residential monthly phone subscription (PPP $)	12.6	73
4.06 Fixed phone tariffs (PPP $)	0.12	61
4.07 Mobile cellular tariffs (PPP $)	0.35	71
4.08 Fixed broadband Internet tariffs (PPP $)	33.3	61
4.09 Buyer sophistication*	2.8	117
Business readiness	**3.4**	**114**
5.01 Extent of staff training*	2.7	135
5.02 Quality of management schools*	3.9	82
5.03 Company spending on R&D*	2.6	103
5.04 University-industry collaboration in R&D*	3.0	116
5.05 Business phone installation (PPP $)	123.9	87
5.06 Business monthly phone subscription (PPP $)	21.8	91
5.07 Local supplier quality*	3.9	112
5.08 Computer, communications, & other services imports, % services imports	25.3	79
Government readiness	**2.8**	**134**
6.01 Gov't prioritization of ICT*	3.0	136
6.02 Gov't procurement of advanced tech.*	3.0	115
6.03 Importance of ICT to gov't vision*	2.4	137

Usage component	2.7	104
Individual usage	**3.3**	**75**
7.01 Mobile phone subscriptions/100 pop.	86.5	80
7.02 Cellular subscriptions w/data, % total	1.9	92
7.03 Households w/ personal computer, %	28.3	69
7.04 Broadband Internet subscribers/100 pop.	6.3	58
7.05 Internet users/100 pop.	37.7	61
7.06 Internet access in schools*	3.8	71
7.07 Use of virtual social networks*	5.0	76
7.08 Impact of ICT on access to basic services*	3.5	125
Business usage	**2.5**	**118**
8.01 Firm-level technology absorption*	4.0	118
8.02 Capacity for innovation*	2.4	116
8.03 Extent of business Internet use*	4.1	116
8.04 National office patent applications/million pop	15.7	60
8.05 Patent Cooperation Treaty apps/million pop	3.7	47
8.06 High-tech exports, % goods exports	2.0	64
8.07 Impact of ICT on new services and products*	3.6	122
8.08 Impact of ICT on new organizational models*	3.6	111
Government usage	**2.4**	**133**
9.01 Gov't success in ICT promotion	2.7	130
9.02 ICT use & gov't efficiency*	2.8	135
9.03 Government Online Service Index, 0–1 (best)	0.28	88
9.04 E-Participation Index, 0–1 (best)	0.04	117

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Botswana

Key indicators

Population (millions), 2009	1.8
GDP (PPP) per capita (PPP $), 2009	14,321
GDP (US$ billions), 2009	11.7
Global Competitiveness Index 2010–2011 rank (out of 139)	76

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**91**
2009–2010 (133)	3.5	86
2008–2009 (134)	3.7	77
2007–2008 (127)	3.6	78
2006–2007 (122)	3.6	67

Environment component	3.7	74
Market environment	**4.1**	**69**
1.01 Venture capital availability*	2.9	47
1.02 Financial market sophistication*	4.1	76
1.03 Availability of latest technologies*	4.8	77
1.04 State of cluster development*	2.9	108
1.05 Burden of government regulation*	3.6	43
1.06 Extent & effect of taxation*	4.6	13
1.07 Total tax rate, % profits	19.5	11
1.08 No. days to start a business	61	125
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	5.1	68
Political and regulatory environment	**4.4**	**47**
2.01 Effectiveness of law-making bodies*	4.6	25
2.02 Laws relating to ICT*	3.6	82
2.03 Judicial independence*	5.2	30
2.04 Efficiency of legal system in settling disputes*	4.6	32
2.05 Efficiency of legal system in challenging regs*	4.5	26
2.06 Property rights*	5.3	35
2.07 Intellectual property protection*	4.1	44
2.08 Software piracy rate, % software installed	79	81
2.09 No. procedures to enforce a contract	29	13
2.10 No. days to enforce a contract	625	93
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**2.7**	**106**
3.01 Phone lines/100 pop.	7.0	104
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	3.6	94
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	2.2	94
3.05 Electricity production, kWh/capita	591.3	109
3.06 Tertiary education enrollment rate, %	7.6	114
3.07 Quality scientific research institutions*	3.3	82
3.08 Availability of scientists & engineers*	3.5	105
3.09 Availability research & training services*	3.4	108
3.10 Accessibility of digital content*	4.0	106

Readiness component	4.0	93
Individual readiness	**4.1**	**114**
4.01 Quality of math & science education*	3.7	78
4.02 Quality of educational system*	4.1	48
4.03 Adult literacy rate, %	83.3	103
4.04 Residential phone installation (PPP $)	77.5	78
4.05 Residential monthly phone subscription (PPP $)	25.3	123
4.06 Fixed phone tariffs (PPP $)	0.41	119
4.07 Mobile cellular tariffs (PPP $)	0.55	104
4.08 Fixed broadband Internet tariffs (PPP $)	124.7	118
4.09 Buyer sophistication*	3.4	70
Business readiness	**3.7**	**92**
5.01 Extent of staff training*	4.2	53
5.02 Quality of management schools*	3.5	112
5.03 Company spending on R&D*	3.0	70
5.04 University-industry collaboration in R&D*	3.5	68
5.05 Business phone installation (PPP $)	113.8	80
5.06 Business monthly phone subscription (PPP $)	42.1	130
5.07 Local supplier quality*	3.9	108
5.08 Computer, communications, & other services imports, % services imports	33.8	60
Government readiness	**4.3**	**55**
6.01 Gov't prioritization of ICT*	4.6	69
6.02 Gov't procurement of advanced tech.*	3.9	51
6.03 Importance of ICT to gov't vision*	4.3	52

Usage component	2.8	97
Individual usage	**2.8**	**101**
7.01 Mobile phone subscriptions/100 pop.	96.1	67
7.02 Cellular subscriptions w/data, % total	3.1	81
7.03 Households w/ personal computer, %	4.9	114
7.04 Broadband Internet subscribers/100 pop.	0.5	102
7.05 Internet users/100 pop.	6.2	114
7.06 Internet access in schools*	3.3	93
7.07 Use of virtual social networks*	4.6	93
7.08 Impact of ICT on access to basic services*	4.4	70
Business usage	**2.6**	**112**
8.01 Firm-level technology absorption*	4.6	80
8.02 Capacity for innovation*	2.5	103
8.03 Extent of business Internet use*	4.1	111
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.7	87
8.07 Impact of ICT on new services and products*	3.8	110
8.08 Impact of ICT on new organizational models*	3.5	115
Government usage	**3.2**	**84**
9.01 Gov't success in ICT promotion	4.6	48
9.02 ICT use & gov't efficiency*	4.4	62
9.03 Government Online Service Index, 0–1 (best)	0.20	104
9.04 E-Participation Index, 0–1 (best)	0.10	95

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Brazil

Key indicators

Population (millions), 2009	191.5
GDP (PPP) per capita (PPP $), 2009	10,499
GDP (US$ billions), 2009	1,574.0
Global Competitiveness Index 2010–2011 rank (out of 139)	58

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**56**
2009–2010 (133)	3.8	61
2008–2009 (134)	3.9	59
2007–2008 (127)	3.9	59
2006–2007 (122)	3.8	53

Environment component	3.8	66
Market environment	**3.9**	**93**
1.01 Venture capital availability*	2.6	60
1.02 Financial market sophistication*	6.0	14
1.03 Availability of latest technologies*	5.5	50
1.04 State of cluster development*	4.5	23
1.05 Burden of government regulation*	1.9	138
1.06 Extent & effect of taxation*	2.0	138
1.07 Total tax rate, % profits	69.0	128
1.08 No. days to start a business	120	134
1.09 No. procedures to start a business	15	129
1.10 Freedom of the press*	5.9	31
Political and regulatory environment	**4.1**	**64**
2.01 Effectiveness of law-making bodies*	2.4	122
2.02 Laws relating to ICT*	4.5	42
2.03 Judicial independence*	3.5	75
2.04 Efficiency of legal system in settling disputes*	3.4	82
2.05 Efficiency of legal system in challenging regs*	3.5	70
2.06 Property rights*	4.3	71
2.07 Intellectual property protection*	3.1	88
2.08 Software piracy rate, % software installed	56	45
2.09 No. procedures to enforce a contract	45	119
2.10 No. days to enforce a contract	616	89
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.5**	**63**
3.01 Phone lines/100 pop.	21.4	61
3.02 Mobile network coverage, % pop. covered	96.6	71
3.03 Secure Internet servers/million pop.	25.9	58
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	21.1	57
3.05 Electricity production, kWh/capita	2,341.4	74
3.06 Tertiary education enrollment rate, %	34.4	65
3.07 Quality scientific research institutions*	4.2	42
3.08 Availability of scientists & engineers*	4.0	68
3.09 Availability research & training services*	4.7	36
3.10 Accessibility of digital content*	4.9	63

Readiness component	4.3	59
Individual readiness	**4.2**	**110**
4.01 Quality of math & science education*	2.7	125
4.02 Quality of educational system*	3.1	102
4.03 Adult literacy rate, %	90.0	83
4.04 Residential phone installation (PPP $)	78.0	79
4.05 Residential monthly phone subscription (PPP $)	9.6	56
4.06 Fixed phone tariffs (PPP $)	0.29	109
4.07 Mobile cellular tariffs (PPP $)	0.89	126
4.08 Fixed broadband Internet tariffs (PPP $)	32.1	57
4.09 Buyer sophistication*	3.6	52
Business readiness	**4.4**	**41**
5.01 Extent of staff training*	4.2	52
5.02 Quality of management schools*	4.1	73
5.03 Company spending on R&D*	3.8	29
5.04 University-industry collaboration in R&D*	4.3	34
5.05 Business phone installation (PPP $)	76.1	55
5.06 Business monthly phone subscription (PPP $)	46.4	134
5.07 Local supplier quality*	5.2	29
5.08 Computer, communications, & other services imports, % services imports	49.4	17
Government readiness	**4.2**	**56**
6.01 Gov't prioritization of ICT*	4.6	71
6.02 Gov't procurement of advanced tech.*	3.9	49
6.03 Importance of ICT to gov't vision*	4.2	58

Usage component	3.6	52
Individual usage	**3.5**	**64**
7.01 Mobile phone subscriptions/100 pop.	89.8	77
7.02 Cellular subscriptions w/data, % total	5.0	73
7.03 Households w/ personal computer, %	32.3	63
7.04 Broadband Internet subscribers/100 pop.	5.9	61
7.05 Internet users/100 pop.	39.2	59
7.06 Internet access in schools*	3.8	72
7.07 Use of virtual social networks*	5.3	63
7.08 Impact of ICT on access to basic services*	4.7	49
Business usage	**3.5**	**37**
8.01 Firm-level technology absorption*	5.2	46
8.02 Capacity for innovation*	3.8	29
8.03 Extent of business Internet use*	5.7	25
8.04 National office patent applications/million pop	20.8	56
8.05 Patent Cooperation Treaty apps/million pop	2.3	52
8.06 High-tech exports, % goods exports	5.5	41
8.07 Impact of ICT on new services and products*	5.3	24
8.08 Impact of ICT on new organizational models*	4.9	27
Government usage	**3.8**	**48**
9.01 Gov't success in ICT promotion	4.4	60
9.02 ICT use & gov't efficiency*	4.9	33
9.03 Government Online Service Index, 0–1 (best)	0.37	53
9.04 E-Participation Index, 0–1 (best)	0.29	41

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Brunei Darussalam

Key indicators

Population (millions), 2009	0.4
GDP (PPP) per capita (PPP $), 2009	47,930
GDP (US$ billions), 2009	10.4
Global Competitiveness Index 2010–2011 rank (out of 139)	28

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**57**
2009–2010 (133)	3.8	63
2008–2009 (134)	3.9	63
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.5	89
Market environment	**3.8**	**100**
1.01 Venture capital availability*	2.9	46
1.02 Financial market sophistication*	4.3	68
1.03 Availability of latest technologies*	5.2	58
1.04 State of cluster development*	3.4	72
1.05 Burden of government regulation*	3.7	32
1.06 Extent & effect of taxation*	4.5	15
1.07 Total tax rate, % profits	29.8	31
1.08 No. days to start a business	105	133
1.09 No. procedures to start a business	15	129
1.10 Freedom of the press*	3.9	113
Political and regulatory environment	**3.9**	**74**
2.01 Effectiveness of law-making bodies*	4.3	34
2.02 Laws relating to ICT*	4.0	63
2.03 Judicial independence*	4.7	42
2.04 Efficiency of legal system in settling disputes*	4.4	35
2.05 Efficiency of legal system in challenging regs*	3.8	58
2.06 Property rights*	4.7	51
2.07 Intellectual property protection*	3.9	54
2.08 Software piracy rate, % software installed	67	62
2.09 No. procedures to enforce a contract	58	135
2.10 No. days to enforce a contract	540	66
2.11 Internet & telephony competition, 0–6 (best)	2	119
Infrastructure environment	**2.9**	**96**
3.01 Phone lines/100 pop.	20.2	67
3.02 Mobile network coverage, % pop. covered	n/a	n/a
3.03 Secure Internet servers/million pop.	42.5	51
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	15.8	65
3.05 Electricity production, kWh/capita	8,821.6	17
3.06 Tertiary education enrollment rate, %	16.0	97
3.07 Quality scientific research institutions*	3.2	91
3.08 Availability of scientists & engineers*	3.4	109
3.09 Availability research & training services*	3.2	115
3.10 Accessibility of digital content*	5.1	53

Readiness component	4.4	50
Individual readiness	**4.6**	**89**
4.01 Quality of math & science education*	4.9	27
4.02 Quality of educational system*	4.5	31
4.03 Adult literacy rate, %	95.0	61
4.04 Residential phone installation (PPP $)	64.9	58
4.05 Residential monthly phone subscription (PPP $)	16.9	94
4.06 Fixed phone tariffs (PPP $)	0.12	59
4.07 Mobile cellular tariffs (PPP $)	n/a	n/a
4.08 Fixed broadband Internet tariffs (PPP $)	218.1	124
4.09 Buyer sophistication*	3.1	97
Business readiness	**3.9**	**68**
5.01 Extent of staff training*	4.1	59
5.02 Quality of management schools*	4.1	69
5.03 Company spending on R&D*	2.9	79
5.04 University-industry collaboration in R&D*	3.7	60
5.05 Business phone installation (PPP $)	64.9	39
5.06 Business monthly phone subscription (PPP $)	16.9	70
5.07 Local supplier quality*	4.4	75
5.08 Computer, communications, & other services imports, % services imports	22.4	88
Government readiness	**4.7**	**30**
6.01 Gov't prioritization of ICT*	5.3	34
6.02 Gov't procurement of advanced tech.*	4.2	32
6.03 Importance of ICT to gov't vision*	4.6	31

Usage component	3.7	46
Individual usage	**4.7**	**33**
7.01 Mobile phone subscriptions/100 pop.	103.3	57
7.02 Cellular subscriptions w/data, % total	46.7	14
7.03 Households w/ personal computer, %	72.6	23
7.04 Broadband Internet subscribers/100 pop.	5.0	66
7.05 Internet users/100 pop.	78.8	14
7.06 Internet access in schools*	4.9	38
7.07 Use of virtual social networks*	5.4	50
7.08 Impact of ICT on access to basic services*	5.0	35
Business usage	**2.9**	**79**
8.01 Firm-level technology absorption*	4.8	70
8.02 Capacity for innovation*	2.7	83
8.03 Extent of business Internet use*	5.0	59
8.04 National office patent applications/million pop	0.0	92
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.2	106
8.07 Impact of ICT on new services and products*	4.3	84
8.08 Impact of ICT on new organizational models*	4.1	62
Government usage	**3.6**	**54**
9.01 Gov't success in ICT promotion	5.0	28
9.02 ICT use & gov't efficiency*	4.6	46
9.03 Government Online Service Index, 0–1 (best)	0.28	85
9.04 E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Bulgaria

Key indicators

Population (millions), 2009	7.6
GDP (PPP) per capita (PPP $), 2009	11,883
GDP (US$ billions), 2009	47.1
Global Competitiveness Index 2010–2011 rank (out of 139)	71

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**68**
2009–2010 (133)	3.7	71
2008–2009 (134)	3.8	68
2007–2008 (127)	3.7	68
2006–2007 (122)	3.5	72

Environment component	3.8	70
Market environment	**3.8**	**99**
1.01 Venture capital availability*	2.5	71
1.02 Financial market sophistication*	3.2	111
1.03 Availability of latest technologies*	4.3	99
1.04 State of cluster development*	2.8	111
1.05 Burden of government regulation*	3.2	75
1.06 Extent & effect of taxation*	3.4	82
1.07 Total tax rate, % profits	29.0	27
1.08 No. days to start a business	18	70
1.09 No. procedures to start a business	4	14
1.10 Freedom of the press*	4.2	98
Political and regulatory environment	**3.5**	**103**
2.01 Effectiveness of law-making bodies*	2.8	109
2.02 Laws relating to ICT*	4.3	50
2.03 Judicial independence*	3.0	100
2.04 Efficiency of legal system in settling disputes*	2.7	124
2.05 Efficiency of legal system in challenging regs*	2.8	118
2.06 Property rights*	3.2	120
2.07 Intellectual property protection*	2.6	111
2.08 Software piracy rate, % software installed	67	62
2.09 No. procedures to enforce a contract	39	83
2.10 No. days to enforce a contract	564	71
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**4.0**	**40**
3.01 Phone lines/100 pop.	29.2	43
3.02 Mobile network coverage, % pop. covered	100.0	22
3.03 Secure Internet servers/million pop.	34.7	56
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	271.2	11
3.05 Electricity production, kWh/capita	5,605.5	41
3.06 Tertiary education enrollment rate, %	51.0	46
3.07 Quality scientific research institutions*	3.5	73
3.08 Availability of scientists & engineers*	4.0	77
3.09 Availability research & training services*	3.9	80
3.10 Accessibility of digital content*	5.1	55

Readiness component	3.9	103
Individual readiness	**4.5**	**95**
4.01 Quality of math & science education*	4.0	68
4.02 Quality of educational system*	3.4	84
4.03 Adult literacy rate, %	98.3	45
4.04 Residential phone installation (PPP $)	35.4	26
4.05 Residential monthly phone subscription (PPP $)	20.4	110
4.06 Fixed phone tariffs (PPP $)	0.28	108
4.07 Mobile cellular tariffs (PPP $)	0.80	120
4.08 Fixed broadband Internet tariffs (PPP $)	29.5	48
4.09 Buyer sophistication*	3.2	84
Business readiness	**3.5**	**107**
5.01 Extent of staff training*	2.8	134
5.02 Quality of management schools*	3.7	94
5.03 Company spending on R&D*	2.7	95
5.04 University-industry collaboration in R&D*	3.0	109
5.05 Business phone installation (PPP $)	123.9	86
5.06 Business monthly phone subscription (PPP $)	31.9	122
5.07 Local supplier quality*	4.3	82
5.08 Computer, communications, & other services imports, % services imports	34.9	50
Government readiness	**3.7**	**96**
6.01 Gov't prioritization of ICT*	4.0	112
6.02 Gov't procurement of advanced tech.*	3.4	86
6.03 Importance of ICT to gov't vision*	3.6	95

Usage component	3.7	48
Individual usage	**4.7**	**36**
7.01 Mobile phone subscriptions/100 pop.	140.2	16
7.02 Cellular subscriptions w/data, % total	95.2	3
7.03 Households w/ personal computer, %	31.7	66
7.04 Broadband Internet subscribers/100 pop.	12.9	43
7.05 Internet users/100 pop.	45.0	48
7.06 Internet access in schools*	4.6	45
7.07 Use of virtual social networks*	5.4	54
7.08 Impact of ICT on access to basic services*	4.2	88
Business usage	**3.0**	**73**
8.01 Firm-level technology absorption*	4.0	126
8.02 Capacity for innovation*	2.8	79
8.03 Extent of business Internet use*	5.3	39
8.04 National office patent applications/million pop	31.9	48
8.05 Patent Cooperation Treaty apps/million pop	3.6	48
8.06 High-tech exports, % goods exports	4.6	52
8.07 Impact of ICT on new services and products*	4.3	81
8.08 Impact of ICT on new organizational models*	4.1	64
Government usage	**3.5**	**59**
9.01 Gov't success in ICT promotion	3.7	111
9.02 ICT use & gov't efficiency*	3.9	88
9.03 Government Online Service Index, 0–1 (best)	0.41	44
9.04 E-Participation Index, 0–1 (best)	0.30	38

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Burkina Faso

Key indicators

Population (millions), 2009	14.4
GDP (PPP) per capita (PPP $), 2009	1,303
GDP (US$ billions), 2009	8.1
Global Competitiveness Index 2010–2011 rank (out of 139)	134

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.1**	**122**
2009–2010 (133)	3.1	108
2008–2009 (134)	3.1	113
2007–2008 (127)	3.1	103
2006–2007 (122)	3.0	99

Environment component	3.2	111
Market environment	**3.5**	**116**
1.01 Venture capital availability*	1.5	137
1.02 Financial market sophistication*	2.5	126
1.03 Availability of latest technologies*	4.2	112
1.04 State of cluster development*	1.9	138
1.05 Burden of government regulation*	3.3	64
1.06 Extent & effect of taxation*	3.3	85
1.07 Total tax rate, % profits	44.9	86
1.08 No. days to start a business	14	56
1.09 No. procedures to start a business	4	14
1.10 Freedom of the press*	4.6	86
Political and regulatory environment	**3.8**	**85**
2.01 Effectiveness of law-making bodies*	3.2	87
2.02 Laws relating to ICT*	3.6	81
2.03 Judicial independence*	2.5	126
2.04 Efficiency of legal system in settling disputes*	3.7	68
2.05 Efficiency of legal system in challenging regs*	3.2	91
2.06 Property rights*	4.2	77
2.07 Intellectual property protection*	3.3	76
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	37	65
2.10 No. days to enforce a contract	446	46
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.4**	**123**
3.01 Phone lines/100 pop.	1.0	126
3.02 Mobile network coverage, % pop. covered	61.1	121
3.03 Secure Internet servers/million pop.	0.2	134
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.3	118
3.05 Electricity production, kWh/capita	41.5	133
3.06 Tertiary education enrollment rate, %	3.1	130
3.07 Quality scientific research institutions*	3.8	58
3.08 Availability of scientists & engineers*	3.7	94
3.09 Availability research & training services*	3.7	91
3.10 Accessibility of digital content*	3.4	127

Readiness component	3.5	131
Individual readiness	**2.7**	**137**
4.01 Quality of math & science education*	3.6	86
4.02 Quality of educational system*	2.5	128
4.03 Adult literacy rate, %	28.7	135
4.04 Residential phone installation (PPP $)	121.8	101
4.05 Residential monthly phone subscription (PPP $)	12.2	70
4.06 Fixed phone tariffs (PPP $)	0.55	125
4.07 Mobile cellular tariffs (PPP $)	0.87	125
4.08 Fixed broadband Internet tariffs (PPP $)	200.6	122
4.09 Buyer sophistication*	1.8	138
Business readiness	**3.4**	**115**
5.01 Extent of staff training*	2.9	133
5.02 Quality of management schools*	3.8	89
5.03 Company spending on R&D*	2.6	108
5.04 University-industry collaboration in R&D*	3.3	82
5.05 Business phone installation (PPP $)	121.8	84
5.06 Business monthly phone subscription (PPP $)	12.2	42
5.07 Local supplier quality*	3.9	110
5.08 Computer, communications, & other services imports, % services imports	12.9	109
Government readiness	**4.4**	**50**
6.01 Gov't prioritization of ICT*	5.1	48
6.02 Gov't procurement of advanced tech.*	3.6	69
6.03 Importance of ICT to gov't vision*	4.4	44

Usage component	2.5	120
Individual usage	**1.9**	**135**
7.01 Mobile phone subscriptions/100 pop.	24.3	132
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	1.8	133
7.04 Broadband Internet subscribers/100 pop.	0.1	115
7.05 Internet users/100 pop.	1.1	134
7.06 Internet access in schools*	1.9	135
7.07 Use of virtual social networks*	2.9	134
7.08 Impact of ICT on access to basic services*	4.5	65
Business usage	**2.6**	**110**
8.01 Firm-level technology absorption*	4.3	100
8.02 Capacity for innovation*	2.2	127
8.03 Extent of business Internet use*	4.0	119
8.04 National office patent applications/million pop.	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.1	114
8.07 Impact of ICT on new services and products*	4.7	58
8.08 Impact of ICT on new organizational models*	3.6	109
Government usage	**3.1**	**95**
9.01 Gov't success in ICT promotion	4.6	47
9.02 ICT use & gov't efficiency*	4.4	57
9.03 Government Online Service Index, 0–1 (best)	0.16	115
9.04 E-Participation Index, 0–1 (best)	0.06	111

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Burundi

Key indicators

Population (millions), 2009	8.1
GDP (PPP) per capita (PPP $), 2009	400
GDP (US$ billions), 2009	1.3
Global Competitiveness Index 2010–2011 rank (out of 139)	137

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**2.7**	**137**
2009–2010 (133)	2.8	129
2008–2009 (134)	2.6	131
2007–2008 (127)	2.5	126
2006–2007 (122)	2.4	121

Environment component	2.7	137
Market environment	**2.9**	**137**
1.01 Venture capital availability*	1.5	138
1.02 Financial market sophistication*	1.9	138
1.03 Availability of latest technologies*	3.5	136
1.04 State of cluster development*	2.2	137
1.05 Burden of government regulation*	3.2	74
1.06 Extent & effect of taxation*	2.7	126
1.07 Total tax rate, % profits	153.4	134
1.08 No. days to start a business	32	101
1.09 No. procedures to start a business	11	113
1.10 Freedom of the press*	4.4	89
Political and regulatory environment	**3.1**	**128**
2.01 Effectiveness of law-making bodies*	2.3	126
2.02 Laws relating to ICT*	2.3	137
2.03 Judicial independence*	1.9	135
2.04 Efficiency of legal system in settling disputes*	2.9	115
2.05 Efficiency of legal system in challenging regs*	2.6	127
2.06 Property rights*	3.0	126
2.07 Intellectual property protection*	1.9	137
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	44	116
2.10 No. days to enforce a contract	832	116
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.2**	**131**
3.01 Phone lines/100 pop.	0.4	135
3.02 Mobile network coverage, % pop. covered	83.0	104
3.03 Secure Internet servers/million pop.	0.2	132
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	137
3.05 Electricity production, kWh/capita	11.7	136
3.06 Tertiary education enrollment rate, %	2.5	132
3.07 Quality scientific research institutions*	2.5	128
3.08 Availability of scientists & engineers*	3.5	106
3.09 Availability research & training services*	2.2	137
3.10 Accessibility of digital content*	2.5	138

Readiness component	3.3	135
Individual readiness	**3.8**	**127**
4.01 Quality of math & science education*	3.1	109
4.02 Quality of educational system*	2.3	133
4.03 Adult literacy rate, %	65.9	118
4.04 Residential phone installation (PPP $)	28.8	18
4.05 Residential monthly phone subscription (PPP $)	1.2	3
4.06 Fixed phone tariffs (PPP $)	n/a	n/a
4.07 Mobile cellular tariffs (PPP $)	n/a	n/a
4.08 Fixed broadband Internet tariffs (PPP $)	n/a	n/a
4.09 Buyer sophistication*	1.9	137
Business readiness	**3.0**	**136**
5.01 Extent of staff training*	2.9	132
5.02 Quality of management schools*	2.9	130
5.03 Company spending on R&D*	2.3	133
5.04 University-industry collaboration in R&D*	2.8	126
5.05 Business phone installation (PPP $)	173.0	110
5.06 Business monthly phone subscription (PPP $)	1.2	2
5.07 Local supplier quality*	3.6	127
5.08 Computer, communications, & other services imports, % services imports	5.8	122
Government readiness	**3.1**	**129**
6.01 Gov't prioritization of ICT*	3.7	124
6.02 Gov't procurement of advanced tech.*	2.7	127
6.03 Importance of ICT to gov't vision*	2.9	129

Usage component	2.0	138
Individual usage	**1.6**	**138**
7.01 Mobile phone subscriptions/100 pop.	10.1	137
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	n/a	n/a
7.04 Broadband Internet subscribers/100 pop.	0.0	136
7.05 Internet users/100 pop.	1.9	130
7.06 Internet access in schools*	1.6	138
7.07 Use of virtual social networks*	2.2	138
7.08 Impact of ICT on access to basic services*	2.8	137
Business usage	**2.2**	**136**
8.01 Firm-level technology absorption*	3.6	135
8.02 Capacity for innovation*	2.0	136
8.03 Extent of business Internet use*	3.7	130
8.04 National office patent applications/million pop.	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	1.9	66
8.07 Impact of ICT on new services and products*	3.3	129
8.08 Impact of ICT on new organizational models*	2.4	138
Government usage	**2.2**	**136**
9.01 Gov't success in ICT promotion	3.4	118
9.02 ICT use & gov't efficiency*	3.2	128
9.03 Government Online Service Index, 0–1 (best)	0.04	131
9.04 E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Cambodia

Key indicators

Population (millions), 2009	14.1
GDP (PPP) per capita (PPP $), 2009	1,993
GDP (US$ billions), 2009	10.9
Global Competitiveness Index 2010–2011 rank (out of 139)	109

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**111**
2009–2010 (133)	3.0	117
2008–2009 (134)	2.9	126
2007–2008 (127)	3.0	115
2006–2007 (122)	2.9	106

Environment component 3.3 109

Market environment 3.7 102

1.01	Venture capital availability*	2.5	76
1.02	Financial market sophistication*	3.3	107
1.03	Availability of latest technologies*	4.3	102
1.04	State of cluster development*	3.8	51
1.05	Burden of government regulation*	3.4	63
1.06	Extent & effect of taxation*	3.7	60
1.07	Total tax rate, % profits	22.5	15
1.08	No. days to start a business	85	131
1.09	No. procedures to start a business	9	92
1.10	Freedom of the press*	4.1	106

Political and regulatory environment 3.5 101

2.01	Effectiveness of law-making bodies*	3.6	62
2.02	Laws relating to ICT*	3.2	105
2.03	Judicial independence*	2.9	107
2.04	Efficiency of legal system in settling disputes*	3.6	71
2.05	Efficiency of legal system in challenging regs*	3.8	60
2.06	Property rights*	3.5	109
2.07	Intellectual property protection*	2.8	98
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	44	116
2.10	No. days to enforce a contract	401	33
2.11	Internet & telephony competition, 0–6 (best)	3	107

Infrastructure environment 2.6 115

3.01	Phone lines/100 pop.	0.4	136
3.02	Mobile network coverage, % pop. covered	99.0	48
3.03	Secure Internet servers/million pop.	1.5	105
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.2	124
3.05	Electricity production, kWh/capita	94.2	129
3.06	Tertiary education enrollment rate, %	7.0	115
3.07	Quality scientific research institutions*	2.9	105
3.08	Availability of scientists & engineers*	3.2	120
3.09	Availability research & training services*	3.3	111
3.10	Accessibility of digital content*	4.0	105

Readiness component 3.8 111

Individual readiness 4.0 118

4.01	Quality of math & science education*	3.1	110
4.02	Quality of educational system*	3.4	81
4.03	Adult literacy rate, %	77.6	107
4.04	Residential phone installation (PPP $)	140.2	112
4.05	Residential monthly phone subscription (PPP $)	19.6	106
4.06	Fixed phone tariffs (PPP $)	0.08	49
4.07	Mobile cellular tariffs (PPP $)	0.33	63
4.08	Fixed broadband Internet tariffs (PPP $)	250.6	128
4.09	Buyer sophistication*	3.6	53

Business readiness 3.4 113

5.01	Extent of staff training*	3.7	91
5.02	Quality of management schools*	3.3	117
5.03	Company spending on R&D*	2.8	81
5.04	University-industry collaboration in R&D*	3.0	114
5.05	Business phone installation (PPP $)	140.2	94
5.06	Business monthly phone subscription (PPP $)	28.0	112
5.07	Local supplier quality*	3.7	120
5.08	Computer, communications, & other services imports, % services imports	26.5	75

Government readiness 4.0 76

6.01	Gov't prioritization of ICT*	4.6	75
6.02	Gov't procurement of advanced tech.*	3.7	64
6.03	Importance of ICT to gov't vision*	3.7	88

Usage component 2.6 110

Individual usage 2.4 115

7.01	Mobile phone subscriptions/100 pop.	42.3	121
7.02	Cellular subscriptions w/data, % total	7.3	65
7.03	Households w/ personal computer, %	3.7	121
7.04	Broadband Internet subscribers/100 pop.	0.2	107
7.05	Internet users/100 pop.	0.5	136
7.06	Internet access in schools*	3.0	109
7.07	Use of virtual social networks*	4.3	108
7.08	Impact of ICT on access to basic services*	4.2	80

Business usage 2.6 104

8.01	Firm-level technology absorption*	4.4	92
8.02	Capacity for innovation*	2.6	101
8.03	Extent of business Internet use*	4.5	87
8.04	National office patent applications/million pop	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	0.1	111
8.07	Impact of ICT on new services and products*	4.2	91
8.08	Impact of ICT on new organizational models*	3.3	124

Government usage 2.9 104

9.01	Gov't success in ICT promotion	4.1	82
9.02	ICT use & gov't efficiency*	3.9	93
9.03	Government Online Service Index, 0–1 (best)	0.14	118
9.04	E-Participation Index, 0–1 (best)	0.11	89

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Cameroon

Key indicators

Population (millions), 2009	19.9
GDP (PPP) per capita (PPP $), 2009	2,144
GDP (US$ billions), 2009	22.2
Global Competitiveness Index 2010–2011 rank (out of 139)	111

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.0**	**125**
2009–2010 (133)	2.9	128
2008–2009 (134)	2.9	123
2007–2008 (127)	2.9	118
2006–2007 (122)	2.7	113

Environment component	3.0	126
Market environment	**3.4**	**124**
1.01 Venture capital availability*	1.8	127
1.02 Financial market sophistication*	2.2	134
1.03 Availability of latest technologies*	4.2	113
1.04 State of cluster development*	2.4	130
1.05 Burden of government regulation*	2.9	100
1.06 Extent & effect of taxation*	2.9	118
1.07 Total tax rate, % profits	49.1	100
1.08 No. days to start a business	19	72
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	4.7	82
Political and regulatory environment	**3.2**	**121**
2.01 Effectiveness of law-making bodies*	3.0	96
2.02 Laws relating to ICT*	2.6	128
2.03 Judicial independence*	2.6	116
2.04 Efficiency of legal system in settling disputes*	3.3	89
2.05 Efficiency of legal system in challenging regs*	3.1	96
2.06 Property rights*	3.7	95
2.07 Intellectual property protection*	2.7	105
2.08 Software piracy rate, % software installed	83	92
2.09 No. procedures to enforce a contract	43	112
2.10 No. days to enforce a contract	800	112
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.4**	**122**
3.01 Phone lines/100 pop.	2.2	115
3.02 Mobile network coverage, % pop. covered	58.0	122
3.03 Secure Internet servers/million pop.	0.5	123
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.2	120
3.05 Electricity production, kWh/capita	308.3	115
3.06 Tertiary education enrollment rate, %	7.8	113
3.07 Quality scientific research institutions*	3.1	96
3.08 Availability of scientists & engineers*	4.5	39
3.09 Availability research & training services*	3.5	96
3.10 Accessibility of digital content*	3.3	132

Readiness component	3.6	128
Individual readiness	**3.5**	**132**
4.01 Quality of math & science education*	3.7	80
4.02 Quality of educational system*	3.5	78
4.03 Adult literacy rate, %	75.9	108
4.04 Residential phone installation (PPP $)	84.3	84
4.05 Residential monthly phone subscription (PPP $)	12.7	75
4.06 Fixed phone tariffs (PPP $)	0.63	129
4.07 Mobile cellular tariffs (PPP $)	0.71	117
4.08 Fixed broadband Internet tariffs (PPP $)	168.7	121
4.09 Buyer sophistication*	2.3	132
Business readiness	**3.8**	**79**
5.01 Extent of staff training*	3.7	92
5.02 Quality of management schools*	4.0	74
5.03 Company spending on R&D*	3.0	63
5.04 University-industry collaboration in R&D*	3.0	112
5.05 Business phone installation (PPP $)	210.9	115
5.06 Business monthly phone subscription (PPP $)	12.7	47
5.07 Local supplier quality*	4.0	99
5.08 Computer, communications, & other services imports, % services imports	45.2	23
Government readiness	**3.5**	**111**
6.01 Gov't prioritization of ICT*	4.2	99
6.02 Gov't procurement of advanced tech.*	3.1	108
6.03 Importance of ICT to gov't vision*	3.1	126

Usage component	2.5	124
Individual usage	**2.1**	**129**
7.01 Mobile phone subscriptions/100 pop.	41.0	122
7.02 Cellular subscriptions w/data, % total	1.2	100
7.03 Households w/ personal computer, %	4.5	115
7.04 Broadband Internet subscribers/100 pop.	0.0	134
7.05 Internet users/100 pop.	3.8	121
7.06 Internet access in schools*	2.6	121
7.07 Use of virtual social networks*	3.5	128
7.08 Impact of ICT on access to basic services*	3.5	123
Business usage	**2.6**	**113**
8.01 Firm-level technology absorption*	4.4	94
8.02 Capacity for innovation*	2.6	102
8.03 Extent of business Internet use*	4.4	100
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.1	94
8.06 High-tech exports, % goods exports	0.1	113
8.07 Impact of ICT on new services and products*	4.3	82
8.08 Impact of ICT on new organizational models*	3.1	126
Government usage	**2.8**	**111**
9.01 Gov't success in ICT promotion	3.9	95
9.02 ICT use & gov't efficiency*	3.4	120
9.03 Government Online Service Index, 0–1 (best)	0.15	116
9.04 E-Participation Index, 0–1 (best)	0.16	74

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Canada

Key indicators

Population (millions), 2009	33.7
GDP (PPP) per capita (PPP $), 2009	37,947
GDP (US$ billions), 2009	1,336.1
Global Competitiveness Index 2010–2011 rank (out of 139)	10

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.2**	**8**
2009–2010 (133)	5.4	7
2008–2009 (134)	5.4	10
2007–2008 (127)	5.3	13
2006–2007 (122)	5.3	11

Environment component 5.6 5

Market environment 5.4 4

1.01	Venture capital availability*	3.7	19
1.02	Financial market sophistication*	6.5	4
1.03	Availability of latest technologies*	6.4	14
1.04	State of cluster development*	5.0	11
1.05	Burden of government regulation*	3.6	40
1.06	Extent & effect of taxation*	3.8	48
1.07	Total tax rate, % profits	29.2	28
1.08	No. days to start a business	5	8
1.09	No. procedures to start a business	1	1
1.10	Freedom of the press*	6.6	9

Political and regulatory environment 5.7 13

2.01	Effectiveness of law-making bodies*	5.1	11
2.02	Laws relating to ICT*	5.5	10
2.03	Judicial independence*	6.2	11
2.04	Efficiency of legal system in settling disputes*	5.3	14
2.05	Efficiency of legal system in challenging regs*	4.9	18
2.06	Property rights*	6.1	10
2.07	Intellectual property protection*	5.6	13
2.08	Software piracy rate, % software installed	29	15
2.09	No. procedures to enforce a contract	36	54
2.10	No. days to enforce a contract	570	75
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 5.7 4

3.01	Phone lines/100 pop.	52.5	12
3.02	Mobile network coverage, % pop. covered	99.0	48
3.03	Secure Internet servers/million pop.	983.9	11
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	161.9	19
3.05	Electricity production, kWh/capita	19,399.9	3
3.06	Tertiary education enrollment rate, %	62.3	27
3.07	Quality scientific research institutions*	5.7	8
3.08	Availability of scientists & engineers*	5.6	6
3.09	Availability research & training services*	5.7	11
3.10	Accessibility of digital content*	6.2	15

Readiness component 5.1 15

Individual readiness 5.7 6

4.01	Quality of math & science education*	5.4	10
4.02	Quality of educational system*	5.7	5
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	83.0	83
4.05	Residential monthly phone subscription (PPP $)	16.7	93
4.06	Fixed phone tariffs (PPP $)	0.00	1
4.07	Mobile cellular tariffs (PPP $)	0.34	66
4.08	Fixed broadband Internet tariffs (PPP $)	22.6	23
4.09	Buyer sophistication*	4.7	6

Business readiness 4.9 20

5.01	Extent of staff training*	5.0	12
5.02	Quality of management schools*	6.0	3
5.03	Company spending on R&D*	4.2	20
5.04	University-industry collaboration in R&D*	5.4	7
5.05	Business phone installation (PPP $)	n/a	n/a
5.06	Business monthly phone subscription (PPP $)	29.9	117
5.07	Local supplier quality*	5.8	7
5.08	Computer, communications, & other services imports, % services imports	34.7	52

Government readiness 4.8 27

6.01	Gov't prioritization of ICT*	5.3	31
6.02	Gov't procurement of advanced tech.*	4.3	25
6.03	Importance of ICT to gov't vision*	4.7	28

Usage component 4.9 14

Individual usage 5.1 23

7.01	Mobile phone subscriptions/100 pop.	70.9	95
7.02	Cellular subscriptions w/data, % total	6.9	68
7.03	Households w/ personal computer, %	82.5	10
7.04	Broadband Internet subscribers/100 pop.	30.6	10
7.05	Internet users/100 pop.	80.3	11
7.06	Internet access in schools*	6.0	13
7.07	Use of virtual social networks*	6.2	6
7.08	Impact of ICT on access to basic services*	5.3	23

Business usage 4.1 22

8.01	Firm-level technology absorption*	5.6	22
8.02	Capacity for innovation*	4.2	19
8.03	Extent of business Internet use*	6.2	8
8.04	National office patent applications/million pop	150.2	23
8.05	Patent Cooperation Treaty apps/million pop	80.2	20
8.06	High-tech exports, % goods exports	9.2	28
8.07	Impact of ICT on new services and products*	5.7	9
8.08	Impact of ICT on new organizational models*	5.5	7

Government usage 5.5 5

9.01	Gov't success in ICT promotion	5.0	29
9.02	ICT use & gov't efficiency*	5.3	20
9.03	Government Online Service Index, 0–1 (best)	0.88	3
9.04	E-Participation Index, 0–1 (best)	0.73	8

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Cape Verde

Key indicators

Population (millions), 2009	0.5
GDP (PPP) per capita (PPP $), 2009	3,455
GDP (US$ billions), 2009	1.6
Global Competitiveness Index 2010–2011 rank (out of 139)	117

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**84**
2009–2010 (133)	n/a	n/a
2008–2009 (134)	n/a	n/a
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.4	101
Market environment	**3.9**	**87**
1.01 Venture capital availability*	2.1	114
1.02 Financial market sophistication*	3.8	88
1.03 Availability of latest technologies*	5.0	71
1.04 State of cluster development*	2.3	133
1.05 Burden of government regulation*	3.3	66
1.06 Extent & effect of taxation*	3.2	93
1.07 Total tax rate, % profits	37.1	57
1.08 No. days to start a business	11	43
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	5.2	65
Political and regulatory environment	**3.7**	**87**
2.01 Effectiveness of law-making bodies*	4.4	33
2.02 Laws relating to ICT*	3.9	75
2.03 Judicial independence*	4.1	57
2.04 Efficiency of legal system in settling disputes*	3.4	81
2.05 Efficiency of legal system in challenging regs*	3.2	87
2.06 Property rights*	3.7	99
2.07 Intellectual property protection*	2.5	126
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	37	65
2.10 No. days to enforce a contract	425	41
2.11 Internet & telephony competition, 0–6 (best)	2	119
Infrastructure environment	**2.6**	**117**
3.01 Phone lines/100 pop.	14.2	85
3.02 Mobile network coverage, % pop. covered	69.0	117
3.03 Secure Internet servers/million pop.	11.9	70
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	4.4	85
3.05 Electricity production, kWh/capita	508.4	112
3.06 Tertiary education enrollment rate, %	11.9	103
3.07 Quality scientific research institutions*	2.6	120
3.08 Availability of scientists & engineers*	3.5	107
3.09 Availability research & training services*	2.9	128
3.10 Accessibility of digital content*	4.4	98

Readiness component	4.4	54
Individual readiness	**5.0**	**58**
4.01 Quality of math & science education*	3.4	96
4.02 Quality of educational system*	3.8	64
4.03 Adult literacy rate, %	84.1	99
4.04 Residential phone installation (PPP $)	30.7	21
4.05 Residential monthly phone subscription (PPP $)	3.7	15
4.06 Fixed phone tariffs (PPP $)	0.08	48
4.07 Mobile cellular tariffs (PPP $)	0.36	78
4.08 Fixed broadband Internet tariffs (PPP $)	39.7	76
4.09 Buyer sophistication*	3.0	100
Business readiness	**3.3**	**120**
5.01 Extent of staff training*	3.3	119
5.02 Quality of management schools*	3.3	120
5.03 Company spending on R&D*	2.1	135
5.04 University-industry collaboration in R&D*	3.3	88
5.05 Business phone installation (PPP $)	31.4	14
5.06 Business monthly phone subscription (PPP $)	6.7	17
5.07 Local supplier quality*	3.5	129
5.08 Computer, communications, & other services imports, % services imports	8.5	118
Government readiness	**4.7**	**31**
6.01 Gov't prioritization of ICT*	5.4	28
6.02 Gov't procurement of advanced tech.*	4.0	45
6.03 Importance of ICT to gov't vision*	4.7	27

Usage component	3.0	91
Individual usage	**2.9**	**94**
7.01 Mobile phone subscriptions/100 pop.	57.5	106
7.02 Cellular subscriptions w/data, % total	1.8	93
7.03 Households w/ personal computer, %	13.6	91
7.04 Broadband Internet subscribers/100 pop.	2.2	84
7.05 Internet users/100 pop.	29.7	73
7.06 Internet access in schools*	3.4	90
7.07 Use of virtual social networks*	4.4	103
7.08 Impact of ICT on access to basic services*	4.9	40
Business usage	**2.8**	**93**
8.01 Firm-level technology absorption*	4.9	62
8.02 Capacity for innovation*	2.0	134
8.03 Extent of business Internet use*	4.6	85
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.0	128
8.07 Impact of ICT on new services and products*	4.5	70
8.08 Impact of ICT on new organizational models*	4.2	61
Government usage	**3.2**	**78**
9.01 Gov't success in ICT promotion	n/a	n/a
9.02 ICT use & gov't efficiency*	5.0	29
9.03 Government Online Service Index, 0–1 (best)	0.27	89
9.04 E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Chad

Key indicators

Population (millions), 2009	10.0
GDP (PPP) per capita (PPP $), 2009	1,610
GDP (US$ billions), 2009	6.9
Global Competitiveness Index 2010–2011 rank (out of 139)	139

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**2.6**	**138**
2009–2010 (133)	2.6	133
2008–2009 (134)	2.4	134
2007–2008 (127)	2.4	127
2006–2007 (122)	2.2	122

Environment component 2.6 138

Market environment 2.9 136

1.01	Venture capital availability*	2.3	91
1.02	Financial market sophistication*	2.1	137
1.03	Availability of latest technologies*	3.3	138
1.04	State of cluster development*	2.7	118
1.05	Burden of government regulation*	2.9	99
1.06	Extent & effect of taxation*	2.6	128
1.07	Total tax rate, % profits	65.4	122
1.08	No. days to start a business	75	129
1.09	No. procedures to start a business	13	122
1.10	Freedom of the press*	3.7	121

Political and regulatory environment 2.9 136

2.01	Effectiveness of law-making bodies*	2.8	110
2.02	Laws relating to ICT*	2.8	120
2.03	Judicial independence*	2.7	115
2.04	Efficiency of legal system in settling disputes*	2.9	118
2.05	Efficiency of legal system in challenging regs*	3.0	104
2.06	Property rights*	2.4	135
2.07	Intellectual property protection*	2.3	130
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	41	102
2.10	No. days to enforce a contract	743	107
2.11	Internet & telephony competition, 0–6 (best)	2	119

Infrastructure environment 2.0 135

3.01	Phone lines/100 pop.	0.5	133
3.02	Mobile network coverage, % pop. covered	24.0	129
3.03	Secure Internet servers/million pop.	n/a	n/a
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	138
3.05	Electricity production, kWh/capita	9.4	137
3.06	Tertiary education enrollment rate, %	1.9	134
3.07	Quality scientific research institutions*	2.6	123
3.08	Availability of scientists & engineers*	3.6	97
3.09	Availability research & training services*	2.9	130
3.10	Accessibility of digital content*	2.6	137

Readiness component 3.1 137

Individual readiness 2.9 136

4.01	Quality of math & science education*	3.3	102
4.02	Quality of educational system*	3.2	96
4.03	Adult literacy rate, %	32.7	134
4.04	Residential phone installation (PPP $)	254.1	131
4.05	Residential monthly phone subscription (PPP $)	14.4	83
4.06	Fixed phone tariffs (PPP $)	0.85	133
4.07	Mobile cellular tariffs (PPP $)	1.08	127
4.08	Fixed broadband Internet tariffs (PPP $)	28.2	38
4.09	Buyer sophistication*	2.0	136

Business readiness 3.3 121

5.01	Extent of staff training*	3.2	124
5.02	Quality of management schools*	3.3	119
5.03	Company spending on R&D*	3.0	66
5.04	University-industry collaboration in R&D*	3.0	115
5.05	Business phone installation (PPP $)	254.1	122
5.06	Business monthly phone subscription (PPP $)	14.4	59
5.07	Local supplier quality*	3.3	134
5.08	Computer, communications, & other services imports, % services imports	n/a	n/a

Government readiness 3.2 125

6.01	Gov't prioritization of ICT*	3.4	130
6.02	Gov't procurement of advanced tech.*	3.0	113
6.03	Importance of ICT to gov't vision*	3.1	122

Usage component 2.1 137

Individual usage 1.7 137

7.01	Mobile phone subscriptions/100 pop.	20.4	134
7.02	Cellular subscriptions w/data, % total	0.0	110
7.03	Households w/ personal computer, %	2.8	123
7.04	Broadband Internet subscribers/100 pop.	0.0	137
7.05	Internet users/100 pop.	1.5	133
7.06	Internet access in schools*	1.6	137
7.07	Use of virtual social networks*	2.5	137
7.08	Impact of ICT on access to basic services*	3.3	127

Business usage 2.3 132

8.01	Firm-level technology absorption*	3.5	137
8.02	Capacity for innovation*	2.4	118
8.03	Extent of business Internet use*	3.1	138
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.1	87
8.06	High-tech exports, % goods exports	n/a	n/a
8.07	Impact of ICT on new services and products*	3.1	131
8.08	Impact of ICT on new organizational models*	3.0	129

Government usage 2.3 135

9.01	Gov't success in ICT promotion	3.2	122
9.02	ICT use & gov't efficiency*	3.3	123
9.03	Government Online Service Index, 0–1 (best)	0.02	133
9.04	E-Participation Index, 0–1 (best)	0.06	111

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Chile

Key indicators

Population (millions), 2009	17.0
GDP (PPP) per capita (PPP $), 2009	14,316
GDP (US$ billions), 2009	161.6
Global Competitiveness Index 2010–2011 rank (out of 139)	30

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.3**	**39**
2009–2010 (133)	4.1	40
2008–2009 (134)	4.3	39
2007–2008 (127)	4.4	34
2006–2007 (122)	4.4	31

Environment component	4.5	33
Market environment	**4.9**	**20**
1.01 Venture capital availability*	3.2	34
1.02 Financial market sophistication*	5.9	19
1.03 Availability of latest technologies*	6.0	26
1.04 State of cluster development*	4.1	38
1.05 Burden of government regulation*	3.6	44
1.06 Extent & effect of taxation*	4.3	19
1.07 Total tax rate, % profits	25.0	21
1.08 No. days to start a business	22	82
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	6.5	13
Political and regulatory environment	**4.8**	**32**
2.01 Effectiveness of law-making bodies*	4.0	46
2.02 Laws relating to ICT*	5.0	29
2.03 Judicial independence*	5.4	25
2.04 Efficiency of legal system in settling disputes*	4.8	26
2.05 Efficiency of legal system in challenging regs*	4.6	24
2.06 Property rights*	5.2	37
2.07 Intellectual property protection*	3.7	58
2.08 Software piracy rate, % software installed	64	57
2.09 No. procedures to enforce a contract	36	54
2.10 No. days to enforce a contract	480	53
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.8**	**46**
3.01 Phone lines/100 pop.	21.1	63
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	39.1	53
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	40.8	48
3.05 Electricity production, kWh/capita	3,517.0	59
3.06 Tertiary education enrollment rate, %	52.1	43
3.07 Quality scientific research institutions*	3.9	55
3.08 Availability of scientists & engineers*	4.9	24
3.09 Availability research & training services*	4.9	31
3.10 Accessibility of digital content*	5.2	46

Readiness component	4.4	47
Individual readiness	**4.4**	**100**
4.01 Quality of math & science education*	2.8	122
4.02 Quality of educational system*	3.2	99
4.03 Adult literacy rate, %	98.6	44
4.04 Residential phone installation (PPP $)	26.5	15
4.05 Residential monthly phone subscription (PPP $)	15.9	88
4.06 Fixed phone tariffs (PPP $)	0.60	127
4.07 Mobile cellular tariffs (PPP $)	0.31	53
4.08 Fixed broadband Internet tariffs (PPP $)	68.9	100
4.09 Buyer sophistication*	4.1	27
Business readiness	**4.4**	**39**
5.01 Extent of staff training*	4.4	33
5.02 Quality of management schools*	5.3	15
5.03 Company spending on R&D*	3.2	52
5.04 University-industry collaboration in R&D*	4.2	39
5.05 Business phone installation (PPP $)	60.2	34
5.06 Business monthly phone subscription (PPP $)	13.9	56
5.07 Local supplier quality*	5.2	27
5.08 Computer, communications, & other services imports, % services imports	20.4	94
Government readiness	**4.6**	**40**
6.01 Gov't prioritization of ICT*	5.0	51
6.02 Gov't procurement of advanced tech.*	4.1	43
6.03 Importance of ICT to gov't vision*	4.6	29

Usage component	3.9	40
Individual usage	**3.9**	**54**
7.01 Mobile phone subscriptions/100 pop.	96.9	66
7.02 Cellular subscriptions w/data, % total	2.8	84
7.03 Households w/ personal computer, %	40.0	53
7.04 Broadband Internet subscribers/100 pop.	9.6	49
7.05 Internet users/100 pop.	41.3	54
7.06 Internet access in schools*	4.7	42
7.07 Use of virtual social networks*	5.8	26
7.08 Impact of ICT on access to basic services*	5.0	33
Business usage	**3.3**	**47**
8.01 Firm-level technology absorption*	5.3	37
8.02 Capacity for innovation*	3.1	59
8.03 Extent of business Internet use*	5.5	34
8.04 National office patent applications/million pop	31.3	49
8.05 Patent Cooperation Treaty apps/million pop	4.5	45
8.06 High-tech exports, % goods exports	0.5	92
8.07 Impact of ICT on new services and products*	5.2	27
8.08 Impact of ICT on new organizational models*	4.8	33
Government usage	**4.4**	**26**
9.01 Gov't success in ICT promotion	4.5	55
9.02 ICT use & gov't efficiency*	5.5	13
9.03 Government Online Service Index, 0–1 (best)	0.61	18
9.04 E-Participation Index, 0–1 (best)	0.34	34

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

China

Key indicators

Population (millions), 2009	1,334.7
GDP (PPP) per capita (PPP $), 2009	6,778
GDP (US$ billions), 2009	4,984.7
Global Competitiveness Index 2010–2011 rank (out of 139)	27

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.3**	**36**
2009–2010 (133)	4.3	37
2008–2009 (134)	4.1	46
2007–2008 (127)	3.9	57
2006–2007 (122)	3.7	59

Environment component 4.0 57

Market environment 4.0 71

1.01	Venture capital availability*	3.3	27
1.02	Financial market sophistication*	4.2	73
1.03	Availability of latest technologies*	4.4	93
1.04	State of cluster development*	4.7	17
1.05	Burden of government regulation*	4.0	20
1.06	Extent & effect of taxation*	4.1	29
1.07	Total tax rate, % profits	63.5	120
1.08	No. days to start a business	38	110
1.09	No. procedures to start a business	14	126
1.10	Freedom of the press*	4.2	99

Political and regulatory environment 4.3 50

2.01	Effectiveness of law-making bodies*	4.4	30
2.02	Laws relating to ICT*	4.4	46
2.03	Judicial independence*	4.0	61
2.04	Efficiency of legal system in settling disputes*	4.2	43
2.05	Efficiency of legal system in challenging regs*	4.0	50
2.06	Property rights*	5.1	38
2.07	Intellectual property protection*	4.0	48
2.08	Software piracy rate, % software installed	79	81
2.09	No. procedures to enforce a contract	34	41
2.10	No. days to enforce a contract	406	34
2.11	Internet & telephony competition, 0–6 (best)	4	85

Infrastructure environment 3.5 58

3.01	Phone lines/100 pop.	23.3	55
3.02	Mobile network coverage, % pop. covered	99.5	45
3.03	Secure Internet servers/million pop.	1.2	109
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	6.5	81
3.05	Electricity production, kWh/capita	2,488.2	72
3.06	Tertiary education enrollment rate, %	22.7	87
3.07	Quality scientific research institutions*	4.3	39
3.08	Availability of scientists & engineers*	4.6	35
3.09	Availability research & training services*	4.4	50
3.10	Accessibility of digital content*	5.7	34

Readiness component 5.1 16

Individual readiness 5.7 8

4.01	Quality of math & science education*	4.7	33
4.02	Quality of educational system*	4.0	53
4.03	Adult literacy rate, %	93.7	66
4.04	Residential phone installation (PPP $)	n/a	n/a
4.05	Residential monthly phone subscription (PPP $)	2.7	11
4.06	Fixed phone tariffs (PPP $)	0.05	27
4.07	Mobile cellular tariffs (PPP $)	0.16	19
4.08	Fixed broadband Internet tariffs (PPP $)	33.9	64
4.09	Buyer sophistication*	4.6	7

Business readiness 4.6 30

5.01	Extent of staff training*	4.1	56
5.02	Quality of management schools*	4.2	63
5.03	Company spending on R&D*	4.1	22
5.04	University-industry collaboration in R&D*	4.6	25
5.05	Business phone installation (PPP $)	n/a	n/a
5.06	Business monthly phone subscription (PPP $)	5.5	10
5.07	Local supplier quality*	4.7	54
5.08	Computer, communications, & other services imports, % services imports	35.3	49

Government readiness 5.1 15

6.01	Gov't prioritization of ICT*	5.6	15
6.02	Gov't procurement of advanced tech.*	4.5	12
6.03	Importance of ICT to gov't vision*	5.1	15

Usage component 4.0 36

Individual usage 3.5 63

7.01	Mobile phone subscriptions/100 pop.	55.5	111
7.02	Cellular subscriptions w/data, % total	1.6	95
7.03	Households w/ personal computer, %	31.8	65
7.04	Broadband Internet subscribers/100 pop.	7.7	56
7.05	Internet users/100 pop.	28.9	75
7.06	Internet access in schools*	5.7	22
7.07	Use of virtual social networks*	5.0	80
7.08	Impact of ICT on access to basic services*	5.4	21

Business usage 4.2 19

8.01	Firm-level technology absorption*	4.9	60
8.02	Capacity for innovation*	4.2	21
8.03	Extent of business Internet use*	5.1	53
8.04	National office patent applications/million pop	172.1	20
8.05	Patent Cooperation Treaty apps/million pop	9.3	37
8.06	High-tech exports, % goods exports	30.5	6
8.07	Impact of ICT on new services and products*	5.1	35
8.08	Impact of ICT on new organizational models*	4.7	37

Government usage 4.2 34

9.01	Gov't success in ICT promotion	5.3	16
9.02	ICT use & gov't efficiency*	5.0	28
9.03	Government Online Service Index, 0–1 (best)	0.37	53
9.04	E-Participation Index, 0–1 (best)	0.37	32

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Colombia

Key indicators

Population (millions), 2009	45.0
GDP (PPP) per capita (PPP $), 2009	9,046
GDP (US$ billions), 2009	232.4
Global Competitiveness Index 2010–2011 rank (out of 139)	68

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**58**
2009–2010 (133)	3.8	60
2008–2009 (134)	3.9	64
2007–2008 (127)	3.7	69
2006–2007 (122)	3.6	64

Environment component	3.7	80
Market environment	**3.9**	**86**
1.01 Venture capital availability*	2.5	66
1.02 Financial market sophistication*	4.5	62
1.03 Availability of latest technologies*	4.7	86
1.04 State of cluster development*	4.0	40
1.05 Burden of government regulation*	2.6	123
1.06 Extent & effect of taxation*	2.6	127
1.07 Total tax rate, % profits	78.7	130
1.08 No. days to start a business	14	56
1.09 No. procedures to start a business	9	92
1.10 Freedom of the press*	5.2	64
Political and regulatory environment	**3.9**	**75**
2.01 Effectiveness of law-making bodies*	2.8	108
2.02 Laws relating to ICT*	4.2	51
2.03 Judicial independence*	3.5	77
2.04 Efficiency of legal system in settling disputes*	3.4	86
2.05 Efficiency of legal system in challenging regs*	3.4	72
2.06 Property rights*	3.8	90
2.07 Intellectual property protection*	3.0	92
2.08 Software piracy rate, % software installed	55	44
2.09 No. procedures to enforce a contract	34	41
2.10 No. days to enforce a contract	1346	132
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.1**	**80**
3.01 Phone lines/100 pop.	16.4	78
3.02 Mobile network coverage, % pop. covered	83.0	104
3.03 Secure Internet servers/million pop.	12.1	68
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	29.4	50
3.05 Electricity production, kWh/capita	1,246.9	90
3.06 Tertiary education enrollment rate, %	35.4	63
3.07 Quality scientific research institutions*	3.3	81
3.08 Availability of scientists & engineers*	3.8	86
3.09 Availability research & training services*	4.1	65
3.10 Accessibility of digital content*	4.6	86

Readiness component	4.4	51
Individual readiness	**4.9**	**68**
4.01 Quality of math & science education*	3.5	92
4.02 Quality of educational system*	3.5	79
4.03 Adult literacy rate, %	93.4	70
4.04 Residential phone installation (PPP $)	59.7	52
4.05 Residential monthly phone subscription (PPP $)	8.8	49
4.06 Fixed phone tariffs (PPP $)	0.22	93
4.07 Mobile cellular tariffs (PPP $)	0.33	62
4.08 Fixed broadband Internet tariffs (PPP $)	54.0	86
4.09 Buyer sophistication*	3.4	71
Business readiness	**4.2**	**50**
5.01 Extent of staff training*	3.6	98
5.02 Quality of management schools*	4.3	59
5.03 Company spending on R&D*	2.9	78
5.04 University-industry collaboration in R&D*	4.0	47
5.05 Business phone installation (PPP $)	63.3	36
5.06 Business monthly phone subscription (PPP $)	8.9	26
5.07 Local supplier quality*	5.0	42
5.08 Computer, communications, & other services imports, % services imports	32.4	63
Government readiness	**4.2**	**62**
6.01 Gov't prioritization of ICT*	4.3	90
6.02 Gov't procurement of advanced tech.*	3.9	50
6.03 Importance of ICT to gov't vision*	4.2	55

Usage component	3.6	51
Individual usage	**3.4**	**70**
7.01 Mobile phone subscriptions/100 pop.	92.3	74
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	22.6	75
7.04 Broadband Internet subscribers/100 pop.	4.4	68
7.05 Internet users/100 pop.	49.4	45
7.06 Internet access in schools*	3.5	88
7.07 Use of virtual social networks*	5.1	72
7.08 Impact of ICT on access to basic services*	4.3	74
Business usage	**3.0**	**65**
8.01 Firm-level technology absorption*	4.5	84
8.02 Capacity for innovation*	2.9	70
8.03 Extent of business Internet use*	5.0	58
8.04 National office patent applications/million pop	2.7	75
8.05 Patent Cooperation Treaty apps/million pop	1.1	63
8.06 High-tech exports, % goods exports	1.5	71
8.07 Impact of ICT on new services and products*	4.8	49
8.08 Impact of ICT on new organizational models*	4.7	36
Government usage	**4.4**	**25**
9.01 Gov't success in ICT promotion	4.2	75
9.02 ICT use & gov't efficiency*	4.6	47
9.03 Government Online Service Index, 0–1 (best)	0.71	9
9.04 E-Participation Index, 0–1 (best)	0.44	26

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Costa Rica

Key indicators

Population (millions), 2009	4.6
GDP (PPP) per capita (PPP $), 2009	10,564
GDP (US$ billions), 2009	29.3
Global Competitiveness Index 2010–2011 rank (out of 139)	56

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.1**	**46**
2009–2010 (133)	3.9	49
2008–2009 (134)	4.0	56
2007–2008 (127)	3.9	60
2006–2007 (122)	3.8	56

Environment component 3.8 67

Market environment 4.1 68

1.01	Venture capital availability*	2.4	82
1.02	Financial market sophistication*	4.3	69
1.03	Availability of latest technologies*	5.0	70
1.04	State of cluster development*	3.8	52
1.05	Burden of government regulation*	3.3	68
1.06	Extent & effect of taxation*	3.8	41
1.07	Total tax rate, % profits	55.0	111
1.08	No. days to start a business	60	124
1.09	No. procedures to start a business	12	116
1.10	Freedom of the press*	6.5	11

Political and regulatory environment 3.8 86

2.01	Effectiveness of law-making bodies*	2.6	114
2.02	Laws relating to ICT*	4.1	58
2.03	Judicial independence*	5.3	26
2.04	Efficiency of legal system in settling disputes*	4.0	52
2.05	Efficiency of legal system in challenging regs*	4.2	38
2.06	Property rights*	4.4	66
2.07	Intellectual property protection*	3.6	67
2.08	Software piracy rate, % software installed	59	51
2.09	No. procedures to enforce a contract	40	94
2.10	No. days to enforce a contract	852	118
2.11	Internet & telephony competition, 0–6 (best)	1	128

Infrastructure environment 3.5 59

3.01	Phone lines/100 pop.	32.8	36
3.02	Mobile network coverage, % pop. covered	69.5	116
3.03	Secure Internet servers/million pop.	98.3	40
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	43.3	46
3.05	Electricity production, kWh/capita	2,029.7	79
3.06	Tertiary education enrollment rate, %	25.3	82
3.07	Quality scientific research institutions*	4.7	31
3.08	Availability of scientists & engineers*	4.8	28
3.09	Availability research & training services*	4.9	32
3.10	Accessibility of digital content*	4.7	80

Readiness component 4.9 25

Individual readiness 5.7 7

4.01	Quality of math & science education*	4.4	50
4.02	Quality of educational system*	4.9	22
4.03	Adult literacy rate, %	96.0	59
4.04	Residential phone installation (PPP $)	63.5	56
4.05	Residential monthly phone subscription (PPP $)	6.4	37
4.06	Fixed phone tariffs (PPP $)	0.04	20
4.07	Mobile cellular tariffs (PPP $)	0.12	13
4.08	Fixed broadband Internet tariffs (PPP $)	12.2	3
4.09	Buyer sophistication*	3.8	44

Business readiness 4.7 26

5.01	Extent of staff training*	4.8	22
5.02	Quality of management schools*	5.5	13
5.03	Company spending on R&D*	3.8	31
5.04	University-industry collaboration in R&D*	4.5	28
5.05	Business phone installation (PPP $)	63.5	37
5.06	Business monthly phone subscription (PPP $)	7.6	23
5.07	Local supplier quality*	5.2	28
5.08	Computer, communications, & other services imports, % services imports	28.7	68

Government readiness 4.3 53

6.01	Gov't prioritization of ICT*	4.8	63
6.02	Gov't procurement of advanced tech.*	3.8	54
6.03	Importance of ICT to gov't vision*	4.3	48

Usage component 3.5 58

Individual usage 3.2 77

7.01	Mobile phone subscriptions/100 pop.	42.6	120
7.02	Cellular subscriptions w/data, % total	4.1	76
7.03	Households w/ personal computer, %	38.0	58
7.04	Broadband Internet subscribers/100 pop.	3.9	72
7.05	Internet users/100 pop.	32.4	69
7.06	Internet access in schools*	4.1	64
7.07	Use of virtual social networks*	5.5	49
7.08	Impact of ICT on access to basic services*	4.5	67

Business usage 3.7 31

8.01	Firm-level technology absorption*	5.1	50
8.02	Capacity for innovation*	3.4	44
8.03	Extent of business Internet use*	5.2	48
8.04	National office patent applications/million pop	0.2	88
8.05	Patent Cooperation Treaty apps/million pop	0.7	69
8.06	High-tech exports, % goods exports	19.5	13
8.07	Impact of ICT on new services and products*	5.2	31
8.08	Impact of ICT on new organizational models*	4.6	42

Government usage 3.4 61

9.01	Gov't success in ICT promotion	4.4	62
9.02	ICT use & gov't efficiency*	4.3	65
9.03	Government Online Service Index, 0–1 (best)	0.30	77
9.04	E-Participation Index, 0–1 (best)	0.20	56

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Côte d'Ivoire

Key indicators

Population (millions), 2009	21.4
GDP (PPP) per capita (PPP $), 2009	1,672
GDP (US$ billions), 2009	22.5
Global Competitiveness Index 2010–2011 rank (out of 139)	129

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**113**
2009–2010 (133)	3.2	104
2008–2009 (134)	3.1	111
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.1	120
Market environment	**3.5**	**120**
1.01 Venture capital availability*	1.6	136
1.02 Financial market sophistication*	3.6	97
1.03 Availability of latest technologies*	4.8	78
1.04 State of cluster development*	2.4	132
1.05 Burden of government regulation*	2.9	102
1.06 Extent & effect of taxation*	3.1	102
1.07 Total tax rate, % profits	44.4	83
1.08 No. days to start a business	40	114
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	4.3	91
Political and regulatory environment	**3.1**	**127**
2.01 Effectiveness of law-making bodies*	2.8	107
2.02 Laws relating to ICT*	2.7	124
2.03 Judicial independence*	1.9	136
2.04 Efficiency of legal system in settling disputes*	3.0	111
2.05 Efficiency of legal system in challenging regs*	2.8	116
2.06 Property rights*	3.4	113
2.07 Intellectual property protection*	2.2	135
2.08 Software piracy rate, % software installed	79	81
2.09 No. procedures to enforce a contract	33	38
2.10 No. days to enforce a contract	770	108
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.8**	**103**
3.01 Phone lines/100 pop.	1.3	122
3.02 Mobile network coverage, % pop. covered	92.2	88
3.03 Secure Internet servers/million pop.	0.6	120
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.4	112
3.05 Electricity production, kWh/capita	279.8	117
3.06 Tertiary education enrollment rate, %	8.4	111
3.07 Quality scientific research institutions*	3.2	92
3.08 Availability of scientists & engineers*	4.5	42
3.09 Availability research & training services*	4.2	63
3.10 Accessibility of digital content*	3.7	118

Readiness component	3.8	116
Individual readiness	**3.8**	**126**
4.01 Quality of math & science education*	3.6	82
4.02 Quality of educational system*	3.1	105
4.03 Adult literacy rate, %	54.6	126
4.04 Residential phone installation (PPP $)	33.1	23
4.05 Residential monthly phone subscription (PPP $)	23.4	119
4.06 Fixed phone tariffs (PPP $)	0.59	126
4.07 Mobile cellular tariffs (PPP $)	0.33	61
4.08 Fixed broadband Internet tariffs (PPP $)	66.1	97
4.09 Buyer sophistication*	2.1	135
Business readiness	**3.8**	**84**
5.01 Extent of staff training*	4.3	43
5.02 Quality of management schools*	3.7	100
5.03 Company spending on R&D*	2.7	92
5.04 University-industry collaboration in R&D*	2.6	129
5.05 Business phone installation (PPP $)	33.1	15
5.06 Business monthly phone subscription (PPP $)	23.4	96
5.07 Local supplier quality*	4.3	79
5.08 Computer, communications, & other services imports, % services imports	27.2	73
Government readiness	**3.6**	**99**
6.01 Gov't prioritization of ICT*	4.4	85
6.02 Gov't procurement of advanced tech.*	3.2	99
6.03 Importance of ICT to gov't vision*	3.3	112

Usage component	2.7	103
Individual usage	**2.4**	**116**
7.01 Mobile phone subscriptions/100 pop.	62.6	105
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	1.4	135
7.04 Broadband Internet subscribers/100 pop.	0.0	121
7.05 Internet users/100 pop.	4.6	120
7.06 Internet access in schools*	2.6	123
7.07 Use of virtual social networks*	4.7	92
7.08 Impact of ICT on access to basic services*	3.8	114
Business usage	**2.7**	**100**
8.01 Firm-level technology absorption*	4.9	63
8.02 Capacity for innovation*	2.2	131
8.03 Extent of business Internet use*	3.9	125
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	95
8.06 High-tech exports, % goods exports	1.8	67
8.07 Impact of ICT on new services and products*	4.5	69
8.08 Impact of ICT on new organizational models*	3.6	100
Government usage	**3.1**	**90**
9.01 Gov't success in ICT promotion	4.0	86
9.02 ICT use & gov't efficiency*	3.6	111
9.03 Government Online Service Index, 0–1 (best)	0.32	67
9.04 E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Croatia

Key indicators

Population (millions), 2009	4.4
GDP (PPP) per capita (PPP $), 2009	17,707
GDP (US$ billions), 2009	67.7
Global Competitiveness Index 2010–2011 rank (out of 139)	77

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**54**
2009–2010 (133)	3.9	51
2008–2009 (134)	4.1	49
2007–2008 (127)	4.1	49
2006–2007 (122)	4.0	46

Environment component 4.0 54

Market environment		**3.8**	**98**
1.01	Venture capital availability*	2.1	107
1.02	Financial market sophistication*	4.1	74
1.03	Availability of latest technologies*	5.4	55
1.04	State of cluster development*	2.9	103
1.05	Burden of government regulation*	2.1	135
1.06	Extent & effect of taxation*	2.4	133
1.07	Total tax rate, % profits	32.5	42
1.08	No. days to start a business	7	20
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	4.3	92
Political and regulatory environment		**4.0**	**65**
2.01	Effectiveness of law-making bodies*	3.1	89
2.02	Laws relating to ICT*	3.9	66
2.03	Judicial independence*	3.1	96
2.04	Efficiency of legal system in settling disputes*	2.7	125
2.05	Efficiency of legal system in challenging regs*	2.6	125
2.06	Property rights*	4.0	86
2.07	Intellectual property protection*	3.5	69
2.08	Software piracy rate, % software installed	54	40
2.09	No. procedures to enforce a contract	38	73
2.10	No. days to enforce a contract	561	70
2.11	Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment		**4.1**	**39**
3.01	Phone lines/100 pop.	42.1	25
3.02	Mobile network coverage, % pop. covered	100.0	1
3.03	Secure Internet servers/million pop.	116.7	36
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop.	219.8	15
3.05	Electricity production, kWh/capita	2,723.4	69
3.06	Tertiary education enrollment rate, %	47.0	50
3.07	Quality scientific research institutions*	4.0	51
3.08	Availability of scientists & engineers*	3.8	85
3.09	Availability research & training services*	4.2	61
3.10	Accessibility of digital content*	5.2	48

Readiness component 4.0 90

Individual readiness		**4.6**	**88**
4.01	Quality of math & science education*	4.9	22
4.02	Quality of educational system*	3.3	88
4.03	Adult literacy rate, %	98.7	42
4.04	Residential phone installation (PPP $)	162.1	120
4.05	Residential monthly phone subscription (PPP $)	19.4	105
4.06	Fixed phone tariffs (PPP $)	0.22	97
4.07	Mobile cellular tariffs (PPP $)	0.57	107
4.08	Fixed broadband Internet tariffs (PPP $)	26.3	33
4.09	Buyer sophistication*	2.9	113
Business readiness		**3.9**	**71**
5.01	Extent of staff training*	3.1	127
5.02	Quality of management schools*	3.8	88
5.03	Company spending on R&D*	3.1	60
5.04	University-industry collaboration in R&D*	3.4	74
5.05	Business phone installation (PPP $)	162.1	107
5.06	Business monthly phone subscription (PPP $)	22.7	93
5.07	Local supplier quality*	4.4	76
5.08	Computer, communications, & other services imports, % services imports	50.6	14
Government readiness		**3.6**	**106**
6.01	Gov't prioritization of ICT*	4.3	94
6.02	Gov't procurement of advanced tech.*	2.9	120
6.03	Importance of ICT to gov't vision*	3.5	101

Usage component 3.7 47

Individual usage		**4.4**	**44**
7.01	Mobile phone subscriptions/100 pop.	136.7	21
7.02	Cellular subscriptions w/data, % total	23.6	36
7.03	Households w/ personal computer, %	54.7	42
7.04	Broadband Internet subscribers/100 pop.	15.5	37
7.05	Internet users/100 pop.	50.6	43
7.06	Internet access in schools*	4.7	44
7.07	Use of virtual social networks*	4.9	83
7.08	Impact of ICT on access to basic services*	4.2	86
Business usage		**3.0**	**66**
8.01	Firm-level technology absorption*	4.4	97
8.02	Capacity for innovation*	3.0	66
8.03	Extent of business Internet use*	5.2	47
8.04	National office patent applications/million pop	56.4	37
8.05	Patent Cooperation Treaty apps/million pop	11.5	34
8.06	High-tech exports, % goods exports	7.6	32
8.07	Impact of ICT on new services and products*	4.0	101
8.08	Impact of ICT on new organizational models*	3.8	87
Government usage		**3.8**	**49**
9.01	Gov't success in ICT promotion	4.2	77
9.02	ICT use & gov't efficiency*	3.7	101
9.03	Government Online Service Index, 0–1 (best)	0.42	40
9.04	E-Participation Index, 0–1 (best)	0.46	25

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Cyprus

Key indicators

Population (millions), 2009	0.8
GDP (PPP) per capita (PPP $), 2009	28,504
GDP (US$ billions), 2009	23.6
Global Competitiveness Index 2010–2011 rank (out of 139)	40

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.5**	**31**
2009–2010 (133)	4.5	32
2008–2009 (134)	4.5	33
2007–2008 (127)	4.2	41
2006–2007 (122)	4.1	43

Environment component	4.7	29
Market environment	**4.9**	**22**
1.01 Venture capital availability*	3.4	23
1.02 Financial market sophistication*	4.9	41
1.03 Availability of latest technologies*	5.7	36
1.04 State of cluster development*	4.0	44
1.05 Burden of government regulation*	4.0	22
1.06 Extent & effect of taxation*	4.7	12
1.07 Total tax rate, % profits	23.2	18
1.08 No. days to start a business	8	27
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.9	30
Political and regulatory environment	**4.9**	**29**
2.01 Effectiveness of law-making bodies*	4.5	27
2.02 Laws relating to ICT*	4.5	45
2.03 Judicial independence*	5.5	22
2.04 Efficiency of legal system in settling disputes*	4.7	28
2.05 Efficiency of legal system in challenging regs*	4.7	21
2.06 Property rights*	5.4	27
2.07 Intellectual property protection*	4.7	32
2.08 Software piracy rate, % software installed	48	34
2.09 No. procedures to enforce a contract	43	112
2.10 No. days to enforce a contract	735	105
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**4.2**	**32**
3.01 Phone lines/100 pop.	47.6	15
3.02 Mobile network coverage, % pop. covered	100.0	21
3.03 Secure Internet servers/million pop.	552.2	19
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	16.0	63
3.05 Electricity production, kWh/capita	5,705.0	38
3.06 Tertiary education enrollment rate, %	42.6	54
3.07 Quality scientific research institutions*	4.2	41
3.08 Availability of scientists & engineers*	4.7	32
3.09 Availability research & training services*	4.5	43
3.10 Accessibility of digital content*	5.3	42

Readiness component	4.7	40
Individual readiness	**5.6**	**16**
4.01 Quality of math & science education*	5.2	16
4.02 Quality of educational system*	5.1	13
4.03 Adult literacy rate, %	97.8	48
4.04 Residential phone installation (PPP $)	137.0	109
4.05 Residential monthly phone subscription (PPP $)	21.8	117
4.06 Fixed phone tariffs (PPP $)	0.07	41
4.07 Mobile cellular tariffs (PPP $)	0.11	11
4.08 Fixed broadband Internet tariffs (PPP $)	21.3	16
4.09 Buyer sophistication*	4.3	19
Business readiness	**4.1**	**53**
5.01 Extent of staff training*	4.4	35
5.02 Quality of management schools*	4.9	30
5.03 Company spending on R&D*	3.4	43
5.04 University-industry collaboration in R&D*	4.0	45
5.05 Business phone installation (PPP $)	137.0	92
5.06 Business monthly phone subscription (PPP $)	21.8	92
5.07 Local supplier quality*	5.1	34
5.08 Computer, communications, & other services imports, % services imports	18.5	100
Government readiness	**4.4**	**48**
6.01 Gov't prioritization of ICT*	4.7	66
6.02 Gov't procurement of advanced tech.*	4.2	28
6.03 Importance of ICT to gov't vision*	4.3	51

Usage component	4.1	35
Individual usage	**4.7**	**35**
7.01 Mobile phone subscriptions/100 pop.	122.0	36
7.02 Cellular subscriptions w/data, % total	46.9	13
7.03 Households w/ personal computer, %	61.2	37
7.04 Broadband Internet subscribers/100 pop.	20.2	31
7.05 Internet users/100 pop.	49.8	44
7.06 Internet access in schools*	4.9	37
7.07 Use of virtual social networks*	5.0	77
7.08 Impact of ICT on access to basic services*	4.7	52
Business usage	**3.5**	**36**
8.01 Firm-level technology absorption*	5.3	43
8.02 Capacity for innovation*	3.4	43
8.03 Extent of business Internet use*	5.2	51
8.04 National office patent applications/million pop	6.9	67
8.05 Patent Cooperation Treaty apps/million pop	50.5	26
8.06 High-tech exports, % goods exports	16.4	18
8.07 Impact of ICT on new services and products*	4.7	60
8.08 Impact of ICT on new organizational models*	4.0	74
Government usage	**4.1**	**36**
9.01 Gov't success in ICT promotion	4.8	36
9.02 ICT use & gov't efficiency*	4.6	48
9.03 Government Online Service Index, 0–1 (best)	0.37	52
9.04 E-Participation Index, 0–1 (best)	0.49	23

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Czech Republic

Key indicators

Population (millions), 2009	10.4
GDP (PPP) per capita (PPP $), 2009	24,271
GDP (US$ billions), 2009	190.3
Global Competitiveness Index 2010–2011 rank (out of 139)	36

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.3**	**40**
2009–2010 (133)	4.3	36
2008–2009 (134)	4.5	32
2007–2008 (127)	4.3	36
2006–2007 (122)	4.3	34

Environment component 4.3 40

Market environment 4.2 56

1.01	Venture capital availability*	2.6	63
1.02	Financial market sophistication*	4.7	51
1.03	Availability of latest technologies*	5.5	46
1.04	State of cluster development*	4.0	41
1.05	Burden of government regulation*	2.7	117
1.06	Extent & effect of taxation*	3.8	49
1.07	Total tax rate, % profits	48.8	99
1.08	No. days to start a business	20	79
1.09	No. procedures to start a business	9	92
1.10	Freedom of the press*	5.3	63

Political and regulatory environment 4.5 46

2.01	Effectiveness of law-making bodies*	3.1	93
2.02	Laws relating to ICT*	4.6	38
2.03	Judicial independence*	4.0	60
2.04	Efficiency of legal system in settling disputes*	3.2	96
2.05	Efficiency of legal system in challenging regs*	3.3	83
2.06	Property rights*	4.4	64
2.07	Intellectual property protection*	3.9	51
2.08	Software piracy rate, % software installed	37	22
2.09	No. procedures to enforce a contract	27	8
2.10	No. days to enforce a contract	611	87
2.11	Internet & telephony competition, 0–6 (best)	5	62

Infrastructure environment 4.3 31

3.01	Phone lines/100 pop.	20.4	65
3.02	Mobile network coverage, % pop. covered	99.8	33
3.03	Secure Internet servers/million pop.	185.5	31
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	70.8	35
3.05	Electricity production, kWh/capita	8,492.6	22
3.06	Tertiary education enrollment rate, %	58.6	32
3.07	Quality scientific research institutions*	5.1	21
3.08	Availability of scientists & engineers*	4.4	50
3.09	Availability research & training services*	5.4	17
3.10	Accessibility of digital content*	6.0	24

Readiness component 4.6 45

Individual readiness 4.9 66

4.01	Quality of math & science education*	4.9	25
4.02	Quality of educational system*	4.5	34
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	43.3	35
4.05	Residential monthly phone subscription (PPP $)	29.4	133
4.06	Fixed phone tariffs (PPP $)	0.35	113
4.07	Mobile cellular tariffs (PPP $)	0.43	86
4.08	Fixed broadband Internet tariffs (PPP $)	34.7	66
4.09	Buyer sophistication*	3.9	36

Business readiness 4.6 28

5.01	Extent of staff training*	4.4	39
5.02	Quality of management schools*	4.4	56
5.03	Company spending on R&D*	4.0	25
5.04	University-industry collaboration in R&D*	4.5	29
5.05	Business phone installation (PPP $)	43.3	24
5.06	Business monthly phone subscription (PPP $)	43.0	131
5.07	Local supplier quality*	5.4	17
5.08	Computer, communications, & other services imports, % services imports	53.9	9

Government readiness 4.2 59

6.01	Gov't prioritization of ICT*	4.6	72
6.02	Gov't procurement of advanced tech.*	4.2	30
6.03	Importance of ICT to gov't vision*	3.8	74

Usage component 3.9 37

Individual usage 4.6 39

7.01	Mobile phone subscriptions/100 pop.	137.5	19
7.02	Cellular subscriptions w/data, % total	9.8	58
7.03	Households w/ personal computer, %	59.6	39
7.04	Broadband Internet subscribers/100 pop.	13.2	40
7.05	Internet users/100 pop.	64.4	29
7.06	Internet access in schools*	5.7	24
7.07	Use of virtual social networks*	5.4	53
7.08	Impact of ICT on access to basic services*	4.3	73

Business usage 3.7 30

8.01	Firm-level technology absorption*	5.4	36
8.02	Capacity for innovation*	4.1	24
8.03	Extent of business Internet use*	5.8	23
8.04	National office patent applications/million pop	75.2	32
8.05	Patent Cooperation Treaty apps/million pop	12.9	31
8.06	High-tech exports, % goods exports	14.5	20
8.07	Impact of ICT on new services and products*	4.7	59
8.08	Impact of ICT on new organizational models*	4.1	65

Government usage 3.5 60

9.01	Gov't success in ICT promotion	3.9	90
9.02	ICT use & gov't efficiency*	4.4	61
9.03	Government Online Service Index, 0–1 (best)	0.45	36
9.04	E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Denmark

Key indicators

Population (millions), 2009	5.5
GDP (PPP) per capita (PPP $), 2009	35,828
GDP (US$ billions), 2009	310.1
Global Competitiveness Index 2010–2011 rank (out of 139)	9

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.3**	**7**
2009–2010 (133)	5.5	3
2008–2009 (134)	5.8	1
2007–2008 (127)	5.8	1
2006–2007 (122)	5.7	1

Environment component	5.5	10
Market environment	**5.1**	**11**
1.01 Venture capital availability*	3.3	29
1.02 Financial market sophistication*	5.7	21
1.03 Availability of latest technologies*	6.4	13
1.04 State of cluster development*	4.6	20
1.05 Burden of government regulation*	3.8	25
1.06 Extent & effect of taxation*	2.6	129
1.07 Total tax rate, % profits	29.2	28
1.08 No. days to start a business	6	12
1.09 No. procedures to start a business	4	14
1.10 Freedom of the press*	6.9	1
Political and regulatory environment	**5.8**	**11**
2.01 Effectiveness of law-making bodies*	5.4	8
2.02 Laws relating to ICT*	5.7	4
2.03 Judicial independence*	6.4	3
2.04 Efficiency of legal system in settling disputes*	5.4	13
2.05 Efficiency of legal system in challenging regs*	5.2	11
2.06 Property rights*	6.0	11
2.07 Intellectual property protection*	5.7	12
2.08 Software piracy rate, % software installed	26	11
2.09 No. procedures to enforce a contract	35	46
2.10 No. days to enforce a contract	410	35
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**5.5**	**10**
3.01 Phone lines/100 pop.	37.7	29
3.02 Mobile network coverage, % pop. covered	n/a	n/a
3.03 Secure Internet servers/million pop.	1,166.2	5
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	345.1	8
3.05 Electricity production, kWh/capita	7,169.2	29
3.06 Tertiary education enrollment rate, %	80.3	7
3.07 Quality scientific research institutions*	5.5	12
3.08 Availability of scientists & engineers*	5.1	19
3.09 Availability research & training services*	5.8	8
3.10 Accessibility of digital content*	6.2	13

Readiness component	5.3	9
Individual readiness	**5.7**	**9**
4.01 Quality of math & science education*	5.1	19
4.02 Quality of educational system*	5.3	10
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	116.3	98
4.05 Residential monthly phone subscription (PPP $)	13.2	79
4.06 Fixed phone tariffs (PPP $)	0.09	52
4.07 Mobile cellular tariffs (PPP $)	0.08	9
4.08 Fixed broadband Internet tariffs (PPP $)	18.2	8
4.09 Buyer sophistication*	4.3	21
Business readiness	**5.1**	**9**
5.01 Extent of staff training*	5.4	7
5.02 Quality of management schools*	5.4	14
5.03 Company spending on R&D*	5.2	7
5.04 University-industry collaboration in R&D*	5.3	8
5.05 Business phone installation (PPP $)	110.6	77
5.06 Business monthly phone subscription (PPP $)	13.9	55
5.07 Local supplier quality*	5.6	13
5.08 Computer, communications, & other services imports, % services imports	34.8	51
Government readiness	**5.0**	**16**
6.01 Gov't prioritization of ICT*	5.5	23
6.02 Gov't procurement of advanced tech.*	4.6	9
6.03 Importance of ICT to gov't vision*	5.0	16

Usage component	5.1	7
Individual usage	**5.8**	**5**
7.01 Mobile phone subscriptions/100 pop.	125.0	31
7.02 Cellular subscriptions w/data, % total	29.2	27
7.03 Households w/ personal computer, %	86.2	7
7.04 Broadband Internet subscribers/100 pop.	37.9	1
7.05 Internet users/100 pop.	86.8	6
7.06 Internet access in schools*	6.1	10
7.07 Use of virtual social networks*	6.3	5
7.08 Impact of ICT on access to basic services*	5.5	14
Business usage	**4.3**	**14**
8.01 Firm-level technology absorption*	6.0	13
8.02 Capacity for innovation*	4.9	9
8.03 Extent of business Internet use*	6.0	17
8.04 National office patent applications/million pop	274.5	8
8.05 Patent Cooperation Treaty apps/million pop	206.2	9
8.06 High-tech exports, % goods exports	11.9	25
8.07 Impact of ICT on new services and products*	5.1	37
8.08 Impact of ICT on new organizational models*	5.0	24
Government usage	**5.1**	**9**
9.01 Gov't success in ICT promotion	5.5	9
9.02 ICT use & gov't efficiency*	5.2	25
9.03 Government Online Service Index, 0–1 (best)	0.67	13
9.04 E-Participation Index, 0–1 (best)	0.64	13

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Dominican Republic

Key indicators

Population (millions), 2009	9.7
GDP (PPP) per capita (PPP $), 2009	8,269
GDP (US$ billions), 2009	46.7
Global Competitiveness Index 2010–2011 rank (out of 139)	101

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**79**
2009–2010 (133)	3.6	74
2008–2009 (134)	3.8	75
2007–2008 (127)	3.7	75
2006–2007 (122)	3.6	66

Environment component	3.5	92
Market environment	**4.0**	**73**
1.01 Venture capital availability*	2.1	111
1.02 Financial market sophistication*	3.8	89
1.03 Availability of latest technologies*	5.3	56
1.04 State of cluster development*	3.6	63
1.05 Burden of government regulation*	3.1	77
1.06 Extent & effect of taxation*	3.0	114
1.07 Total tax rate, % profits	40.7	70
1.08 No. days to start a business	19	72
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	5.1	66
Political and regulatory environment	**3.8**	**80**
2.01 Effectiveness of law-making bodies*	2.6	113
2.02 Laws relating to ICT*	3.9	73
2.03 Judicial independence*	3.1	98
2.04 Efficiency of legal system in settling disputes*	3.5	77
2.05 Efficiency of legal system in challenging regs*	2.8	119
2.06 Property rights*	4.0	85
2.07 Intellectual property protection*	2.8	103
2.08 Software piracy rate, % software installed	77	78
2.09 No. procedures to enforce a contract	34	41
2.10 No. days to enforce a contract	460	48
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.7**	**107**
3.01 Phone lines/100 pop.	9.6	96
3.02 Mobile network coverage, % pop. covered	51.1	124
3.03 Secure Internet servers/million pop.	14.2	65
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	13.9	68
3.05 Electricity production, kWh/capita	1,512.1	86
3.06 Tertiary education enrollment rate, %	33.3	71
3.07 Quality scientific research institutions*	2.6	121
3.08 Availability of scientists & engineers*	3.2	116
3.09 Availability research & training services*	3.9	78
3.10 Accessibility of digital content*	5.1	51

Readiness component	4.0	83
Individual readiness	**4.4**	**102**
4.01 Quality of math & science education*	2.0	135
4.02 Quality of educational system*	2.4	132
4.03 Adult literacy rate, %	88.2	90
4.04 Residential phone installation (PPP $)	50.8	42
4.05 Residential monthly phone subscription (PPP $)	17.8	100
4.06 Fixed phone tariffs (PPP $)	0.16	73
4.07 Mobile cellular tariffs (PPP $)	0.40	79
4.08 Fixed broadband Internet tariffs (PPP $)	48.2	85
4.09 Buyer sophistication*	3.0	99
Business readiness	**3.5**	**108**
5.01 Extent of staff training*	3.6	93
5.02 Quality of management schools*	3.7	93
5.03 Company spending on R&D*	2.4	123
5.04 University-industry collaboration in R&D*	3.2	92
5.05 Business phone installation (PPP $)	76.1	56
5.06 Business monthly phone subscription (PPP $)	20.1	83
5.07 Local supplier quality*	4.2	85
5.08 Computer, communications, & other services imports, % services imports	13.0	108
Government readiness	**4.2**	**57**
6.01 Gov't prioritization of ICT*	5.0	50
6.02 Gov't procurement of advanced tech.*	3.5	76
6.03 Importance of ICT to gov't vision*	4.2	54

Usage component	3.3	70
Individual usage	**3.1**	**82**
7.01 Mobile phone subscriptions/100 pop.	85.5	81
7.02 Cellular subscriptions w/data, % total	1.2	101
7.03 Households w/ personal computer, %	14.2	88
7.04 Broadband Internet subscribers/100 pop.	3.9	71
7.05 Internet users/100 pop.	26.8	80
7.06 Internet access in schools*	3.3	92
7.07 Use of virtual social networks*	5.6	40
7.08 Impact of ICT on access to basic services*	4.5	66
Business usage	**3.0**	**68**
8.01 Firm-level technology absorption*	5.0	56
8.02 Capacity for innovation*	2.3	120
8.03 Extent of business Internet use*	4.7	81
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.3	77
8.06 High-tech exports, % goods exports	4.1	55
8.07 Impact of ICT on new services and products*	4.9	46
8.08 Impact of ICT on new organizational models*	4.4	52
Government usage	**3.7**	**51**
9.01 Gov't success in ICT promotion	4.8	35
9.02 ICT use & gov't efficiency*	4.8	37
9.03 Government Online Service Index, 0–1 (best)	0.37	57
9.04 E-Participation Index, 0–1 (best)	0.19	62

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Ecuador

Key indicators

Population (millions), 2009	14.1
GDP (PPP) per capita (PPP $), 2009	7,765
GDP (US$ billions), 2009	55.6
Global Competitiveness Index 2010–2011 rank (out of 139)	105

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.3**	**108**
2009–2010 (133)	3.0	114
2008–2009 (134)	3.0	116
2007–2008 (127)	3.1	107
2006–2007 (122)	3.1	97

Environment component	3.2	117
Market environment	**3.4**	**127**
1.01 Venture capital availability*	2.0	116
1.02 Financial market sophistication*	3.9	81
1.03 Availability of latest technologies*	4.3	105
1.04 State of cluster development*	2.9	109
1.05 Burden of government regulation*	2.9	96
1.06 Extent & effect of taxation*	2.8	123
1.07 Total tax rate, % profits	35.3	53
1.08 No. days to start a business	56	122
1.09 No. procedures to start a business	13	122
1.10 Freedom of the press*	3.5	128
Political and regulatory environment	**3.4**	**116**
2.01 Effectiveness of law-making bodies*	1.9	136
2.02 Laws relating to ICT*	3.3	102
2.03 Judicial independence*	2.0	134
2.04 Efficiency of legal system in settling disputes*	2.5	134
2.05 Efficiency of legal system in challenging regs*	2.4	131
2.06 Property rights*	3.2	122
2.07 Intellectual property protection*	2.5	127
2.08 Software piracy rate, % software installed	67	62
2.09 No. procedures to enforce a contract	39	83
2.10 No. days to enforce a contract	588	80
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.8**	**100**
3.01 Phone lines/100 pop.	14.7	83
3.02 Mobile network coverage, % pop. covered	84.0	103
3.03 Secure Internet servers/million pop.	12.0	69
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	4.8	84
3.05 Electricity production, kWh/capita	1,299.3	89
3.06 Tertiary education enrollment rate, %	42.4	55
3.07 Quality scientific research institutions*	2.4	131
3.08 Availability of scientists & engineers*	2.9	131
3.09 Availability research & training services*	3.4	103
3.10 Accessibility of digital content*	3.9	110

Readiness component	3.8	113
Individual readiness	**4.7**	**82**
4.01 Quality of math & science education*	2.9	116
4.02 Quality of educational system*	2.8	121
4.03 Adult literacy rate, %	84.2	98
4.04 Residential phone installation (PPP $)	70.5	65
4.05 Residential monthly phone subscription (PPP $)	2.1	10
4.06 Fixed phone tariffs (PPP $)	0.02	12
4.07 Mobile cellular tariffs (PPP $)	0.40	82
4.08 Fixed broadband Internet tariffs (PPP $)	78.6	105
4.09 Buyer sophistication*	3.1	92
Business readiness	**3.3**	**123**
5.01 Extent of staff training*	3.4	106
5.02 Quality of management schools*	3.6	102
5.03 Company spending on R&D*	2.5	119
5.04 University-industry collaboration in R&D*	2.8	121
5.05 Business phone installation (PPP $)	132.4	90
5.06 Business monthly phone subscription (PPP $)	30.0	118
5.07 Local supplier quality*	3.9	104
5.08 Computer, communications, & other services imports, % services imports	18.5	101
Government readiness	**3.3**	**123**
6.01 Gov't prioritization of ICT*	3.7	125
6.02 Gov't procurement of advanced tech.*	3.0	117
6.03 Importance of ICT to gov't vision*	3.2	118

Usage component	2.8	98
Individual usage	**2.9**	**89**
7.01 Mobile phone subscriptions/100 pop.	100.1	63
7.02 Cellular subscriptions w/data, % total	1.6	97
7.03 Households w/ personal computer, %	23.4	74
7.04 Broadband Internet subscribers/100 pop.	1.8	86
7.05 Internet users/100 pop.	24.6	86
7.06 Internet access in schools*	3.0	108
7.07 Use of virtual social networks*	4.5	100
7.08 Impact of ICT on access to basic services*	3.7	120
Business usage	**2.6**	**109**
8.01 Firm-level technology absorption*	4.3	105
8.02 Capacity for innovation*	2.4	114
8.03 Extent of business Internet use*	4.2	105
8.04 National office patent applications/million pop	42.2	41
8.05 Patent Cooperation Treaty apps/million pop	1.9	54
8.06 High-tech exports, % goods exports	0.4	96
8.07 Impact of ICT on new services and products*	3.9	105
8.08 Impact of ICT on new organizational models*	3.7	93
Government usage	**2.9**	**99**
9.01 Gov't success in ICT promotion	3.1	124
9.02 ICT use & gov't efficiency*	3.8	98
9.03 Government Online Service Index, 0–1 (best)	0.32	70
9.04 E-Participation Index, 0–1 (best)	0.16	74

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Egypt

Key indicators

Population (millions), 2009	76.7
GDP (PPP) per capita (PPP $), 2009	6,114
GDP (US$ billions), 2009	188.0
Global Competitiveness Index 2010–2011 rank (out of 139)	81

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**74**
2009–2010 (133)	3.7	70
2008–2009 (134)	3.8	76
2007–2008 (127)	3.7	63
2006–2007 (122)	3.4	77

Environment component 3.8 71

Market environment 4.1 65

1.01	Venture capital availability*	3.0	41
1.02	Financial market sophistication*	3.9	86
1.03	Availability of latest technologies*	4.6	90
1.04	State of cluster development*	3.5	65
1.05	Burden of government regulation*	3.1	78
1.06	Extent & effect of taxation*	3.5	74
1.07	Total tax rate, % profits	42.6	79
1.08	No. days to start a business	7	20
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	5.0	72

Political and regulatory environment 4.0 66

2.01	Effectiveness of law-making bodies*	3.8	52
2.02	Laws relating to ICT*	4.0	61
2.03	Judicial independence*	3.9	62
2.04	Efficiency of legal system in settling disputes*	4.3	39
2.05	Efficiency of legal system in challenging regs*	3.5	68
2.06	Property rights*	4.6	55
2.07	Intellectual property protection*	3.6	66
2.08	Software piracy rate, % software installed	59	51
2.09	No. procedures to enforce a contract	41	102
2.10	No. days to enforce a contract	1010	125
2.11	Internet & telephony competition, 0–6 (best)	4	85

Infrastructure environment 3.2 75

3.01	Phone lines/100 pop.	12.4	87
3.02	Mobile network coverage, % pop. covered	99.6	40
3.03	Secure Internet servers/million pop.	1.4	106
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	12.0	71
3.05	Electricity production, kWh/capita	1,562.9	85
3.06	Tertiary education enrollment rate, %	28.5	78
3.07	Quality scientific research institutions*	2.9	109
3.08	Availability of scientists & engineers*	4.9	25
3.09	Availability research & training services*	4.1	64
3.10	Accessibility of digital content*	4.6	84

Readiness component 4.1 74

Individual readiness 4.9 70

4.01	Quality of math & science education*	2.7	124
4.02	Quality of educational system*	2.5	130
4.03	Adult literacy rate, %	74.0	110
4.04	Residential phone installation (PPP $)	16.7	11
4.05	Residential monthly phone subscription (PPP $)	5.4	30
4.06	Fixed phone tariffs (PPP $)	0.06	38
4.07	Mobile cellular tariffs (PPP $)	0.18	24
4.08	Fixed broadband Internet tariffs (PPP $)	20.3	13
4.09	Buyer sophistication*	2.6	125

Business readiness 3.4 112

5.01	Extent of staff training*	3.3	111
5.02	Quality of management schools*	3.3	121
5.03	Company spending on R&D*	3.0	74
5.04	University-industry collaboration in R&D*	2.8	119
5.05	Business phone installation (PPP $)	225.7	119
5.06	Business monthly phone subscription (PPP $)	10.8	34
5.07	Local supplier quality*	4.2	89
5.08	Computer, communications, & other services imports, % services imports	24.1	82

Government readiness 4.1 68

6.01	Gov't prioritization of ICT*	5.0	49
6.02	Gov't procurement of advanced tech.*	3.4	85
6.03	Importance of ICT to gov't vision*	3.9	70

Usage component 3.4 65

Individual usage 3.2 79

7.01	Mobile phone subscriptions/100 pop.	66.7	101
7.02	Cellular subscriptions w/data, % total	12.7	51
7.03	Households w/ personal computer, %	28.0	70
7.04	Broadband Internet subscribers/100 pop.	1.3	92
7.05	Internet users/100 pop.	24.3	87
7.06	Internet access in schools*	3.3	95
7.07	Use of virtual social networks*	5.2	65
7.08	Impact of ICT on access to basic services*	4.9	41

Business usage 2.9 83

8.01	Firm-level technology absorption*	5.0	57
8.02	Capacity for innovation*	2.5	109
8.03	Extent of business Internet use*	4.7	76
8.04	National office patent applications/million pop	5.9	68
8.05	Patent Cooperation Treaty apps/million pop	0.6	71
8.06	High-tech exports, % goods exports	0.4	98
8.07	Impact of ICT on new services and products*	4.5	73
8.08	Impact of ICT on new organizational models*	4.0	72

Government usage 4.1 39

9.01	Gov't success in ICT promotion	5.0	27
9.02	ICT use & gov't efficiency*	4.4	59
9.03	Government Online Service Index, 0–1 (best)	0.53	23
9.04	E-Participation Index, 0–1 (best)	0.29	41

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

El Salvador

Key indicators

Population (millions), 2009	5.8
GDP (PPP) per capita (PPP $), 2009	7,355
GDP (US$ billions), 2009	21.1
Global Competitiveness Index 2010–2011 rank (out of 139)	82

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**92**
2009–2010 (133)	3.5	81
2008–2009 (134)	3.7	78
2007–2008 (127)	3.7	66
2006–2007 (122)	3.7	61

Environment component	3.7	79
Market environment	**4.3**	**48**
1.01 Venture capital availability*	2.3	90
1.02 Financial market sophistication*	4.8	44
1.03 Availability of latest technologies*	5.1	67
1.04 State of cluster development*	3.3	79
1.05 Burden of government regulation*	3.4	54
1.06 Extent & effect of taxation*	4.0	35
1.07 Total tax rate, % profits	35.0	50
1.08 No. days to start a business	17	68
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	5.8	39
Political and regulatory environment	**3.7**	**88**
2.01 Effectiveness of law-making bodies*	2.6	112
2.02 Laws relating to ICT*	3.5	90
2.03 Judicial independence*	3.0	99
2.04 Efficiency of legal system in settling disputes*	3.1	100
2.05 Efficiency of legal system in challenging regs*	3.0	100
2.06 Property rights*	4.1	81
2.07 Intellectual property protection*	2.9	95
2.08 Software piracy rate, % software installed	80	86
2.09 No. procedures to enforce a contract	30	16
2.10 No. days to enforce a contract	786	111
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.9**	**90**
3.01 Phone lines/100 pop.	17.8	72
3.02 Mobile network coverage, % pop. covered	95.0	76
3.03 Secure Internet servers/million pop.	11.8	71
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	2.4	91
3.05 Electricity production, kWh/capita	950.7	95
3.06 Tertiary education enrollment rate, %	24.6	84
3.07 Quality scientific research institutions*	2.3	132
3.08 Availability of scientists & engineers*	3.1	124
3.09 Availability research & training services*	3.9	83
3.10 Accessibility of digital content*	4.8	69

Readiness component	3.9	101
Individual readiness	**4.7**	**85**
4.01 Quality of math & science education*	2.7	123
4.02 Quality of educational system*	2.9	120
4.03 Adult literacy rate, %	84.0	100
4.04 Residential phone installation (PPP $)	75.6	73
4.05 Residential monthly phone subscription (PPP $)	17.6	99
4.06 Fixed phone tariffs (PPP $)	0.15	68
4.07 Mobile cellular tariffs (PPP $)	0.28	48
4.08 Fixed broadband Internet tariffs (PPP $)	38.0	75
4.09 Buyer sophistication*	3.4	73
Business readiness	**3.6**	**97**
5.01 Extent of staff training*	4.1	62
5.02 Quality of management schools*	4.0	79
5.03 Company spending on R&D*	2.5	121
5.04 University-industry collaboration in R&D*	3.0	113
5.05 Business phone installation (PPP $)	100.1	74
5.06 Business monthly phone subscription (PPP $)	26.8	108
5.07 Local supplier quality*	4.9	49
5.08 Computer, communications, & other services imports, % services imports	13.1	107
Government readiness	**3.4**	**118**
6.01 Gov't prioritization of ICT*	3.8	119
6.02 Gov't procurement of advanced tech.*	3.0	112
6.03 Importance of ICT to gov't vision*	3.4	105

Usage component	3.0	89
Individual usage	**2.9**	**90**
7.01 Mobile phone subscriptions/100 pop.	122.8	33
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	12.5	96
7.04 Broadband Internet subscribers/100 pop.	2.4	81
7.05 Internet users/100 pop.	12.1	97
7.06 Internet access in schools*	3.0	104
7.07 Use of virtual social networks*	4.8	87
7.08 Impact of ICT on access to basic services*	3.9	107
Business usage	**2.8**	**84**
8.01 Firm-level technology absorption*	4.6	81
8.02 Capacity for innovation*	2.4	117
8.03 Extent of business Internet use*	4.6	82
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	4.8	48
8.07 Impact of ICT on new services and products*	4.2	90
8.08 Impact of ICT on new organizational models*	4.0	75
Government usage	**3.2**	**77**
9.01 Gov't success in ICT promotion	3.9	97
9.02 ICT use & gov't efficiency*	4.1	77
9.03 Government Online Service Index, 0–1 (best)	0.43	39
9.04 E-Participation Index, 0–1 (best)	0.07	105

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Estonia

Key indicators

Population (millions), 2009	1.3
GDP (PPP) per capita (PPP $), 2009	17,695
GDP (US$ billions), 2009	19.3
Global Competitiveness Index 2010–2011 rank (out of 139)	33

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.8**	**26**
2009–2010 (133)	4.8	25
2008–2009 (134)	5.2	18
2007–2008 (127)	5.1	20
2006–2007 (122)	5.0	20

Environment component 4.8 23

Market environment 4.8 28

1.01	Venture capital availability*	3.3	30
1.02	Financial market sophistication*	5.2	34
1.03	Availability of latest technologies*	5.8	31
1.04	State of cluster development*	3.1	91
1.05	Burden of government regulation*	4.4	6
1.06	Extent & effect of taxation*	4.3	18
1.07	Total tax rate, % profits	49.6	101
1.08	No. days to start a business	7	20
1.09	No. procedures to start a business	5	22
1.10	Freedom of the press*	6.0	27

Political and regulatory environment 5.1 24

2.01	Effectiveness of law-making bodies*	4.2	37
2.02	Laws relating to ICT*	5.8	3
2.03	Judicial independence*	5.5	24
2.04	Efficiency of legal system in settling disputes*	4.3	40
2.05	Efficiency of legal system in challenging regs*	4.2	40
2.06	Property rights*	5.3	33
2.07	Intellectual property protection*	4.6	34
2.08	Software piracy rate, % software installed	50	37
2.09	No. procedures to enforce a contract	36	54
2.10	No. days to enforce a contract	425	41
2.11	Internet & telephony competition, 0–6 (best)	5	62

Infrastructure environment 4.6 25

3.01	Phone lines/100 pop.	36.8	31
3.02	Mobile network coverage, % pop. covered	100.0	20
3.03	Secure Internet servers/million pop.	314.8	24
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	156.7	21
3.05	Electricity production, kWh/capita	9,085.7	15
3.06	Tertiary education enrollment rate, %	63.7	25
3.07	Quality scientific research institutions*	4.7	26
3.08	Availability of scientists & engineers*	4.2	58
3.09	Availability research & training services*	4.8	33
3.10	Accessibility of digital content*	6.4	5

Readiness component 4.8 32

Individual readiness 5.1 47

4.01	Quality of math & science education*	4.9	21
4.02	Quality of educational system*	4.3	42
4.03	Adult literacy rate, %	99.8	1
4.04	Residential phone installation (PPP $)	101.7	93
4.05	Residential monthly phone subscription (PPP $)	12.0	69
4.06	Fixed phone tariffs (PPP $)	0.19	83
4.07	Mobile cellular tariffs (PPP $)	0.36	77
4.08	Fixed broadband Internet tariffs (PPP $)	36.3	70
4.09	Buyer sophistication*	3.3	78

Business readiness 4.4 34

5.01	Extent of staff training*	4.3	47
5.02	Quality of management schools*	4.6	41
5.03	Company spending on R&D*	3.3	46
5.04	University-industry collaboration in R&D*	4.2	36
5.05	Business phone installation (PPP $)	101.7	75
5.06	Business monthly phone subscription (PPP $)	14.8	62
5.07	Local supplier quality*	5.1	36
5.08	Computer, communications, & other services imports, % services imports	41.4	32

Government readiness 4.9 19

6.01	Gov't prioritization of ICT*	5.6	14
6.02	Gov't procurement of advanced tech.*	4.1	42
6.03	Importance of ICT to gov't vision*	5.0	19

Usage component 4.7 22

Individual usage 5.2 22

7.01	Mobile phone subscriptions/100 pop.	203.0	3
7.02	Cellular subscriptions w/data, % total	9.2	61
7.03	Households w/ personal computer, %	65.1	33
7.04	Broadband Internet subscribers/100 pop.	22.5	24
7.05	Internet users/100 pop.	72.5	22
7.06	Internet access in schools*	6.4	2
7.07	Use of virtual social networks*	5.7	31
7.08	Impact of ICT on access to basic services*	5.5	18

Business usage 3.7 28

8.01	Firm-level technology absorption*	5.3	42
8.02	Capacity for innovation*	3.6	34
8.03	Extent of business Internet use*	6.3	2
8.04	National office patent applications/million pop	56.7	36
8.05	Patent Cooperation Treaty apps/million pop	32.8	29
8.06	High-tech exports, % goods exports	6.8	33
8.07	Impact of ICT on new services and products*	5.6	13
8.08	Impact of ICT on new organizational models*	5.2	17

Government usage 5.0 12

9.01	Gov't success in ICT promotion	5.4	11
9.02	ICT use & gov't efficiency*	5.7	8
9.03	Government Online Service Index, 0–1 (best)	0.50	27
9.04	E-Participation Index, 0–1 (best)	0.69	9

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Ethiopia

Key indicators

Population (millions), 2009	82.8
GDP (PPP) per capita (PPP $), 2009	953
GDP (US$ billions), 2009	32.3
Global Competitiveness Index 2010–2011 rank (out of 139)	119

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.1**	**123**
2009–2010 (133)	3.0	122
2008–2009 (134)	2.8	129
2007–2008 (127)	2.8	123
2006–2007 (122)	2.5	119

Environment component	3.0	129
Market environment	**3.6**	**106**
1.01 Venture capital availability*	2.1	113
1.02 Financial market sophistication*	2.4	131
1.03 Availability of latest technologies*	3.9	128
1.04 State of cluster development*	2.8	113
1.05 Burden of government regulation*	3.8	26
1.06 Extent & effect of taxation*	3.7	61
1.07 Total tax rate, % profits	31.1	37
1.08 No. days to start a business	9	34
1.09 No. procedures to start a business	5	22
1.10 Freedom of the press*	3.4	129
Political and regulatory environment	**3.4**	**110**
2.01 Effectiveness of law-making bodies*	3.7	54
2.02 Laws relating to ICT*	3.2	106
2.03 Judicial independence*	3.3	88
2.04 Efficiency of legal system in settling disputes*	3.7	66
2.05 Efficiency of legal system in challenging regs*	3.5	69
2.06 Property rights*	4.5	59
2.07 Intellectual property protection*	3.4	70
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	37	65
2.10 No. days to enforce a contract	620	90
2.11 Internet & telephony competition, 0–6 (best)	0	131
Infrastructure environment	**1.8**	**137**
3.01 Phone lines/100 pop.	1.1	125
3.02 Mobile network coverage, % pop. covered	10.0	132
3.03 Secure Internet servers/million pop.	0.1	137
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	135
3.05 Electricity production, kWh/capita	44.5	132
3.06 Tertiary education enrollment rate, %	3.6	128
3.07 Quality scientific research institutions*	3.0	101
3.08 Availability of scientists & engineers*	3.0	128
3.09 Availability research & training services*	3.1	121
3.10 Accessibility of digital content*	3.0	135

Readiness component	4.0	96
Individual readiness	**4.2**	**112**
4.01 Quality of math & science education*	3.5	93
4.02 Quality of educational system*	3.8	59
4.03 Adult literacy rate, %	35.9	133
4.04 Residential phone installation (PPP $)	55.8	47
4.05 Residential monthly phone subscription (PPP $)	1.8	6
4.06 Fixed phone tariffs (PPP $)	0.05	25
4.07 Mobile cellular tariffs (PPP $)	0.19	26
4.08 Fixed broadband Internet tariffs (PPP $)	1,405.7	132
4.09 Buyer sophistication*	3.0	102
Business readiness	**3.6**	**99**
5.01 Extent of staff training*	3.2	121
5.02 Quality of management schools*	3.6	105
5.03 Company spending on R&D*	2.5	122
5.04 University-industry collaboration in R&D*	3.1	100
5.05 Business phone installation (PPP $)	55.8	32
5.06 Business monthly phone subscription (PPP $)	3.9	6
5.07 Local supplier quality*	3.7	122
5.08 Computer, communications, & other services imports, % services imports	21.8	90
Government readiness	**4.1**	**67**
6.01 Gov't prioritization of ICT*	4.5	80
6.02 Gov't procurement of advanced tech.*	3.8	53
6.03 Importance of ICT to gov't vision*	4.0	66

Usage component	2.3	132
Individual usage	**1.8**	**136**
7.01 Mobile phone subscriptions/100 pop.	4.9	138
7.02 Cellular subscriptions w/data, % total	2.1	90
7.03 Households w/ personal computer, %	0.5	136
7.04 Broadband Internet subscribers/100 pop.	0.0	135
7.05 Internet users/100 pop.	0.5	135
7.06 Internet access in schools*	2.4	126
7.07 Use of virtual social networks*	3.1	132
7.08 Impact of ICT on access to basic services*	4.0	103
Business usage	**2.3**	**131**
8.01 Firm-level technology absorption*	4.0	123
8.02 Capacity for innovation*	2.5	106
8.03 Extent of business Internet use*	3.6	133
8.04 National office patent applications/million pop	0.1	90
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.5	93
8.07 Impact of ICT on new services and products*	3.4	127
8.08 Impact of ICT on new organizational models*	2.9	130
Government usage	**2.9**	**103**
9.01 Gov't success in ICT promotion	4.0	88
9.02 ICT use & gov't efficiency*	4.0	82
9.03 Government Online Service Index, 0–1 (best)	0.20	104
9.04 E-Participation Index, 0–1 (best)	0.04	117

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Finland

Key indicators

Population (millions), 2009	5.4
GDP (PPP) per capita (PPP $), 2009	33,445
GDP (US$ billions), 2009	238.6
Global Competitiveness Index 2010–2011 rank (out of 139)	7

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.4**	**3**
2009–2010 (133)	5.4	6
2008–2009 (134)	5.5	6
2007–2008 (127)	5.5	6
2006–2007 (122)	5.6	4

Environment component 5.6 3

Market environment 5.4 6

1.01	Venture capital availability*	4.2	4
1.02	Financial market sophistication*	6.1	12
1.03	Availability of latest technologies*	6.6	4
1.04	State of cluster development*	5.1	9
1.05	Burden of government regulation*	4.3	9
1.06	Extent & effect of taxation*	3.0	113
1.07	Total tax rate, % profits	44.6	85
1.08	No. days to start a business	14	56
1.09	No. procedures to start a business	3	7
1.10	Freedom of the press*	6.6	6

Political and regulatory environment 6.1 4

2.01	Effectiveness of law-making bodies*	5.5	6
2.02	Laws relating to ICT*	5.5	7
2.03	Judicial independence*	6.3	6
2.04	Efficiency of legal system in settling disputes*	5.5	7
2.05	Efficiency of legal system in challenging regs*	5.5	4
2.06	Property rights*	6.4	2
2.07	Intellectual property protection*	6.2	2
2.08	Software piracy rate, % software installed	25	5
2.09	No. procedures to enforce a contract	32	33
2.10	No. days to enforce a contract	375	25
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 5.5 9

3.01	Phone lines/100 pop.	26.9	48
3.02	Mobile network coverage, % pop. covered	99.5	43
3.03	Secure Internet servers/million pop.	802.3	15
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	172.2	18
3.05	Electricity production, kWh/capita	15,362.7	7
3.06	Tertiary education enrollment rate, %	94.4	2
3.07	Quality scientific research institutions*	5.4	13
3.08	Availability of scientists & engineers*	6.0	1
3.09	Availability research & training services*	5.8	7
3.10	Accessibility of digital content*	6.2	16

Readiness component 5.5 2

Individual readiness 5.8 3

4.01	Quality of math & science education*	6.2	3
4.02	Quality of educational system*	5.6	6
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	105.6	95
4.05	Residential monthly phone subscription (PPP $)	8.9	50
4.06	Fixed phone tariffs (PPP $)	0.16	74
4.07	Mobile cellular tariffs (PPP $)	0.17	21
4.08	Fixed broadband Internet tariffs (PPP $)	29.1	43
4.09	Buyer sophistication*	4.4	17

Business readiness 5.5 3

5.01	Extent of staff training*	5.2	9
5.02	Quality of management schools*	5.3	18
5.03	Company spending on R&D*	5.4	5
5.04	University-industry collaboration in R&D*	5.6	3
5.05	Business phone installation (PPP $)	105.6	76
5.06	Business monthly phone subscription (PPP $)	8.9	27
5.07	Local supplier quality*	5.4	19
5.08	Computer, communications, & other services imports, % services imports	62.4	4

Government readiness 5.2 10

6.01	Gov't prioritization of ICT*	6.1	5
6.02	Gov't procurement of advanced tech.*	4.7	6
6.03	Importance of ICT to gov't vision*	4.9	21

Usage component 5.1 6

Individual usage 6.2 2

7.01	Mobile phone subscriptions/100 pop.	144.6	15
7.02	Cellular subscriptions w/data, % total	100.0	1
7.03	Households w/ personal computer, %	80.1	16
7.04	Broadband Internet subscribers/100 pop.	28.8	15
7.05	Internet users/100 pop.	82.5	8
7.06	Internet access in schools*	6.1	11
7.07	Use of virtual social networks*	6.2	7
7.08	Impact of ICT on access to basic services*	5.3	25

Business usage 4.7 8

8.01	Firm-level technology absorption*	6.0	12
8.02	Capacity for innovation*	5.6	5
8.03	Extent of business Internet use*	5.9	19
8.04	National office patent applications/million pop	338.3	7
8.05	Patent Cooperation Treaty apps/million pop	388.9	3
8.06	High-tech exports, % goods exports	14.2	21
8.07	Impact of ICT on new services and products*	5.4	18
8.08	Impact of ICT on new organizational models*	5.4	9

Government usage 4.5 24

9.01	Gov't success in ICT promotion	5.2	23
9.02	ICT use & gov't efficiency*	5.3	21
9.03	Government Online Service Index, 0–1 (best)	0.48	31
9.04	E-Participation Index, 0–1 (best)	0.41	30

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

France

Key indicators

Population (millions), 2009	62.6
GDP (PPP) per capita (PPP $), 2009	33,434
GDP (US$ billions), 2009	2,656.4
Global Competitiveness Index 2010–2011 rank (out of 139)	15

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.9**	**20**
2009–2010 (133)	5.0	18
2008–2009 (134)	5.2	19
2007–2008 (127)	5.1	21
2006–2007 (122)	5.0	23

Environment component	5.1	18
Market environment	**4.7**	**32**
1.01 Venture capital availability*	3.2	32
1.02 Financial market sophistication*	6.2	8
1.03 Availability of latest technologies*	6.4	16
1.04 State of cluster development*	4.2	30
1.05 Burden of government regulation*	2.6	121
1.06 Extent & effect of taxation*	3.1	107
1.07 Total tax rate, % profits	65.8	123
1.08 No. days to start a business	7	20
1.09 No. procedures to start a business	5	22
1.10 Freedom of the press*	5.9	33
Political and regulatory environment	**5.6**	**17**
2.01 Effectiveness of law-making bodies*	5.0	13
2.02 Laws relating to ICT*	5.2	22
2.03 Judicial independence*	4.8	38
2.04 Efficiency of legal system in settling disputes*	4.9	23
2.05 Efficiency of legal system in challenging regs*	4.9	17
2.06 Property rights*	5.8	16
2.07 Intellectual property protection*	5.9	6
2.08 Software piracy rate, % software installed	40	24
2.09 No. procedures to enforce a contract	29	13
2.10 No. days to enforce a contract	331	19
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**5.1**	**16**
3.01 Phone lines/100 pop.	56.9	7
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	209.8	29
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	293.6	10
3.05 Electricity production, kWh/capita	9,111.8	14
3.06 Tertiary education enrollment rate, %	54.6	39
3.07 Quality scientific research institutions*	5.2	19
3.08 Availability of scientists & engineers*	5.3	12
3.09 Availability research & training services*	5.9	5
3.10 Accessibility of digital content*	5.5	37

Readiness component	4.9	29
Individual readiness	**5.1**	**48**
4.01 Quality of math & science education*	5.4	11
4.02 Quality of educational system*	4.7	29
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	62.6	55
4.05 Residential monthly phone subscription (PPP $)	18.2	102
4.06 Fixed phone tariffs (PPP $)	0.18	82
4.07 Mobile cellular tariffs (PPP $)	0.63	113
4.08 Fixed broadband Internet tariffs (PPP $)	28.4	41
4.09 Buyer sophistication*	4.1	26
Business readiness	**4.9**	**18**
5.01 Extent of staff training*	4.7	30
5.02 Quality of management schools*	5.7	5
5.03 Company spending on R&D*	4.7	13
5.04 University-industry collaboration in R&D*	4.0	44
5.05 Business phone installation (PPP $)	62.6	35
5.06 Business monthly phone subscription (PPP $)	24.9	103
5.07 Local supplier quality*	5.7	10
5.08 Computer, communications, & other services imports, % services imports	40.8	34
Government readiness	**4.6**	**38**
6.01 Gov't prioritization of ICT*	5.2	42
6.02 Gov't procurement of advanced tech.*	4.0	47
6.03 Importance of ICT to gov't vision*	4.6	30

Usage component	4.8	17
Individual usage	**5.0**	**25**
7.01 Mobile phone subscriptions/100 pop.	95.5	68
7.02 Cellular subscriptions w/data, % total	25.2	31
7.03 Households w/ personal computer, %	69.2	29
7.04 Broadband Internet subscribers/100 pop.	31.6	9
7.05 Internet users/100 pop.	71.6	23
7.06 Internet access in schools*	4.8	41
7.07 Use of virtual social networks*	5.7	37
7.08 Impact of ICT on access to basic services*	5.2	26
Business usage	**4.4**	**11**
8.01 Firm-level technology absorption*	5.6	23
8.02 Capacity for innovation*	5.1	8
8.03 Extent of business Internet use*	5.9	21
8.04 National office patent applications/million pop	228.3	13
8.05 Patent Cooperation Treaty apps/million pop	114.9	17
8.06 High-tech exports, % goods exports	17.9	15
8.07 Impact of ICT on new services and products*	5.8	5
8.08 Impact of ICT on new organizational models*	5.2	14
Government usage	**4.9**	**16**
9.01 Gov't success in ICT promotion	4.8	38
9.02 ICT use & gov't efficiency*	5.2	23
9.03 Government Online Service Index, 0–1 (best)	0.68	11
9.04 E-Participation Index, 0–1 (best)	0.60	15

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Gambia, The

Key indicators

Population (millions), 2009	1.7
GDP (PPP) per capita (PPP $), 2009	1,911
GDP (US$ billions), 2009	1.0
Global Competitiveness Index 2010–2011 rank (out of 139)	90

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.7**	**76**
2009–2010 (133)	3.6	77
2008–2009 (134)	3.4	91
2007–2008 (127)	3.2	101
2006–2007 (122)	n/a	n/a

Environment component	3.8	68
Market environment	**3.9**	**95**
1.01 Venture capital availability*	2.5	73
1.02 Financial market sophistication*	4.1	78
1.03 Availability of latest technologies*	4.9	75
1.04 State of cluster development*	3.4	73
1.05 Burden of government regulation*	4.6	4
1.06 Extent & effect of taxation*	3.7	59
1.07 Total tax rate, % profits	292.3	135
1.08 No. days to start a business	27	89
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	3.9	116
Political and regulatory environment	**4.9**	**31**
2.01 Effectiveness of law-making bodies*	4.7	20
2.02 Laws relating to ICT*	4.1	56
2.03 Judicial independence*	4.6	49
2.04 Efficiency of legal system in settling disputes*	4.9	25
2.05 Efficiency of legal system in challenging regs*	4.2	36
2.06 Property rights*	5.1	39
2.07 Intellectual property protection*	4.6	35
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	32	33
2.10 No. days to enforce a contract	434	45
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**2.7**	**110**
3.01 Phone lines/100 pop.	2.9	112
3.02 Mobile network coverage, % pop. covered	85.0	100
3.03 Secure Internet servers/million pop.	2.9	97
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.4	113
3.05 Electricity production, kWh/capita	99.0	128
3.06 Tertiary education enrollment rate, %	1.2	137
3.07 Quality scientific research institutions*	3.4	78
3.08 Availability of scientists & engineers*	3.0	127
3.09 Availability research & training services*	4.0	72
3.10 Accessibility of digital content*	4.7	76

Readiness component	4.3	58
Individual readiness	**3.9**	**123**
4.01 Quality of math & science education*	3.6	85
4.02 Quality of educational system*	4.5	33
4.03 Adult literacy rate, %	45.3	129
4.04 Residential phone installation (PPP $)	86.6	87
4.05 Residential monthly phone subscription (PPP $)	3.7	16
4.06 Fixed phone tariffs (PPP $)	0.22	98
4.07 Mobile cellular tariffs (PPP $)	n/a	n/a
4.08 Fixed broadband Internet tariffs (PPP $)	996.1	129
4.09 Buyer sophistication*	3.1	89
Business readiness	**4.3**	**47**
5.01 Extent of staff training*	4.4	32
5.02 Quality of management schools*	4.5	53
5.03 Company spending on R&D*	2.8	85
5.04 University-industry collaboration in R&D*	3.6	63
5.05 Business phone installation (PPP $)	90.1	68
5.06 Business monthly phone subscription (PPP $)	4.5	9
5.07 Local supplier quality*	4.7	58
5.08 Computer, communications, & other services imports, % services imports	36.0	47
Government readiness	**4.9**	**21**
6.01 Gov't prioritization of ICT*	5.5	21
6.02 Gov't procurement of advanced tech.*	4.3	22
6.03 Importance of ICT to gov't vision*	4.8	23

Usage component	3.0	90
Individual usage	**2.9**	**96**
7.01 Mobile phone subscriptions/100 pop.	84.0	86
7.02 Cellular subscriptions w/data, % total	0.3	105
7.03 Households w/ personal computer, %	4.5	116
7.04 Broadband Internet subscribers/100 pop.	0.0	130
7.05 Internet users/100 pop.	7.6	110
7.06 Internet access in schools*	3.7	78
7.07 Use of virtual social networks*	5.1	74
7.08 Impact of ICT on access to basic services*	5.2	30
Business usage	**2.9**	**80**
8.01 Firm-level technology absorption*	4.8	68
8.02 Capacity for innovation*	3.0	63
8.03 Extent of business Internet use*	4.5	86
8.04 National office patent applications/million pop.	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.5	94
8.07 Impact of ICT on new services and products*	4.5	71
8.08 Impact of ICT on new organizational models*	4.1	66
Government usage	**3.2**	**86**
9.01 Gov't success in ICT promotion	5.3	13
9.02 ICT use & gov't efficiency*	4.8	36
9.03 Government Online Service Index, 0–1 (best)	0.08	129
9.04 E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Georgia

Key indicators

Population (millions), 2009	4.4
GDP (PPP) per capita (PPP $), 2009	4,754
GDP (US$ billions), 2009	10.7
Global Competitiveness Index 2010–2011 rank (out of 139)	93

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**98**
2009–2010 (133)	3.4	93
2008–2009 (134)	3.5	88
2007–2008 (127)	3.3	91
2006–2007 (122)	3.1	93

Environment component	3.6	86
Market environment	**4.1**	**66**
1.01 Venture capital availability*	2.1	108
1.02 Financial market sophistication*	3.3	105
1.03 Availability of latest technologies*	4.3	97
1.04 State of cluster development*	3.0	97
1.05 Burden of government regulation*	4.6	3
1.06 Extent & effect of taxation*	4.2	24
1.07 Total tax rate, % profits	15.3	8
1.08 No. days to start a business	3	3
1.09 No. procedures to start a business	3	7
1.10 Freedom of the press*	3.8	120
Political and regulatory environment	**3.6**	**93**
2.01 Effectiveness of law-making bodies*	3.2	84
2.02 Laws relating to ICT*	3.5	91
2.03 Judicial independence*	2.9	103
2.04 Efficiency of legal system in settling disputes*	3.4	88
2.05 Efficiency of legal system in challenging regs*	3.1	97
2.06 Property rights*	3.2	119
2.07 Intellectual property protection*	2.9	96
2.08 Software piracy rate, % software installed	95	107
2.09 No. procedures to enforce a contract	36	54
2.10 No. days to enforce a contract	285	11
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.0**	**87**
3.01 Phone lines/100 pop.	14.6	84
3.02 Mobile network coverage, % pop. covered	99.3	46
3.03 Secure Internet servers/million pop.	8.7	80
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	7.5	77
3.05 Electricity production, kWh/capita	1,911.3	83
3.06 Tertiary education enrollment rate, %	34.3	66
3.07 Quality scientific research institutions*	2.7	118
3.08 Availability of scientists & engineers*	3.2	121
3.09 Availability research & training services*	3.0	124
3.10 Accessibility of digital content*	4.6	89

Readiness component	3.8	107
Individual readiness	**4.7**	**86**
4.01 Quality of math & science education*	3.2	103
4.02 Quality of educational system*	2.9	118
4.03 Adult literacy rate, %	99.7	3
4.04 Residential phone installation (PPP $)	202.6	128
4.05 Residential monthly phone subscription (PPP $)	4.7	25
4.06 Fixed phone tariffs (PPP $)	0.07	43
4.07 Mobile cellular tariffs (PPP $)	0.34	70
4.08 Fixed broadband Internet tariffs (PPP $)	81.8	107
4.09 Buyer sophistication*	3.2	87
Business readiness	**3.1**	**132**
5.01 Extent of staff training*	3.4	107
5.02 Quality of management schools*	3.4	115
5.03 Company spending on R&D*	2.3	131
5.04 University-industry collaboration in R&D*	2.5	133
5.05 Business phone installation (PPP $)	217.7	117
5.06 Business monthly phone subscription (PPP $)	7.3	22
5.07 Local supplier quality*	3.4	130
5.08 Computer, communications, & other services imports, % services imports	12.3	112
Government readiness	**3.7**	**94**
6.01 Gov't prioritization of ICT*	4.3	88
6.02 Gov't procurement of advanced tech.*	3.2	101
6.03 Importance of ICT to gov't vision*	3.5	99

Usage component	3.0	92
Individual usage	**3.1**	**81**
7.01 Mobile phone subscriptions/100 pop.	66.6	102
7.02 Cellular subscriptions w/data, % total	19.6	41
7.03 Households w/ personal computer, %	12.6	95
7.04 Broadband Internet subscribers/100 pop.	3.5	76
7.05 Internet users/100 pop.	30.5	72
7.06 Internet access in schools*	3.7	74
7.07 Use of virtual social networks*	5.3	60
7.08 Impact of ICT on access to basic services*	4.1	92
Business usage	**2.6**	**103**
8.01 Firm-level technology absorption*	4.0	124
8.02 Capacity for innovation*	2.4	112
8.03 Extent of business Internet use*	4.5	89
8.04 National office patent applications/million pop	58.7	35
8.05 Patent Cooperation Treaty apps/million pop	1.2	61
8.06 High-tech exports, % goods exports	1.4	73
8.07 Impact of ICT on new services and products*	3.9	104
8.08 Impact of ICT on new organizational models*	3.6	108
Government usage	**3.1**	**94**
9.01 Gov't success in ICT promotion	3.9	93
9.02 ICT use & gov't efficiency*	4.6	50
9.03 Government Online Service Index, 0–1 (best)	0.25	97
9.04 E-Participation Index, 0–1 (best)	0.06	111

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Germany

Key indicators

Population (millions), 2009	81.8
GDP (PPP) per capita (PPP $), 2009	34,388
GDP (US$ billions), 2009	3,338.7
Global Competitiveness Index 2010–2011 rank (out of 139)	5

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.1**	**13**
2009–2010 (133)	5.2	14
2008–2009 (134)	5.2	20
2007–2008 (127)	5.2	16
2006–2007 (122)	5.2	16

Environment component 5.3 16

Market environment 4.8 23

1.01	Venture capital availability*	2.8	52
1.02	Financial market sophistication*	6.0	16
1.03	Availability of latest technologies*	6.3	17
1.04	State of cluster development*	5.0	12
1.05	Burden of government regulation*	3.0	91
1.06	Extent & effect of taxation*	3.3	89
1.07	Total tax rate, % profits	48.2	95
1.08	No. days to start a business	15	61
1.09	No. procedures to start a business	9	92
1.10	Freedom of the press*	6.6	8

Political and regulatory environment 5.9 9

2.01	Effectiveness of law-making bodies*	5.0	15
2.02	Laws relating to ICT*	5.3	18
2.03	Judicial independence*	6.4	5
2.04	Efficiency of legal system in settling disputes*	5.3	15
2.05	Efficiency of legal system in challenging regs*	5.3	8
2.06	Property rights*	6.1	8
2.07	Intellectual property protection*	5.7	9
2.08	Software piracy rate, % software installed	28	13
2.09	No. procedures to enforce a contract	30	16
2.10	No. days to enforce a contract	394	28
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 5.3 11

3.01	Phone lines/100 pop.	59.3	5
3.02	Mobile network coverage, % pop. covered	99.0	48
3.03	Secure Internet servers/million pop.	641.1	17
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	256.5	13
3.05	Electricity production, kWh/capita	7,652.6	25
3.06	Tertiary education enrollment rate, %	46.3	51
3.07	Quality scientific research institutions*	5.9	6
3.08	Availability of scientists & engineers*	4.8	27
3.09	Availability research & training services*	6.2	2
3.10	Accessibility of digital content*	6.2	17

Readiness component 5.1 14

Individual readiness 5.4 25

4.01	Quality of math & science education*	4.7	39
4.02	Quality of educational system*	5.0	18
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	74.3	68
4.05	Residential monthly phone subscription (PPP $)	24.7	122
4.06	Fixed phone tariffs (PPP $)	0.11	58
4.07	Mobile cellular tariffs (PPP $)	0.19	25
4.08	Fixed broadband Internet tariffs (PPP $)	37.1	71
4.09	Buyer sophistication*	4.4	18

Business readiness 5.3 4

5.01	Extent of staff training*	5.2	8
5.02	Quality of management schools*	4.9	31
5.03	Company spending on R&D*	5.7	4
5.04	University-industry collaboration in R&D*	5.2	9
5.05	Business phone installation (PPP $)	74.3	50
5.06	Business monthly phone subscription (PPP $)	24.7	101
5.07	Local supplier quality*	6.2	3
5.08	Computer, communications, & other services imports, % services imports	43.4	27

Government readiness 4.8 29

6.01	Gov't prioritization of ICT*	5.5	24
6.02	Gov't procurement of advanced tech.*	4.2	31
6.03	Importance of ICT to gov't vision*	4.6	34

Usage component 4.9 12

Individual usage 5.4 17

7.01	Mobile phone subscriptions/100 pop.	127.8	27
7.02	Cellular subscriptions w/data, % total	24.8	32
7.03	Households w/ personal computer, %	84.1	8
7.04	Broadband Internet subscribers/100 pop.	30.4	11
7.05	Internet users/100 pop.	79.3	13
7.06	Internet access in schools*	4.9	39
7.07	Use of virtual social networks*	5.9	23
7.08	Impact of ICT on access to basic services*	5.3	24

Business usage 4.8 7

8.01	Firm-level technology absorption*	6.0	14
8.02	Capacity for innovation*	5.9	1
8.03	Extent of business Internet use*	5.8	22
8.04	National office patent applications/million pop	584.5	5
8.05	Patent Cooperation Treaty apps/million pop	209.7	8
8.06	High-tech exports, % goods exports	13.3	23
8.07	Impact of ICT on new services and products*	5.6	12
8.08	Impact of ICT on new organizational models*	5.2	16

Government usage 4.7 20

9.01	Gov't success in ICT promotion	4.8	39
9.02	ICT use & gov't efficiency*	4.9	32
9.03	Government Online Service Index, 0–1 (best)	0.55	21
9.04	E-Participation Index, 0–1 (best)	0.61	14

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Ghana

Key indicators

Population (millions), 2009	23.1
GDP (PPP) per capita (PPP $), 2009	1,558
GDP (US$ billions), 2009	15.3
Global Competitiveness Index 2010–2011 rank (out of 139)	114

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.4**	**99**
2009–2010 (133)	3.3	98
2008–2009 (134)	3.3	103
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.6	82
Market environment	**4.2**	**60**
1.01 Venture capital availability*	2.1	110
1.02 Financial market sophistication*	4.2	72
1.03 Availability of latest technologies*	4.4	94
1.04 State of cluster development*	3.1	89
1.05 Burden of government regulation*	3.5	46
1.06 Extent & effect of taxation*	3.8	40
1.07 Total tax rate, % profits	32.7	43
1.08 No. days to start a business	12	45
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	5.9	36
Political and regulatory environment	**4.1**	**62**
2.01 Effectiveness of law-making bodies*	4.4	32
2.02 Laws relating to ICT*	3.0	113
2.03 Judicial independence*	3.8	67
2.04 Efficiency of legal system in settling disputes*	4.0	49
2.05 Efficiency of legal system in challenging regs*	3.8	56
2.06 Property rights*	4.2	75
2.07 Intellectual property protection*	3.3	75
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	36	54
2.10 No. days to enforce a contract	487	54
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.5**	**118**
3.01 Phone lines/100 pop.	1.1	124
3.02 Mobile network coverage, % pop. covered	75.0	112
3.03 Secure Internet servers/million pop.	0.7	116
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	1.0	104
3.05 Electricity production, kWh/capita	305.1	116
3.06 Tertiary education enrollment rate, %	6.2	117
3.07 Quality scientific research institutions*	3.8	64
3.08 Availability of scientists & engineers*	3.7	90
3.09 Availability research & training services*	3.5	98
3.10 Accessibility of digital content*	3.6	121

Readiness component	4.1	80
Individual readiness	**4.6**	**90**
4.01 Quality of math & science education*	3.4	97
4.02 Quality of educational system*	3.7	70
4.03 Adult literacy rate, %	65.8	119
4.04 Residential phone installation (PPP $)	65.5	59
4.05 Residential monthly phone subscription (PPP $)	4.1	20
4.06 Fixed phone tariffs (PPP $)	0.25	104
4.07 Mobile cellular tariffs (PPP $)	0.24	41
4.08 Fixed broadband Internet tariffs (PPP $)	104.8	114
4.09 Buyer sophistication*	3.1	91
Business readiness	**3.8**	**80**
5.01 Extent of staff training*	3.8	76
5.02 Quality of management schools*	4.2	64
5.03 Company spending on R&D*	2.3	132
5.04 University-industry collaboration in R&D*	3.1	97
5.05 Business phone installation (PPP $)	65.5	40
5.06 Business monthly phone subscription (PPP $)	4.1	7
5.07 Local supplier quality*	3.9	106
5.08 Computer, communications, & other services imports, % services imports	27.7	71
Government readiness	**3.9**	**83**
6.01 Gov't prioritization of ICT*	4.6	70
6.02 Gov't procurement of advanced tech.*	3.2	100
6.03 Importance of ICT to gov't vision*	3.7	86

Usage component	2.6	108
Individual usage	**2.5**	**112**
7.01 Mobile phone subscriptions/100 pop.	63.4	104
7.02 Cellular subscriptions w/data, % total	0.4	104
7.03 Households w/ personal computer, %	6.4	110
7.04 Broadband Internet subscribers/100 pop.	0.1	113
7.05 Internet users/100 pop.	5.4	117
7.06 Internet access in schools*	3.1	103
7.07 Use of virtual social networks*	4.2	110
7.08 Impact of ICT on access to basic services*	4.2	84
Business usage	**2.7**	**102**
8.01 Firm-level technology absorption*	4.1	111
8.02 Capacity for innovation*	2.5	110
8.03 Extent of business Internet use*	4.3	103
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.2	107
8.07 Impact of ICT on new services and products*	4.5	66
8.08 Impact of ICT on new organizational models*	3.8	86
Government usage	**2.8**	**116**
9.01 Gov't success in ICT promotion	4.0	85
9.02 ICT use & gov't efficiency*	3.6	107
9.03 Government Online Service Index, 0–1 (best)	0.15	117
9.04 E-Participation Index, 0–1 (best)	0.09	99

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Greece

Key indicators

Population (millions), 2009	11.2
GDP (PPP) per capita (PPP $), 2009	29,839
GDP (US$ billions), 2009	330.8
Global Competitiveness Index 2010–2011 rank (out of 139)	83

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**64**
2009–2010 (133)	3.8	56
2008–2009 (134)	4.0	55
2007–2008 (127)	3.9	56
2006–2007 (122)	4.0	48

Environment component	4.0	50
Market environment	**3.9**	**90**
1.01 Venture capital availability*	2.3	86
1.02 Financial market sophistication*	4.3	67
1.03 Availability of latest technologies*	5.2	59
1.04 State of cluster development*	2.9	98
1.05 Burden of government regulation*	2.4	128
1.06 Extent & effect of taxation*	3.2	98
1.07 Total tax rate, % profits	47.2	93
1.08 No. days to start a business	19	72
1.09 No. procedures to start a business	15	129
1.10 Freedom of the press*	6.1	23
Political and regulatory environment	**4.1**	**63**
2.01 Effectiveness of law-making bodies*	3.5	71
2.02 Laws relating to ICT*	3.6	83
2.03 Judicial independence*	3.5	74
2.04 Efficiency of legal system in settling disputes*	3.2	97
2.05 Efficiency of legal system in challenging regs*	3.1	93
2.06 Property rights*	4.7	52
2.07 Intellectual property protection*	4.0	49
2.08 Software piracy rate, % software installed	58	49
2.09 No. procedures to enforce a contract	39	83
2.10 No. days to enforce a contract	819	113
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**4.2**	**36**
3.01 Phone lines/100 pop.	47.0	16
3.02 Mobile network coverage, % pop. covered	99.9	23
3.03 Secure Internet servers/million pop.	79.2	44
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	45.4	45
3.05 Electricity production, kWh/capita	5,602.8	42
3.06 Tertiary education enrollment rate, %	90.8	3
3.07 Quality scientific research institutions*	3.3	88
3.08 Availability of scientists & engineers*	5.0	21
3.09 Availability research & training services*	3.7	88
3.10 Accessibility of digital content*	4.7	83

Readiness component	4.0	91
Individual readiness	**4.9**	**69**
4.01 Quality of math & science education*	4.3	56
4.02 Quality of educational system*	2.9	117
4.03 Adult literacy rate, %	97.0	56
4.04 Residential phone installation (PPP $)	49.2	38
4.05 Residential monthly phone subscription (PPP $)	20.8	113
4.06 Fixed phone tariffs (PPP $)	0.13	62
4.07 Mobile cellular tariffs (PPP $)	0.49	92
4.08 Fixed broadband Internet tariffs (PPP $)	23.2	25
4.09 Buyer sophistication*	3.6	58
Business readiness	**3.6**	**94**
5.01 Extent of staff training*	3.5	104
5.02 Quality of management schools*	3.7	97
5.03 Company spending on R&D*	2.4	125
5.04 University-industry collaboration in R&D*	3.0	111
5.05 Business phone installation (PPP $)	49.2	27
5.06 Business monthly phone subscription (PPP $)	20.8	87
5.07 Local supplier quality*	4.5	68
5.08 Computer, communications, & other services imports, % services imports	23.8	83
Government readiness	**3.5**	**108**
6.01 Gov't prioritization of ICT*	4.1	103
6.02 Gov't procurement of advanced tech.*	3.2	107
6.03 Importance of ICT to gov't vision*	3.4	109

Usage component	3.4	59
Individual usage	**4.1**	**50**
7.01 Mobile phone subscriptions/100 pop.	119.1	39
7.02 Cellular subscriptions w/data, % total	29.5	26
7.03 Households w/ personal computer, %	47.3	49
7.04 Broadband Internet subscribers/100 pop.	17.2	36
7.05 Internet users/100 pop.	44.5	50
7.06 Internet access in schools*	3.6	81
7.07 Use of virtual social networks*	5.0	82
7.08 Impact of ICT on access to basic services*	4.1	90
Business usage	**2.8**	**88**
8.01 Firm-level technology absorption*	4.4	90
8.02 Capacity for innovation*	2.5	105
8.03 Extent of business Internet use*	4.4	99
8.04 National office patent applications/million pop	61.9	34
8.05 Patent Cooperation Treaty apps/million pop	7.7	39
8.06 High-tech exports, % goods exports	6.3	36
8.07 Impact of ICT on new services and products*	4.1	97
8.08 Impact of ICT on new organizational models*	3.3	122
Government usage	**3.4**	**62**
9.01 Gov't success in ICT promotion	4.0	83
9.02 ICT use & gov't efficiency*	4.0	86
9.03 Government Online Service Index, 0–1 (best)	0.36	58
9.04 E-Participation Index, 0–1 (best)	0.26	47

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Guatemala

Key indicators

Population (millions), 2009	14.0
GDP (PPP) per capita (PPP $), 2009	4,831
GDP (US$ billions), 2009	37.7
Global Competitiveness Index 2010–2011 rank (out of 139)	78

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**94**
2009–2010 (133)	3.5	83
2008–2009 (134)	3.6	82
2007–2008 (127)	3.6	80
2006–2007 (122)	3.4	79

Environment component	3.5	93
Market environment	**4.3**	**54**
1.01 Venture capital availability*	2.4	77
1.02 Financial market sophistication*	4.4	65
1.03 Availability of latest technologies*	5.5	45
1.04 State of cluster development*	4.0	42
1.05 Burden of government regulation*	3.6	45
1.06 Extent & effect of taxation*	3.6	67
1.07 Total tax rate, % profits	40.9	72
1.08 No. days to start a business	37	109
1.09 No. procedures to start a business	12	116
1.10 Freedom of the press*	5.8	42
Political and regulatory environment	**3.4**	**114**
2.01 Effectiveness of law-making bodies*	2.0	134
2.02 Laws relating to ICT*	3.8	77
2.03 Judicial independence*	2.7	113
2.04 Efficiency of legal system in settling disputes*	3.1	104
2.05 Efficiency of legal system in challenging regs*	3.0	103
2.06 Property rights*	3.7	101
2.07 Intellectual property protection*	2.6	120
2.08 Software piracy rate, % software installed	80	86
2.09 No. procedures to enforce a contract	31	26
2.10 No. days to enforce a contract	1459	135
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.9**	**93**
3.01 Phone lines/100 pop.	10.1	94
3.02 Mobile network coverage, % pop. covered	76.0	111
3.03 Secure Internet servers/million pop.	8.8	78
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	1.9	98
3.05 Electricity production, kWh/capita	655.6	106
3.06 Tertiary education enrollment rate, %	17.7	94
3.07 Quality scientific research institutions*	3.1	94
3.08 Availability of scientists & engineers*	3.9	82
3.09 Availability research & training services*	4.4	54
3.10 Accessibility of digital content*	5.2	44

Readiness component	3.8	109
Individual readiness	**4.4**	**99**
4.01 Quality of math & science education*	2.6	130
4.02 Quality of educational system*	2.6	125
4.03 Adult literacy rate, %	73.8	111
4.04 Residential phone installation (PPP $)	138.7	111
4.05 Residential monthly phone subscription (PPP $)	9.9	58
4.06 Fixed phone tariffs (PPP $)	0.15	67
4.07 Mobile cellular tariffs (PPP $)	0.31	55
4.08 Fixed broadband Internet tariffs (PPP $)	63.6	95
4.09 Buyer sophistication*	3.5	67
Business readiness	**3.9**	**74**
5.01 Extent of staff training*	4.2	55
5.02 Quality of management schools*	4.6	43
5.03 Company spending on R&D*	3.0	65
5.04 University-industry collaboration in R&D*	3.8	54
5.05 Business phone installation (PPP $)	187.2	112
5.06 Business monthly phone subscription (PPP $)	11.0	35
5.07 Local supplier quality*	5.0	40
5.08 Computer, communications, & other services imports, % services imports	9.8	116
Government readiness	**3.1**	**128**
6.01 Gov't prioritization of ICT*	3.4	131
6.02 Gov't procurement of advanced tech.*	2.9	119
6.03 Importance of ICT to gov't vision*	3.1	124

Usage component	3.2	78
Individual usage	**3.1**	**86**
7.01 Mobile phone subscriptions/100 pop.	123.4	32
7.02 Cellular subscriptions w/data, % total	1.7	94
7.03 Households w/ personal computer, %	14.9	85
7.04 Broadband Internet subscribers/100 pop.	0.8	98
7.05 Internet users/100 pop.	16.3	93
7.06 Internet access in schools*	3.0	105
7.07 Use of virtual social networks*	5.4	52
7.08 Impact of ICT on access to basic services*	3.9	108
Business usage	**3.2**	**53**
8.01 Firm-level technology absorption*	5.2	44
8.02 Capacity for innovation*	2.9	71
8.03 Extent of business Internet use*	5.3	40
8.04 National office patent applications/million pop	0.5	86
8.05 Patent Cooperation Treaty apps/million pop	0.1	84
8.06 High-tech exports, % goods exports	2.0	65
8.07 Impact of ICT on new services and products*	4.9	43
8.08 Impact of ICT on new organizational models*	4.7	39
Government usage	**3.3**	**71**
9.01 Gov't success in ICT promotion	3.6	114
9.02 ICT use & gov't efficiency*	4.0	87
9.03 Government Online Service Index, 0–1 (best)	0.31	75
9.04 E-Participation Index, 0–1 (best)	0.31	36

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Guyana

Key indicators

Population (millions), 2009	0.8
GDP (PPP) per capita (PPP $), 2009	6,658
GDP (US$ billions), 2009	2.1
Global Competitiveness Index 2010–2011 rank (out of 139)	110

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.4**	**100**
2009–2010 (133)	3.2	100
2008–2009 (134)	3.3	100
2007–2008 (127)	3.2	102
2006–2007 (122)	3.0	98

Environment component 3.3 107

Market environment 3.7 103

1.01	Venture capital availability*	2.2	99
1.02	Financial market sophistication*	3.2	110
1.03	Availability of latest technologies*	4.3	106
1.04	State of cluster development*	3.0	94
1.05	Burden of government regulation*	3.5	47
1.06	Extent & effect of taxation*	2.8	124
1.07	Total tax rate, % profits	38.9	65
1.08	No. days to start a business	30	96
1.09	No. procedures to start a business	8	76
1.10	Freedom of the press*	4.6	83

Political and regulatory environment 3.4 109

2.01	Effectiveness of law-making bodies*	3.5	68
2.02	Laws relating to ICT*	3.0	115
2.03	Judicial independence*	3.4	85
2.04	Efficiency of legal system in settling disputes*	3.0	108
2.05	Efficiency of legal system in challenging regs*	3.0	106
2.06	Property rights*	3.7	94
2.07	Intellectual property protection*	3.1	89
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	36	54
2.10	No. days to enforce a contract	581	78
2.11	Internet & telephony competition, 0–6 (best)	2	119

Infrastructure environment 2.8 105

3.01	Phone lines/100 pop.	18.3	71
3.02	Mobile network coverage, % pop. covered	96.0	74
3.03	Secure Internet servers/million pop.	7.9	83
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.5	111
3.05	Electricity production, kWh/capita	1,074.5	92
3.06	Tertiary education enrollment rate, %	11.5	105
3.07	Quality scientific research institutions*	2.6	119
3.08	Availability of scientists & engineers*	2.9	132
3.09	Availability research & training services*	3.4	106
3.10	Accessibility of digital content*	4.1	103

Readiness component 4.2 65

Individual readiness 4.8 77

4.01	Quality of math & science education*	3.9	70
4.02	Quality of educational system*	3.7	67
4.03	Adult literacy rate, %	n/a	n/a
4.04	Residential phone installation (PPP $)	5.0	6
4.05	Residential monthly phone subscription (PPP $)	5.0	28
4.06	Fixed phone tariffs (PPP $)	0.01	11
4.07	Mobile cellular tariffs (PPP $)	0.32	59
4.08	Fixed broadband Internet tariffs (PPP $)	99.1	113
4.09	Buyer sophistication*	2.7	120

Business readiness 4.1 57

5.01	Extent of staff training*	4.1	60
5.02	Quality of management schools*	4.0	76
5.03	Company spending on R&D*	3.0	73
5.04	University-industry collaboration in R&D*	2.8	120
5.05	Business phone installation (PPP $)	30.7	13
5.06	Business monthly phone subscription (PPP $)	15.4	65
5.07	Local supplier quality*	4.4	77
5.08	Computer, communications, & other services imports, % services imports	40.2	36

Government readiness 3.8 91

6.01	Gov't prioritization of ICT*	4.3	91
6.02	Gov't procurement of advanced tech.*	3.3	94
6.03	Importance of ICT to gov't vision*	3.7	91

Usage component 2.8 101

Individual usage 2.9 91

7.01	Mobile phone subscriptions/100 pop.	74.4	93
7.02	Cellular subscriptions w/data, % total	n/a	n/a
7.03	Households w/ personal computer, %	5.9	112
7.04	Broadband Internet subscribers/100 pop.	0.9	95
7.05	Internet users/100 pop.	24.9	85
7.06	Internet access in schools*	3.0	107
7.07	Use of virtual social networks*	4.5	99
7.08	Impact of ICT on access to basic services*	4.1	93

Business usage 2.6 105

8.01	Firm-level technology absorption*	4.2	110
8.02	Capacity for innovation*	2.7	89
8.03	Extent of business Internet use*	4.7	80
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	0.0	123
8.07	Impact of ICT on new services and products*	3.9	103
8.08	Impact of ICT on new organizational models*	3.5	113

Government usage 2.8 113

9.01	Gov't success in ICT promotion	3.9	96
9.02	ICT use & gov't efficiency*	3.7	106
9.03	Government Online Service Index, 0–1 (best)	0.18	108
9.04	E-Participation Index, 0–1 (best)	0.09	99

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Honduras

Key indicators

Population (millions), 2009	7.5
GDP (PPP) per capita (PPP $), 2009	4,344
GDP (US$ billions), 2009	14.3
Global Competitiveness Index 2010–2011 rank (out of 139)	91

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.3**	**103**
2009–2010 (133)	3.1	106
2008–2009 (134)	3.4	95
2007–2008 (127)	3.3	90
2006–2007 (122)	3.1	94

Environment component	3.3	108
Market environment	**4.0**	**75**
1.01 Venture capital availability*	2.3	92
1.02 Financial market sophistication*	4.1	75
1.03 Availability of latest technologies*	4.7	83
1.04 State of cluster development*	3.3	76
1.05 Burden of government regulation*	3.7	34
1.06 Extent & effect of taxation*	3.7	51
1.07 Total tax rate, % profits	48.3	96
1.08 No. days to start a business	14	56
1.09 No. procedures to start a business	13	122
1.10 Freedom of the press*	5.6	50
Political and regulatory environment	**3.0**	**131**
2.01 Effectiveness of law-making bodies*	3.1	88
2.02 Laws relating to ICT*	3.4	99
2.03 Judicial independence*	3.1	95
2.04 Efficiency of legal system in settling disputes*	3.2	94
2.05 Efficiency of legal system in challenging regs*	3.4	75
2.06 Property rights*	3.8	92
2.07 Intellectual property protection*	3.2	79
2.08 Software piracy rate, % software installed	74	74
2.09 No. procedures to enforce a contract	45	119
2.10 No. days to enforce a contract	900	122
2.11 Internet & telephony competition, 0–6 (best)	0	131
Infrastructure environment	**2.8**	**99**
3.01 Phone lines/100 pop.	9.6	95
3.02 Mobile network coverage, % pop. covered	89.9	96
3.03 Secure Internet servers/million pop.	7.1	86
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	2.4	92
3.05 Electricity production, kWh/capita	880.4	97
3.06 Tertiary education enrollment rate, %	18.7	92
3.07 Quality scientific research institutions*	2.8	113
3.08 Availability of scientists & engineers*	3.4	113
3.09 Availability research & training services*	3.7	89
3.10 Accessibility of digital content*	4.6	85

Readiness component	3.8	110
Individual readiness	**4.3**	**106**
4.01 Quality of math & science education*	2.6	129
4.02 Quality of educational system*	2.8	122
4.03 Adult literacy rate, %	83.6	102
4.04 Residential phone installation (PPP $)	56.5	49
4.05 Residential monthly phone subscription (PPP $)	14.8	85
4.06 Fixed phone tariffs (PPP $)	0.17	77
4.07 Mobile cellular tariffs (PPP $)	0.40	80
4.08 Fixed broadband Internet tariffs (PPP $)	n/a	n/a
4.09 Buyer sophistication*	3.3	77
Business readiness	**3.6**	**100**
5.01 Extent of staff training*	3.8	79
5.02 Quality of management schools*	3.5	109
5.03 Company spending on R&D*	2.7	97
5.04 University-industry collaboration in R&D*	3.2	90
5.05 Business phone installation (PPP $)	113.5	79
5.06 Business monthly phone subscription (PPP $)	27.8	111
5.07 Local supplier quality*	4.2	88
5.08 Computer, communications, & other services imports, % services imports	24.9	81
Government readiness	**3.5**	**109**
6.01 Gov't prioritization of ICT*	3.8	117
6.02 Gov't procurement of advanced tech.*	3.4	88
6.03 Importance of ICT to gov't vision*	3.4	103

Usage component	2.9	93
Individual usage	**2.9**	**93**
7.01 Mobile phone subscriptions/100 pop.	112.4	46
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	11.1	100
7.04 Broadband Internet subscribers/100 pop.	0.0	138
7.05 Internet users/100 pop.	9.8	104
7.06 Internet access in schools*	3.2	97
7.07 Use of virtual social networks*	5.3	58
7.08 Impact of ICT on access to basic services*	3.9	106
Business usage	**2.9**	**77**
8.01 Firm-level technology absorption*	4.6	77
8.02 Capacity for innovation*	2.7	90
8.03 Extent of business Internet use*	4.9	62
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.3	103
8.07 Impact of ICT on new services and products*	4.5	68
8.08 Impact of ICT on new organizational models*	4.4	55
Government usage	**3.0**	**98**
9.01 Gov't success in ICT promotion	3.8	101
9.02 ICT use & gov't efficiency*	3.7	103
9.03 Government Online Service Index, 0–1 (best)	0.30	81
9.04 E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Hong Kong SAR

Key indicators

Population (millions), 2009	7.1
GDP (PPP) per capita (PPP $), 2009	42,653
GDP (US$ billions), 2009	210.6
Global Competitiveness Index 2010–2011 rank (out of 139)	11

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.2**	**12**
2009–2010 (133)	5.3	8
2008–2009 (134)	5.3	12
2007–2008 (127)	5.3	11
2006–2007 (122)	5.3	12

Environment component 5.4 12

Market environment 5.7 1

1.01	Venture capital availability*	4.4	1
1.02	Financial market sophistication*	6.4	5
1.03	Availability of latest technologies*	6.4	10
1.04	State of cluster development*	5.1	7
1.05	Burden of government regulation*	5.1	2
1.06	Extent & effect of taxation*	6.0	2
1.07	Total tax rate, % profits	24.1	19
1.08	No. days to start a business	6	12
1.09	No. procedures to start a business	3	7
1.10	Freedom of the press*	5.9	32

Political and regulatory environment 5.6 15

2.01	Effectiveness of law-making bodies*	4.2	39
2.02	Laws relating to ICT*	5.5	6
2.03	Judicial independence*	6.1	15
2.04	Efficiency of legal system in settling disputes*	6.1	3
2.05	Efficiency of legal system in challenging regs*	5.8	2
2.06	Property rights*	6.3	4
2.07	Intellectual property protection*	5.4	18
2.08	Software piracy rate, % software installed	47	33
2.09	No. procedures to enforce a contract	24	3
2.10	No. days to enforce a contract	280	8
2.11	Internet & telephony competition, 0–6 (best)	n/a	n/a

Infrastructure environment 5.0 20

3.01	Phone lines/100 pop.	60.9	3
3.02	Mobile network coverage, % pop. covered	100.0	1
3.03	Secure Internet servers/million pop.	352.4	23
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	5,792.7	2
3.05	Electricity production, kWh/capita	5,624.1	39
3.06	Tertiary education enrollment rate, %	34.3	67
3.07	Quality scientific research institutions*	4.5	35
3.08	Availability of scientists & engineers*	4.1	64
3.09	Availability research & training services*	5.4	15
3.10	Accessibility of digital content*	6.3	7

Readiness component 5.2 11

Individual readiness 6.0 2

4.01	Quality of math & science education*	5.4	12
4.02	Quality of educational system*	4.8	25
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	0.0	1
4.05	Residential monthly phone subscription (PPP $)	10.1	59
4.06	Fixed phone tariffs (PPP $)	0.00	1
4.07	Mobile cellular tariffs (PPP $)	0.01	1
4.08	Fixed broadband Internet tariffs (PPP $)	22.2	21
4.09	Buyer sophistication*	4.4	14

Business readiness 4.7 27

5.01	Extent of staff training*	4.7	27
5.02	Quality of management schools*	5.1	24
5.03	Company spending on R&D*	3.6	36
5.04	University-industry collaboration in R&D*	4.6	26
5.05	Business phone installation (PPP $)	0.0	1
5.06	Business monthly phone subscription (PPP $)	10.6	33
5.07	Local supplier quality*	5.4	20
5.08	Computer, communications, & other services imports, % services imports	23.7	85

Government readiness 4.9 18

6.01	Gov't prioritization of ICT*	5.4	26
6.02	Gov't procurement of advanced tech.*	4.3	26
6.03	Importance of ICT to gov't vision*	5.1	13

Usage component 4.9 13

Individual usage 5.6 11

7.01	Mobile phone subscriptions/100 pop.	179.4	4
7.02	Cellular subscriptions w/data, % total	35.1	23
7.03	Households w/ personal computer, %	75.8	18
7.04	Broadband Internet subscribers/100 pop.	29.2	14
7.05	Internet users/100 pop.	69.4	25
7.06	Internet access in schools*	6.1	9
7.07	Use of virtual social networks*	6.1	13
7.08	Impact of ICT on access to basic services*	5.6	12

Business usage 3.8 25

8.01	Firm-level technology absorption*	5.9	18
8.02	Capacity for innovation*	3.3	49
8.03	Extent of business Internet use*	6.0	13
8.04	National office patent applications/million pop	21.3	55
8.05	Patent Cooperation Treaty apps/million pop.	n/a	n/a
8.06	High-tech exports, % goods exports	11.4	26
8.07	Impact of ICT on new services and products*	5.4	19
8.08	Impact of ICT on new organizational models*	5.2	15

Government usage 5.3 7

9.01	Gov't success in ICT promotion	5.2	24
9.02	ICT use & gov't efficiency*	5.5	11
9.03	Government Online Service Index, 0–1 (best)	n/a	n/a
9.04	E-Participation Index, 0–1 (best)	n/a	n/a

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Hungary

Key indicators

Population (millions), 2009	10.0
GDP (PPP) per capita (PPP $), 2009	18,506
GDP (US$ billions), 2009	129.5
Global Competitiveness Index 2010–2011 rank (out of 139)	52

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.0**	**49**
2009–2010 (133)	4.0	46
2008–2009 (134)	4.3	41
2007–2008 (127)	4.3	37
2006–2007 (122)	4.3	33

Environment component	4.2	44
Market environment	**4.0**	**76**
1.01 Venture capital availability*	2.2	104
1.02 Financial market sophistication*	4.6	53
1.03 Availability of latest technologies*	5.5	47
1.04 State of cluster development*	2.9	100
1.05 Burden of government regulation*	2.2	133
1.06 Extent & effect of taxation*	2.1	137
1.07 Total tax rate, % profits	53.3	109
1.08 No. days to start a business	4	6
1.09 No. procedures to start a business	4	14
1.10 Freedom of the press*	5.4	60
Political and regulatory environment	**4.3**	**48**
2.01 Effectiveness of law-making bodies*	2.9	103
2.02 Laws relating to ICT*	4.1	57
2.03 Judicial independence*	4.0	58
2.04 Efficiency of legal system in settling disputes*	3.3	91
2.05 Efficiency of legal system in challenging regs*	2.8	113
2.06 Property rights*	4.4	65
2.07 Intellectual property protection*	4.0	50
2.08 Software piracy rate, % software installed	41	26
2.09 No. procedures to enforce a contract	35	46
2.10 No. days to enforce a contract	395	29
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**4.2**	**37**
3.01 Phone lines/100 pop.	30.7	40
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	113.5	38
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	59.9	39
3.05 Electricity production, kWh/capita	3,973.8	56
3.06 Tertiary education enrollment rate, %	65.0	23
3.07 Quality scientific research institutions*	5.2	18
3.08 Availability of scientists & engineers*	4.4	48
3.09 Availability research & training services*	4.4	47
3.10 Accessibility of digital content*	5.9	25

Readiness component	4.0	84
Individual readiness	**4.4**	**104**
4.01 Quality of math & science education*	4.8	30
4.02 Quality of educational system*	3.6	74
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	266.9	132
4.05 Residential monthly phone subscription (PPP $)	26.9	128
4.06 Fixed phone tariffs (PPP $)	0.23	99
4.07 Mobile cellular tariffs (PPP $)	0.57	106
4.08 Fixed broadband Internet tariffs (PPP $)	42.5	80
4.09 Buyer sophistication*	3.0	101
Business readiness	**4.1**	**58**
5.01 Extent of staff training*	3.7	87
5.02 Quality of management schools*	4.1	71
5.03 Company spending on R&D*	3.0	75
5.04 University-industry collaboration in R&D*	4.3	32
5.05 Business phone installation (PPP $)	284.6	125
5.06 Business monthly phone subscription (PPP $)	26.9	109
5.07 Local supplier quality*	4.6	62
5.08 Computer, communications, & other services imports, % services imports	55.9	7
Government readiness	**3.7**	**95**
6.01 Gov't prioritization of ICT*	4.3	93
6.02 Gov't procurement of advanced tech.*	3.2	105
6.03 Importance of ICT to gov't vision*	3.6	96

Usage component	3.9	38
Individual usage	**4.5**	**41**
7.01 Mobile phone subscriptions/100 pop.	118.0	40
7.02 Cellular subscriptions w/data, % total	19.4	42
7.03 Households w/ personal computer, %	63.0	35
7.04 Broadband Internet subscribers/100 pop.	18.8	33
7.05 Internet users/100 pop.	61.8	33
7.06 Internet access in schools*	5.4	31
7.07 Use of virtual social networks*	4.6	94
7.08 Impact of ICT on access to basic services*	4.0	99
Business usage	**3.5**	**35**
8.01 Firm-level technology absorption*	4.8	69
8.02 Capacity for innovation*	3.4	46
8.03 Extent of business Internet use*	4.9	66
8.04 National office patent applications/million pop	75.5	31
8.05 Patent Cooperation Treaty apps/million pop	16.6	30
8.06 High-tech exports, % goods exports	23.4	9
8.07 Impact of ICT on new services and products*	4.3	78
8.08 Impact of ICT on new organizational models*	3.7	94
Government usage	**3.6**	**53**
9.01 Gov't success in ICT promotion	3.6	116
9.02 ICT use & gov't efficiency*	4.0	84
9.03 Government Online Service Index, 0–1 (best)	0.50	26
9.04 E-Participation Index, 0–1 (best)	0.31	36

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Iceland

Key indicators

Population (millions), 2009	0.3
GDP (PPP) per capita (PPP $), 2009	37,853
GDP (US$ billions), 2009	12.1
Global Competitiveness Index 2010–2011 rank (out of 139)	31

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.1**	**16**
2009–2010 (133)	5.2	12
2008–2009 (134)	5.5	7
2007–2008 (127)	5.4	8
2006–2007 (122)	5.5	8

Environment component 5.4 11

Market environment		**4.6**	**35**
1.01	Venture capital availability*	2.4	83
1.02	Financial market sophistication*	3.4	104
1.03	Availability of latest technologies*	6.8	2
1.04	State of cluster development*	3.7	60
1.05	Burden of government regulation*	4.3	11
1.06	Extent & effect of taxation*	3.9	37
1.07	Total tax rate, % profits	26.8	26
1.08	No. days to start a business	5	8
1.09	No. procedures to start a business	5	22
1.10	Freedom of the press*	5.8	45
Political and regulatory environment		**5.4**	**19**
2.01	Effectiveness of law-making bodies*	4.2	38
2.02	Laws relating to ICT*	5.5	12
2.03	Judicial independence*	5.9	16
2.04	Efficiency of legal system in settling disputes*	5.1	20
2.05	Efficiency of legal system in challenging regs*	5.0	14
2.06	Property rights*	5.4	32
2.07	Intellectual property protection*	5.1	25
2.08	Software piracy rate, % software installed	49	35
2.09	No. procedures to enforce a contract	27	8
2.10	No. days to enforce a contract	417	38
2.11	Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment		**6.3**	**1**
3.01	Phone lines/100 pop.	57.4	6
3.02	Mobile network coverage, % pop. covered	99.0	48
3.03	Secure Internet servers/million pop.	1,711.3	1
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	626.8	5
3.05	Electricity production, kWh/capita	38,441.3	1
3.06	Tertiary education enrollment rate, %	74.6	14
3.07	Quality scientific research institutions*	5.0	24
3.08	Availability of scientists & engineers*	5.7	5
3.09	Availability research & training services*	5.4	16
3.10	Accessibility of digital content*	6.6	1

Readiness component 5.2 13

Individual readiness		**5.8**	**4**
4.01	Quality of math & science education*	5.3	14
4.02	Quality of educational system*	5.9	3
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	23.2	13
4.05	Residential monthly phone subscription (PPP $)	13.2	78
4.06	Fixed phone tariffs (PPP $)	0.10	53
4.07	Mobile cellular tariffs (PPP $)	0.16	20
4.08	Fixed broadband Internet tariffs (PPP $)	33.5	63
4.09	Buyer sophistication*	3.9	38
Business readiness		**4.9**	**14**
5.01	Extent of staff training*	4.7	24
5.02	Quality of management schools*	5.6	9
5.03	Company spending on R&D*	3.9	27
5.04	University-industry collaboration in R&D*	5.0	16
5.05	Business phone installation (PPP $)	23.2	6
5.06	Business monthly phone subscription (PPP $)	15.6	66
5.07	Local supplier quality*	5.3	25
5.08	Computer, communications, & other services imports, % services imports	36.9	44
Government readiness		**4.8**	**24**
6.01	Gov't prioritization of ICT*	5.4	29
6.02	Gov't procurement of advanced tech.*	4.3	24
6.03	Importance of ICT to gov't vision*	4.8	25

Usage component 4.6 23

Individual usage		**5.8**	**6**
7.01	Mobile phone subscriptions/100 pop.	105.3	55
7.02	Cellular subscriptions w/data, % total	5.8	72
7.03	Households w/ personal computer, %	92.5	1
7.04	Broadband Internet subscribers/100 pop.	33.2	6
7.05	Internet users/100 pop.	93.5	1
7.06	Internet access in schools*	6.8	1
7.07	Use of virtual social networks*	6.8	1
7.08	Impact of ICT on access to basic services*	5.8	7
Business usage		**4.2**	**17**
8.01	Firm-level technology absorption*	6.5	1
8.02	Capacity for innovation*	4.2	20
8.03	Extent of business Internet use*	6.3	4
8.04	National office patent applications/million pop	200.6	16
8.05	Patent Cooperation Treaty apps/million pop	166.1	12
8.06	High-tech exports, % goods exports	5.5	43
8.07	Impact of ICT on new services and products*	5.7	8
8.08	Impact of ICT on new organizational models*	5.3	12
Government usage		**3.9**	**46**
9.01	Gov't success in ICT promotion	5.4	12
9.02	ICT use & gov't efficiency*	5.4	14
9.03	Government Online Service Index, 0–1 (best)	0.40	47
9.04	E-Participation Index, 0–1 (best)	0.04	117

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

India

Key indicators

Population (millions), 2009	1,199.1
GDP (PPP) per capita (PPP $), 2009	3,015
GDP (US$ billions), 2009	1,236.9
Global Competitiveness Index 2010–2011 rank (out of 139)	51

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.0**	**48**
2009–2010 (133)	4.1	43
2008–2009 (134)	4.0	54
2007–2008 (127)	4.1	50
2006–2007 (122)	4.1	44

Environment component	3.9	58
Market environment	**4.4**	**41**
1.01 Venture capital availability*	3.2	31
1.02 Financial market sophistication*	5.2	35
1.03 Availability of latest technologies*	5.6	41
1.04 State of cluster development*	4.2	29
1.05 Burden of government regulation*	3.0	94
1.06 Extent & effect of taxation*	4.0	36
1.07 Total tax rate, % profits	63.3	119
1.08 No. days to start a business	29	94
1.09 No. procedures to start a business	12	116
1.10 Freedom of the press*	6.1	25
Political and regulatory environment	**4.3**	**52**
2.01 Effectiveness of law-making bodies*	4.3	36
2.02 Laws relating to ICT*	4.5	39
2.03 Judicial independence*	4.8	40
2.04 Efficiency of legal system in settling disputes*	4.1	46
2.05 Efficiency of legal system in challenging regs*	4.2	37
2.06 Property rights*	4.5	60
2.07 Intellectual property protection*	3.6	65
2.08 Software piracy rate, % software installed	65	58
2.09 No. procedures to enforce a contract	46	121
2.10 No. days to enforce a contract	1420	133
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.1**	**81**
3.01 Phone lines/100 pop.	3.1	110
3.02 Mobile network coverage, % pop. covered	83.0	104
3.03 Secure Internet servers/million pop.	1.6	104
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	2.2	95
3.05 Electricity production, kWh/capita	714.3	104
3.06 Tertiary education enrollment rate, %	13.5	101
3.07 Quality scientific research institutions*	4.7	30
3.08 Availability of scientists & engineers*	5.2	15
3.09 Availability research & training services*	4.4	51
3.10 Accessibility of digital content*	4.5	93

Readiness component	4.8	33
Individual readiness	**5.5**	**21**
4.01 Quality of math & science education*	4.7	38
4.02 Quality of educational system*	4.3	39
4.03 Adult literacy rate, %	62.8	120
4.04 Residential phone installation (PPP $)	17.9	12
4.05 Residential monthly phone subscription (PPP $)	7.2	44
4.06 Fixed phone tariffs (PPP $)	0.06	36
4.07 Mobile cellular tariffs (PPP $)	0.06	4
4.08 Fixed broadband Internet tariffs (PPP $)	14.9	6
4.09 Buyer sophistication*	3.8	43
Business readiness	**4.5**	**33**
5.01 Extent of staff training*	4.1	58
5.02 Quality of management schools*	5.1	23
5.03 Company spending on R&D*	3.6	37
5.04 University-industry collaboration in R&D*	3.7	58
5.05 Business phone installation (PPP $)	17.9	5
5.06 Business monthly phone subscription (PPP $)	7.2	21
5.07 Local supplier quality*	4.6	60
5.08 Computer, communications, & other services imports, % services imports	34.6	55
Government readiness	**4.5**	**47**
6.01 Gov't prioritization of ICT*	5.3	35
6.02 Gov't procurement of advanced tech.*	3.5	75
6.03 Importance of ICT to gov't vision*	4.6	32

Usage component	3.3	67
Individual usage	**2.8**	**98**
7.01 Mobile phone subscriptions/100 pop.	43.8	119
7.02 Cellular subscriptions w/data, % total	n/a	n/a
7.03 Households w/ personal computer, %	4.4	118
7.04 Broadband Internet subscribers/100 pop.	0.6	100
7.05 Internet users/100 pop.	5.1	118
7.06 Internet access in schools*	3.8	70
7.07 Use of virtual social networks*	4.8	89
7.08 Impact of ICT on access to basic services*	4.9	42
Business usage	**3.4**	**45**
8.01 Firm-level technology absorption*	5.3	39
8.02 Capacity for innovation*	3.6	33
8.03 Extent of business Internet use*	5.1	54
8.04 National office patent applications/million pop	5.3	71
8.05 Patent Cooperation Treaty apps/million pop	1.0	66
8.06 High-tech exports, % goods exports	5.9	38
8.07 Impact of ICT on new services and products*	5.1	36
8.08 Impact of ICT on new organizational models*	4.7	34
Government usage	**3.8**	**47**
9.01 Gov't success in ICT promotion	5.2	22
9.02 ICT use & gov't efficiency*	4.7	41
9.03 Government Online Service Index, 0–1 (best)	0.37	53
9.04 E-Participation Index, 0–1 (best)	0.20	56

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Indonesia

Key indicators

Population (millions), 2009	231.5
GDP (PPP) per capita (PPP $), 2009	4,151
GDP (US$ billions), 2009	539.4
Global Competitiveness Index 2010–2011 rank (out of 139)	44

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**53**
2009–2010 (133)	3.7	67
2008–2009 (134)	3.6	83
2007–2008 (127)	3.6	76
2006–2007 (122)	3.6	62

Environment component	3.9	62
Market environment	**4.5**	**37**
1.01 Venture capital availability*	3.9	9
1.02 Financial market sophistication*	4.6	55
1.03 Availability of latest technologies*	4.8	76
1.04 State of cluster development*	4.5	24
1.05 Burden of government regulation*	3.7	35
1.06 Extent & effect of taxation*	4.4	17
1.07 Total tax rate, % profits	37.3	58
1.08 No. days to start a business	47	118
1.09 No. procedures to start a business	9	92
1.10 Freedom of the press*	5.3	61
Political and regulatory environment	**3.9**	**72**
2.01 Effectiveness of law-making bodies*	3.6	63
2.02 Laws relating to ICT*	3.9	68
2.03 Judicial independence*	3.8	66
2.04 Efficiency of legal system in settling disputes*	3.8	59
2.05 Efficiency of legal system in challenging regs*	3.9	54
2.06 Property rights*	4.0	83
2.07 Intellectual property protection*	3.8	57
2.08 Software piracy rate, % software installed	86	98
2.09 No. procedures to enforce a contract	40	94
2.10 No. days to enforce a contract	570	75
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**3.2**	**74**
3.01 Phone lines/100 pop.	14.8	82
3.02 Mobile network coverage, % pop. covered	90.0	91
3.03 Secure Internet servers/million pop.	1.4	107
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	1.1	103
3.05 Electricity production, kWh/capita	633.1	107
3.06 Tertiary education enrollment rate, %	21.3	88
3.07 Quality scientific research institutions*	4.2	44
3.08 Availability of scientists & engineers*	4.7	31
3.09 Availability research & training services*	4.4	52
3.10 Accessibility of digital content*	4.8	74

Readiness component	4.7	39
Individual readiness	**5.6**	**18**
4.01 Quality of math & science education*	4.5	46
4.02 Quality of educational system*	4.3	40
4.03 Adult literacy rate, %	92.0	77
4.04 Residential phone installation (PPP $)	75.0	70
4.05 Residential monthly phone subscription (PPP $)	6.0	35
4.06 Fixed phone tariffs (PPP $)	0.04	24
4.07 Mobile cellular tariffs (PPP $)	0.13	14
4.08 Fixed broadband Internet tariffs (PPP $)	34.5	65
4.09 Buyer sophistication*	3.9	35
Business readiness	**4.3**	**42**
5.01 Extent of staff training*	4.4	36
5.02 Quality of management schools*	4.4	55
5.03 Company spending on R&D*	4.0	26
5.04 University-industry collaboration in R&D*	4.2	38
5.05 Business phone installation (PPP $)	114.4	81
5.06 Business monthly phone subscription (PPP $)	14.6	61
5.07 Local supplier quality*	4.6	61
5.08 Computer, communications, & other services imports, % services imports	32.2	64
Government readiness	**4.3**	**51**
6.01 Gov't prioritization of ICT*	4.7	68
6.02 Gov't procurement of advanced tech.*	4.2	29
6.03 Importance of ICT to gov't vision*	4.1	62

Usage component	3.1	80
Individual usage	**3.0**	**87**
7.01 Mobile phone subscriptions/100 pop.	69.2	99
7.02 Cellular subscriptions w/data, % total	9.3	60
7.03 Households w/ personal computer, %	8.3	106
7.04 Broadband Internet subscribers/100 pop.	0.7	99
7.05 Internet users/100 pop.	8.7	109
7.06 Internet access in schools*	4.5	50
7.07 Use of virtual social networks*	5.7	33
7.08 Impact of ICT on access to basic services*	4.5	68
Business usage	**3.2**	**50**
8.01 Firm-level technology absorption*	4.9	64
8.02 Capacity for innovation*	3.7	30
8.03 Extent of business Internet use*	5.0	61
8.04 National office patent applications/million pop	1.2	83
8.05 Patent Cooperation Treaty apps/million pop	0.1	91
8.06 High-tech exports, % goods exports	5.9	40
8.07 Impact of ICT on new services and products*	4.5	65
8.08 Impact of ICT on new organizational models*	4.4	51
Government usage	**3.2**	**82**
9.01 Gov't success in ICT promotion	4.3	65
9.02 ICT use & gov't efficiency*	4.2	72
9.03 Government Online Service Index, 0–1 (best)	0.24	99
9.04 E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Iran, Islamic Rep.

Key indicators

Population (millions), 2009	74.1
GDP (PPP) per capita (PPP $), 2009	10,939
GDP (US$ billions), 2009	325.9
Global Competitiveness Index 2010–2011 rank (out of 139)	69

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.4**	**101**
2009–2010 (133)	n/a	n/a
2008–2009 (134)	n/a	n/a
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.5	91
Market environment	**3.5**	**122**
1.01 Venture capital availability*	1.8	132
1.02 Financial market sophistication*	2.9	119
1.03 Availability of latest technologies*	4.1	122
1.04 State of cluster development*	3.1	90
1.05 Burden of government regulation*	2.9	98
1.06 Extent & effect of taxation*	3.5	71
1.07 Total tax rate, % profits	44.1	82
1.08 No. days to start a business	8	27
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	2.9	136
Political and regulatory environment	**3.7**	**89**
2.01 Effectiveness of law-making bodies*	3.8	50
2.02 Laws relating to ICT*	3.2	107
2.03 Judicial independence*	3.8	64
2.04 Efficiency of legal system in settling disputes*	3.4	78
2.05 Efficiency of legal system in challenging regs*	2.9	111
2.06 Property rights*	4.3	69
2.07 Intellectual property protection*	2.6	113
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	39	83
2.10 No. days to enforce a contract	505	56
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**3.4**	**64**
3.01 Phone lines/100 pop.	34.8	33
3.02 Mobile network coverage, % pop. covered	95.0	76
3.03 Secure Internet servers/million pop.	0.3	128
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	1.5	99
3.05 Electricity production, kWh/capita	2,872.2	65
3.06 Tertiary education enrollment rate, %	36.1	62
3.07 Quality scientific research institutions*	4.0	52
3.08 Availability of scientists & engineers*	4.6	37
3.09 Availability research & training services*	4.0	74
3.10 Accessibility of digital content*	3.8	111

Readiness component	4.1	78
Individual readiness	**5.1**	**55**
4.01 Quality of math & science education*	4.6	41
4.02 Quality of educational system*	3.1	107
4.03 Adult literacy rate, %	82.3	104
4.04 Residential phone installation (PPP $)	137.0	108
4.05 Residential monthly phone subscription (PPP $)	0.1	2
4.06 Fixed phone tariffs (PPP $)	0.02	13
4.07 Mobile cellular tariffs (PPP $)	0.24	40
4.08 Fixed broadband Internet tariffs (PPP $)	77.3	104
4.09 Buyer sophistication*	3.5	64
Business readiness	**3.4**	**118**
5.01 Extent of staff training*	2.9	131
5.02 Quality of management schools*	3.8	87
5.03 Company spending on R&D*	2.6	106
5.04 University-industry collaboration in R&D*	3.2	96
5.05 Business phone installation (PPP $)	344.2	131
5.06 Business monthly phone subscription (PPP $)	0.1	1
5.07 Local supplier quality*	3.6	124
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**3.8**	**88**
6.01 Gov't prioritization of ICT*	4.1	102
6.02 Gov't procurement of advanced tech.*	3.7	59
6.03 Importance of ICT to gov't vision*	3.6	94

Usage component	2.6	113
Individual usage	**2.5**	**110**
7.01 Mobile phone subscriptions/100 pop.	70.8	96
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	30.2	67
7.04 Broadband Internet subscribers/100 pop.	0.5	101
7.05 Internet users/100 pop.	11.1	101
7.06 Internet access in schools*	2.8	113
7.07 Use of virtual social networks*	3.2	131
7.08 Impact of ICT on access to basic services*	3.9	112
Business usage	**2.6**	**114**
8.01 Firm-level technology absorption*	4.1	115
8.02 Capacity for innovation*	2.9	68
8.03 Extent of business Internet use*	3.8	127
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.1	90
8.06 High-tech exports, % goods exports	0.6	88
8.07 Impact of ICT on new services and products*	3.9	107
8.08 Impact of ICT on new organizational models*	3.6	101
Government usage	**2.7**	**120**
9.01 Gov't success in ICT promotion	n/a	n/a
9.02 ICT use & gov't efficiency*	4.1	81
9.03 Government Online Service Index, 0–1 (best)	0.27	90
9.04 E-Participation Index, 0–1 (best)	0.07	105

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Ireland

Key indicators

Population (millions), 2009	4.5
GDP (PPP) per capita (PPP $), 2009	38,685
GDP (US$ billions), 2009	222.4
Global Competitiveness Index 2010–2011 rank (out of 139)	29

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.7**	**29**
2009–2010 (133)	4.8	24
2008–2009 (134)	5.0	23
2007–2008 (127)	5.0	23
2006–2007 (122)	5.0	21

Environment component	5.0	20
Market environment	**4.7**	**34**
1.01 Venture capital availability*	2.3	88
1.02 Financial market sophistication*	5.0	39
1.03 Availability of latest technologies*	5.8	34
1.04 State of cluster development*	4.1	32
1.05 Burden of government regulation*	3.1	86
1.06 Extent & effect of taxation*	3.9	38
1.07 Total tax rate, % profits	26.5	24
1.08 No. days to start a business	13	49
1.09 No. procedures to start a business	4	14
1.10 Freedom of the press*	6.4	14
Political and regulatory environment	**5.6**	**16**
2.01 Effectiveness of law-making bodies*	4.0	42
2.02 Laws relating to ICT*	4.7	35
2.03 Judicial independence*	6.2	10
2.04 Efficiency of legal system in settling disputes*	4.5	34
2.05 Efficiency of legal system in challenging regs*	4.5	27
2.06 Property rights*	5.9	13
2.07 Intellectual property protection*	5.6	15
2.08 Software piracy rate, % software installed	35	18
2.09 No. procedures to enforce a contract	20	1
2.10 No. days to enforce a contract	515	63
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**4.8**	**22**
3.01 Phone lines/100 pop.	46.1	17
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	744.2	16
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	152.6	22
3.05 Electricity production, kWh/capita	6,398.3	34
3.06 Tertiary education enrollment rate, %	58.3	33
3.07 Quality scientific research institutions*	5.3	16
3.08 Availability of scientists & engineers*	5.1	16
3.09 Availability research & training services*	5.0	24
3.10 Accessibility of digital content*	5.1	50

Readiness component	4.8	36
Individual readiness	**5.1**	**51**
4.01 Quality of math & science education*	4.7	34
4.02 Quality of educational system*	5.3	11
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	136.9	107
4.05 Residential monthly phone subscription (PPP $)	28.6	131
4.06 Fixed phone tariffs (PPP $)	0.24	102
4.07 Mobile cellular tariffs (PPP $)	0.34	68
4.08 Fixed broadband Internet tariffs (PPP $)	28.2	37
4.09 Buyer sophistication*	4.2	23
Business readiness	**5.1**	**10**
5.01 Extent of staff training*	4.7	23
5.02 Quality of management schools*	5.0	26
5.03 Company spending on R&D*	4.2	21
5.04 University-industry collaboration in R&D*	5.0	17
5.05 Business phone installation (PPP $)	146.6	98
5.06 Business monthly phone subscription (PPP $)	28.6	113
5.07 Local supplier quality*	5.3	23
5.08 Computer, communications, & other services imports, % services imports	75.5	1
Government readiness	**4.1**	**63**
6.01 Gov't prioritization of ICT*	4.7	64
6.02 Gov't procurement of advanced tech.*	3.6	74
6.03 Importance of ICT to gov't vision*	4.1	63

Usage component	4.3	29
Individual usage	**4.8**	**31**
7.01 Mobile phone subscriptions/100 pop.	107.9	53
7.02 Cellular subscriptions w/data, % total	36.8	21
7.03 Households w/ personal computer, %	72.8	22
7.04 Broadband Internet subscribers/100 pop.	21.6	27
7.05 Internet users/100 pop.	67.4	27
7.06 Internet access in schools*	4.2	58
7.07 Use of virtual social networks*	5.5	48
7.08 Impact of ICT on access to basic services*	4.6	58
Business usage	**4.0**	**23**
8.01 Firm-level technology absorption*	5.5	32
8.02 Capacity for innovation*	3.7	31
8.03 Extent of business Internet use*	5.6	32
8.04 National office patent applications/million pop	204.0	15
8.05 Patent Cooperation Treaty apps/million pop	95.3	18
8.06 High-tech exports, % goods exports	19.9	12
8.07 Impact of ICT on new services and products*	5.0	41
8.08 Impact of ICT on new organizational models*	4.7	35
Government usage	**4.2**	**35**
9.01 Gov't success in ICT promotion	4.3	64
9.02 ICT use & gov't efficiency*	4.7	43
9.03 Government Online Service Index, 0–1 (best)	0.50	28
9.04 E-Participation Index, 0–1 (best)	0.44	26

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Israel

Key indicators

Population (millions), 2009	7.3
GDP (PPP) per capita (PPP $), 2009	28,581
GDP (US$ billions), 2009	195.4
Global Competitiveness Index 2010–2011 rank (out of 139)	24

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.8**	**22**
2009–2010 (133)	4.6	28
2008–2009 (134)	5.0	25
2007–2008 (127)	5.2	18
2006–2007 (122)	5.1	18

Environment component	4.8	24
Market environment	**4.9**	**21**
1.01 Venture capital availability*	3.9	10
1.02 Financial market sophistication*	5.8	20
1.03 Availability of latest technologies*	6.4	6
1.04 State of cluster development*	3.5	66
1.05 Burden of government regulation*	3.1	84
1.06 Extent & effect of taxation*	3.8	45
1.07 Total tax rate, % profits	31.7	40
1.08 No. days to start a business	34	105
1.09 No. procedures to start a business	5	22
1.10 Freedom of the press*	6.5	12
Political and regulatory environment	**4.8**	**36**
2.01 Effectiveness of law-making bodies*	4.3	35
2.02 Laws relating to ICT*	4.5	43
2.03 Judicial independence*	6.2	14
2.04 Efficiency of legal system in settling disputes*	4.2	44
2.05 Efficiency of legal system in challenging regs*	4.1	42
2.06 Property rights*	4.7	48
2.07 Intellectual property protection*	4.2	42
2.08 Software piracy rate, % software installed	33	17
2.09 No. procedures to enforce a contract	35	46
2.10 No. days to enforce a contract	890	121
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**4.6**	**24**
3.01 Phone lines/100 pop.	45.3	18
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	290.9	27
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	20.0	58
3.05 Electricity production, kWh/capita	7,490.6	26
3.06 Tertiary education enrollment rate, %	59.7	31
3.07 Quality scientific research institutions*	6.2	1
3.08 Availability of scientists & engineers*	5.1	17
3.09 Availability research & training services*	4.9	30
3.10 Accessibility of digital content*	6.3	11

Readiness component	4.9	27
Individual readiness	**5.2**	**43**
4.01 Quality of math & science education*	3.5	94
4.02 Quality of educational system*	3.6	73
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	47.6	37
4.05 Residential monthly phone subscription (PPP $)	14.5	84
4.06 Fixed phone tariffs (PPP $)	0.08	50
4.07 Mobile cellular tariffs (PPP $)	0.27	44
4.08 Fixed broadband Internet tariffs (PPP $)	6.7	1
4.09 Buyer sophistication*	3.4	74
Business readiness	**5.0**	**11**
5.01 Extent of staff training*	4.7	25
5.02 Quality of management schools*	4.6	46
5.03 Company spending on R&D*	4.7	11
5.04 University-industry collaboration in R&D*	5.1	14
5.05 Business phone installation (PPP $)	68.0	42
5.06 Business monthly phone subscription (PPP $)	11.5	39
5.07 Local supplier quality*	5.4	21
5.08 Computer, communications, & other services imports, % services imports	48.3	19
Government readiness	**4.5**	**41**
6.01 Gov't prioritization of ICT*	5.1	47
6.02 Gov't procurement of advanced tech.*	4.4	19
6.03 Importance of ICT to gov't vision*	4.1	61

Usage component	4.8	19
Individual usage	**5.2**	**20**
7.01 Mobile phone subscriptions/100 pop.	125.8	30
7.02 Cellular subscriptions w/data, % total	49.7	11
7.03 Households w/ personal computer, %	74.5	20
7.04 Broadband Internet subscribers/100 pop.	25.8	17
7.05 Internet users/100 pop.	63.1	31
7.06 Internet access in schools*	5.2	33
7.07 Use of virtual social networks*	5.7	38
7.08 Impact of ICT on access to basic services*	5.0	32
Business usage	**4.7**	**9**
8.01 Firm-level technology absorption*	6.1	7
8.02 Capacity for innovation*	5.3	7
8.03 Extent of business Internet use*	6.1	9
8.04 National office patent applications/million pop	186.4	17
8.05 Patent Cooperation Treaty apps/million pop	199.0	10
8.06 High-tech exports, % goods exports	23.6	8
8.07 Impact of ICT on new services and products*	5.4	22
8.08 Impact of ICT on new organizational models*	5.4	10
Government usage	**4.3**	**28**
9.01 Gov't success in ICT promotion	4.6	45
9.02 ICT use & gov't efficiency*	4.8	35
9.03 Government Online Service Index, 0–1 (best)	0.58	19
9.04 E-Participation Index, 0–1 (best)	0.41	30

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Italy

Key indicators

Population (millions), 2009	59.8
GDP (PPP) per capita (PPP $), 2009	29,068
GDP (US$ billions), 2009	2,118.3
Global Competitiveness Index 2010–2011 rank (out of 139)	48

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.0**	**51**
2009–2010 (133)	4.0	48
2008–2009 (134)	4.2	45
2007–2008 (127)	4.2	42
2006–2007 (122)	4.2	38

Environment component	4.0	51
Market environment	**4.0**	**82**
1.01 Venture capital availability*	2.2	103
1.02 Financial market sophistication*	4.4	64
1.03 Availability of latest technologies*	5.0	72
1.04 State of cluster development*	5.5	1
1.05 Burden of government regulation*	2.2	132
1.06 Extent & effect of taxation*	2.4	132
1.07 Total tax rate, % profits	68.6	127
1.08 No. days to start a business	6	12
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	3.9	114
Political and regulatory environment	**4.0**	**69**
2.01 Effectiveness of law-making bodies*	3.0	97
2.02 Laws relating to ICT*	4.0	62
2.03 Judicial independence*	3.5	80
2.04 Efficiency of legal system in settling disputes*	2.6	128
2.05 Efficiency of legal system in challenging regs*	2.7	121
2.06 Property rights*	4.3	68
2.07 Intellectual property protection*	3.7	60
2.08 Software piracy rate, % software installed	49	35
2.09 No. procedures to enforce a contract	41	102
2.10 No. days to enforce a contract	1210	127
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**4.1**	**38**
3.01 Phone lines/100 pop.	36.2	32
3.02 Mobile network coverage, % pop. covered	99.8	33
3.03 Secure Internet servers/million pop.	109.3	39
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	129.9	27
3.05 Electricity production, kWh/capita	5,191.0	45
3.06 Tertiary education enrollment rate, %	67.1	20
3.07 Quality scientific research institutions*	3.8	65
3.08 Availability of scientists & engineers*	4.3	54
3.09 Availability research & training services*	4.7	37
3.10 Accessibility of digital content*	4.6	88

Readiness component	4.2	64
Individual readiness	**4.9**	**62**
4.01 Quality of math & science education*	3.6	81
4.02 Quality of educational system*	3.4	82
4.03 Adult literacy rate, %	98.8	41
4.04 Residential phone installation (PPP $)	121.3	100
4.05 Residential monthly phone subscription (PPP $)	20.3	109
4.06 Fixed phone tariffs (PPP $)	0.15	70
4.07 Mobile cellular tariffs (PPP $)	0.28	47
4.08 Fixed broadband Internet tariffs (PPP $)	25.1	31
4.09 Buyer sophistication*	4.0	34
Business readiness	**4.3**	**46**
5.01 Extent of staff training*	3.2	126
5.02 Quality of management schools*	4.7	38
5.03 Company spending on R&D*	3.5	39
5.04 University-industry collaboration in R&D*	3.5	69
5.05 Business phone installation (PPP $)	121.3	83
5.06 Business monthly phone subscription (PPP $)	20.3	84
5.07 Local supplier quality*	5.1	35
5.08 Computer, communications, & other services imports, % services imports	50.3	15
Government readiness	**3.4**	**113**
6.01 Gov't prioritization of ICT*	4.0	115
6.02 Gov't procurement of advanced tech.*	3.0	116
6.03 Importance of ICT to gov't vision*	3.4	104

Usage component	3.7	49
Individual usage	**4.6**	**38**
7.01 Mobile phone subscriptions/100 pop.	147.0	13
7.02 Cellular subscriptions w/data, % total	35.9	22
7.03 Households w/ personal computer, %	61.3	36
7.04 Broadband Internet subscribers/100 pop.	20.5	30
7.05 Internet users/100 pop.	48.8	46
7.06 Internet access in schools*	3.6	85
7.07 Use of virtual social networks*	5.4	51
7.08 Impact of ICT on access to basic services*	4.2	78
Business usage	**3.2**	**51**
8.01 Firm-level technology absorption*	4.3	101
8.02 Capacity for innovation*	4.0	27
8.03 Extent of business Internet use*	4.8	71
8.04 National office patent applications/million pop	146.4	24
8.05 Patent Cooperation Treaty apps/million pop	43.7	27
8.06 High-tech exports, % goods exports	6.7	34
8.07 Impact of ICT on new services and products*	4.2	88
8.08 Impact of ICT on new organizational models*	3.8	90
Government usage	**3.2**	**80**
9.01 Gov't success in ICT promotion	3.7	109
9.02 ICT use & gov't efficiency*	4.1	76
9.03 Government Online Service Index, 0–1 (best)	0.29	84
9.04 E-Participation Index, 0–1 (best)	0.21	53

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Jamaica

Key indicators

Population (millions), 2009	2.7
GDP (PPP) per capita (PPP $), 2009	8,804
GDP (US$ billions), 2009	12.6
Global Competitiveness Index 2010–2011 rank (out of 139)	95

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**73**
2009–2010 (133)	3.7	66
2008–2009 (134)	4.0	53
2007–2008 (127)	4.1	46
2006–2007 (122)	4.0	45

Environment component	3.8	65
Market environment	**4.2**	**58**
1.01 Venture capital availability*	1.9	124
1.02 Financial market sophistication*	4.8	42
1.03 Availability of latest technologies*	5.5	52
1.04 State of cluster development*	3.3	78
1.05 Burden of government regulation*	2.7	111
1.06 Extent & effect of taxation*	2.8	120
1.07 Total tax rate, % profits	50.1	103
1.08 No. days to start a business	8	27
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.9	34
Political and regulatory environment	**4.2**	**57**
2.01 Effectiveness of law-making bodies*	3.6	65
2.02 Laws relating to ICT*	3.9	70
2.03 Judicial independence*	4.5	50
2.04 Efficiency of legal system in settling disputes*	3.4	84
2.05 Efficiency of legal system in challenging regs*	3.3	80
2.06 Property rights*	4.3	72
2.07 Intellectual property protection*	3.2	78
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	35	46
2.10 No. days to enforce a contract	655	99
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**3.1**	**83**
3.01 Phone lines/100 pop.	11.1	89
3.02 Mobile network coverage, % pop. covered	95.0	76
3.03 Secure Internet servers/million pop.	35.6	55
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	7.4	78
3.05 Electricity production, kWh/capita	2,908.3	64
3.06 Tertiary education enrollment rate, %	24.2	85
3.07 Quality scientific research institutions*	3.7	67
3.08 Availability of scientists & engineers*	3.1	122
3.09 Availability research & training services*	3.5	99
3.10 Accessibility of digital content*	4.9	62

Readiness component	4.3	57
Individual readiness	**5.1**	**57**
4.01 Quality of math & science education*	2.9	114
4.02 Quality of educational system*	3.2	97
4.03 Adult literacy rate, %	85.9	96
4.04 Residential phone installation (PPP $)	12.9	8
4.05 Residential monthly phone subscription (PPP $)	12.5	72
4.06 Fixed phone tariffs (PPP $)	0.05	26
4.07 Mobile cellular tariffs (PPP $)	0.21	28
4.08 Fixed broadband Internet tariffs (PPP $)	31.5	54
4.09 Buyer sophistication*	3.4	69
Business readiness	**4.0**	**61**
5.01 Extent of staff training*	4.2	48
5.02 Quality of management schools*	4.1	70
5.03 Company spending on R&D*	2.8	82
5.04 University-industry collaboration in R&D*	3.6	65
5.05 Business phone installation (PPP $)	23.6	7
5.06 Business monthly phone subscription (PPP $)	33.5	125
5.07 Local supplier quality*	4.3	84
5.08 Computer, communications, & other services imports, % services imports	34.1	58
Government readiness	**4.0**	**77**
6.01 Gov't prioritization of ICT*	4.8	59
6.02 Gov't procurement of advanced tech.*	3.3	91
6.03 Importance of ICT to gov't vision*	3.8	76

Usage component	3.2	77
Individual usage	**3.6**	**60**
7.01 Mobile phone subscriptions/100 pop.	108.7	51
7.02 Cellular subscriptions w/data, % total	1.6	96
7.03 Households w/ personal computer, %	19.3	78
7.04 Broadband Internet subscribers/100 pop.	4.1	70
7.05 Internet users/100 pop.	58.2	37
7.06 Internet access in schools*	3.6	80
7.07 Use of virtual social networks*	5.1	70
7.08 Impact of ICT on access to basic services*	4.8	47
Business usage	**2.8**	**85**
8.01 Firm-level technology absorption*	4.7	74
8.02 Capacity for innovation*	2.5	107
8.03 Extent of business Internet use*	4.7	78
8.04 National office patent applications/million pop	7.8	65
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.3	99
8.07 Impact of ICT on new services and products*	4.6	61
8.08 Impact of ICT on new organizational models*	4.1	68
Government usage	**3.2**	**88**
9.01 Gov't success in ICT promotion	4.5	52
9.02 ICT use & gov't efficiency*	4.3	66
9.03 Government Online Service Index, 0–1 (best)	0.23	102
9.04 E-Participation Index, 0–1 (best)	0.09	99

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Japan

Key indicators

Population (millions), 2009	127.6
GDP (PPP) per capita (PPP $), 2009	32,554
GDP (US$ billions), 2009	5,068.9
Global Competitiveness Index 2010–2011 rank (out of 139)	6

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.9**	**19**
2009–2010 (133)	4.9	21
2008–2009 (134)	5.2	17
2007–2008 (127)	5.1	19
2006–2007 (122)	5.3	14

Environment component 5.0 21

Market environment 4.7 30

1.01	Venture capital availability*	2.8	49
1.02	Financial market sophistication*	5.1	37
1.03	Availability of latest technologies*	6.3	18
1.04	State of cluster development*	5.4	2
1.05	Burden of government regulation*	3.3	69
1.06	Extent & effect of taxation*	3.1	101
1.07	Total tax rate, % profits	48.6	97
1.08	No. days to start a business	23	85
1.09	No. procedures to start a business	8	76
1.10	Freedom of the press*	6.1	24

Political and regulatory environment 5.5 18

2.01	Effectiveness of law-making bodies*	4.4	31
2.02	Laws relating to ICT*	4.7	33
2.03	Judicial independence*	5.7	20
2.04	Efficiency of legal system in settling disputes*	4.7	27
2.05	Efficiency of legal system in challenging regs*	4.3	33
2.06	Property rights*	5.6	23
2.07	Intellectual property protection*	5.2	21
2.08	Software piracy rate, % software installed	21	2
2.09	No. procedures to enforce a contract	30	16
2.10	No. days to enforce a contract	360	21
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 4.8 23

3.01	Phone lines/100 pop.	34.1	34
3.02	Mobile network coverage, % pop. covered	99.9	23
3.03	Secure Internet servers/million pop.	519.6	20
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	57.7	40
3.05	Electricity production, kWh/capita	8,793.1	19
3.06	Tertiary education enrollment rate, %	58.0	34
3.07	Quality scientific research institutions*	5.3	15
3.08	Availability of scientists & engineers*	5.8	2
3.09	Availability research & training services*	5.6	13
3.10	Accessibility of digital content*	6.3	8

Readiness component 4.7 38

Individual readiness 4.7 80

4.01	Quality of math & science education*	4.9	28
4.02	Quality of educational system*	4.5	35
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	337.2	134
4.05	Residential monthly phone subscription (PPP $)	15.6	87
4.06	Fixed phone tariffs (PPP $)	0.08	46
4.07	Mobile cellular tariffs (PPP $)	1.27	128
4.08	Fixed broadband Internet tariffs (PPP $)	29.4	46
4.09	Buyer sophistication*	5.2	1

Business readiness 4.9 15

5.01	Extent of staff training*	5.4	6
5.02	Quality of management schools*	4.2	65
5.03	Company spending on R&D*	5.9	3
5.04	University-industry collaboration in R&D*	4.9	19
5.05	Business phone installation (PPP $)	337.2	130
5.06	Business monthly phone subscription (PPP $)	22.9	94
5.07	Local supplier quality*	6.2	4
5.08	Computer, communications, & other services imports, % services imports	49.7	16

Government readiness 4.6 37

6.01	Gov't prioritization of ICT*	5.2	41
6.02	Gov't procurement of advanced tech.*	4.1	40
6.03	Importance of ICT to gov't vision*	4.5	40

Usage component 5.1 8

Individual usage 5.4 14

7.01	Mobile phone subscriptions/100 pop.	91.5	75
7.02	Cellular subscriptions w/data, % total	93.8	4
7.03	Households w/ personal computer, %	81.8	11
7.04	Broadband Internet subscribers/100 pop.	24.9	19
7.05	Internet users/100 pop.	78.0	15
7.06	Internet access in schools*	4.9	40
7.07	Use of virtual social networks*	5.2	67
7.08	Impact of ICT on access to basic services*	4.9	45

Business usage 5.0 4

8.01	Firm-level technology absorption*	6.3	3
8.02	Capacity for innovation*	5.8	2
8.03	Extent of business Internet use*	6.0	11
8.04	National office patent applications/million pop	2,315.1	3
8.05	Patent Cooperation Treaty apps/million pop	252.1	6
8.06	High-tech exports, % goods exports	19.2	14
8.07	Impact of ICT on new services and products*	5.3	26
8.08	Impact of ICT on new organizational models*	4.6	44

Government usage 4.8 19

9.01	Gov't success in ICT promotion	4.5	53
9.02	ICT use & gov't efficiency*	4.3	68
9.03	Government Online Service Index, 0–1 (best)	0.67	13
9.04	E-Participation Index, 0–1 (best)	0.76	6

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Jordan

Key indicators

Population (millions), 2009	6.0
GDP (PPP) per capita (PPP $), 2009	5,548
GDP (US$ billions), 2009	25.1
Global Competitiveness Index 2010–2011 rank (out of 139)	65

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.0**	**50**
2009–2010 (133)	4.1	44
2008–2009 (134)	4.2	44
2007–2008 (127)	4.1	47
2006–2007 (122)	3.7	57

Environment component	4.0	49
Market environment	**4.2**	**57**
1.01 Venture capital availability*	2.7	54
1.02 Financial market sophistication*	4.7	52
1.03 Availability of latest technologies*	5.5	49
1.04 State of cluster development*	3.4	70
1.05 Burden of government regulation*	3.5	49
1.06 Extent & effect of taxation*	3.2	91
1.07 Total tax rate, % profits	31.2	38
1.08 No. days to start a business	13	49
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	4.1	105
Political and regulatory environment	**4.6**	**43**
2.01 Effectiveness of law-making bodies*	2.9	101
2.02 Laws relating to ICT*	3.9	74
2.03 Judicial independence*	4.6	47
2.04 Efficiency of legal system in settling disputes*	4.4	38
2.05 Efficiency of legal system in challenging regs*	4.0	49
2.06 Property rights*	5.4	30
2.07 Intellectual property protection*	4.4	38
2.08 Software piracy rate, % software installed	57	48
2.09 No. procedures to enforce a contract	38	73
2.10 No. days to enforce a contract	689	101
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.4**	**65**
3.01 Phone lines/100 pop.	7.9	100
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	12.1	67
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	18.1	60
3.05 Electricity production, kWh/capita	2,290.9	76
3.06 Tertiary education enrollment rate, %	40.7	57
3.07 Quality scientific research institutions*	3.1	97
3.08 Availability of scientists & engineers*	4.9	26
3.09 Availability research & training services*	4.4	48
3.10 Accessibility of digital content*	5.2	45

Readiness component	4.4	52
Individual readiness	**5.3**	**35**
4.01 Quality of math & science education*	4.4	53
4.02 Quality of educational system*	3.9	55
4.03 Adult literacy rate, %	92.2	75
4.04 Residential phone installation (PPP $)	75.1	71
4.05 Residential monthly phone subscription (PPP $)	11.5	66
4.06 Fixed phone tariffs (PPP $)	0.10	56
4.07 Mobile cellular tariffs (PPP $)	0.18	22
4.08 Fixed broadband Internet tariffs (PPP $)	30.4	49
4.09 Buyer sophistication*	3.2	85
Business readiness	**3.4**	**119**
5.01 Extent of staff training*	3.6	100
5.02 Quality of management schools*	3.9	83
5.03 Company spending on R&D*	2.5	115
5.04 University-industry collaboration in R&D*	3.1	98
5.05 Business phone installation (PPP $)	150.2	101
5.06 Business monthly phone subscription (PPP $)	26.0	105
5.07 Local supplier quality*	4.2	86
5.08 Computer, communications, & other services imports, % services imports	10.4	115
Government readiness	**4.5**	**43**
6.01 Gov't prioritization of ICT*	5.2	39
6.02 Gov't procurement of advanced tech.*	3.8	56
6.03 Importance of ICT to gov't vision*	4.5	36

Usage component	3.6	53
Individual usage	**3.6**	**62**
7.01 Mobile phone subscriptions/100 pop.	95.2	70
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	43.0	52
7.04 Broadband Internet subscribers/100 pop.	3.2	77
7.05 Internet users/100 pop.	26.0	82
7.06 Internet access in schools*	4.4	51
7.07 Use of virtual social networks*	5.3	57
7.08 Impact of ICT on access to basic services*	5.0	38
Business usage	**3.0**	**71**
8.01 Firm-level technology absorption*	5.5	29
8.02 Capacity for innovation*	2.6	96
8.03 Extent of business Internet use*	4.7	79
8.04 National office patent applications/million pop	10.1	62
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	1.0	81
8.07 Impact of ICT on new services and products*	4.4	74
8.08 Impact of ICT on new organizational models*	4.2	60
Government usage	**4.2**	**33**
9.01 Gov't success in ICT promotion	5.2	21
9.02 ICT use & gov't efficiency*	4.7	40
9.03 Government Online Service Index, 0–1 (best)	0.53	22
9.04 E-Participation Index, 0–1 (best)	0.29	41

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Kazakhstan

Key indicators

Population (millions), 2009	15.6
GDP (PPP) per capita (PPP $), 2009	11,679
GDP (US$ billions), 2009	107.9
Global Competitiveness Index 2010–2011 rank (out of 139)	72

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**67**
2009–2010 (133)	3.7	68
2008–2009 (134)	3.8	73
2007–2008 (127)	3.7	71
2006–2007 (122)	3.5	73

Environment component	3.6	87
Market environment	**3.8**	**97**
1.01 Venture capital availability*	2.4	81
1.02 Financial market sophistication*	3.6	98
1.03 Availability of latest technologies*	4.4	96
1.04 State of cluster development*	3.2	84
1.05 Burden of government regulation*	3.2	72
1.06 Extent & effect of taxation*	3.5	73
1.07 Total tax rate, % profits	29.6	30
1.08 No. days to start a business	19	72
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	3.9	119
Political and regulatory environment	**3.5**	**100**
2.01 Effectiveness of law-making bodies*	3.7	57
2.02 Laws relating to ICT*	4.0	60
2.03 Judicial independence*	2.9	108
2.04 Efficiency of legal system in settling disputes*	3.4	85
2.05 Efficiency of legal system in challenging regs*	3.3	84
2.06 Property rights*	3.5	111
2.07 Intellectual property protection*	2.8	97
2.08 Software piracy rate, % software installed	78	79
2.09 No. procedures to enforce a contract	38	73
2.10 No. days to enforce a contract	390	26
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**3.3**	**68**
3.01 Phone lines/100 pop.	24.7	52
3.02 Mobile network coverage, % pop. covered	94.0	85
3.03 Secure Internet servers/million pop.	3.3	96
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	7.0	79
3.05 Electricity production, kWh/capita	4,946.7	48
3.06 Tertiary education enrollment rate, %	41.0	56
3.07 Quality scientific research institutions*	2.9	111
3.08 Availability of scientists & engineers*	3.7	91
3.09 Availability research & training services*	4.0	76
3.10 Accessibility of digital content*	4.8	73

Readiness component	4.3	56
Individual readiness	**5.1**	**53**
4.01 Quality of math & science education*	3.8	77
4.02 Quality of educational system*	3.3	92
4.03 Adult literacy rate, %	99.7	3
4.04 Residential phone installation (PPP $)	188.7	123
4.05 Residential monthly phone subscription (PPP $)	2.8	12
4.06 Fixed phone tariffs (PPP $)	0.02	14
4.07 Mobile cellular tariffs (PPP $)	0.36	76
4.08 Fixed broadband Internet tariffs (PPP $)	22.0	19
4.09 Buyer sophistication*	3.7	49
Business readiness	**3.8**	**81**
5.01 Extent of staff training*	3.6	97
5.02 Quality of management schools*	3.6	103
5.03 Company spending on R&D*	2.8	83
5.04 University-industry collaboration in R&D*	3.0	110
5.05 Business phone installation (PPP $)	315.1	129
5.06 Business monthly phone subscription (PPP $)	12.5	44
5.07 Local supplier quality*	4.0	97
5.08 Computer, communications, & other services imports, % services imports	63.5	3
Government readiness	**4.1**	**66**
6.01 Gov't prioritization of ICT*	4.8	57
6.02 Gov't procurement of advanced tech.*	3.4	82
6.03 Importance of ICT to gov't vision*	4.1	59

Usage component	3.5	56
Individual usage	**3.3**	**73**
7.01 Mobile phone subscriptions/100 pop.	107.9	52
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	18.4	79
7.04 Broadband Internet subscribers/100 pop.	3.7	73
7.05 Internet users/100 pop.	33.9	68
7.06 Internet access in schools*	4.1	63
7.07 Use of virtual social networks*	4.4	104
7.08 Impact of ICT on access to basic services*	4.5	62
Business usage	**2.9**	**75**
8.01 Firm-level technology absorption*	4.3	104
8.02 Capacity for innovation*	2.8	75
8.03 Extent of business Internet use*	5.0	60
8.04 National office patent applications/million pop	95.2	28
8.05 Patent Cooperation Treaty apps/million pop	1.1	62
8.06 High-tech exports, % goods exports	4.2	53
8.07 Impact of ICT on new services and products*	3.9	106
8.08 Impact of ICT on new organizational models*	3.8	85
Government usage	**4.3**	**31**
9.01 Gov't success in ICT promotion	4.4	63
9.02 ICT use & gov't efficiency*	4.2	70
9.03 Government Online Service Index, 0–1 (best)	0.53	24
9.04 E-Participation Index, 0–1 (best)	0.56	18

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Kenya

Key indicators

Population (millions), 2009	35.9
GDP (PPP) per capita (PPP $), 2009	1,728
GDP (US$ billions), 2009	30.1
Global Competitiveness Index 2010–2011 rank (out of 139)	106

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**81**
2009–2010 (133)	3.4	90
2008–2009 (134)	3.4	97
2007–2008 (127)	3.3	92
2006–2007 (122)	3.1	95

Environment component	3.4	99
Market environment	**3.9**	**88**
1.01 Venture capital availability*	3.1	35
1.02 Financial market sophistication*	4.2	71
1.03 Availability of latest technologies*	4.7	81
1.04 State of cluster development*	4.0	43
1.05 Burden of government regulation*	2.8	105
1.06 Extent & effect of taxation*	2.8	121
1.07 Total tax rate, % profits	49.7	102
1.08 No. days to start a business	33	104
1.09 No. procedures to start a business	11	113
1.10 Freedom of the press*	4.4	90
Political and regulatory environment	**3.6**	**97**
2.01 Effectiveness of law-making bodies*	2.8	105
2.02 Laws relating to ICT*	3.9	71
2.03 Judicial independence*	2.6	120
2.04 Efficiency of legal system in settling disputes*	3.1	99
2.05 Efficiency of legal system in challenging regs*	3.0	107
2.06 Property rights*	3.7	102
2.07 Intellectual property protection*	2.9	93
2.08 Software piracy rate, % software installed	79	81
2.09 No. procedures to enforce a contract	40	94
2.10 No. days to enforce a contract	465	50
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**2.8**	**102**
3.01 Phone lines/100 pop.	1.7	119
3.02 Mobile network coverage, % pop. covered	84.5	102
3.03 Secure Internet servers/million pop.	1.3	108
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	4.2	87
3.05 Electricity production, kWh/capita	179.4	120
3.06 Tertiary education enrollment rate, %	4.1	123
3.07 Quality scientific research institutions*	3.9	54
3.08 Availability of scientists & engineers*	4.0	70
3.09 Availability research & training services*	4.3	56
3.10 Accessibility of digital content*	4.0	107

Readiness component	4.3	55
Individual readiness	**4.8**	**73**
4.01 Quality of math & science education*	4.2	63
4.02 Quality of educational system*	4.5	32
4.03 Adult literacy rate, %	86.5	94
4.04 Residential phone installation (PPP $)	61.6	53
4.05 Residential monthly phone subscription (PPP $)	13.4	80
4.06 Fixed phone tariffs (PPP $)	0.23	100
4.07 Mobile cellular tariffs (PPP $)	0.35	72
4.08 Fixed broadband Internet tariffs (PPP $)	80.3	106
4.09 Buyer sophistication*	3.2	88
Business readiness	**4.1**	**55**
5.01 Extent of staff training*	3.9	69
5.02 Quality of management schools*	4.5	51
5.03 Company spending on R&D*	3.6	34
5.04 University-industry collaboration in R&D*	3.8	55
5.05 Business phone installation (PPP $)	97.4	70
5.06 Business monthly phone subscription (PPP $)	14.3	58
5.07 Local supplier quality*	4.4	69
5.08 Computer, communications, & other services imports, % services imports	26.3	76
Government readiness	**4.1**	**70**
6.01 Gov't prioritization of ICT*	4.6	74
6.02 Gov't procurement of advanced tech.*	3.5	80
6.03 Importance of ICT to gov't vision*	4.3	50

Usage component	3.0	88
Individual usage	**2.7**	**104**
7.01 Mobile phone subscriptions/100 pop.	48.7	115
7.02 Cellular subscriptions w/data, % total	10.2	56
7.03 Households w/ personal computer, %	6.3	111
7.04 Broadband Internet subscribers/100 pop.	0.0	126
7.05 Internet users/100 pop.	10.0	103
7.06 Internet access in schools*	3.4	91
7.07 Use of virtual social networks*	4.8	85
7.08 Impact of ICT on access to basic services*	4.7	54
Business usage	**3.0**	**67**
8.01 Firm-level technology absorption*	4.9	66
8.02 Capacity for innovation*	3.2	52
8.03 Extent of business Internet use*	4.8	72
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.1	86
8.06 High-tech exports, % goods exports	2.1	62
8.07 Impact of ICT on new services and products*	4.7	55
8.08 Impact of ICT on new organizational models*	4.2	59
Government usage	**3.4**	**65**
9.01 Gov't success in ICT promotion	4.4	57
9.02 ICT use & gov't efficiency*	4.3	63
9.03 Government Online Service Index, 0–1 (best)	0.24	100
9.04 E-Participation Index, 0–1 (best)	0.23	51

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Korea, Rep.

Key indicators

Population (millions), 2009	48.8
GDP (PPP) per capita (PPP $), 2009	27,938
GDP (US$ billions), 2009	832.5
Global Competitiveness Index 2010–2011 rank (out of 139)	22

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.2**	**10**
2009–2010 (133)	5.1	15
2008–2009 (134)	5.4	11
2007–2008 (127)	5.4	9
2006–2007 (122)	5.1	19

Environment component 4.7 27

Market environment 4.3 53

1.01	Venture capital availability*	2.2	97
1.02	Financial market sophistication*	4.2	70
1.03	Availability of latest technologies*	6.1	23
1.04	State of cluster development*	4.4	25
1.05	Burden of government regulation*	2.8	107
1.06	Extent & effect of taxation*	3.4	80
1.07	Total tax rate, % profits	29.8	31
1.08	No. days to start a business	14	56
1.09	No. procedures to start a business	8	76
1.10	Freedom of the press*	4.6	84

Political and regulatory environment 4.6 41

2.01	Effectiveness of law-making bodies*	2.2	131
2.02	Laws relating to ICT*	5.1	25
2.03	Judicial independence*	4.0	59
2.04	Efficiency of legal system in settling disputes*	3.5	74
2.05	Efficiency of legal system in challenging regs*	3.2	86
2.06	Property rights*	4.7	53
2.07	Intellectual property protection*	4.1	43
2.08	Software piracy rate, % software installed	41	26
2.09	No. procedures to enforce a contract	35	46
2.10	No. days to enforce a contract	230	3
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 5.2 15

3.01	Phone lines/100 pop.	53.7	10
3.02	Mobile network coverage, % pop. covered	99.9	31
3.03	Secure Internet servers/million pop.	926.7	12
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	60.7	38
3.05	Electricity production, kWh/capita	8,789.6	20
3.06	Tertiary education enrollment rate, %	98.1	1
3.07	Quality scientific research institutions*	4.8	25
3.08	Availability of scientists & engineers*	4.9	23
3.09	Availability research & training services*	4.6	39
3.10	Accessibility of digital content*	6.2	14

Readiness component 5.1 17

Individual readiness 5.5 19

4.01	Quality of math & science education*	5.1	18
4.02	Quality of educational system*	3.9	57
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	0.0	1
4.05	Residential monthly phone subscription (PPP $)	6.5	38
4.06	Fixed phone tariffs (PPP $)	0.05	29
4.07	Mobile cellular tariffs (PPP $)	0.41	83
4.08	Fixed broadband Internet tariffs (PPP $)	34.9	67
4.09	Buyer sophistication*	4.6	11

Business readiness 4.9 16

5.01	Extent of staff training*	4.4	41
5.02	Quality of management schools*	4.5	47
5.03	Company spending on R&D*	4.7	12
5.04	University-industry collaboration in R&D*	4.7	23
5.05	Business phone installation (PPP $)	74.8	52
5.06	Business monthly phone subscription (PPP $)	6.5	15
5.07	Local supplier quality*	5.2	33
5.08	Computer, communications, & other services imports, % services imports	49.1	18

Government readiness 4.9 22

6.01	Gov't prioritization of ICT*	5.6	17
6.02	Gov't procurement of advanced tech.*	4.1	38
6.03	Importance of ICT to gov't vision*	5.0	20

Usage component 5.8 1

Individual usage 5.9 4

7.01	Mobile phone subscriptions/100 pop.	100.7	60
7.02	Cellular subscriptions w/data, % total	83.0	5
7.03	Households w/ personal computer, %	81.4	12
7.04	Broadband Internet subscribers/100 pop.	33.8	5
7.05	Internet users/100 pop.	81.5	9
7.06	Internet access in schools*	6.0	12
7.07	Use of virtual social networks*	5.6	39
7.08	Impact of ICT on access to basic services*	5.7	8

Business usage 5.2 2

8.01	Firm-level technology absorption*	6.1	9
8.02	Capacity for innovation*	4.3	18
8.03	Extent of business Internet use*	6.3	3
8.04	National office patent applications/million pop	2,611.8	2
8.05	Patent Cooperation Treaty apps/million pop	198.7	11
8.06	High-tech exports, % goods exports	30.5	7
8.07	Impact of ICT on new services and products*	5.9	3
8.08	Impact of ICT on new organizational models*	5.1	20

Government usage 6.2 1

9.01	Gov't success in ICT promotion	5.3	17
9.02	ICT use & gov't efficiency*	5.7	6
9.03	Government Online Service Index, 0–1 (best)	1.00	1
9.04	E-Participation Index, 0–1 (best)	1.00	1

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Kuwait

Key indicators

Population (millions), 2009	3.5
GDP (PPP) per capita (PPP $), 2009	37,849
GDP (US$ billions), 2009	98.4
Global Competitiveness Index 2010–2011 rank (out of 139)	35

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.7**	**75**
2009–2010 (133)	3.6	76
2008–2009 (134)	4.0	57
2007–2008 (127)	4.0	52
2006–2007 (122)	3.8	54

Environment component	4.0	52
Market environment	**4.4**	**44**
1.01 Venture capital availability*	3.4	22
1.02 Financial market sophistication*	4.5	58
1.03 Availability of latest technologies*	5.1	63
1.04 State of cluster development*	3.7	59
1.05 Burden of government regulation*	2.7	116
1.06 Extent & effect of taxation*	5.5	6
1.07 Total tax rate, % profits	15.5	9
1.08 No. days to start a business	35	106
1.09 No. procedures to start a business	13	122
1.10 Freedom of the press*	5.9	37
Political and regulatory environment	**3.8**	**78**
2.01 Effectiveness of law-making bodies*	3.3	81
2.02 Laws relating to ICT*	3.3	101
2.03 Judicial independence*	4.9	35
2.04 Efficiency of legal system in settling disputes*	4.4	37
2.05 Efficiency of legal system in challenging regs*	4.2	41
2.06 Property rights*	4.9	45
2.07 Intellectual property protection*	4.1	46
2.08 Software piracy rate, % software installed	60	53
2.09 No. procedures to enforce a contract	50	131
2.10 No. days to enforce a contract	566	74
2.11 Internet & telephony competition, 0–6 (best)	1	128
Infrastructure environment	**3.7**	**49**
3.01 Phone lines/100 pop.	18.5	70
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	85.2	43
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	8.7	75
3.05 Electricity production, kWh/capita	18,307.8	4
3.06 Tertiary education enrollment rate, %	18.9	91
3.07 Quality scientific research institutions*	3.5	75
3.08 Availability of scientists & engineers*	4.3	57
3.09 Availability research & training services*	4.0	75
3.10 Accessibility of digital content*	4.7	79

Readiness component	4.0	95
Individual readiness	**5.2**	**45**
4.01 Quality of math & science education*	3.5	88
4.02 Quality of educational system*	3.3	87
4.03 Adult literacy rate, %	94.5	65
4.04 Residential phone installation (PPP $)	122.3	102
4.05 Residential monthly phone subscription (PPP $)	8.7	48
4.06 Fixed phone tariffs (PPP $)	0.00	1
4.07 Mobile cellular tariffs (PPP $)	0.22	35
4.08 Fixed broadband Internet tariffs (PPP $)	26.4	34
4.09 Buyer sophistication*	3.4	72
Business readiness	**3.1**	**128**
5.01 Extent of staff training*	3.6	95
5.02 Quality of management schools*	3.7	95
5.03 Company spending on R&D*	2.7	101
5.04 University-industry collaboration in R&D*	3.2	95
5.05 Business phone installation (PPP $)	306.5	128
5.06 Business monthly phone subscription (PPP $)	23.8	97
5.07 Local supplier quality*	4.5	65
5.08 Computer, communications, & other services imports, % services imports	2.1	125
Government readiness	**3.6**	**105**
6.01 Gov't prioritization of ICT*	4.0	111
6.02 Gov't procurement of advanced tech.*	3.4	89
6.03 Importance of ICT to gov't vision*	3.4	108

Usage component	3.3	72
Individual usage	**3.7**	**57**
7.01 Mobile phone subscriptions/100 pop.	129.9	26
7.02 Cellular subscriptions w/data, % total	24.5	33
7.03 Households w/ personal computer, %	35.2	61
7.04 Broadband Internet subscribers/100 pop.	1.5	87
7.05 Internet users/100 pop.	36.9	63
7.06 Internet access in schools*	3.9	67
7.07 Use of virtual social networks*	5.4	56
7.08 Impact of ICT on access to basic services*	3.9	110
Business usage	**2.7**	**94**
8.01 Firm-level technology absorption*	5.3	38
8.02 Capacity for innovation*	2.6	97
8.03 Extent of business Internet use*	4.5	93
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.0	124
8.07 Impact of ICT on new services and products*	3.8	117
8.08 Impact of ICT on new organizational models*	3.8	89
Government usage	**3.4**	**69**
9.01 Gov't success in ICT promotion	3.6	113
9.02 ICT use & gov't efficiency*	3.7	105
9.03 Government Online Service Index, 0–1 (best)	0.46	35
9.04 E-Participation Index, 0–1 (best)	0.23	51

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Kyrgyz Republic

Key indicators

Population (millions), 2009	5.4
GDP (PPP) per capita (PPP $), 2009	2,250
GDP (US$ billions), 2009	4.6
Global Competitiveness Index 2010–2011 rank (out of 139)	121

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**116**
2009–2010 (133)	3.0	123
2008–2009 (134)	3.0	115
2007–2008 (127)	3.0	114
2006–2007 (122)	2.9	105

Environment component 3.2 112

Market environment 3.4 126

1.01	Venture capital availability*	1.8	129
1.02	Financial market sophistication*	2.7	124
1.03	Availability of latest technologies*	3.5	134
1.04	State of cluster development*	2.6	120
1.05	Burden of government regulation*	3.1	83
1.06	Extent & effect of taxation*	3.1	105
1.07	Total tax rate, % profits	57.2	116
1.08	No. days to start a business	10	39
1.09	No. procedures to start a business	2	3
1.10	Freedom of the press*	3.3	130

Political and regulatory environment 3.4 113

2.01	Effectiveness of law-making bodies*	2.4	123
2.02	Laws relating to ICT*	2.6	129
2.03	Judicial independence*	2.1	132
2.04	Efficiency of legal system in settling disputes*	2.7	126
2.05	Efficiency of legal system in challenging regs*	2.6	126
2.06	Property rights*	2.8	131
2.07	Intellectual property protection*	2.3	128
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	39	83
2.10	No. days to enforce a contract	260	5
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 2.8 97

3.01	Phone lines/100 pop.	9.1	97
3.02	Mobile network coverage, % pop. covered	82.8	107
3.03	Secure Internet servers/million pop.	0.9	113
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.6	107
3.05	Electricity production, kWh/capita	3,101.7	62
3.06	Tertiary education enrollment rate, %	52.0	44
3.07	Quality scientific research institutions*	2.2	133
3.08	Availability of scientists & engineers*	2.8	135
3.09	Availability research & training services*	3.1	119
3.10	Accessibility of digital content*	4.5	92

Readiness component 3.7 125

Individual readiness 5.2 42

4.01	Quality of math & science education*	3.6	87
4.02	Quality of educational system*	3.3	90
4.03	Adult literacy rate, %	99.3	13
4.04	Residential phone installation (PPP $)	54.2	45
4.05	Residential monthly phone subscription (PPP $)	3.4	14
4.06	Fixed phone tariffs (PPP $)	0.00	1
4.07	Mobile cellular tariffs (PPP $)	0.18	23
4.08	Fixed broadband Internet tariffs (PPP $)	75.6	103
4.09	Buyer sophistication*	3.2	81

Business readiness 3.1 130

5.01	Extent of staff training*	3.2	123
5.02	Quality of management schools*	3.0	128
5.03	Company spending on R&D*	2.0	137
5.04	University-industry collaboration in R&D*	2.2	138
5.05	Business phone installation (PPP $)	153.4	103
5.06	Business monthly phone subscription (PPP $)	6.0	13
5.07	Local supplier quality*	3.7	121
5.08	Computer, communications, & other services imports, % services imports	19.2	98

Government readiness 2.7 136

6.01	Gov't prioritization of ICT*	3.3	132
6.02	Gov't procurement of advanced tech.*	2.4	137
6.03	Importance of ICT to gov't vision*	2.5	136

Usage component 2.7 106

Individual usage 2.7 105

7.01	Mobile phone subscriptions/100 pop.	81.8	88
7.02	Cellular subscriptions w/data, % total	0.5	103
7.03	Households w/ personal computer, %	2.5	124
7.04	Broadband Internet subscribers/100 pop.	0.3	104
7.05	Internet users/100 pop.	40.0	57
7.06	Internet access in schools*	3.2	96
7.07	Use of virtual social networks*	3.9	120
7.08	Impact of ICT on access to basic services*	3.1	134

Business usage 2.3 134

8.01	Firm-level technology absorption*	3.5	136
8.02	Capacity for innovation*	2.2	130
8.03	Extent of business Internet use*	4.0	120
8.04	National office patent applications/million pop	25.4	53
8.05	Patent Cooperation Treaty apps/million pop	0.2	80
8.06	High-tech exports, % goods exports	0.9	82
8.07	Impact of ICT on new services and products*	3.1	132
8.08	Impact of ICT on new organizational models*	2.8	132

Government usage 3.0 97

9.01	Gov't success in ICT promotion	3.1	125
9.02	ICT use & gov't efficiency*	2.6	137
9.03	Government Online Service Index, 0–1 (best)	0.32	70
9.04	E-Participation Index, 0–1 (best)	0.43	28

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Latvia

Key indicators

Population (millions), 2009	2.3
GDP (PPP) per capita (PPP $), 2009	14,291
GDP (US$ billions), 2009	25.9
Global Competitiveness Index 2010–2011 rank (out of 139)	70

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**52**
2009–2010 (133)	3.9	52
2008–2009 (134)	4.1	48
2007–2008 (127)	4.1	44
2006–2007 (122)	4.1	42

Environment component	4.0	53
Market environment	**4.0**	**79**
1.01 Venture capital availability*	2.2	100
1.02 Financial market sophistication*	3.9	82
1.03 Availability of latest technologies*	5.1	65
1.04 State of cluster development*	2.9	102
1.05 Burden of government regulation*	3.1	87
1.06 Extent & effect of taxation*	2.9	116
1.07 Total tax rate, % profits	38.5	63
1.08 No. days to start a business	16	66
1.09 No. procedures to start a business	5	22
1.10 Freedom of the press*	5.0	71
Political and regulatory environment	**4.2**	**53**
2.01 Effectiveness of law-making bodies*	2.6	115
2.02 Laws relating to ICT*	3.8	80
2.03 Judicial independence*	3.7	70
2.04 Efficiency of legal system in settling disputes*	2.9	116
2.05 Efficiency of legal system in challenging regs*	2.8	117
2.06 Property rights*	4.3	70
2.07 Intellectual property protection*	3.6	63
2.08 Software piracy rate, % software installed	56	45
2.09 No. procedures to enforce a contract	27	8
2.10 No. days to enforce a contract	309	15
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.7**	**50**
3.01 Phone lines/100 pop.	28.6	44
3.02 Mobile network coverage, % pop. covered	98.8	64
3.03 Secure Internet servers/million pop.	114.4	37
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	35.4	49
3.05 Electricity production, kWh/capita	2,096.1	78
3.06 Tertiary education enrollment rate, %	69.2	18
3.07 Quality scientific research institutions*	3.8	61
3.08 Availability of scientists & engineers*	3.6	98
3.09 Availability research & training services*	4.1	68
3.10 Accessibility of digital content*	5.4	40

Readiness component	4.1	72
Individual readiness	**5.1**	**49**
4.01 Quality of math & science education*	4.2	59
4.02 Quality of educational system*	3.8	63
4.03 Adult literacy rate, %	99.8	1
4.04 Residential phone installation (PPP $)	94.1	90
4.05 Residential monthly phone subscription (PPP $)	9.3	53
4.06 Fixed phone tariffs (PPP $)	0.21	91
4.07 Mobile cellular tariffs (PPP $)	0.21	30
4.08 Fixed broadband Internet tariffs (PPP $)	31.9	55
4.09 Buyer sophistication*	3.2	86
Business readiness	**3.9**	**75**
5.01 Extent of staff training*	3.9	75
5.02 Quality of management schools*	4.2	67
5.03 Company spending on R&D*	2.7	93
5.04 University-industry collaboration in R&D*	3.5	72
5.05 Business phone installation (PPP $)	184.3	111
5.06 Business monthly phone subscription (PPP $)	21.7	90
5.07 Local supplier quality*	4.7	53
5.08 Computer, communications, & other services imports, % services imports	34.3	57
Government readiness	**3.5**	**110**
6.01 Gov't prioritization of ICT*	4.0	107
6.02 Gov't procurement of advanced tech.*	3.1	110
6.03 Importance of ICT to gov't vision*	3.3	113

Usage component	3.6	50
Individual usage	**4.5**	**43**
7.01 Mobile phone subscriptions/100 pop.	105.4	54
7.02 Cellular subscriptions w/data, % total	8.3	63
7.03 Households w/ personal computer, %	60.1	38
7.04 Broadband Internet subscribers/100 pop.	18.6	34
7.05 Internet users/100 pop.	66.8	28
7.06 Internet access in schools*	5.4	30
7.07 Use of virtual social networks*	5.2	66
7.08 Impact of ICT on access to basic services*	4.2	89
Business usage	**3.1**	**62**
8.01 Firm-level technology absorption*	4.5	88
8.02 Capacity for innovation*	3.1	57
8.03 Extent of business Internet use*	5.4	37
8.04 National office patent applications/million pop	106.4	27
8.05 Patent Cooperation Treaty apps/million pop	11.5	33
8.06 High-tech exports, % goods exports	5.3	44
8.07 Impact of ICT on new services and products*	4.1	98
8.08 Impact of ICT on new organizational models*	3.8	84
Government usage	**3.4**	**64**
9.01 Gov't success in ICT promotion	3.8	104
9.02 ICT use & gov't efficiency*	3.7	102
9.03 Government Online Service Index, 0–1 (best)	0.42	41
9.04 E-Participation Index, 0–1 (best)	0.27	44

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Lebanon

Key indicators

Population (millions), 2009	3.9
GDP (PPP) per capita (PPP $), 2009	14,268
GDP (US$ billions), 2009	34.5
Global Competitiveness Index 2010–2011 rank (out of 139)	92

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**95**
2009–2010 (133)	n/a	n/a
2008–2009 (134)	n/a	n/a
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component 3.6 81

Market environment 4.4 45

1.01	Venture capital availability*	2.5	67
1.02	Financial market sophistication*	4.7	50
1.03	Availability of latest technologies*	4.9	74
1.04	State of cluster development*	3.3	77
1.05	Burden of government regulation*	3.1	81
1.06	Extent & effect of taxation*	4.3	22
1.07	Total tax rate, % profits	30.2	34
1.08	No. days to start a business	9	34
1.09	No. procedures to start a business	5	22
1.10	Freedom of the press*	5.6	52

Political and regulatory environment 3.1 126

2.01	Effectiveness of law-making bodies*	2.4	124
2.02	Laws relating to ICT*	2.5	133
2.03	Judicial independence*	2.7	112
2.04	Efficiency of legal system in settling disputes*	3.0	106
2.05	Efficiency of legal system in challenging regs*	2.4	132
2.06	Property rights*	4.6	56
2.07	Intellectual property protection*	2.7	109
2.08	Software piracy rate, % software installed	72	71
2.09	No. procedures to enforce a contract	37	65
2.10	No. days to enforce a contract	721	103
2.11	Internet & telephony competition, 0–6 (best)	2	119

Infrastructure environment 3.4 66

3.01	Phone lines/100 pop.	19.0	69
3.02	Mobile network coverage, % pop. covered	95.0	76
3.03	Secure Internet servers/million pop.	15.4	64
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	4.3	86
3.05	Electricity production, kWh/capita	2,300.3	75
3.06	Tertiary education enrollment rate, %	51.5	45
3.07	Quality scientific research institutions*	2.4	129
3.08	Availability of scientists & engineers*	4.6	36
3.09	Availability research & training services*	4.4	53
3.10	Accessibility of digital content*	4.8	71

Readiness component 4.0 85

Individual readiness 5.3 32

4.01	Quality of math & science education*	5.6	7
4.02	Quality of educational system*	5.0	16
4.03	Adult literacy rate, %	89.6	84
4.04	Residential phone installation (PPP $)	47.4	36
4.05	Residential monthly phone subscription (PPP $)	12.6	74
4.06	Fixed phone tariffs (PPP $)	0.15	71
4.07	Mobile cellular tariffs (PPP $)	0.56	105
4.08	Fixed broadband Internet tariffs (PPP $)	35.9	69
4.09	Buyer sophistication*	4.1	28

Business readiness 4.3 44

5.01	Extent of staff training*	3.5	101
5.02	Quality of management schools*	5.1	20
5.03	Company spending on R&D*	2.5	118
5.04	University-industry collaboration in R&D*	3.1	108
5.05	Business phone installation (PPP $)	47.4	25
5.06	Business monthly phone subscription (PPP $)	12.6	46
5.07	Local supplier quality*	4.7	52
5.08	Computer, communications, & other services imports, % services imports	54.9	8

Government readiness 2.5 138

6.01	Gov't prioritization of ICT*	2.9	137
6.02	Gov't procurement of advanced tech.*	2.4	138
6.03	Importance of ICT to gov't vision*	2.2	138

Usage component 2.8 100

Individual usage 3.0 88

7.01	Mobile phone subscriptions/100 pop.	56.6	107
7.02	Cellular subscriptions w/data, % total	0.0	110
7.03	Households w/ personal computer, %	27.6	72
7.04	Broadband Internet subscribers/100 pop.	5.3	63
7.05	Internet users/100 pop.	23.7	88
7.06	Internet access in schools*	3.7	79
7.07	Use of virtual social networks*	5.9	20
7.08	Impact of ICT on access to basic services*	3.2	128

Business usage 2.8 91

8.01	Firm-level technology absorption*	4.8	67
8.02	Capacity for innovation*	2.6	99
8.03	Extent of business Internet use*	4.9	65
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.9	67
8.06	High-tech exports, % goods exports	4.6	51
8.07	Impact of ICT on new services and products*	3.8	115
8.08	Impact of ICT on new organizational models*	3.3	125

Government usage 2.6 125

9.01	Gov't success in ICT promotion	n/a	n/a
9.02	ICT use & gov't efficiency*	2.7	136
9.03	Government Online Service Index, 0–1 (best)	0.27	90
9.04	E-Participation Index, 0–1 (best)	0.27	44

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Lesotho

Key indicators

Population (millions), 2009	2.5
GDP (PPP) per capita (PPP $), 2009	1,210
GDP (US$ billions), 2009	1.6
Global Competitiveness Index 2010–2011 rank (out of 139)	128

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.1**	**121**
2009–2010 (133)	3.1	107
2008–2009 (134)	3.0	118
2007–2008 (127)	2.8	122
2006–2007 (122)	2.6	116

Environment component	3.2	118
Market environment	**3.7**	**105**
1.01 Venture capital availability*	2.1	115
1.02 Financial market sophistication*	2.7	125
1.03 Availability of latest technologies*	4.1	124
1.04 State of cluster development*	3.4	71
1.05 Burden of government regulation*	3.4	61
1.06 Extent & effect of taxation*	3.4	79
1.07 Total tax rate, % profits	19.6	12
1.08 No. days to start a business	40	114
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	4.1	107
Political and regulatory environment	**3.7**	**91**
2.01 Effectiveness of law-making bodies*	3.1	92
2.02 Laws relating to ICT*	2.8	121
2.03 Judicial independence*	3.2	90
2.04 Efficiency of legal system in settling disputes*	3.0	109
2.05 Efficiency of legal system in challenging regs*	2.7	123
2.06 Property rights*	3.7	100
2.07 Intellectual property protection*	3.0	91
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	41	102
2.10 No. days to enforce a contract	785	110
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.2**	**130**
3.01 Phone lines/100 pop.	1.9	118
3.02 Mobile network coverage, % pop. covered	55.0	123
3.03 Secure Internet servers/million pop.	0.5	124
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	130
3.05 Electricity production, kWh/capita	247.1	118
3.06 Tertiary education enrollment rate, %	3.6	127
3.07 Quality scientific research institutions*	2.7	117
3.08 Availability of scientists & engineers*	3.1	126
3.09 Availability research & training services*	3.2	117
3.10 Accessibility of digital content*	3.2	134

Readiness component	3.7	119
Individual readiness	**4.4**	**103**
4.01 Quality of math & science education*	3.4	99
4.02 Quality of educational system*	3.6	76
4.03 Adult literacy rate, %	89.5	86
4.04 Residential phone installation (PPP $)	75.3	72
4.05 Residential monthly phone subscription (PPP $)	11.2	64
4.06 Fixed phone tariffs (PPP $)	0.38	116
4.07 Mobile cellular tariffs (PPP $)	0.44	89
4.08 Fixed broadband Internet tariffs (PPP $)	82.8	108
4.09 Buyer sophistication*	2.7	122
Business readiness	**3.4**	**116**
5.01 Extent of staff training*	3.8	82
5.02 Quality of management schools*	3.5	110
5.03 Company spending on R&D*	3.1	59
5.04 University-industry collaboration in R&D*	3.1	106
5.05 Business phone installation (PPP $)	81.0	63
5.06 Business monthly phone subscription (PPP $)	14.4	60
5.07 Local supplier quality*	3.4	132
5.08 Computer, communications, & other services imports, % services imports	5.7	123
Government readiness	**3.4**	**117**
6.01 Gov't prioritization of ICT*	3.6	126
6.02 Gov't procurement of advanced tech.*	3.2	98
6.03 Importance of ICT to gov't vision*	3.3	110

Usage component	2.5	121
Individual usage	**2.1**	**126**
7.01 Mobile phone subscriptions/100 pop.	32.0	128
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	4.5	116
7.04 Broadband Internet subscribers/100 pop.	0.0	128
7.05 Internet users/100 pop.	3.7	122
7.06 Internet access in schools*	2.1	131
7.07 Use of virtual social networks*	4.4	105
7.08 Impact of ICT on access to basic services*	3.8	115
Business usage	**2.6**	**106**
8.01 Firm-level technology absorption*	4.1	113
8.02 Capacity for innovation*	2.2	132
8.03 Extent of business Internet use*	3.6	135
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	n/a	n/a
8.07 Impact of ICT on new services and products*	3.8	114
8.08 Impact of ICT on new organizational models*	3.6	96
Government usage	**2.8**	**110**
9.01 Gov't success in ICT promotion	3.6	115
9.02 ICT use & gov't efficiency*	3.5	114
9.03 Government Online Service Index, 0–1 (best)	0.26	92
9.04 E-Participation Index, 0–1 (best)	0.09	99

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Libya

Key indicators

Population (millions), 2009	6.3
GDP (PPP) per capita (PPP $), 2009	13,599
GDP (US$ billions), 2009	60.2
Global Competitiveness Index 2010–2011 rank (out of 139)	100

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.0**	**126**
2009–2010 (133)	3.2	103
2008–2009 (134)	3.3	101
2007–2008 (127)	3.1	105
2006–2007 (122)	n/a	n/a

Environment component 2.9 133

Market environment		**3.0**	**135**
1.01	Venture capital availability*	2.7	55
1.02	Financial market sophistication*	2.2	136
1.03	Availability of latest technologies*	4.4	95
1.04	State of cluster development*	2.3	135
1.05	Burden of government regulation*	2.8	108
1.06	Extent & effect of taxation*	4.0	34
1.07	Total tax rate, % profits	n/a	n/a
1.08	No. days to start a business	n/a	n/a
1.09	No. procedures to start a business	n/a	n/a
1.10	Freedom of the press*	2.5	137
Political and regulatory environment		**2.7**	**138**
2.01	Effectiveness of law-making bodies*	3.5	73
2.02	Laws relating to ICT*	2.2	138
2.03	Judicial independence*	3.1	94
2.04	Efficiency of legal system in settling disputes*	3.7	69
2.05	Efficiency of legal system in challenging regs*	3.5	67
2.06	Property rights*	3.5	110
2.07	Intellectual property protection*	2.8	101
2.08	Software piracy rate, % software installed	88	100
2.09	No. procedures to enforce a contract	n/a	n/a
2.10	No. days to enforce a contract	n/a	n/a
2.11	Internet & telephony competition, 0–6 (best)	0	131
Infrastructure environment		**2.9**	**89**
3.01	Phone lines/100 pop.	17.1	76
3.02	Mobile network coverage, % pop. covered	70.7	114
3.03	Secure Internet servers/million pop.	1.1	110
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.5	109
3.05	Electricity production, kWh/capita	4,165.0	53
3.06	Tertiary education enrollment rate, %	55.7	37
3.07	Quality scientific research institutions*	2.6	124
3.08	Availability of scientists & engineers*	3.5	104
3.09	Availability research & training services*	2.7	133
3.10	Accessibility of digital content*	4.4	97

Readiness component 3.5 130

Individual readiness		**4.3**	**105**
4.01	Quality of math & science education*	3.1	112
4.02	Quality of educational system*	2.0	137
4.03	Adult literacy rate, %	88.4	89
4.04	Residential phone installation (PPP $)	59.6	51
4.05	Residential monthly phone subscription (PPP $)	2.0	8
4.06	Fixed phone tariffs (PPP $)	n/a	n/a
4.07	Mobile cellular tariffs (PPP $)	n/a	n/a
4.08	Fixed broadband Internet tariffs (PPP $)	67.8	98
4.09	Buyer sophistication*	2.7	121
Business readiness		**2.7**	**138**
5.01	Extent of staff training*	3.4	109
5.02	Quality of management schools*	2.2	136
5.03	Company spending on R&D*	2.0	138
5.04	University-industry collaboration in R&D*	2.6	130
5.05	Business phone installation (PPP $)	214.4	116
5.06	Business monthly phone subscription (PPP $)	17.9	79
5.07	Local supplier quality*	3.3	135
5.08	Computer, communications, & other services imports, % services imports	1.7	126
Government readiness		**3.6**	**107**
6.01	Gov't prioritization of ICT*	4.2	96
6.02	Gov't procurement of advanced tech.*	2.8	125
6.03	Importance of ICT to gov't vision*	3.6	93

Usage component 2.7 105

Individual usage		**2.7**	**103**
7.01	Mobile phone subscriptions/100 pop.	77.9	90
7.02	Cellular subscriptions w/data, % total	38.2	19
7.03	Households w/ personal computer, %	7.0	108
7.04	Broadband Internet subscribers/100 pop.	0.2	111
7.05	Internet users/100 pop.	5.5	116
7.06	Internet access in schools*	2.3	128
7.07	Use of virtual social networks*	4.2	114
7.08	Impact of ICT on access to basic services*	3.9	109
Business usage		**2.5**	**117**
8.01	Firm-level technology absorption*	4.4	98
8.02	Capacity for innovation*	2.0	135
8.03	Extent of business Internet use*	4.0	118
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.2	83
8.06	High-tech exports, % goods exports	n/a	n/a
8.07	Impact of ICT on new services and products*	3.1	133
8.08	Impact of ICT on new organizational models*	3.3	121
Government usage		**2.9**	**102**
9.01	Gov't success in ICT promotion	4.4	61
9.02	ICT use & gov't efficiency*	3.3	125
9.03	Government Online Service Index, 0–1 (best)	0.14	118
9.04	E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Lithuania

Key indicators

Population (millions), 2009	3.3
GDP (PPP) per capita (PPP $), 2009	16,529
GDP (US$ billions), 2009	37.1
Global Competitiveness Index 2010–2011 rank (out of 139)	47

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.2**	**42**
2009–2010 (133)	4.1	41
2008–2009 (134)	4.4	35
2007–2008 (127)	4.4	33
2006–2007 (122)	4.2	39

Environment component	4.2	42
Market environment	**4.0**	**72**
1.01 Venture capital availability*	2.2	102
1.02 Financial market sophistication*	4.1	77
1.03 Availability of latest technologies*	5.6	37
1.04 State of cluster development*	2.9	104
1.05 Burden of government regulation*	2.7	114
1.06 Extent & effect of taxation*	2.7	125
1.07 Total tax rate, % profits	38.7	64
1.08 No. days to start a business	22	82
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.4	56
Political and regulatory environment	**4.3**	**51**
2.01 Effectiveness of law-making bodies*	2.9	100
2.02 Laws relating to ICT*	4.5	44
2.03 Judicial independence*	3.6	72
2.04 Efficiency of legal system in settling disputes*	3.5	76
2.05 Efficiency of legal system in challenging regs*	3.2	90
2.06 Property rights*	4.3	67
2.07 Intellectual property protection*	3.5	68
2.08 Software piracy rate, % software installed	54	40
2.09 No. procedures to enforce a contract	30	16
2.10 No. days to enforce a contract	275	7
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**4.2**	**33**
3.01 Phone lines/100 pop.	22.7	57
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	121.3	35
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	143.0	24
3.05 Electricity production, kWh/capita	3,990.4	55
3.06 Tertiary education enrollment rate, %	77.3	11
3.07 Quality scientific research institutions*	4.2	40
3.08 Availability of scientists & engineers*	4.4	51
3.09 Availability research & training services*	4.6	38
3.10 Accessibility of digital content*	6.0	22

Readiness component	4.2	62
Individual readiness	**4.9**	**65**
4.01 Quality of math & science education*	4.9	29
4.02 Quality of educational system*	3.7	69
4.03 Adult literacy rate, %	99.7	3
4.04 Residential phone installation (PPP $)	151.3	118
4.05 Residential monthly phone subscription (PPP $)	13.9	81
4.06 Fixed phone tariffs (PPP $)	0.30	111
4.07 Mobile cellular tariffs (PPP $)	0.29	51
4.08 Fixed broadband Internet tariffs (PPP $)	21.8	18
4.09 Buyer sophistication*	3.0	105
Business readiness	**4.0**	**62**
5.01 Extent of staff training*	4.1	63
5.02 Quality of management schools*	4.2	68
5.03 Company spending on R&D*	3.1	57
5.04 University-industry collaboration in R&D*	4.2	35
5.05 Business phone installation (PPP $)	151.3	102
5.06 Business monthly phone subscription (PPP $)	16.9	71
5.07 Local supplier quality*	5.0	44
5.08 Computer, communications, & other services imports, % services imports	19.9	96
Government readiness	**3.9**	**82**
6.01 Gov't prioritization of ICT*	4.5	76
6.02 Gov't procurement of advanced tech.*	3.2	103
6.03 Importance of ICT to gov't vision*	3.9	73

Usage component	4.2	33
Individual usage	**4.7**	**34**
7.01 Mobile phone subscriptions/100 pop.	151.0	10
7.02 Cellular subscriptions w/data, % total	3.2	79
7.03 Households w/ personal computer, %	57.3	40
7.04 Broadband Internet subscribers/100 pop.	19.3	32
7.05 Internet users/100 pop.	59.8	34
7.06 Internet access in schools*	5.5	27
7.07 Use of virtual social networks*	5.5	45
7.08 Impact of ICT on access to basic services*	4.9	43
Business usage	**3.5**	**38**
8.01 Firm-level technology absorption*	5.0	55
8.02 Capacity for innovation*	3.3	48
8.03 Extent of business Internet use*	6.3	5
8.04 National office patent applications/million pop	27.2	51
8.05 Patent Cooperation Treaty apps/million pop	3.0	50
8.06 High-tech exports, % goods exports	5.9	39
8.07 Impact of ICT on new services and products*	5.2	29
8.08 Impact of ICT on new organizational models*	4.9	26
Government usage	**4.3**	**29**
9.01 Gov't success in ICT promotion	4.3	69
9.02 ICT use & gov't efficiency*	4.8	34
9.03 Government Online Service Index, 0–1 (best)	0.48	29
9.04 E-Participation Index, 0–1 (best)	0.53	19

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Luxembourg

Key indicators

Population (millions), 2009	0.5
GDP (PPP) per capita (PPP $), 2009	78,409
GDP (US$ billions), 2009	52.4
Global Competitiveness Index 2010–2011 rank (out of 139)	20

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.1**	**14**
2009–2010 (133)	5.0	17
2008–2009 (134)	5.1	21
2007–2008 (127)	4.9	24
2006–2007 (122)	4.9	25

Environment component 5.5 8

Market environment 5.4 3

1.01	Venture capital availability*	4.2	5
1.02	Financial market sophistication*	6.6	1
1.03	Availability of latest technologies*	6.2	21
1.04	State of cluster development*	4.8	16
1.05	Burden of government regulation*	4.0	21
1.06	Extent & effect of taxation*	5.4	7
1.07	Total tax rate, % profits	21.1	13
1.08	No. days to start a business	19	72
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	6.2	19

Political and regulatory environment 6.1 5

2.01	Effectiveness of law-making bodies*	5.5	5
2.02	Laws relating to ICT*	5.3	19
2.03	Judicial independence*	5.9	17
2.04	Efficiency of legal system in settling disputes*	5.4	11
2.05	Efficiency of legal system in challenging regs*	5.6	3
2.06	Property rights*	6.2	6
2.07	Intellectual property protection*	6.0	5
2.08	Software piracy rate, % software installed	21	2
2.09	No. procedures to enforce a contract	26	5
2.10	No. days to enforce a contract	321	18
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 5.0 18

3.01	Phone lines/100 pop.	54.2	9
3.02	Mobile network coverage, % pop. covered	99.9	23
3.03	Secure Internet servers/million pop.	1,076.6	7
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	70,301.7	1
3.05	Electricity production, kWh/capita	6,648.0	32
3.06	Tertiary education enrollment rate, %	10.0	108
3.07	Quality scientific research institutions*	4.6	34
3.08	Availability of scientists & engineers*	3.9	81
3.09	Availability research & training services*	4.9	28
3.10	Accessibility of digital content*	5.9	27

Readiness component 5.2 12

Individual readiness 5.4 22

4.01	Quality of math & science education*	4.5	45
4.02	Quality of educational system*	4.4	36
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	63.7	57
4.05	Residential monthly phone subscription (PPP $)	20.4	111
4.06	Fixed phone tariffs (PPP $)	0.10	54
4.07	Mobile cellular tariffs (PPP $)	0.23	38
4.08	Fixed broadband Internet tariffs (PPP $)	32.1	58
4.09	Buyer sophistication*	4.9	4

Business readiness 4.8 22

5.01	Extent of staff training*	5.4	5
5.02	Quality of management schools*	4.2	66
5.03	Company spending on R&D*	4.8	10
5.04	University-industry collaboration in R&D*	5.1	15
5.05	Business phone installation (PPP $)	63.7	38
5.06	Business monthly phone subscription (PPP $)	20.4	85
5.07	Local supplier quality*	5.2	31
5.08	Computer, communications, & other services imports, % services imports	28.9	67

Government readiness 5.3 7

6.01	Gov't prioritization of ICT*	5.9	10
6.02	Gov't procurement of advanced tech.*	4.9	4
6.03	Importance of ICT to gov't vision*	5.1	12

Usage component 4.7 20

Individual usage 6.1 3

7.01	Mobile phone subscriptions/100 pop.	148.1	12
7.02	Cellular subscriptions w/data, % total	56.7	8
7.03	Households w/ personal computer, %	87.9	3
7.04	Broadband Internet subscribers/100 pop.	32.8	7
7.05	Internet users/100 pop.	87.3	5
7.06	Internet access in schools*	5.8	19
7.07	Use of virtual social networks*	6.1	14
7.08	Impact of ICT on access to basic services*	5.8	6

Business usage 4.2 18

8.01	Firm-level technology absorption*	5.7	20
8.02	Capacity for innovation*	4.6	16
8.03	Extent of business Internet use*	5.6	31
8.04	National office patent applications/million pop	120.5	25
8.05	Patent Cooperation Treaty apps/million pop	500.1	1
8.06	High-tech exports, % goods exports	7.7	31
8.07	Impact of ICT on new services and products*	5.1	34
8.08	Impact of ICT on new organizational models*	4.7	41

Government usage 4.0 42

9.01	Gov't success in ICT promotion	5.5	10
9.02	ICT use & gov't efficiency*	5.2	24
9.03	Government Online Service Index, 0–1 (best)	0.38	51
9.04	E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Macedonia, FYR

Key indicators

Population (millions), 2009	2.1
GDP (PPP) per capita (PPP $), 2009	9,183
GDP (US$ billions), 2009	9.4
Global Competitiveness Index 2010–2011 rank (out of 139)	79

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**72**
2009–2010 (133)	3.6	73
2008–2009 (134)	3.7	79
2007–2008 (127)	3.5	83
2006–2007 (122)	3.4	81

Environment component	3.7	73
Market environment	**4.1**	**67**
1.01 Venture capital availability*	2.5	72
1.02 Financial market sophistication*	3.8	91
1.03 Availability of latest technologies*	4.8	79
1.04 State of cluster development*	2.9	106
1.05 Burden of government regulation*	3.1	89
1.06 Extent & effect of taxation*	3.8	42
1.07 Total tax rate, % profits	10.6	3
1.08 No. days to start a business	3	3
1.09 No. procedures to start a business	3	7
1.10 Freedom of the press*	4.1	102
Political and regulatory environment	**3.8**	**82**
2.01 Effectiveness of law-making bodies*	3.6	64
2.02 Laws relating to ICT*	4.2	54
2.03 Judicial independence*	2.9	102
2.04 Efficiency of legal system in settling disputes*	3.1	98
2.05 Efficiency of legal system in challenging regs*	3.0	109
2.06 Property rights*	3.6	104
2.07 Intellectual property protection*	3.1	86
2.08 Software piracy rate, % software installed	67	62
2.09 No. procedures to enforce a contract	37	65
2.10 No. days to enforce a contract	370	23
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**3.3**	**70**
3.01 Phone lines/100 pop.	21.4	62
3.02 Mobile network coverage, % pop. covered	99.9	23
3.03 Secure Internet servers/million pop.	16.6	63
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.2	125
3.05 Electricity production, kWh/capita	3,298.8	60
3.06 Tertiary education enrollment rate, %	40.4	58
3.07 Quality scientific research institutions*	3.5	71
3.08 Availability of scientists & engineers*	3.6	95
3.09 Availability research & training services*	3.4	102
3.10 Accessibility of digital content*	4.9	67

Readiness component	4.2	67
Individual readiness	**4.6**	**87**
4.01 Quality of math & science education*	4.2	61
4.02 Quality of educational system*	3.9	58
4.03 Adult literacy rate, %	97.0	56
4.04 Residential phone installation (PPP $)	79.5	81
4.05 Residential monthly phone subscription (PPP $)	25.6	124
4.06 Fixed phone tariffs (PPP $)	0.19	84
4.07 Mobile cellular tariffs (PPP $)	0.58	108
4.08 Fixed broadband Internet tariffs (PPP $)	32.0	56
4.09 Buyer sophistication*	2.9	110
Business readiness	**3.8**	**85**
5.01 Extent of staff training*	3.3	118
5.02 Quality of management schools*	4.0	75
5.03 Company spending on R&D*	2.6	110
5.04 University-industry collaboration in R&D*	3.5	73
5.05 Business phone installation (PPP $)	79.5	61
5.06 Business monthly phone subscription (PPP $)	44.9	132
5.07 Local supplier quality*	4.3	83
5.08 Computer, communications, & other services imports, % services imports	45.0	24
Government readiness	**4.2**	**60**
6.01 Gov't prioritization of ICT*	5.2	38
6.02 Gov't procurement of advanced tech.*	3.1	109
6.03 Importance of ICT to gov't vision*	4.2	56

Usage component	3.4	60
Individual usage	**4.1**	**51**
7.01 Mobile phone subscriptions/100 pop.	95.1	71
7.02 Cellular subscriptions w/data, % total	15.2	49
7.03 Households w/ personal computer, %	54.1	43
7.04 Broadband Internet subscribers/100 pop.	10.7	45
7.05 Internet users/100 pop.	51.8	41
7.06 Internet access in schools*	4.4	54
7.07 Use of virtual social networks*	5.6	43
7.08 Impact of ICT on access to basic services*	4.7	50
Business usage	**2.7**	**98**
8.01 Firm-level technology absorption*	4.1	112
8.02 Capacity for innovation*	2.7	87
8.03 Extent of business Internet use*	4.2	104
8.04 National office patent applications/million pop	19.1	59
8.05 Patent Cooperation Treaty apps/million pop	1.0	65
8.06 High-tech exports, % goods exports	1.6	69
8.07 Impact of ICT on new services and products*	4.3	79
8.08 Impact of ICT on new organizational models*	3.8	91
Government usage	**3.5**	**58**
9.01 Gov't success in ICT promotion	4.2	72
9.02 ICT use & gov't efficiency*	4.4	56
9.03 Government Online Service Index, 0–1 (best)	0.32	69
9.04 E-Participation Index, 0–1 (best)	0.21	53

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Madagascar

Key indicators

Population (millions), 2009	20.8
GDP (PPP) per capita (PPP $), 2009	945
GDP (US$ billions), 2009	8.6
Global Competitiveness Index 2010–2011 rank (out of 139)	124

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.0**	**129**
2009–2010 (133)	3.0	121
2008–2009 (134)	3.1	112
2007–2008 (127)	3.1	104
2006–2007 (122)	3.0	102

Environment component 2.9 130

Market environment		**3.6**	**112**
1.01	Venture capital availability*	2.5	70
1.02	Financial market sophistication*	2.5	129
1.03	Availability of latest technologies*	4.3	104
1.04	State of cluster development*	2.6	124
1.05	Burden of government regulation*	3.0	92
1.06	Extent & effect of taxation*	3.1	104
1.07	Total tax rate, % profits	37.7	61
1.08	No. days to start a business	7	20
1.09	No. procedures to start a business	2	3
1.10	Freedom of the press*	3.2	132
Political and regulatory environment		**3.1**	**129**
2.01	Effectiveness of law-making bodies*	2.5	117
2.02	Laws relating to ICT*	2.5	132
2.03	Judicial independence*	2.5	125
2.04	Efficiency of legal system in settling disputes*	2.8	120
2.05	Efficiency of legal system in challenging regs*	3.0	105
2.06	Property rights*	3.0	125
2.07	Intellectual property protection*	2.2	133
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	38	73
2.10	No. days to enforce a contract	871	119
2.11	Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment		**2.1**	**132**
3.01	Phone lines/100 pop.	0.9	127
3.02	Mobile network coverage, % pop. covered	23.0	130
3.03	Secure Internet servers/million pop.	0.4	125
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.1	127
3.05	Electricity production, kWh/capita	56.2	131
3.06	Tertiary education enrollment rate, %	3.4	129
3.07	Quality scientific research institutions*	2.8	114
3.08	Availability of scientists & engineers*	4.4	52
3.09	Availability research & training services*	3.3	110
3.10	Accessibility of digital content*	3.4	126

Readiness component 3.5 129

Individual readiness		**3.2**	**134**
4.01	Quality of math & science education*	3.6	84
4.02	Quality of educational system*	3.3	91
4.03	Adult literacy rate, %	70.7	116
4.04	Residential phone installation (PPP $)	68.7	63
4.05	Residential monthly phone subscription (PPP $)	14.0	82
4.06	Fixed phone tariffs (PPP $)	0.69	130
4.07	Mobile cellular tariffs (PPP $)	0.63	112
4.08	Fixed broadband Internet tariffs (PPP $)	228.1	126
4.09	Buyer sophistication*	2.3	133
Business readiness		**3.8**	**86**
5.01	Extent of staff training*	3.3	113
5.02	Quality of management schools*	4.0	77
5.03	Company spending on R&D*	2.6	114
5.04	University-industry collaboration in R&D*	3.1	99
5.05	Business phone installation (PPP $)	68.7	43
5.06	Business monthly phone subscription (PPP $)	14.0	57
5.07	Local supplier quality*	3.9	111
5.08	Computer, communications, & other services imports, % services imports	34.7	53
Government readiness		**3.6**	**102**
6.01	Gov't prioritization of ICT*	4.0	108
6.02	Gov't procurement of advanced tech.*	3.5	78
6.03	Importance of ICT to gov't vision*	3.3	114

Usage component 2.5 123

Individual usage		**2.2**	**123**
7.01	Mobile phone subscriptions/100 pop.	32.0	127
7.02	Cellular subscriptions w/data, % total	0.0	110
7.03	Households w/ personal computer, %	2.5	124
7.04	Broadband Internet subscribers/100 pop.	0.0	125
7.05	Internet users/100 pop.	1.6	131
7.06	Internet access in schools*	2.7	117
7.07	Use of virtual social networks*	4.4	107
7.08	Impact of ICT on access to basic services*	4.0	102
Business usage		**2.5**	**119**
8.01	Firm-level technology absorption*	4.2	106
8.02	Capacity for innovation*	2.6	98
8.03	Extent of business Internet use*	4.1	114
8.04	National office patent applications/million pop	0.1	91
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	1.0	80
8.07	Impact of ICT on new services and products*	3.8	112
8.08	Impact of ICT on new organizational models*	3.3	123
Government usage		**2.8**	**112**
9.01	Gov't success in ICT promotion	4.3	66
9.02	ICT use & gov't efficiency*	3.5	115
9.03	Government Online Service Index, 0–1 (best)	0.17	114
9.04	E-Participation Index, 0–1 (best)	0.06	111

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Malawi

Key indicators

Population (millions), 2009	13.9
GDP (PPP) per capita (PPP $), 2009	867
GDP (US$ billions), 2009	4.7
Global Competitiveness Index 2010–2011 rank (out of 139)	125

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.3**	**105**
2009–2010 (133)	3.0	119
2008–2009 (134)	3.1	110
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.6	85
Market environment	**3.9**	**91**
1.01 Venture capital availability*	1.8	131
1.02 Financial market sophistication*	3.7	93
1.03 Availability of latest technologies*	4.3	107
1.04 State of cluster development*	3.7	57
1.05 Burden of government regulation*	3.7	36
1.06 Extent & effect of taxation*	3.2	95
1.07 Total tax rate, % profits	25.1	22
1.08 No. days to start a business	39	112
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	5.1	69
Political and regulatory environment	**4.2**	**56**
2.01 Effectiveness of law-making bodies*	3.7	56
2.02 Laws relating to ICT*	3.4	96
2.03 Judicial independence*	4.6	46
2.04 Efficiency of legal system in settling disputes*	3.9	55
2.05 Efficiency of legal system in challenging regs*	3.9	51
2.06 Property rights*	4.2	76
2.07 Intellectual property protection*	3.8	55
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	42	109
2.10 No. days to enforce a contract	312	16
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.7**	**109**
3.01 Phone lines/100 pop.	1.1	123
3.02 Mobile network coverage, % pop. covered	93.0	87
3.03 Secure Internet servers/million pop.	0.3	131
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	133
3.05 Electricity production, kWh/capita	117.0	125
3.06 Tertiary education enrollment rate, %	0.5	138
3.07 Quality scientific research institutions*	3.4	76
3.08 Availability of scientists & engineers*	3.9	83
3.09 Availability research & training services*	3.7	92
3.10 Accessibility of digital content*	4.0	109

Readiness component	3.9	102
Individual readiness	**3.9**	**124**
4.01 Quality of math & science education*	3.7	79
4.02 Quality of educational system*	4.0	49
4.03 Adult literacy rate, %	72.8	112
4.04 Residential phone installation (PPP $)	23.9	14
4.05 Residential monthly phone subscription (PPP $)	2.0	9
4.06 Fixed phone tariffs (PPP $)	0.30	110
4.07 Mobile cellular tariffs (PPP $)	0.69	115
4.08 Fixed broadband Internet tariffs (PPP $)	1,293.5	131
4.09 Buyer sophistication*	2.6	124
Business readiness	**3.8**	**78**
5.01 Extent of staff training*	4.0	66
5.02 Quality of management schools*	3.7	96
5.03 Company spending on R&D*	3.0	76
5.04 University-industry collaboration in R&D*	3.4	78
5.05 Business phone installation (PPP $)	30.4	12
5.06 Business monthly phone subscription (PPP $)	2.5	4
5.07 Local supplier quality*	4.1	93
5.08 Computer, communications, & other services imports, % services imports	14.7	106
Government readiness	**3.9**	**79**
6.01 Gov't prioritization of ICT*	4.2	97
6.02 Gov't procurement of advanced tech.*	3.7	67
6.03 Importance of ICT to gov't vision*	3.9	71

Usage component	2.5	126
Individual usage	**2.1**	**124**
7.01 Mobile phone subscriptions/100 pop.	15.7	136
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	7.6	107
7.04 Broadband Internet subscribers/100 pop.	0.0	124
7.05 Internet users/100 pop.	4.7	119
7.06 Internet access in schools*	2.5	125
7.07 Use of virtual social networks*	4.1	117
7.08 Impact of ICT on access to basic services*	4.2	85
Business usage	**2.7**	**95**
8.01 Firm-level technology absorption*	4.3	102
8.02 Capacity for innovation*	2.7	84
8.03 Extent of business Internet use*	4.4	101
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.3	102
8.07 Impact of ICT on new services and products*	4.3	85
8.08 Impact of ICT on new organizational models*	3.9	80
Government usage	**2.6**	**127**
9.01 Gov't success in ICT promotion	4.0	84
9.02 ICT use & gov't efficiency*	3.9	89
9.03 Government Online Service Index, 0–1 (best)	0.02	134
9.04 E-Participation Index, 0–1 (best)	0.02	125

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Malaysia

Key indicators

Population (millions), 2009	27.8
GDP (PPP) per capita (PPP $), 2009	13,800
GDP (US$ billions), 2009	193.0
Global Competitiveness Index 2010–2011 rank (out of 139)	26

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.7**	**28**
2009–2010 (133)	4.7	27
2008–2009 (134)	4.8	28
2007–2008 (127)	4.8	26
2006–2007 (122)	4.7	26

Environment component	4.5	36
Market environment	**4.7**	**33**
1.01 Venture capital availability*	3.9	8
1.02 Financial market sophistication*	5.4	27
1.03 Availability of latest technologies*	5.7	35
1.04 State of cluster development*	4.8	15
1.05 Burden of government regulation*	4.0	16
1.06 Extent & effect of taxation*	4.1	28
1.07 Total tax rate, % profits	33.7	46
1.08 No. days to start a business	17	68
1.09 No. procedures to start a business	9	92
1.10 Freedom of the press*	4.1	103
Political and regulatory environment	**5.0**	**27**
2.01 Effectiveness of law-making bodies*	4.6	21
2.02 Laws relating to ICT*	5.1	26
2.03 Judicial independence*	4.3	51
2.04 Efficiency of legal system in settling disputes*	4.6	30
2.05 Efficiency of legal system in challenging regs*	4.4	30
2.06 Property rights*	5.1	41
2.07 Intellectual property protection*	4.7	33
2.08 Software piracy rate, % software installed	58	49
2.09 No. procedures to enforce a contract	30	16
2.10 No. days to enforce a contract	585	79
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.7**	**51**
3.01 Phone lines/100 pop.	17.6	75
3.02 Mobile network coverage, % pop. covered	95.0	76
3.03 Secure Internet servers/million pop.	33.6	57
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	51.0	42
3.05 Electricity production, kWh/capita	3,815.8	58
3.06 Tertiary education enrollment rate, %	32.1	73
3.07 Quality scientific research institutions*	4.7	32
3.08 Availability of scientists & engineers*	4.7	33
3.09 Availability research & training services*	5.0	25
3.10 Accessibility of digital content*	5.5	39

Readiness component	5.2	10
Individual readiness	**5.6**	**14**
4.01 Quality of math & science education*	4.8	31
4.02 Quality of educational system*	4.9	23
4.03 Adult literacy rate, %	92.1	76
4.04 Residential phone installation (PPP $)	28.4	17
4.05 Residential monthly phone subscription (PPP $)	7.4	45
4.06 Fixed phone tariffs (PPP $)	0.07	42
4.07 Mobile cellular tariffs (PPP $)	0.22	31
4.08 Fixed broadband Internet tariffs (PPP $)	37.5	72
4.09 Buyer sophistication*	4.1	24
Business readiness	**4.9**	**19**
5.01 Extent of staff training*	5.0	13
5.02 Quality of management schools*	4.7	35
5.03 Company spending on R&D*	4.5	16
5.04 University-industry collaboration in R&D*	4.7	22
5.05 Business phone installation (PPP $)	28.4	8
5.06 Business monthly phone subscription (PPP $)	11.4	37
5.07 Local supplier quality*	5.1	37
5.08 Computer, communications, & other services imports, % services imports	38.3	39
Government readiness	**5.2**	**11**
6.01 Gov't prioritization of ICT*	5.8	12
6.02 Gov't procurement of advanced tech.*	4.7	8
6.03 Importance of ICT to gov't vision*	5.1	11

Usage component	4.5	25
Individual usage	**4.3**	**45**
7.01 Mobile phone subscriptions/100 pop.	109.7	50
7.02 Cellular subscriptions w/data, % total	24.4	34
7.03 Households w/ personal computer, %	38.7	56
7.04 Broadband Internet subscribers/100 pop.	6.1	59
7.05 Internet users/100 pop.	55.9	39
7.06 Internet access in schools*	5.0	36
7.07 Use of virtual social networks*	5.8	29
7.08 Impact of ICT on access to basic services*	5.5	15
Business usage	**4.2**	**15**
8.01 Firm-level technology absorption*	5.5	30
8.02 Capacity for innovation*	4.1	25
8.03 Extent of business Internet use*	5.4	35
8.04 National office patent applications/million pop	29.8	50
8.05 Patent Cooperation Treaty apps/million pop	11.0	36
8.06 High-tech exports, % goods exports	36.4	5
8.07 Impact of ICT on new services and products*	5.3	23
8.08 Impact of ICT on new organizational models*	5.2	13
Government usage	**5.1**	**11**
9.01 Gov't success in ICT promotion	5.3	14
9.02 ICT use & gov't efficiency*	5.4	15
9.03 Government Online Service Index, 0–1 (best)	0.63	16
9.04 E-Participation Index, 0–1 (best)	0.66	12

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Mali

Key indicators

Population (millions), 2009 ..... 13.7
GDP (PPP) per capita (PPP $), 2009 1,164
GDP (US$ billions), 2009 ..... 9.0

Global Competitiveness Index 2010–2011 rank (out of 139) 132

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.1**	**120**
2009–2010 (133)	3.3	96
2008–2009 (134)	3.2	107
2007–2008 (127)	3.2	99
2006–2007 (122)	3.0	101

Environment component 3.1 119

Market environment		**3.7**	**101**
1.01	Venture capital availability*	1.7	134
1.02	Financial market sophistication*	2.8	121
1.03	Availability of latest technologies*	4.1	123
1.04	State of cluster development*	3.0	96
1.05	Burden of government regulation*	3.4	53
1.06	Extent & effect of taxation*	2.9	115
1.07	Total tax rate, % profits	52.2	106
1.08	No. days to start a business	8	27
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	5.5	53
Political and regulatory environment		**3.6**	**96**
2.01	Effectiveness of law-making bodies*	3.4	77
2.02	Laws relating to ICT*	3.3	100
2.03	Judicial independence*	2.8	109
2.04	Efficiency of legal system in settling disputes*	3.4	79
2.05	Efficiency of legal system in challenging regs*	3.6	66
2.06	Property rights*	3.5	108
2.07	Intellectual property protection*	2.7	107
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	36	54
2.10	No. days to enforce a contract	620	90
2.11	Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment		**2.1**	**134**
3.01	Phone lines/100 pop.	0.7	132
3.02	Mobile network coverage, % pop. covered	20.0	131
3.03	Secure Internet servers/million pop.	0.5	122
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.5	110
3.05	Electricity production, kWh/capita	41.5	134
3.06	Tertiary education enrollment rate, %	5.4	120
3.07	Quality scientific research institutions*	3.5	72
3.08	Availability of scientists & engineers*	3.6	100
3.09	Availability research & training services*	3.3	113
3.10	Accessibility of digital content*	3.2	133

Readiness component 3.7 123

Individual readiness		**3.7**	**129**
4.01	Quality of math & science education*	2.4	133
4.02	Quality of educational system*	2.7	124
4.03	Adult literacy rate, %	26.2	136
4.04	Residential phone installation (PPP $)	140.5	113
4.05	Residential monthly phone subscription (PPP $)	9.7	57
4.06	Fixed phone tariffs (PPP $)	0.19	87
4.07	Mobile cellular tariffs (PPP $)	0.40	81
4.08	Fixed broadband Internet tariffs (PPP $)	90.9	111
4.09	Buyer sophistication*	2.2	134
Business readiness		**3.3**	**122**
5.01	Extent of staff training*	3.0	130
5.02	Quality of management schools*	3.1	125
5.03	Company spending on R&D*	2.9	77
5.04	University-industry collaboration in R&D*	3.2	89
5.05	Business phone installation (PPP $)	140.5	95
5.06	Business monthly phone subscription (PPP $)	19.3	82
5.07	Local supplier quality*	3.7	119
5.08	Computer, communications, & other services imports, % services imports	17.9	102
Government readiness		**4.1**	**69**
6.01	Gov't prioritization of ICT*	4.8	55
6.02	Gov't procurement of advanced tech.*	3.8	57
6.03	Importance of ICT to gov't vision*	3.7	82

Usage component 2.6 115

Individual usage		**2.0**	**132**
7.01	Mobile phone subscriptions/100 pop.	34.2	124
7.02	Cellular subscriptions w/data, % total	0.0	110
7.03	Households w/ personal computer, %	2.4	128
7.04	Broadband Internet subscribers/100 pop.	0.0	131
7.05	Internet users/100 pop.	1.9	129
7.06	Internet access in schools*	2.8	116
7.07	Use of virtual social networks*	3.0	133
7.08	Impact of ICT on access to basic services*	4.0	97
Business usage		**2.5**	**122**
8.01	Firm-level technology absorption*	4.3	99
8.02	Capacity for innovation*	2.5	111
8.03	Extent of business Internet use*	3.7	131
8.04	National office patent applications/million pop	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	0.2	108
8.07	Impact of ICT on new services and products*	3.8	111
8.08	Impact of ICT on new organizational models*	3.6	110
Government usage		**3.2**	**85**
9.01	Gov't success in ICT promotion	4.6	44
9.02	ICT use & gov't efficiency*	4.3	64
9.03	Government Online Service Index, 0–1 (best)	0.18	107
9.04	E-Participation Index, 0–1 (best)	0.11	89

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Malta

Key indicators

Population (millions), 2009	0.4
GDP (PPP) per capita (PPP $), 2009	23,667
GDP (US$ billions), 2009	8.0
Global Competitiveness Index 2010–2011 rank (out of 139)	50

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.8**	**27**
2009–2010 (133)	4.8	26
2008–2009 (134)	4.8	26
2007–2008 (127)	4.6	27
2006–2007 (122)	4.5	27

Environment component 4.7 28

Market environment		**4.4**	**42**
1.01	Venture capital availability*	3.1	36
1.02	Financial market sophistication*	5.2	32
1.03	Availability of latest technologies*	6.0	30
1.04	State of cluster development*	3.7	58
1.05	Burden of government regulation*	3.0	95
1.06	Extent & effect of taxation*	4.0	32
1.07	Total tax rate, % profits	n/a	n/a
1.08	No. days to start a business	n/a	n/a
1.09	No. procedures to start a business	n/a	n/a
1.10	Freedom of the press*	5.9	29
Political and regulatory environment		**5.1**	**22**
2.01	Effectiveness of law-making bodies*	4.8	19
2.02	Laws relating to ICT*	5.2	23
2.03	Judicial independence*	5.0	32
2.04	Efficiency of legal system in settling disputes*	4.2	42
2.05	Efficiency of legal system in challenging regs*	4.0	48
2.06	Property rights*	5.3	34
2.07	Intellectual property protection*	4.6	36
2.08	Software piracy rate, % software installed	45	30
2.09	No. procedures to enforce a contract	n/a	n/a
2.10	No. days to enforce a contract	n/a	n/a
2.11	Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment		**4.5**	**27**
3.01	Phone lines/100 pop.	59.9	4
3.02	Mobile network coverage, % pop. covered	100.0	1
3.03	Secure Internet servers/million pop.	985.6	10
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	75.5	34
3.05	Electricity production, kWh/capita	5,613.0	40
3.06	Tertiary education enrollment rate, %	33.0	72
3.07	Quality scientific research institutions*	3.5	70
3.08	Availability of scientists & engineers*	4.0	74
3.09	Availability research & training services*	4.5	44
3.10	Accessibility of digital content*	5.8	29

Readiness component 5.0 21

Individual readiness		**5.3**	**29**
4.01	Quality of math & science education*	4.9	23
4.02	Quality of educational system*	4.9	21
4.03	Adult literacy rate, %	92.4	74
4.04	Residential phone installation (PPP $)	94.1	89
4.05	Residential monthly phone subscription (PPP $)	10.3	61
4.06	Fixed phone tariffs (PPP $)	0.22	94
4.07	Mobile cellular tariffs (PPP $)	0.27	46
4.08	Fixed broadband Internet tariffs (PPP $)	23.7	27
4.09	Buyer sophistication*	3.6	59
Business readiness		**4.4**	**36**
5.01	Extent of staff training*	4.3	46
5.02	Quality of management schools*	4.7	36
5.03	Company spending on R&D*	3.1	55
5.04	University-industry collaboration in R&D*	3.8	56
5.05	Business phone installation (PPP $)	159.5	105
5.06	Business monthly phone subscription (PPP $)	10.3	31
5.07	Local supplier quality*	4.7	57
5.08	Computer, communications, & other services imports, % services imports	53.5	10
Government readiness		**5.4**	**4**
6.01	Gov't prioritization of ICT*	6.2	3
6.02	Gov't procurement of advanced tech.*	4.4	18
6.03	Importance of ICT to gov't vision*	5.6	4

Usage component 4.6 24

Individual usage		**5.0**	**26**
7.01	Mobile phone subscriptions/100 pop.	103.3	58
7.02	Cellular subscriptions w/data, % total	18.1	45
7.03	Households w/ personal computer, %	67.4	30
7.04	Broadband Internet subscribers/100 pop.	25.9	16
7.05	Internet users/100 pop.	58.9	36
7.06	Internet access in schools*	5.8	17
7.07	Use of virtual social networks*	5.8	28
7.08	Impact of ICT on access to basic services*	5.7	9
Business usage		**4.1**	**21**
8.01	Firm-level technology absorption*	5.5	31
8.02	Capacity for innovation*	3.1	54
8.03	Extent of business Internet use*	5.7	26
8.04	National office patent applications/million pop	19.3	58
8.05	Patent Cooperation Treaty apps/million pop	53.0	25
8.06	High-tech exports, % goods exports	44.5	2
8.07	Impact of ICT on new services and products*	5.3	25
8.08	Impact of ICT on new organizational models*	5.0	25
Government usage		**4.6**	**21**
9.01	Gov't success in ICT promotion	5.9	3
9.02	ICT use & gov't efficiency*	5.6	9
9.03	Government Online Service Index, 0–1 (best)	0.47	34
9.04	E-Participation Index, 0–1 (best)	0.34	34

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Mauritania

Key indicators

Population (millions), 2009	3.1
GDP (PPP) per capita (PPP $), 2009	2,035
GDP (US$ billions), 2009	3.0
Global Competitiveness Index 2010–2011 rank (out of 139)	135

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.0**	**130**
2009–2010 (133)	3.2	102
2008–2009 (134)	3.1	109
2007–2008 (127)	3.2	97
2006–2007 (122)	3.2	87

Environment component	3.1	124
Market environment	**3.4**	**123**
1.01 Venture capital availability*	1.9	122
1.02 Financial market sophistication*	2.3	133
1.03 Availability of latest technologies*	4.2	117
1.04 State of cluster development*	2.4	128
1.05 Burden of government regulation*	4.3	8
1.06 Extent & effect of taxation*	3.3	86
1.07 Total tax rate, % profits	68.4	126
1.08 No. days to start a business	19	72
1.09 No. procedures to start a business	9	92
1.10 Freedom of the press*	4.1	101
Political and regulatory environment	**3.6**	**98**
2.01 Effectiveness of law-making bodies*	2.3	125
2.02 Laws relating to ICT*	3.1	112
2.03 Judicial independence*	2.4	127
2.04 Efficiency of legal system in settling disputes*	3.4	83
2.05 Efficiency of legal system in challenging regs*	3.3	82
2.06 Property rights*	3.5	107
2.07 Intellectual property protection*	2.5	124
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	46	121
2.10 No. days to enforce a contract	370	23
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.2**	**129**
3.01 Phone lines/100 pop.	2.3	114
3.02 Mobile network coverage, % pop. covered	62.0	120
3.03 Secure Internet servers/million pop.	2.1	99
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.8	105
3.05 Electricity production, kWh/capita	132.3	124
3.06 Tertiary education enrollment rate, %	3.8	124
3.07 Quality scientific research institutions*	2.0	136
3.08 Availability of scientists & engineers*	3.5	103
3.09 Availability research & training services*	2.6	134
3.10 Accessibility of digital content*	3.6	123

Readiness component	3.4	133
Individual readiness	**3.7**	**131**
4.01 Quality of math & science education*	3.2	106
4.02 Quality of educational system*	2.3	134
4.03 Adult literacy rate, %	56.8	123
4.04 Residential phone installation (PPP $)	40.4	32
4.05 Residential monthly phone subscription (PPP $)	10.5	62
4.06 Fixed phone tariffs (PPP $)	0.48	123
4.07 Mobile cellular tariffs (PPP $)	0.51	94
4.08 Fixed broadband Internet tariffs (PPP $)	121.2	117
4.09 Buyer sophistication*	2.4	129
Business readiness	**3.2**	**126**
5.01 Extent of staff training*	2.6	137
5.02 Quality of management schools*	2.4	135
5.03 Company spending on R&D*	2.6	104
5.04 University-industry collaboration in R&D*	2.4	134
5.05 Business phone installation (PPP $)	40.4	20
5.06 Business monthly phone subscription (PPP $)	10.5	32
5.07 Local supplier quality*	3.2	136
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**3.4**	**115**
6.01 Gov't prioritization of ICT*	4.0	113
6.02 Gov't procurement of advanced tech.*	2.6	135
6.03 Importance of ICT to gov't vision*	3.8	78

Usage component	2.4	128
Individual usage	**2.1**	**128**
7.01 Mobile phone subscriptions/100 pop.	66.3	103
7.02 Cellular subscriptions w/data, % total	4.9	74
7.03 Households w/ personal computer, %	2.5	124
7.04 Broadband Internet subscribers/100 pop.	0.3	105
7.05 Internet users/100 pop.	2.3	126
7.06 Internet access in schools*	2.2	129
7.07 Use of virtual social networks*	2.9	135
7.08 Impact of ICT on access to basic services*	3.6	122
Business usage	**2.3**	**130**
8.01 Firm-level technology absorption*	3.7	130
8.02 Capacity for innovation*	2.3	122
8.03 Extent of business Internet use*	3.8	128
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	n/a	n/a
8.07 Impact of ICT on new services and products*	2.7	138
8.08 Impact of ICT on new organizational models*	2.8	131
Government usage	**2.8**	**106**
9.01 Gov't success in ICT promotion	4.4	56
9.02 ICT use & gov't efficiency*	3.7	100
9.03 Government Online Service Index, 0–1 (best)	0.09	127
9.04 E-Participation Index, 0–1 (best)	0.11	89

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Mauritius

Key indicators

Population (millions), 2009	1.3
GDP (PPP) per capita (PPP $), 2009	12,737
GDP (US$ billions), 2009	8.6
Global Competitiveness Index 2010–2011 rank (out of 139)	55

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.0**	**47**
2009–2010 (133)	3.9	53
2008–2009 (134)	4.1	51
2007–2008 (127)	4.0	54
2006–2007 (122)	3.9	51

Environment component 4.3 41

Market environment 4.8 26

1.01	Venture capital availability*	2.8	50
1.02	Financial market sophistication*	4.8	43
1.03	Availability of latest technologies*	5.4	54
1.04	State of cluster development*	4.1	37
1.05	Burden of government regulation*	3.8	28
1.06	Extent & effect of taxation*	5.4	8
1.07	Total tax rate, % profits	24.1	19
1.08	No. days to start a business	6	12
1.09	No. procedures to start a business	5	22
1.10	Freedom of the press*	5.7	47

Political and regulatory environment 4.8 33

2.01	Effectiveness of law-making bodies*	4.9	17
2.02	Laws relating to ICT*	4.2	53
2.03	Judicial independence*	4.8	37
2.04	Efficiency of legal system in settling disputes*	4.7	29
2.05	Efficiency of legal system in challenging regs*	4.4	28
2.06	Property rights*	5.3	36
2.07	Intellectual property protection*	3.9	53
2.08	Software piracy rate, % software installed	56	45
2.09	No. procedures to enforce a contract	36	54
2.10	No. days to enforce a contract	645	98
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 3.2 78

3.01	Phone lines/100 pop.	29.6	42
3.02	Mobile network coverage, % pop. covered	99.0	48
3.03	Secure Internet servers/million pop.	61.9	48
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	14.6	66
3.05	Electricity production, kWh/capita	1,841.1	84
3.06	Tertiary education enrollment rate, %	16.0	96
3.07	Quality scientific research institutions*	3.3	86
3.08	Availability of scientists & engineers*	3.4	111
3.09	Availability research & training services*	3.8	87
3.10	Accessibility of digital content*	4.7	77

Readiness component 4.6 46

Individual readiness 5.2 36

4.01	Quality of math & science education*	4.0	67
4.02	Quality of educational system*	4.0	50
4.03	Adult literacy rate, %	87.5	92
4.04	Residential phone installation (PPP $)	68.6	62
4.05	Residential monthly phone subscription (PPP $)	5.4	29
4.06	Fixed phone tariffs (PPP $)	0.14	64
4.07	Mobile cellular tariffs (PPP $)	0.21	29
4.08	Fixed broadband Internet tariffs (PPP $)	28.9	42
4.09	Buyer sophistication*	3.5	68

Business readiness 4.0 60

5.01	Extent of staff training*	4.4	40
5.02	Quality of management schools*	3.8	90
5.03	Company spending on R&D*	3.0	64
5.04	University-industry collaboration in R&D*	3.2	93
5.05	Business phone installation (PPP $)	137.2	93
5.06	Business monthly phone subscription (PPP $)	13.4	52
5.07	Local supplier quality*	4.5	66
5.08	Computer, communications, & other services imports, % services imports	39.9	38

Government readiness 4.5 45

6.01	Gov't prioritization of ICT*	5.5	25
6.02	Gov't procurement of advanced tech.*	3.7	66
6.03	Importance of ICT to gov't vision*	4.3	47

Usage component 3.2 76

Individual usage 3.4 68

7.01	Mobile phone subscriptions/100 pop.	84.4	84
7.02	Cellular subscriptions w/data, % total	9.5	59
7.03	Households w/ personal computer, %	30.0	68
7.04	Broadband Internet subscribers/100 pop.	7.1	57
7.05	Internet users/100 pop.	22.5	89
7.06	Internet access in schools*	3.7	73
7.07	Use of virtual social networks*	5.3	61
7.08	Impact of ICT on access to basic services*	4.7	53

Business usage 3.0 69

8.01	Firm-level technology absorption*	5.1	53
8.02	Capacity for innovation*	2.8	76
8.03	Extent of business Internet use*	4.9	68
8.04	National office patent applications/million pop	1.6	81
8.05	Patent Cooperation Treaty apps/million pop	1.6	56
8.06	High-tech exports, % goods exports	1.1	79
8.07	Impact of ICT on new services and products*	4.7	56
8.08	Impact of ICT on new organizational models*	4.3	56

Government usage 3.3 72

9.01	Gov't success in ICT promotion	4.6	43
9.02	ICT use & gov't efficiency*	4.5	53
9.03	Government Online Service Index, 0–1 (best)	0.30	81
9.04	E-Participation Index, 0–1 (best)	0.06	111

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Mexico

Key indicators

Population (millions), 2009	107.6
GDP (PPP) per capita (PPP $), 2009	13,609
GDP (US$ billions), 2009	874.8
Global Competitiveness Index 2010–2011 rank (out of 139)	66

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.7**	**78**
2009–2010 (133)	3.6	78
2008–2009 (134)	3.8	67
2007–2008 (127)	3.9	58
2006–2007 (122)	3.9	49

Environment component	3.8	69
Market environment	**4.1**	**63**
1.01 Venture capital availability*	2.3	95
1.02 Financial market sophistication*	4.6	54
1.03 Availability of latest technologies*	4.9	73
1.04 State of cluster development*	3.8	50
1.05 Burden of government regulation*	2.7	115
1.06 Extent & effect of taxation*	3.0	112
1.07 Total tax rate, % profits	50.5	105
1.08 No. days to start a business	9	34
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.5	54
Political and regulatory environment	**4.0**	**70**
2.01 Effectiveness of law-making bodies*	2.5	120
2.02 Laws relating to ICT*	3.9	69
2.03 Judicial independence*	3.2	91
2.04 Efficiency of legal system in settling disputes*	3.1	101
2.05 Efficiency of legal system in challenging regs*	3.4	76
2.06 Property rights*	3.9	87
2.07 Intellectual property protection*	3.1	84
2.08 Software piracy rate, % software installed	60	53
2.09 No. procedures to enforce a contract	38	73
2.10 No. days to enforce a contract	415	37
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.3**	**72**
3.01 Phone lines/100 pop.	17.6	74
3.02 Mobile network coverage, % pop. covered	99.9	23
3.03 Secure Internet servers/million pop.	17.2	62
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	3.1	89
3.05 Electricity production, kWh/capita	2,445.5	73
3.06 Tertiary education enrollment rate, %	27.2	80
3.07 Quality scientific research institutions*	3.8	60
3.08 Availability of scientists & engineers*	3.8	89
3.09 Availability research & training services*	4.3	55
3.10 Accessibility of digital content*	4.5	94

Readiness component	3.9	100
Individual readiness	**4.4**	**97**
4.01 Quality of math & science education*	2.6	127
4.02 Quality of educational system*	2.9	119
4.03 Adult literacy rate, %	92.9	72
4.04 Residential phone installation (PPP $)	147.2	115
4.05 Residential monthly phone subscription (PPP $)	20.4	112
4.06 Fixed phone tariffs (PPP $)	0.19	85
4.07 Mobile cellular tariffs (PPP $)	0.43	85
4.08 Fixed broadband Internet tariffs (PPP $)	24.6	30
4.09 Buyer sophistication*	3.3	79
Business readiness	**3.6**	**103**
5.01 Extent of staff training*	3.8	83
5.02 Quality of management schools*	4.5	52
5.03 Company spending on R&D*	2.7	89
5.04 University-industry collaboration in R&D*	3.7	59
5.05 Business phone installation (PPP $)	147.2	99
5.06 Business monthly phone subscription (PPP $)	25.8	104
5.07 Local supplier quality*	4.7	55
5.08 Computer, communications, & other services imports, % services imports	1.6	127
Government readiness	**3.7**	**98**
6.01 Gov't prioritization of ICT*	4.0	114
6.02 Gov't procurement of advanced tech.*	3.3	95
6.03 Importance of ICT to gov't vision*	3.7	85

Usage component	3.4	64
Individual usage	**3.2**	**78**
7.01 Mobile phone subscriptions/100 pop.	76.2	92
7.02 Cellular subscriptions w/data, % total	6.6	69
7.03 Households w/ personal computer, %	26.8	73
7.04 Broadband Internet subscribers/100 pop.	8.8	53
7.05 Internet users/100 pop.	28.3	77
7.06 Internet access in schools*	3.5	89
7.07 Use of virtual social networks*	4.8	86
7.08 Impact of ICT on access to basic services*	3.9	104
Business usage	**3.2**	**48**
8.01 Firm-level technology absorption*	4.5	86
8.02 Capacity for innovation*	2.7	86
8.03 Extent of business Internet use*	4.7	77
8.04 National office patent applications/million pop	7.7	66
8.05 Patent Cooperation Treaty apps/million pop	1.3	60
8.06 High-tech exports, % goods exports	16.8	17
8.07 Impact of ICT on new services and products*	4.5	72
8.08 Impact of ICT on new organizational models*	4.1	70
Government usage	**3.7**	**50**
9.01 Gov't success in ICT promotion	3.8	100
9.02 ICT use & gov't efficiency*	4.2	74
9.03 Government Online Service Index, 0–1 (best)	0.44	38
9.04 E-Participation Index, 0–1 (best)	0.37	32

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Moldova

Key indicators

Population (millions), 2009	3.6
GDP (PPP) per capita (PPP $), 2009	2,839
GDP (US$ billions), 2009	5.4
Global Competitiveness Index 2010–2011 rank (out of 139)	94

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**97**
2009–2010 (133)	n/a	n/a
2008–2009 (134)	n/a	n/a
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component 3.5 97

Market environment 3.5 117

1.01	Venture capital availability*	1.9	126
1.02	Financial market sophistication*	2.9	120
1.03	Availability of latest technologies*	4.2	111
1.04	State of cluster development*	2.3	134
1.05	Burden of government regulation*	2.8	103
1.06	Extent & effect of taxation*	3.7	55
1.07	Total tax rate, % profits	30.9	36
1.08	No. days to start a business	10	39
1.09	No. procedures to start a business	8	76
1.10	Freedom of the press*	3.9	117

Political and regulatory environment 3.6 99

2.01	Effectiveness of law-making bodies*	3.1	91
2.02	Laws relating to ICT*	3.4	98
2.03	Judicial independence*	2.3	129
2.04	Efficiency of legal system in settling disputes*	3.0	110
2.05	Efficiency of legal system in challenging regs*	3.1	98
2.06	Property rights*	3.3	118
2.07	Intellectual property protection*	2.6	117
2.08	Software piracy rate, % software installed	91	104
2.09	No. procedures to enforce a contract	31	26
2.10	No. days to enforce a contract	365	22
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 3.3 69

3.01	Phone lines/100 pop.	31.6	38
3.02	Mobile network coverage, % pop. covered	98.0	68
3.03	Secure Internet servers/million pop.	9.7	77
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	66.6	37
3.05	Electricity production, kWh/capita	1,048.7	94
3.06	Tertiary education enrollment rate, %	40.0	59
3.07	Quality scientific research institutions*	3.0	104
3.08	Availability of scientists & engineers*	3.2	117
3.09	Availability research & training services*	3.6	93
3.10	Accessibility of digital content*	4.8	68

Readiness component 4.0 92

Individual readiness 5.1 46

4.01	Quality of math & science education*	3.8	74
4.02	Quality of educational system*	3.2	95
4.03	Adult literacy rate, %	98.3	45
4.04	Residential phone installation (PPP $)	84.9	85
4.05	Residential monthly phone subscription (PPP $)	4.1	19
4.06	Fixed phone tariffs (PPP $)	0.05	31
4.07	Mobile cellular tariffs (PPP $)	0.36	75
4.08	Fixed broadband Internet tariffs (PPP $)	13.6	5
4.09	Buyer sophistication*	3.1	94

Business readiness 3.4 111

5.01	Extent of staff training*	3.3	116
5.02	Quality of management schools*	3.3	122
5.03	Company spending on R&D*	2.2	134
5.04	University-industry collaboration in R&D*	2.8	124
5.05	Business phone installation (PPP $)	84.9	66
5.06	Business monthly phone subscription (PPP $)	7.1	20
5.07	Local supplier quality*	3.9	113
5.08	Computer, communications, & other services imports, % services imports	23.7	84

Government readiness 3.5 112

6.01	Gov't prioritization of ICT*	4.6	73
6.02	Gov't procurement of advanced tech.*	2.6	134
6.03	Importance of ICT to gov't vision*	3.2	119

Usage component 2.9 95

Individual usage 3.2 76

7.01	Mobile phone subscriptions/100 pop.	77.3	91
7.02	Cellular subscriptions w/data, % total	2.9	82
7.03	Households w/ personal computer, %	33.0	62
7.04	Broadband Internet subscribers/100 pop.	5.2	65
7.05	Internet users/100 pop.	37.0	62
7.06	Internet access in schools*	4.1	61
7.07	Use of virtual social networks*	4.4	106
7.08	Impact of ICT on access to basic services*	4.0	100

Business usage 2.6 116

8.01	Firm-level technology absorption*	3.7	132
8.02	Capacity for innovation*	2.7	91
8.03	Extent of business Internet use*	4.4	98
8.04	National office patent applications/million pop	37.2	44
8.05	Patent Cooperation Treaty apps/million pop	0.3	78
8.06	High-tech exports, % goods exports	1.8	68
8.07	Impact of ICT on new services and products*	3.6	125
8.08	Impact of ICT on new organizational models*	3.5	114

Government usage 2.9 105

9.01	Gov't success in ICT promotion	n/a	n/a
9.02	ICT use & gov't efficiency*	3.6	108
9.03	Government Online Service Index, 0–1 (best)	0.30	81
9.04	E-Participation Index, 0–1 (best)	0.20	56

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Mongolia

Key indicators

Population (millions), 2009	2.7
GDP (PPP) per capita (PPP $), 2009	3,456
GDP (US$ billions), 2009	4.2
Global Competitiveness Index 2010–2011 rank (out of 139)	99

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**85**
2009–2010 (133)	3.4	94
2008–2009 (134)	3.4	93
2007–2008 (127)	3.4	87
2006–2007 (122)	3.2	90

Environment component	3.3	103
Market environment	**3.6**	**111**
1.01 Venture capital availability*	1.7	135
1.02 Financial market sophistication*	2.5	127
1.03 Availability of latest technologies*	4.2	118
1.04 State of cluster development*	2.5	126
1.05 Burden of government regulation*	2.7	112
1.06 Extent & effect of taxation*	3.6	68
1.07 Total tax rate, % profits	23.0	16
1.08 No. days to start a business	13	49
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	5.0	70
Political and regulatory environment	**3.5**	**102**
2.01 Effectiveness of law-making bodies*	2.5	118
2.02 Laws relating to ICT*	2.9	117
2.03 Judicial independence*	2.6	119
2.04 Efficiency of legal system in settling disputes*	2.8	123
2.05 Efficiency of legal system in challenging regs*	2.9	112
2.06 Property rights*	3.4	114
2.07 Intellectual property protection*	2.3	129
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	32	33
2.10 No. days to enforce a contract	314	17
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**2.9**	**94**
3.01 Phone lines/100 pop.	7.1	103
3.02 Mobile network coverage, % pop. covered	82.2	108
3.03 Secure Internet servers/million pop.	8.2	82
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	29.2	51
3.05 Electricity production, kWh/capita	1,467.8	87
3.06 Tertiary education enrollment rate, %	49.8	47
3.07 Quality scientific research institutions*	2.9	110
3.08 Availability of scientists & engineers*	4.0	72
3.09 Availability research & training services*	1.9	138
3.10 Accessibility of digital content*	4.9	65

Readiness component	4.1	75
Individual readiness	**5.0**	**60**
4.01 Quality of math & science education*	3.8	72
4.02 Quality of educational system*	2.2	135
4.03 Adult literacy rate, %	97.3	55
4.04 Residential phone installation (PPP $)	104.3	94
4.05 Residential monthly phone subscription (PPP $)	1.3	4
4.06 Fixed phone tariffs (PPP $)	0.02	16
4.07 Mobile cellular tariffs (PPP $)	n/a	n/a
4.08 Fixed broadband Internet tariffs (PPP $)	18.7	10
4.09 Buyer sophistication*	2.8	116
Business readiness	**3.4**	**117**
5.01 Extent of staff training*	3.8	81
5.02 Quality of management schools*	2.7	134
5.03 Company spending on R&D*	2.6	109
5.04 University-industry collaboration in R&D*	3.3	85
5.05 Business phone installation (PPP $)	122.7	85
5.06 Business monthly phone subscription (PPP $)	11.3	36
5.07 Local supplier quality*	3.4	133
5.08 Computer, communications, & other services imports, % services imports	20.8	93
Government readiness	**4.0**	**78**
6.01 Gov't prioritization of ICT*	4.8	58
6.02 Gov't procurement of advanced tech.*	3.3	93
6.03 Importance of ICT to gov't vision*	3.8	80

Usage component	3.2	75
Individual usage	**2.8**	**97**
7.01 Mobile phone subscriptions/100 pop.	84.2	85
7.02 Cellular subscriptions w/data, % total	2.4	89
7.03 Households w/ personal computer, %	14.0	89
7.04 Broadband Internet subscribers/100 pop.	1.4	91
7.05 Internet users/100 pop.	12.5	96
7.06 Internet access in schools*	3.6	86
7.07 Use of virtual social networks*	4.2	111
7.08 Impact of ICT on access to basic services*	4.6	61
Business usage	**2.8**	**92**
8.01 Firm-level technology absorption*	4.6	83
8.02 Capacity for innovation*	2.8	74
8.03 Extent of business Internet use*	4.5	97
8.04 National office patent applications/million pop	38.6	42
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.4	97
8.07 Impact of ICT on new services and products*	4.4	76
8.08 Impact of ICT on new organizational models*	3.7	95
Government usage	**4.1**	**38**
9.01 Gov't success in ICT promotion	4.6	49
9.02 ICT use & gov't efficiency*	4.0	85
9.03 Government Online Service Index, 0–1 (best)	0.56	20
9.04 E-Participation Index, 0–1 (best)	0.43	28

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Montenegro

Key indicators

Population (millions), 2009	0.6
GDP (PPP) per capita (PPP $), 2009	10,528
GDP (US$ billions), 2009	4.2
Global Competitiveness Index 2010–2011 rank (out of 139)	49

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.1**	**44**
2009–2010 (133)	4.1	42
2008–2009 (134)	3.8	71
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	4.1	47
Market environment	**4.3**	**51**
1.01 Venture capital availability*	3.4	24
1.02 Financial market sophistication*	4.5	61
1.03 Availability of latest technologies*	4.7	84
1.04 State of cluster development*	2.8	114
1.05 Burden of government regulation*	3.7	30
1.06 Extent & effect of taxation*	4.3	21
1.07 Total tax rate, % profits	26.6	25
1.08 No. days to start a business	10	39
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	4.8	78
Political and regulatory environment	**4.2**	**54**
2.01 Effectiveness of law-making bodies*	3.9	49
2.02 Laws relating to ICT*	4.2	52
2.03 Judicial independence*	4.1	56
2.04 Efficiency of legal system in settling disputes*	4.1	47
2.05 Efficiency of legal system in challenging regs*	4.2	39
2.06 Property rights*	4.8	47
2.07 Intellectual property protection*	3.6	61
2.08 Software piracy rate, % software installed	81	89
2.09 No. procedures to enforce a contract	49	128
2.10 No. days to enforce a contract	545	68
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.7**	**52**
3.01 Phone lines/100 pop.	27.5	47
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	19.2	61
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	12.1	70
3.05 Electricity production, kWh/capita	4,585.2	49
3.06 Tertiary education enrollment rate, %	52.1	42
3.07 Quality scientific research institutions*	4.4	36
3.08 Availability of scientists & engineers*	4.2	63
3.09 Availability research & training services*	3.9	79
3.10 Accessibility of digital content*	5.2	43

Readiness component	4.7	41
Individual readiness	**5.2**	**37**
4.01 Quality of math & science education*	4.7	35
4.02 Quality of educational system*	4.4	37
4.03 Adult literacy rate, %	97.7	50
4.04 Residential phone installation (PPP $)	33.4	25
4.05 Residential monthly phone subscription (PPP $)	16.7	92
4.06 Fixed phone tariffs (PPP $)	0.16	72
4.07 Mobile cellular tariffs (PPP $)	0.29	50
4.08 Fixed broadband Internet tariffs (PPP $)	55.6	88
4.09 Buyer sophistication*	3.6	57
Business readiness	**4.3**	**43**
5.01 Extent of staff training*	4.0	68
5.02 Quality of management schools*	4.5	48
5.03 Company spending on R&D*	3.4	44
5.04 University-industry collaboration in R&D*	3.8	52
5.05 Business phone installation (PPP $)	33.4	16
5.06 Business monthly phone subscription (PPP $)	16.7	69
5.07 Local supplier quality*	4.3	80
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**4.5**	**46**
6.01 Gov't prioritization of ICT*	4.7	67
6.02 Gov't procurement of advanced tech.*	4.2	27
6.03 Importance of ICT to gov't vision*	4.5	35

Usage component	3.5	55
Individual usage	**4.0**	**53**
7.01 Mobile phone subscriptions/100 pop.	207.3	2
7.02 Cellular subscriptions w/data, % total	7.1	67
7.03 Households w/ personal computer, %	28.0	70
7.04 Broadband Internet subscribers/100 pop.	8.5	55
7.05 Internet users/100 pop.	44.9	49
7.06 Internet access in schools*	4.3	56
7.07 Use of virtual social networks*	5.6	41
7.08 Impact of ICT on access to basic services*	4.4	69
Business usage	**3.2**	**54**
8.01 Firm-level technology absorption*	4.5	89
8.02 Capacity for innovation*	3.3	51
8.03 Extent of business Internet use*	4.5	96
8.04 National office patent applications/million pop	4.8	74
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	n/a	n/a
8.07 Impact of ICT on new services and products*	4.6	64
8.08 Impact of ICT on new organizational models*	4.5	48
Government usage	**3.4**	**66**
9.01 Gov't success in ICT promotion	4.3	67
9.02 ICT use & gov't efficiency*	4.4	60
9.03 Government Online Service Index, 0–1 (best)	0.31	72
9.04 E-Participation Index, 0–1 (best)	0.16	74

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Morocco

Key indicators

Population (millions), 2009	31.7
GDP (PPP) per capita (PPP $), 2009	4,587
GDP (US$ billions), 2009	91.4
Global Competitiveness Index 2010–2011 rank (out of 139)	75

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**83**
2009–2010 (133)	3.4	88
2008–2009 (134)	3.6	86
2007–2008 (127)	3.7	74
2006–2007 (122)	3.4	76

Environment component	3.8	72
Market environment	**4.2**	**59**
1.01 Venture capital availability*	3.0	40
1.02 Financial market sophistication*	4.5	60
1.03 Availability of latest technologies*	5.0	68
1.04 State of cluster development*	3.4	68
1.05 Burden of government regulation*	3.4	60
1.06 Extent & effect of taxation*	3.2	99
1.07 Total tax rate, % profits	41.7	75
1.08 No. days to start a business	12	45
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	4.3	94
Political and regulatory environment	**4.2**	**59**
2.01 Effectiveness of law-making bodies*	3.7	58
2.02 Laws relating to ICT*	3.6	84
2.03 Judicial independence*	3.5	78
2.04 Efficiency of legal system in settling disputes*	3.9	56
2.05 Efficiency of legal system in challenging regs*	3.9	52
2.06 Property rights*	4.4	62
2.07 Intellectual property protection*	3.4	71
2.08 Software piracy rate, % software installed	66	60
2.09 No. procedures to enforce a contract	40	94
2.10 No. days to enforce a contract	615	88
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.0**	**84**
3.01 Phone lines/100 pop.	11.0	90
3.02 Mobile network coverage, % pop. covered	98.0	66
3.03 Secure Internet servers/million pop.	1.9	101
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	16.0	64
3.05 Electricity production, kWh/capita	732.1	103
3.06 Tertiary education enrollment rate, %	12.3	102
3.07 Quality scientific research institutions*	3.1	93
3.08 Availability of scientists & engineers*	4.5	46
3.09 Availability research & training services*	4.2	60
3.10 Accessibility of digital content*	4.5	95

Readiness component	3.8	106
Individual readiness	**3.9**	**125**
4.01 Quality of math & science education*	4.0	66
4.02 Quality of educational system*	3.1	104
4.03 Adult literacy rate, %	56.4	124
4.04 Residential phone installation (PPP $)	120.0	99
4.05 Residential monthly phone subscription (PPP $)	24.0	121
4.06 Fixed phone tariffs (PPP $)	0.40	118
4.07 Mobile cellular tariffs (PPP $)	0.78	119
4.08 Fixed broadband Internet tariffs (PPP $)	25.8	32
4.09 Buyer sophistication*	3.1	95
Business readiness	**3.6**	**96**
5.01 Extent of staff training*	3.7	86
5.02 Quality of management schools*	4.5	49
5.03 Company spending on R&D*	2.7	96
5.04 University-industry collaboration in R&D*	3.1	103
5.05 Business phone installation (PPP $)	240.0	120
5.06 Business monthly phone subscription (PPP $)	28.8	114
5.07 Local supplier quality*	4.3	78
5.08 Computer, communications, & other services imports, % services imports	30.4	65
Government readiness	**4.1**	**73**
6.01 Gov't prioritization of ICT*	4.4	84
6.02 Gov't procurement of advanced tech.*	3.6	70
6.03 Importance of ICT to gov't vision*	4.1	60

Usage component	3.1	84
Individual usage	**3.4**	**71**
7.01 Mobile phone subscriptions/100 pop.	79.1	89
7.02 Cellular subscriptions w/data, % total	6.5	70
7.03 Households w/ personal computer, %	32.0	64
7.04 Broadband Internet subscribers/100 pop.	1.5	88
7.05 Internet users/100 pop.	41.3	54
7.06 Internet access in schools*	3.6	83
7.07 Use of virtual social networks*	5.7	30
7.08 Impact of ICT on access to basic services*	4.1	94
Business usage	**2.8**	**89**
8.01 Firm-level technology absorption*	4.8	73
8.02 Capacity for innovation*	2.7	94
8.03 Extent of business Internet use*	4.6	84
8.04 National office patent applications/million pop	5.5	70
8.05 Patent Cooperation Treaty apps/million pop	0.5	72
8.06 High-tech exports, % goods exports	4.7	49
8.07 Impact of ICT on new services and products*	3.8	113
8.08 Impact of ICT on new organizational models*	3.6	97
Government usage	**3.1**	**89**
9.01 Gov't success in ICT promotion	4.2	74
9.02 ICT use & gov't efficiency*	4.2	75
9.03 Government Online Service Index, 0–1 (best)	0.24	100
9.04 E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Mozambique

Key indicators

Population (millions), 2009	21.2
GDP (PPP) per capita (PPP $), 2009	933
GDP (US$ billions), 2009	9.8
Global Competitiveness Index 2010–2011 rank (out of 139)	131

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.3**	**106**
2009–2010 (133)	3.0	116
2008–2009 (134)	2.9	124
2007–2008 (127)	2.8	121
2006–2007 (122)	2.6	115

Environment component 3.2 113

Market environment 3.8 96

1.01	Venture capital availability*	2.1	109
1.02	Financial market sophistication*	3.6	94
1.03	Availability of latest technologies*	4.3	103
1.04	State of cluster development*	2.9	99
1.05	Burden of government regulation*	3.4	56
1.06	Extent & effect of taxation*	3.3	87
1.07	Total tax rate, % profits	34.3	48
1.08	No. days to start a business	13	49
1.09	No. procedures to start a business	9	92
1.10	Freedom of the press*	4.9	76

Political and regulatory environment 3.7 92

2.01	Effectiveness of law-making bodies*	3.7	61
2.02	Laws relating to ICT*	3.5	94
2.03	Judicial independence*	2.9	104
2.04	Efficiency of legal system in settling disputes*	3.5	75
2.05	Efficiency of legal system in challenging regs*	3.4	77
2.06	Property rights*	3.3	116
2.07	Intellectual property protection*	2.5	123
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	30	16
2.10	No. days to enforce a contract	730	104
2.11	Internet & telephony competition, 0–6 (best)	4	85

Infrastructure environment 2.1 133

3.01	Phone lines/100 pop.	0.3	137
3.02	Mobile network coverage, % pop. covered	29.1	128
3.03	Secure Internet servers/million pop.	0.3	126
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.6	108
3.05	Electricity production, kWh/capita	735.1	102
3.06	Tertiary education enrollment rate, %	1.5	136
3.07	Quality scientific research institutions*	3.3	84
3.08	Availability of scientists & engineers*	3.2	118
3.09	Availability research & training services*	3.0	125
3.10	Accessibility of digital content*	3.7	119

Readiness component 4.0 87

Individual readiness 3.7 128

4.01	Quality of math & science education*	2.9	117
4.02	Quality of educational system*	3.5	80
4.03	Adult literacy rate, %	54.0	127
4.04	Residential phone installation (PPP $)	36.9	28
4.05	Residential monthly phone subscription (PPP $)	17.4	96
4.06	Fixed phone tariffs (PPP $)	0.37	115
4.07	Mobile cellular tariffs (PPP $)	0.54	100
4.08	Fixed broadband Internet tariffs (PPP $)	167.0	120
4.09	Buyer sophistication*	2.9	111

Business readiness 3.9 72

5.01	Extent of staff training*	3.4	110
5.02	Quality of management schools*	3.3	116
5.03	Company spending on R&D*	2.8	80
5.04	University-industry collaboration in R&D*	4.0	48
5.05	Business phone installation (PPP $)	36.9	18
5.06	Business monthly phone subscription (PPP $)	17.4	73
5.07	Local supplier quality*	3.6	126
5.08	Computer, communications, & other services imports, % services imports	42.1	30

Government readiness 4.5 44

6.01	Gov't prioritization of ICT*	5.2	44
6.02	Gov't procurement of advanced tech.*	4.1	41
6.03	Importance of ICT to gov't vision*	4.2	57

Usage component 2.7 107

Individual usage 2.1 125

7.01	Mobile phone subscriptions/100 pop.	26.1	131
7.02	Cellular subscriptions w/data, % total	1.5	98
7.03	Households w/ personal computer, %	4.0	119
7.04	Broadband Internet subscribers/100 pop.	0.1	117
7.05	Internet users/100 pop.	2.7	125
7.06	Internet access in schools*	2.6	119
7.07	Use of virtual social networks*	3.4	129
7.08	Impact of ICT on access to basic services*	4.7	56

Business usage 2.7 96

8.01	Firm-level technology absorption*	4.4	96
8.02	Capacity for innovation*	2.5	108
8.03	Extent of business Internet use*	4.5	90
8.04	National office patent applications/million pop	0.8	85
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	1.2	77
8.07	Impact of ICT on new services and products*	4.0	99
8.08	Impact of ICT on new organizational models*	3.9	81

Government usage 3.1 92

9.01	Gov't success in ICT promotion	4.5	51
9.02	ICT use & gov't efficiency*	4.2	71
9.03	Government Online Service Index, 0–1 (best)	0.17	112
9.04	E-Participation Index, 0–1 (best)	0.11	89

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Namibia

Key indicators

Population (millions), 2009	2.1
GDP (PPP) per capita (PPP $), 2009	6,653
GDP (US$ billions), 2009	9.4
Global Competitiveness Index 2010–2011 rank (out of 139)	74

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**82**
2009–2010 (133)	3.4	89
2008–2009 (134)	3.4	92
2007–2008 (127)	3.3	93
2006–2007 (122)	3.3	85

Environment component	4.0	56
Market environment	**4.4**	**43**
1.01 Venture capital availability*	2.6	65
1.02 Financial market sophistication*	5.2	31
1.03 Availability of latest technologies*	5.5	44
1.04 State of cluster development*	3.3	80
1.05 Burden of government regulation*	3.6	37
1.06 Extent & effect of taxation*	4.0	33
1.07 Total tax rate, % profits	9.6	2
1.08 No. days to start a business	66	127
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	5.8	46
Political and regulatory environment	**4.8**	**35**
2.01 Effectiveness of law-making bodies*	4.6	24
2.02 Laws relating to ICT*	3.5	92
2.03 Judicial independence*	5.5	23
2.04 Efficiency of legal system in settling disputes*	4.9	24
2.05 Efficiency of legal system in challenging regs*	4.9	15
2.06 Property rights*	5.6	20
2.07 Intellectual property protection*	4.8	31
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	33	38
2.10 No. days to enforce a contract	270	6
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**2.7**	**108**
3.01 Phone lines/100 pop.	6.5	105
3.02 Mobile network coverage, % pop. covered	95.0	76
3.03 Secure Internet servers/million pop.	8.8	79
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.3	119
3.05 Electricity production, kWh/capita	811.0	99
3.06 Tertiary education enrollment rate, %	8.9	110
3.07 Quality scientific research institutions*	3.4	80
3.08 Availability of scientists & engineers*	2.9	134
3.09 Availability research & training services*	3.2	116
3.10 Accessibility of digital content*	4.5	96

Readiness component	4.2	71
Individual readiness	**4.5**	**93**
4.01 Quality of math & science education*	2.8	119
4.02 Quality of educational system*	3.0	111
4.03 Adult literacy rate, %	88.2	91
4.04 Residential phone installation (PPP $)	51.5	44
4.05 Residential monthly phone subscription (PPP $)	11.4	65
4.06 Fixed phone tariffs (PPP $)	0.24	103
4.07 Mobile cellular tariffs (PPP $)	0.51	96
4.08 Fixed broadband Internet tariffs (PPP $)	61.3	91
4.09 Buyer sophistication*	3.5	61
Business readiness	**4.0**	**66**
5.01 Extent of staff training*	4.0	65
5.02 Quality of management schools*	3.1	126
5.03 Company spending on R&D*	2.7	91
5.04 University-industry collaboration in R&D*	3.4	79
5.05 Business phone installation (PPP $)	51.5	30
5.06 Business monthly phone subscription (PPP $)	12.7	48
5.07 Local supplier quality*	4.4	72
5.08 Computer, communications, & other services imports, % services imports	40.9	33
Government readiness	**4.0**	**74**
6.01 Gov't prioritization of ICT*	4.9	52
6.02 Gov't procurement of advanced tech.*	3.4	84
6.03 Importance of ICT to gov't vision*	3.8	79

Usage component	2.6	109
Individual usage	**2.6**	**107**
7.01 Mobile phone subscriptions/100 pop.	56.1	109
7.02 Cellular subscriptions w/data, % total	2.6	86
7.03 Households w/ personal computer, %	12.7	94
7.04 Broadband Internet subscribers/100 pop.	0.0	127
7.05 Internet users/100 pop.	5.9	115
7.06 Internet access in schools*	3.1	102
7.07 Use of virtual social networks*	4.8	84
7.08 Impact of ICT on access to basic services*	4.3	72
Business usage	**2.8**	**90**
8.01 Firm-level technology absorption*	5.2	45
8.02 Capacity for innovation*	2.4	113
8.03 Extent of business Internet use*	4.7	74
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	12.0	32
8.06 High-tech exports, % goods exports	0.5	91
8.07 Impact of ICT on new services and products*	3.8	109
8.08 Impact of ICT on new organizational models*	3.9	82
Government usage	**2.5**	**129**
9.01 Gov't success in ICT promotion	3.8	99
9.02 ICT use & gov't efficiency*	3.6	110
9.03 Government Online Service Index, 0–1 (best)	0.07	130
9.04 E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Nepal

Key indicators

Population (millions), 2009	27.9
GDP (PPP) per capita (PPP $), 2009	1,215
GDP (US$ billions), 2009	12.9
Global Competitiveness Index 2010–2011 rank (out of 139)	130

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.0**	**131**
2009–2010 (133)	2.9	124
2008–2009 (134)	2.9	127
2007–2008 (127)	2.9	119
2006–2007 (122)	2.8	108

Environment component 2.9 134

Market environment 3.6 109

1.01	Venture capital availability*	2.2	105
1.02	Financial market sophistication*	2.7	123
1.03	Availability of latest technologies*	3.9	127
1.04	State of cluster development*	3.2	85
1.05	Burden of government regulation*	2.7	113
1.06	Extent & effect of taxation*	3.6	69
1.07	Total tax rate, % profits	38.2	62
1.08	No. days to start a business	31	98
1.09	No. procedures to start a business	7	63
1.10	Freedom of the press*	4.7	80

Political and regulatory environment 3.2 124

2.01	Effectiveness of law-making bodies*	2.2	130
2.02	Laws relating to ICT*	2.6	125
2.03	Judicial independence*	3.2	92
2.04	Efficiency of legal system in settling disputes*	2.7	127
2.05	Efficiency of legal system in challenging regs*	2.7	122
2.06	Property rights*	3.0	124
2.07	Intellectual property protection*	2.6	115
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	39	83
2.10	No. days to enforce a contract	735	105
2.11	Internet & telephony competition, 0–6 (best)	4	85

Infrastructure environment 1.8 138

3.01	Phone lines/100 pop.	2.8	113
3.02	Mobile network coverage, % pop. covered	10.0	132
3.03	Secure Internet servers/million pop.	1.1	111
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	129
3.05	Electricity production, kWh/capita	99.2	127
3.06	Tertiary education enrollment rate, %	5.6	119
3.07	Quality scientific research institutions*	2.1	135
3.08	Availability of scientists & engineers*	3.0	129
3.09	Availability research & training services*	2.7	131
3.10	Accessibility of digital content*	3.5	125

Readiness component 3.7 118

Individual readiness 4.8 71

4.01	Quality of math & science education*	3.2	108
4.02	Quality of educational system*	3.0	115
4.03	Adult literacy rate, %	57.9	122
4.04	Residential phone installation (PPP $)	0.3	5
4.05	Residential monthly phone subscription (PPP $)	7.0	43
4.06	Fixed phone tariffs (PPP $)	0.05	33
4.07	Mobile cellular tariffs (PPP $)	0.07	7
4.08	Fixed broadband Internet tariffs (PPP $)	57.6	89
4.09	Buyer sophistication*	2.7	123

Business readiness 3.2 125

5.01	Extent of staff training*	2.7	136
5.02	Quality of management schools*	3.2	124
5.03	Company spending on R&D*	2.4	129
5.04	University-industry collaboration in R&D*	2.5	132
5.05	Business phone installation (PPP $)	0.3	3
5.06	Business monthly phone subscription (PPP $)	7.0	19
5.07	Local supplier quality*	3.4	131
5.08	Computer, communications, & other services imports, % services imports	12.4	111

Government readiness 3.1 127

6.01	Gov't prioritization of ICT*	3.7	122
6.02	Gov't procurement of advanced tech.*	2.6	132
6.03	Importance of ICT to gov't vision*	3.1	125

Usage component 2.3 133

Individual usage 2.0 131

7.01	Mobile phone subscriptions/100 pop.	19.1	135
7.02	Cellular subscriptions w/data, % total	0.0	109
7.03	Households w/ personal computer, %	3.1	122
7.04	Broadband Internet subscribers/100 pop.	0.1	119
7.05	Internet users/100 pop.	2.0	128
7.06	Internet access in schools*	2.8	111
7.07	Use of virtual social networks*	3.8	124
7.08	Impact of ICT on access to basic services*	3.7	121

Business usage 2.4 127

8.01	Firm-level technology absorption*	3.9	128
8.02	Capacity for innovation*	2.3	125
8.03	Extent of business Internet use*	3.9	123
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	0.3	104
8.07	Impact of ICT on new services and products*	3.6	124
8.08	Impact of ICT on new organizational models*	3.3	120

Government usage 2.5 128

9.01	Gov't success in ICT promotion	3.4	119
9.02	ICT use & gov't efficiency*	3.2	129
9.03	Government Online Service Index, 0–1 (best)	0.17	113
9.04	E-Participation Index, 0–1 (best)	0.06	111

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Netherlands

Key indicators

Population (millions), 2009	16.5
GDP (PPP) per capita (PPP $), 2009	39,877
GDP (US$ billions), 2009	796.7
Global Competitiveness Index 2010–2011 rank (out of 139)	8

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.2**	**11**
2009–2010 (133)	5.3	9
2008–2009 (134)	5.5	9
2007–2008 (127)	5.4	7
2006–2007 (122)	5.5	6

Environment component	5.5	7
Market environment	**5.1**	**12**
1.01 Venture capital availability*	3.7	17
1.02 Financial market sophistication*	6.1	13
1.03 Availability of latest technologies*	6.4	9
1.04 State of cluster development*	4.7	19
1.05 Burden of government regulation*	3.1	76
1.06 Extent & effect of taxation*	3.7	58
1.07 Total tax rate, % profits	40.5	68
1.08 No. days to start a business	8	27
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	6.7	4
Political and regulatory environment	**5.8**	**12**
2.01 Effectiveness of law-making bodies*	4.6	23
2.02 Laws relating to ICT*	5.3	17
2.03 Judicial independence*	6.2	12
2.04 Efficiency of legal system in settling disputes*	5.4	9
2.05 Efficiency of legal system in challenging regs*	5.1	12
2.06 Property rights*	5.8	15
2.07 Intellectual property protection*	5.7	10
2.08 Software piracy rate, % software installed	28	13
2.09 No. procedures to enforce a contract	26	5
2.10 No. days to enforce a contract	514	62
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**5.7**	**6**
3.01 Phone lines/100 pop.	44.1	21
3.02 Mobile network coverage, % pop. covered	98.0	66
3.03 Secure Internet servers/million pop.	1,414.0	2
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	781.5	4
3.05 Electricity production, kWh/capita	6,302.2	35
3.06 Tertiary education enrollment rate, %	60.6	29
3.07 Quality scientific research institutions*	5.6	9
3.08 Availability of scientists & engineers*	5.0	22
3.09 Availability research & training services*	6.0	4
3.10 Accessibility of digital content*	6.3	9

Readiness component	5.1	19
Individual readiness	**5.4**	**24**
4.01 Quality of math & science education*	5.2	15
4.02 Quality of educational system*	5.1	14
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	56.1	48
4.05 Residential monthly phone subscription (PPP $)	20.1	107
4.06 Fixed phone tariffs (PPP $)	0.12	60
4.07 Mobile cellular tariffs (PPP $)	0.41	84
4.08 Fixed broadband Internet tariffs (PPP $)	29.5	47
4.09 Buyer sophistication*	4.6	9
Business readiness	**5.2**	**7**
5.01 Extent of staff training*	5.1	11
5.02 Quality of management schools*	5.5	12
5.03 Company spending on R&D*	4.6	15
5.04 University-industry collaboration in R&D*	5.2	11
5.05 Business phone installation (PPP $)	n/a	n/a
5.06 Business monthly phone subscription (PPP $)	17.8	78
5.07 Local supplier quality*	5.8	8
5.08 Computer, communications, & other services imports, % services imports	51.4	12
Government readiness	**4.6**	**35**
6.01 Gov't prioritization of ICT*	5.1	46
6.02 Gov't procurement of advanced tech.*	4.3	23
6.03 Importance of ICT to gov't vision*	4.4	43

Usage component	5.0	10
Individual usage	**5.7**	**8**
7.01 Mobile phone subscriptions/100 pop.	127.7	28
7.02 Cellular subscriptions w/data, % total	16.8	46
7.03 Households w/ personal computer, %	90.8	2
7.04 Broadband Internet subscribers/100 pop.	35.6	2
7.05 Internet users/100 pop.	89.6	4
7.06 Internet access in schools*	6.2	6
7.07 Use of virtual social networks*	6.1	15
7.08 Impact of ICT on access to basic services*	5.2	28
Business usage	**4.3**	**13**
8.01 Firm-level technology absorption*	5.6	25
8.02 Capacity for innovation*	4.9	10
8.03 Extent of business Internet use*	6.0	16
8.04 National office patent applications/million pop	155.8	21
8.05 Patent Cooperation Treaty apps/million pop	247.8	7
8.06 High-tech exports, % goods exports	14.1	22
8.07 Impact of ICT on new services and products*	5.4	16
8.08 Impact of ICT on new organizational models*	5.3	11
Government usage	**4.8**	**18**
9.01 Gov't success in ICT promotion	4.7	41
9.02 ICT use & gov't efficiency*	5.0	30
9.03 Government Online Service Index, 0–1 (best)	0.68	12
9.04 E-Participation Index, 0–1 (best)	0.60	15

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

New Zealand

Key indicators

Population (millions), 2009	4.3
GDP (PPP) per capita (PPP $), 2009	26,670
GDP (US$ billions), 2009	117.8
Global Competitiveness Index 2010–2011 rank (out of 139)	23

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.0**	**18**
2009–2010 (133)	4.9	19
2008–2009 (134)	5.0	22
2007–2008 (127)	5.0	22
2006–2007 (122)	5.0	22

Environment component 5.4 15

Market environment		**5.0**	**16**
1.01	Venture capital availability*	3.3	26
1.02	Financial market sophistication*	5.3	30
1.03	Availability of latest technologies*	6.0	27
1.04	State of cluster development*	3.7	56
1.05	Burden of government regulation*	3.9	24
1.06	Extent & effect of taxation*	3.8	44
1.07	Total tax rate, % profits	34.3	48
1.08	No. days to start a business	1	1
1.09	No. procedures to start a business	1	1
1.10	Freedom of the press*	6.7	5
Political and regulatory environment		**6.1**	**3**
2.01	Effectiveness of law-making bodies*	5.8	3
2.02	Laws relating to ICT*	5.5	8
2.03	Judicial independence*	6.8	1
2.04	Efficiency of legal system in settling disputes*	5.7	5
2.05	Efficiency of legal system in challenging regs*	5.3	7
2.06	Property rights*	5.7	18
2.07	Intellectual property protection*	5.8	7
2.08	Software piracy rate, % software installed	22	4
2.09	No. procedures to enforce a contract	30	16
2.10	No. days to enforce a contract	216	2
2.11	Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment		**5.0**	**19**
3.01	Phone lines/100 pop.	43.8	22
3.02	Mobile network coverage, % pop. covered	97.0	69
3.03	Secure Internet servers/million pop.	1,059.1	8
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	45.4	44
3.05	Electricity production, kWh/capita	10,369.4	12
3.06	Tertiary education enrollment rate, %	78.5	10
3.07	Quality scientific research institutions*	5.3	14
3.08	Availability of scientists & engineers*	4.1	67
3.09	Availability research & training services*	4.9	29
3.10	Accessibility of digital content*	5.7	31

Readiness component 4.9 23

Individual readiness		**5.4**	**26**
4.01	Quality of math & science education*	5.5	9
4.02	Quality of educational system*	5.4	9
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	33.3	24
4.05	Residential monthly phone subscription (PPP $)	28.7	132
4.06	Fixed phone tariffs (PPP $)	0.00	1
4.07	Mobile cellular tariffs (PPP $)	0.55	103
4.08	Fixed broadband Internet tariffs (PPP $)	18.5	9
4.09	Buyer sophistication*	4.0	31
Business readiness		**4.6**	**29**
5.01	Extent of staff training*	4.8	21
5.02	Quality of management schools*	5.0	25
5.03	Company spending on R&D*	3.6	38
5.04	University-industry collaboration in R&D*	4.8	21
5.05	Business phone installation (PPP $)	34.0	17
5.06	Business monthly phone subscription (PPP $)	32.2	123
5.07	Local supplier quality*	5.5	15
5.08	Computer, communications, & other services imports, % services imports	33.8	59
Government readiness		**4.8**	**28**
6.01	Gov't prioritization of ICT*	5.7	13
6.02	Gov't procurement of advanced tech.*	3.6	72
6.03	Importance of ICT to gov't vision*	5.0	18

Usage component 4.8 18

Individual usage		**5.4**	**13**
7.01	Mobile phone subscriptions/100 pop.	110.2	49
7.02	Cellular subscriptions w/data, % total	58.3	7
7.03	Households w/ personal computer, %	80.3	15
7.04	Broadband Internet subscribers/100 pop.	23.0	23
7.05	Internet users/100 pop.	79.7	12
7.06	Internet access in schools*	5.8	21
7.07	Use of virtual social networks*	6.0	18
7.08	Impact of ICT on access to basic services*	5.0	37
Business usage		**3.9**	**24**
8.01	Firm-level technology absorption*	5.9	17
8.02	Capacity for innovation*	3.9	28
8.03	Extent of business Internet use*	6.0	14
8.04	National office patent applications/million pop	360.3	6
8.05	Patent Cooperation Treaty apps/million pop	63.3	23
8.06	High-tech exports, % goods exports	2.1	63
8.07	Impact of ICT on new services and products*	5.1	32
8.08	Impact of ICT on new organizational models*	4.8	31
Government usage		**5.0**	**13**
9.01	Gov't success in ICT promotion	4.4	59
9.02	ICT use & gov't efficiency*	5.2	26
9.03	Government Online Service Index, 0–1 (best)	0.64	15
9.04	E-Participation Index, 0–1 (best)	0.77	4

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Nicaragua

Key indicators

Population (millions), 2009	5.7
GDP (PPP) per capita (PPP $), 2009	2,892
GDP (US$ billions), 2009	6.1
Global Competitiveness Index 2010–2011 rank (out of 139)	112

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.0**	**128**
2009–2010 (133)	2.9	125
2008–2009 (134)	2.9	125
2007–2008 (127)	3.0	116
2006–2007 (122)	2.9	103

Environment component	3.2	116
Market environment	**3.6**	**108**
1.01 Venture capital availability*	2.4	84
1.02 Financial market sophistication*	3.5	100
1.03 Availability of latest technologies*	3.9	129
1.04 State of cluster development*	3.1	88
1.05 Burden of government regulation*	3.4	62
1.06 Extent & effect of taxation*	3.4	81
1.07 Total tax rate, % profits	63.2	118
1.08 No. days to start a business	39	112
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	4.0	112
Political and regulatory environment	**3.3**	**117**
2.01 Effectiveness of law-making bodies*	2.2	127
2.02 Laws relating to ICT*	2.9	119
2.03 Judicial independence*	2.1	131
2.04 Efficiency of legal system in settling disputes*	2.6	130
2.05 Efficiency of legal system in challenging regs*	2.3	133
2.06 Property rights*	3.1	123
2.07 Intellectual property protection*	2.6	114
2.08 Software piracy rate, % software installed	79	81
2.09 No. procedures to enforce a contract	35	46
2.10 No. days to enforce a contract	540	66
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.6**	**114**
3.01 Phone lines/100 pop.	4.4	107
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	6.3	88
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	1.4	100
3.05 Electricity production, kWh/capita	573.5	111
3.06 Tertiary education enrollment rate, %	18.0	93
3.07 Quality scientific research institutions*	2.5	125
3.08 Availability of scientists & engineers*	3.1	125
3.09 Availability research & training services*	3.1	118
3.10 Accessibility of digital content*	3.7	117

Readiness component	3.3	136
Individual readiness	**3.9**	**120**
4.01 Quality of math & science education*	2.5	131
4.02 Quality of educational system*	2.5	131
4.03 Adult literacy rate, %	78.0	105
4.04 Residential phone installation (PPP $)	167.4	122
4.05 Residential monthly phone subscription (PPP $)	9.0	52
4.06 Fixed phone tariffs (PPP $)	0.11	57
4.07 Mobile cellular tariffs (PPP $)	0.83	122
4.08 Fixed broadband Internet tariffs (PPP $)	84.7	109
4.09 Buyer sophistication*	3.1	96
Business readiness	**3.0**	**135**
5.01 Extent of staff training*	3.6	94
5.02 Quality of management schools*	3.5	111
5.03 Company spending on R&D*	2.6	111
5.04 University-industry collaboration in R&D*	2.9	117
5.05 Business phone installation (PPP $)	348.8	132
5.06 Business monthly phone subscription (PPP $)	23.9	98
5.07 Local supplier quality*	3.9	103
5.08 Computer, communications, & other services imports, % services imports	12.8	110
Government readiness	**2.8**	**133**
6.01 Gov't prioritization of ICT*	3.1	134
6.02 Gov't procurement of advanced tech.*	2.8	124
6.03 Importance of ICT to gov't vision*	2.6	134

Usage component	2.5	119
Individual usage	**2.3**	**117**
7.01 Mobile phone subscriptions/100 pop.	55.8	110
7.02 Cellular subscriptions w/data, % total	2.7	85
7.03 Households w/ personal computer, %	6.8	109
7.04 Broadband Internet subscribers/100 pop.	0.8	97
7.05 Internet users/100 pop.	3.5	123
7.06 Internet access in schools*	2.7	118
7.07 Use of virtual social networks*	4.5	97
7.08 Impact of ICT on access to basic services*	3.2	130
Business usage	**2.5**	**126**
8.01 Firm-level technology absorption*	4.0	117
8.02 Capacity for innovation*	2.7	92
8.03 Extent of business Internet use*	3.8	129
8.04 National office patent applications/million pop	0.0	92
8.05 Patent Cooperation Treaty apps/million pop	0.2	81
8.06 High-tech exports, % goods exports	0.5	90
8.07 Impact of ICT on new services and products*	3.5	126
8.08 Impact of ICT on new organizational models*	3.6	102
Government usage	**2.8**	**108**
9.01 Gov't success in ICT promotion	2.9	127
9.02 ICT use & gov't efficiency*	3.0	133
9.03 Government Online Service Index, 0–1 (best)	0.25	95
9.04 E-Participation Index, 0–1 (best)	0.30	38

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Nigeria

Key indicators

Population (millions), 2009	151.9
GDP (PPP) per capita (PPP $), 2009	2,274
GDP (US$ billions), 2009	168.8
Global Competitiveness Index 2010–2011 rank (out of 139)	127

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.3**	**104**
2009–2010 (133)	3.3	99
2008–2009 (134)	3.5	90
2007–2008 (127)	3.3	94
2006–2007 (122)	3.2	88

Environment component 3.3 105

Market environment		**3.9**	**94**
1.01	Venture capital availability*	2.0	119
1.02	Financial market sophistication*	4.0	79
1.03	Availability of latest technologies*	4.2	114
1.04	State of cluster development*	3.8	48
1.05	Burden of government regulation*	3.1	85
1.06	Extent & effect of taxation*	3.7	50
1.07	Total tax rate, % profits	32.2	41
1.08	No. days to start a business	31	98
1.09	No. procedures to start a business	8	76
1.10	Freedom of the press*	4.3	95
Political and regulatory environment		**3.4**	**107**
2.01	Effectiveness of law-making bodies*	3.3	80
2.02	Laws relating to ICT*	3.4	95
2.03	Judicial independence*	3.5	79
2.04	Efficiency of legal system in settling disputes*	3.7	67
2.05	Efficiency of legal system in challenging regs*	3.3	79
2.06	Property rights*	3.3	117
2.07	Intellectual property protection*	2.9	94
2.08	Software piracy rate, % software installed	83	92
2.09	No. procedures to enforce a contract	40	94
2.10	No. days to enforce a contract	457	47
2.11	Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment		**2.7**	**112**
3.01	Phone lines/100 pop.	0.9	129
3.02	Mobile network coverage, % pop. covered	90.0	91
3.03	Secure Internet servers/million pop.	0.8	115
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	132
3.05	Electricity production, kWh/capita	155.5	122
3.06	Tertiary education enrollment rate, %	10.1	107
3.07	Quality scientific research institutions*	2.8	112
3.08	Availability of scientists & engineers*	3.9	79
3.09	Availability research & training services*	3.7	90
3.10	Accessibility of digital content*	4.0	108

Readiness component 3.8 108

Individual readiness		**3.9**	**119**
4.01	Quality of math & science education*	2.9	118
4.02	Quality of educational system*	3.8	62
4.03	Adult literacy rate, %	60.1	121
4.04	Residential phone installation (PPP $)	0.0	1
4.05	Residential monthly phone subscription (PPP $)	0.0	1
4.06	Fixed phone tariffs (PPP $)	0.40	117
4.07	Mobile cellular tariffs (PPP $)	0.52	97
4.08	Fixed broadband Internet tariffs (PPP $)	208.2	123
4.09	Buyer sophistication*	3.3	80
Business readiness		**3.8**	**77**
5.01	Extent of staff training*	3.9	73
5.02	Quality of management schools*	3.7	99
5.03	Company spending on R&D*	3.2	53
5.04	University-industry collaboration in R&D*	3.1	101
5.05	Business phone installation (PPP $)	126.6	88
5.06	Business monthly phone subscription (PPP $)	9.8	28
5.07	Local supplier quality*	4.0	101
5.08	Computer, communications, & other services imports, % services imports	34.4	56
Government readiness		**3.7**	**97**
6.01	Gov't prioritization of ICT*	4.1	104
6.02	Gov't procurement of advanced tech.*	3.2	106
6.03	Importance of ICT to gov't vision*	3.8	81

Usage component 2.8 99

Individual usage		**2.9**	**92**
7.01	Mobile phone subscriptions/100 pop.	48.2	116
7.02	Cellular subscriptions w/data, % total	18.6	44
7.03	Households w/ personal computer, %	12.0	97
7.04	Broadband Internet subscribers/100 pop.	0.1	120
7.05	Internet users/100 pop.	28.4	76
7.06	Internet access in schools*	3.2	98
7.07	Use of virtual social networks*	5.2	68
7.08	Impact of ICT on access to basic services*	4.6	59
Business usage		**2.9**	**81**
8.01	Firm-level technology absorption*	4.7	76
8.02	Capacity for innovation*	2.9	73
8.03	Extent of business Internet use*	4.5	88
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	97
8.06	High-tech exports, % goods exports	0.1	112
8.07	Impact of ICT on new services and products*	4.9	47
8.08	Impact of ICT on new organizational models*	4.0	76
Government usage		**2.7**	**123**
9.01	Gov't success in ICT promotion	4.2	76
9.02	ICT use & gov't efficiency*	3.8	95
9.03	Government Online Service Index, 0–1 (best)	0.10	126
9.04	E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Norway

Key indicators

Population (millions), 2009	4.8
GDP (PPP) per capita (PPP $), 2009	51,985
GDP (US$ billions), 2009	378.6
Global Competitiveness Index 2010–2011 rank (out of 139)	14

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.2**	**9**
2009–2010 (133)	5.2	10
2008–2009 (134)	5.5	8
2007–2008 (127)	5.4	10
2006–2007 (122)	5.4	10

Environment component	5.6	6
Market environment	**5.3**	**8**
1.01 Venture capital availability*	4.3	2
1.02 Financial market sophistication*	6.1	9
1.03 Availability of latest technologies*	6.7	3
1.04 State of cluster development*	4.7	18
1.05 Burden of government regulation*	3.4	58
1.06 Extent & effect of taxation*	3.6	63
1.07 Total tax rate, % profits	41.6	74
1.08 No. days to start a business	7	20
1.09 No. procedures to start a business	5	22
1.10 Freedom of the press*	6.8	3
Political and regulatory environment	**5.9**	**8**
2.01 Effectiveness of law-making bodies*	5.2	10
2.02 Laws relating to ICT*	5.6	5
2.03 Judicial independence*	6.2	13
2.04 Efficiency of legal system in settling disputes*	5.8	4
2.05 Efficiency of legal system in challenging regs*	5.3	9
2.06 Property rights*	6.1	9
2.07 Intellectual property protection*	5.6	16
2.08 Software piracy rate, % software installed	29	15
2.09 No. procedures to enforce a contract	33	38
2.10 No. days to enforce a contract	280	8
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**5.5**	**8**
3.01 Phone lines/100 pop.	37.1	30
3.02 Mobile network coverage, % pop. covered	n/a	n/a
3.03 Secure Internet servers/million pop.	1,011.2	9
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	269.1	12
3.05 Electricity production, kWh/capita	28,954.3	2
3.06 Tertiary education enrollment rate, %	73.2	15
3.07 Quality scientific research institutions*	5.0	23
3.08 Availability of scientists & engineers*	5.1	18
3.09 Availability research & training services*	5.5	14
3.10 Accessibility of digital content*	6.4	6

Readiness component	5.1	20
Individual readiness	**5.5**	**20**
4.01 Quality of math & science education*	4.1	64
4.02 Quality of educational system*	5.0	19
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	110.8	97
4.05 Residential monthly phone subscription (PPP $)	17.8	101
4.06 Fixed phone tariffs (PPP $)	0.05	32
4.07 Mobile cellular tariffs (PPP $)	0.10	10
4.08 Fixed broadband Internet tariffs (PPP $)	33.5	62
4.09 Buyer sophistication*	4.5	12
Business readiness	**4.9**	**13**
5.01 Extent of staff training*	5.5	3
5.02 Quality of management schools*	5.2	19
5.03 Company spending on R&D*	4.4	17
5.04 University-industry collaboration in R&D*	4.9	20
5.05 Business phone installation (PPP $)	110.8	78
5.06 Business monthly phone subscription (PPP $)	18.1	80
5.07 Local supplier quality*	5.6	12
5.08 Computer, communications, & other services imports, % services imports	36.6	45
Government readiness	**4.8**	**26**
6.01 Gov't prioritization of ICT*	5.4	27
6.02 Gov't procurement of advanced tech.*	4.2	33
6.03 Importance of ICT to gov't vision*	4.8	24

Usage component	5.0	11
Individual usage	**5.7**	**10**
7.01 Mobile phone subscriptions/100 pop.	111.4	48
7.02 Cellular subscriptions w/data, % total	19.1	43
7.03 Households w/ personal computer, %	87.6	4
7.04 Broadband Internet subscribers/100 pop.	34.0	4
7.05 Internet users/100 pop.	92.1	2
7.06 Internet access in schools*	5.9	15
7.07 Use of virtual social networks*	6.3	4
7.08 Impact of ICT on access to basic services*	5.5	16
Business usage	**4.2**	**16**
8.01 Firm-level technology absorption*	6.2	6
8.02 Capacity for innovation*	4.7	13
8.03 Extent of business Internet use*	6.0	12
8.04 National office patent applications/million pop	258.1	11
8.05 Patent Cooperation Treaty apps/million pop	144.8	14
8.06 High-tech exports, % goods exports	4.1	54
8.07 Impact of ICT on new services and products*	5.8	7
8.08 Impact of ICT on new organizational models*	5.5	4
Government usage	**5.0**	**14**
9.01 Gov't success in ICT promotion	5.2	18
9.02 ICT use & gov't efficiency*	5.3	19
9.03 Government Online Service Index, 0–1 (best)	0.74	7
9.04 E-Participation Index, 0–1 (best)	0.50	21

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Oman

Key indicators

Population (millions), 2009	2.9
GDP (PPP) per capita (PPP $), 2009	25,635
GDP (US$ billions), 2009	46.1
Global Competitiveness Index 2010–2011 rank (out of 139)	34

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.2**	**41**
2009–2010 (133)	3.9	50
2008–2009 (134)	4.1	50
2007–2008 (127)	4.0	53
2006–2007 (122)	n/a	n/a

Environment component	4.2	43
Market environment	**4.7**	**31**
1.01 Venture capital availability*	3.8	15
1.02 Financial market sophistication*	4.8	47
1.03 Availability of latest technologies*	5.3	57
1.04 State of cluster development*	4.1	31
1.05 Burden of government regulation*	4.3	7
1.06 Extent & effect of taxation*	5.6	4
1.07 Total tax rate, % profits	21.6	14
1.08 No. days to start a business	12	45
1.09 No. procedures to start a business	5	22
1.10 Freedom of the press*	3.9	115
Political and regulatory environment	**4.5**	**45**
2.01 Effectiveness of law-making bodies*	5.4	9
2.02 Laws relating to ICT*	4.9	30
2.03 Judicial independence*	5.1	31
2.04 Efficiency of legal system in settling disputes*	5.2	16
2.05 Efficiency of legal system in challenging regs*	4.7	23
2.06 Property rights*	5.5	24
2.07 Intellectual property protection*	5.3	20
2.08 Software piracy rate, % software installed	63	55
2.09 No. procedures to enforce a contract	51	132
2.10 No. days to enforce a contract	598	85
2.11 Internet & telephony competition, 0–6 (best)	1	128
Infrastructure environment	**3.3**	**71**
3.01 Phone lines/100 pop.	10.5	92
3.02 Mobile network coverage, % pop. covered	96.5	72
3.03 Secure Internet servers/million pop.	11.5	72
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	13.7	69
3.05 Electricity production, kWh/capita	5,297.7	44
3.06 Tertiary education enrollment rate, %	26.9	81
3.07 Quality scientific research institutions*	3.9	57
3.08 Availability of scientists & engineers*	3.8	87
3.09 Availability research & training services*	3.8	85
3.10 Accessibility of digital content*	5.1	56

Readiness component	4.8	34
Individual readiness	**5.2**	**40**
4.01 Quality of math & science education*	4.2	58
4.02 Quality of educational system*	4.2	43
4.03 Adult literacy rate, %	86.7	93
4.04 Residential phone installation (PPP $)	30.4	20
4.05 Residential monthly phone subscription (PPP $)	30.4	134
4.06 Fixed phone tariffs (PPP $)	0.09	51
4.07 Mobile cellular tariffs (PPP $)	0.15	16
4.08 Fixed broadband Internet tariffs (PPP $)	30.4	50
4.09 Buyer sophistication*	3.8	42
Business readiness	**4.2**	**52**
5.01 Extent of staff training*	4.3	44
5.02 Quality of management schools*	4.0	81
5.03 Company spending on R&D*	3.2	51
5.04 University-industry collaboration in R&D*	3.9	50
5.05 Business phone installation (PPP $)	30.4	11
5.06 Business monthly phone subscription (PPP $)	30.4	119
5.07 Local supplier quality*	4.8	50
5.08 Computer, communications, & other services imports, % services imports	35.9	48
Government readiness	**5.1**	**13**
6.01 Gov't prioritization of ICT*	5.5	22
6.02 Gov't procurement of advanced tech.*	4.5	11
6.03 Importance of ICT to gov't vision*	5.2	10

Usage component	3.8	43
Individual usage	**4.2**	**48**
7.01 Mobile phone subscriptions/100 pop.	139.5	17
7.02 Cellular subscriptions w/data, % total	30.9	24
7.03 Households w/ personal computer, %	39.2	55
7.04 Broadband Internet subscribers/100 pop.	1.4	90
7.05 Internet users/100 pop.	51.5	42
7.06 Internet access in schools*	4.6	46
7.07 Use of virtual social networks*	5.1	75
7.08 Impact of ICT on access to basic services*	5.5	17
Business usage	**3.2**	**56**
8.01 Firm-level technology absorption*	5.1	52
8.02 Capacity for innovation*	3.0	61
8.03 Extent of business Internet use*	5.3	42
8.04 National office patent applications/million pop	1.8	79
8.05 Patent Cooperation Treaty apps/million pop	1.4	59
8.06 High-tech exports, % goods exports	0.0	119
8.07 Impact of ICT on new services and products*	5.0	38
8.08 Impact of ICT on new organizational models*	4.8	32
Government usage	**3.9**	**45**
9.01 Gov't success in ICT promotion	5.2	19
9.02 ICT use & gov't efficiency*	5.3	18
9.03 Government Online Service Index, 0–1 (best)	0.37	53
9.04 E-Participation Index, 0–1 (best)	0.16	74

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Pakistan

Key indicators

Population (millions), 2009	163.8
GDP (PPP) per capita (PPP $), 2009	2,683
GDP (US$ billions), 2009	162.0
Global Competitiveness Index 2010–2011 rank (out of 139)	123

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**88**
2009–2010 (133)	3.4	87
2008–2009 (134)	3.3	98
2007–2008 (127)	3.4	89
2006–2007 (122)	3.3	84

Environment component	3.5	96
Market environment	**4.2**	**61**
1.01 Venture capital availability*	2.8	51
1.02 Financial market sophistication*	3.9	85
1.03 Availability of latest technologies*	4.6	87
1.04 State of cluster development*	4.0	46
1.05 Burden of government regulation*	3.2	71
1.06 Extent & effect of taxation*	3.8	46
1.07 Total tax rate, % profits	31.6	39
1.08 No. days to start a business	21	81
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	5.4	58
Political and regulatory environment	**3.5**	**104**
2.01 Effectiveness of law-making bodies*	2.9	102
2.02 Laws relating to ICT*	3.2	103
2.03 Judicial independence*	3.6	73
2.04 Efficiency of legal system in settling disputes*	3.1	102
2.05 Efficiency of legal system in challenging regs*	3.1	95
2.06 Property rights*	3.6	106
2.07 Intellectual property protection*	3.1	85
2.08 Software piracy rate, % software installed	84	94
2.09 No. procedures to enforce a contract	47	125
2.10 No. days to enforce a contract	976	124
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.8**	**104**
3.01 Phone lines/100 pop.	1.9	117
3.02 Mobile network coverage, % pop. covered	92.0	89
3.03 Secure Internet servers/million pop.	0.6	119
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	1.1	101
3.05 Electricity production, kWh/capita	588.5	110
3.06 Tertiary education enrollment rate, %	5.2	121
3.07 Quality scientific research institutions*	3.4	79
3.08 Availability of scientists & engineers*	3.9	80
3.09 Availability research & training services*	3.5	97
3.10 Accessibility of digital content*	4.7	78

Readiness component	4.3	60
Individual readiness	**5.1**	**56**
4.01 Quality of math & science education*	3.5	89
4.02 Quality of educational system*	3.3	86
4.03 Adult literacy rate, %	53.7	128
4.04 Residential phone installation (PPP $)	29.3	19
4.05 Residential monthly phone subscription (PPP $)	5.7	33
4.06 Fixed phone tariffs (PPP $)	0.08	47
4.07 Mobile cellular tariffs (PPP $)	0.05	3
4.08 Fixed broadband Internet tariffs (PPP $)	28.2	36
4.09 Buyer sophistication*	3.5	62
Business readiness	**3.9**	**70**
5.01 Extent of staff training*	3.3	114
5.02 Quality of management schools*	4.0	80
5.03 Company spending on R&D*	3.0	67
5.04 University-industry collaboration in R&D*	3.4	80
5.05 Business phone installation (PPP $)	29.3	9
5.06 Business monthly phone subscription (PPP $)	6.8	18
5.07 Local supplier quality*	4.1	95
5.08 Computer, communications, & other services imports, % services imports	29.6	66
Government readiness	**3.9**	**84**
6.01 Gov't prioritization of ICT*	4.5	83
6.02 Gov't procurement of advanced tech.*	3.4	83
6.03 Importance of ICT to gov't vision*	3.7	90

Usage component	2.9	96
Individual usage	**2.6**	**106**
7.01 Mobile phone subscriptions/100 pop.	52.2	114
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	9.8	103
7.04 Broadband Internet subscribers/100 pop.	0.2	109
7.05 Internet users/100 pop.	11.3	99
7.06 Internet access in schools*	3.6	84
7.07 Use of virtual social networks*	4.8	90
7.08 Impact of ICT on access to basic services*	4.2	83
Business usage	**2.8**	**87**
8.01 Firm-level technology absorption*	4.5	87
8.02 Capacity for innovation*	3.1	58
8.03 Extent of business Internet use*	4.3	102
8.04 National office patent applications/million pop	1.0	84
8.05 Patent Cooperation Treaty apps/million pop	0.0	99
8.06 High-tech exports, % goods exports	1.3	75
8.07 Impact of ICT on new services and products*	4.3	83
8.08 Impact of ICT on new organizational models*	4.1	63
Government usage	**3.2**	**87**
9.01 Gov't success in ICT promotion	4.3	68
9.02 ICT use & gov't efficiency*	3.9	91
9.03 Government Online Service Index, 0–1 (best)	0.25	97
9.04 E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Panama

Key indicators

Population (millions), 2009	3.5
GDP (PPP) per capita (PPP $), 2009	11,776
GDP (US$ billions), 2009	24.9
Global Competitiveness Index 2010–2011 rank (out of 139)	53

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**60**
2009–2010 (133)	3.8	58
2008–2009 (134)	3.8	66
2007–2008 (127)	3.7	64
2006–2007 (122)	3.6	65

Environment component 4.1 48

Market environment 4.7 29

1.01	Venture capital availability*	3.3	28
1.02	Financial market sophistication*	6.0	17
1.03	Availability of latest technologies*	5.6	43
1.04	State of cluster development*	3.9	47
1.05	Burden of government regulation*	3.6	39
1.06	Extent & effect of taxation*	3.8	43
1.07	Total tax rate, % profits	50.1	103
1.08	No. days to start a business	9	34
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	5.8	44

Political and regulatory environment 3.9 71

2.01	Effectiveness of law-making bodies*	2.4	121
2.02	Laws relating to ICT*	4.5	41
2.03	Judicial independence*	2.5	124
2.04	Efficiency of legal system in settling disputes*	3.3	90
2.05	Efficiency of legal system in challenging regs*	3.2	85
2.06	Property rights*	4.7	50
2.07	Intellectual property protection*	4.0	47
2.08	Software piracy rate, % software installed	73	73
2.09	No. procedures to enforce a contract	31	26
2.10	No. days to enforce a contract	686	100
2.11	Internet & telephony competition, 0–6 (best)	5	62

Infrastructure environment 3.5 62

3.01	Phone lines/100 pop.	15.6	81
3.02	Mobile network coverage, % pop. covered	85.2	99
3.03	Secure Internet servers/million pop.	85.7	42
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	159.6	20
3.05	Electricity production, kWh/capita	1,937.0	80
3.06	Tertiary education enrollment rate, %	45.0	52
3.07	Quality scientific research institutions*	3.7	66
3.08	Availability of scientists & engineers*	3.6	99
3.09	Availability research & training services*	4.2	62
3.10	Accessibility of digital content*	4.9	66

Readiness component 4.3 61

Individual readiness 4.8 76

4.01	Quality of math & science education*	2.6	128
4.02	Quality of educational system*	2.6	127
4.03	Adult literacy rate, %	93.5	69
4.04	Residential phone installation (PPP $)	54.9	46
4.05	Residential monthly phone subscription (PPP $)	17.4	95
4.06	Fixed phone tariffs (PPP $)	0.16	75
4.07	Mobile cellular tariffs (PPP $)	0.22	32
4.08	Fixed broadband Internet tariffs (PPP $)	31.0	52
4.09	Buyer sophistication*	3.8	48

Business readiness 3.7 91

5.01	Extent of staff training*	4.2	49
5.02	Quality of management schools*	3.5	108
5.03	Company spending on R&D*	3.1	58
5.04	University-industry collaboration in R&D*	3.3	83
5.05	Business phone installation (PPP $)	77.6	60
5.06	Business monthly phone subscription (PPP $)	29.0	116
5.07	Local supplier quality*	4.9	46
5.08	Computer, communications, & other services imports, % services imports	11.4	114

Government readiness 4.3 52

6.01	Gov't prioritization of ICT*	4.8	60
6.02	Gov't procurement of advanced tech.*	3.8	55
6.03	Importance of ICT to gov't vision*	4.3	46

Usage component 3.3 68

Individual usage 3.6 59

7.01	Mobile phone subscriptions/100 pop.	164.4	8
7.02	Cellular subscriptions w/data, % total	0.0	110
7.03	Households w/ personal computer, %	18.0	82
7.04	Broadband Internet subscribers/100 pop.	5.8	62
7.05	Internet users/100 pop.	27.8	78
7.06	Internet access in schools*	3.7	75
7.07	Use of virtual social networks*	5.7	32
7.08	Impact of ICT on access to basic services*	4.5	63

Business usage 3.1 59

8.01	Firm-level technology absorption*	5.3	41
8.02	Capacity for innovation*	2.7	81
8.03	Extent of business Internet use*	5.0	57
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	1.4	58
8.06	High-tech exports, % goods exports	0.0	126
8.07	Impact of ICT on new services and products*	5.2	30
8.08	Impact of ICT on new organizational models*	4.7	40

Government usage 3.3 73

9.01	Gov't success in ICT promotion	4.2	78
9.02	ICT use & gov't efficiency*	4.5	54
9.03	Government Online Service Index, 0–1 (best)	0.28	85
9.04	E-Participation Index, 0–1 (best)	0.11	93

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Paraguay

Key indicators

Population (millions), 2009	6.3
GDP (PPP) per capita (PPP $), 2009	4,560
GDP (US$ billions), 2009	14.2
Global Competitiveness Index 2010–2011 rank (out of 139)	120

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.0**	**127**
2009–2010 (133)	2.9	127
2008–2009 (134)	2.9	122
2007–2008 (127)	2.9	120
2006–2007 (122)	2.7	114

Environment component	3.1	122
Market environment	**4.0**	**81**
1.01 Venture capital availability*	2.3	87
1.02 Financial market sophistication*	3.5	101
1.03 Availability of latest technologies*	4.2	120
1.04 State of cluster development*	2.8	115
1.05 Burden of government regulation*	3.4	57
1.06 Extent & effect of taxation*	4.3	23
1.07 Total tax rate, % profits	35.0	50
1.08 No. days to start a business	35	106
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	5.9	35
Political and regulatory environment	**2.9**	**135**
2.01 Effectiveness of law-making bodies*	2.0	135
2.02 Laws relating to ICT*	2.6	130
2.03 Judicial independence*	1.7	137
2.04 Efficiency of legal system in settling disputes*	2.5	133
2.05 Efficiency of legal system in challenging regs*	2.5	128
2.06 Property rights*	2.9	128
2.07 Intellectual property protection*	2.2	134
2.08 Software piracy rate, % software installed	82	90
2.09 No. procedures to enforce a contract	38	73
2.10 No. days to enforce a contract	591	82
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.4**	**124**
3.01 Phone lines/100 pop.	6.1	106
3.02 Mobile network coverage, % pop. covered	n/a	n/a
3.03 Secure Internet servers/million pop.	5.7	90
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	6.6	80
3.05 Electricity production, kWh/capita	8,769.1	21
3.06 Tertiary education enrollment rate, %	28.6	77
3.07 Quality scientific research institutions*	1.8	137
3.08 Availability of scientists & engineers*	2.6	136
3.09 Availability research & training services*	2.9	129
3.10 Accessibility of digital content*	3.7	115

Readiness component	3.5	132
Individual readiness	**4.5**	**91**
4.01 Quality of math & science education*	2.1	134
4.02 Quality of educational system*	2.1	136
4.03 Adult literacy rate, %	94.6	63
4.04 Residential phone installation (PPP $)	96.4	91
4.05 Residential monthly phone subscription (PPP $)	8.5	47
4.06 Fixed phone tariffs (PPP $)	0.15	69
4.07 Mobile cellular tariffs (PPP $)	0.31	56
4.08 Fixed broadband Internet tariffs (PPP $)	40.8	77
4.09 Buyer sophistication*	2.9	109
Business readiness	**3.1**	**131**
5.01 Extent of staff training*	3.2	122
5.02 Quality of management schools*	2.9	131
5.03 Company spending on R&D*	2.4	124
5.04 University-industry collaboration in R&D*	2.7	128
5.05 Business phone installation (PPP $)	96.4	69
5.06 Business monthly phone subscription (PPP $)	11.9	41
5.07 Local supplier quality*	4.1	94
5.08 Computer, communications, & other services imports, % services imports	2.5	124
Government readiness	**2.7**	**137**
6.01 Gov't prioritization of ICT*	2.8	138
6.02 Gov't procurement of advanced tech.*	2.6	131
6.03 Importance of ICT to gov't vision*	2.7	133

Usage component	2.5	127
Individual usage	**2.5**	**111**
7.01 Mobile phone subscriptions/100 pop.	88.5	78
7.02 Cellular subscriptions w/data, % total	1.0	102
7.03 Households w/ personal computer, %	13.9	90
7.04 Broadband Internet subscribers/100 pop.	2.2	83
7.05 Internet users/100 pop.	17.4	91
7.06 Internet access in schools*	2.0	134
7.07 Use of virtual social networks*	4.2	112
7.08 Impact of ICT on access to basic services*	3.0	136
Business usage	**2.5**	**125**
8.01 Firm-level technology absorption*	4.0	116
8.02 Capacity for innovation*	2.3	119
8.03 Extent of business Internet use*	3.9	124
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	1.2	78
8.07 Impact of ICT on new services and products*	3.7	119
8.08 Impact of ICT on new organizational models*	3.6	105
Government usage	**2.4**	**131**
9.01 Gov't success in ICT promotion	2.6	131
9.02 ICT use & gov't efficiency*	3.3	122
9.03 Government Online Service Index, 0–1 (best)	0.26	92
9.04 E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Peru

Key indicators

Population (millions), 2009	29.1
GDP (PPP) per capita (PPP $), 2009	8,626
GDP (US$ billions), 2009	126.8
Global Competitiveness Index 2010–2011 rank (out of 139)	73

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**89**
2009–2010 (133)	3.4	92
2008–2009 (134)	3.5	89
2007–2008 (127)	3.5	84
2006–2007 (122)	3.4	78

Environment component 3.7 76

Market environment 4.3 47

1.01	Venture capital availability*	2.9	42
1.02	Financial market sophistication*	4.8	45
1.03	Availability of latest technologies*	5.1	66
1.04	State of cluster development*	3.4	75
1.05	Burden of government regulation*	2.7	118
1.06	Extent & effect of taxation*	3.8	47
1.07	Total tax rate, % profits	40.2	66
1.08	No. days to start a business	27	89
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	6.2	22

Political and regulatory environment 3.6 94

2.01	Effectiveness of law-making bodies*	1.9	137
2.02	Laws relating to ICT*	3.8	78
2.03	Judicial independence*	2.6	118
2.04	Efficiency of legal system in settling disputes*	3.0	107
2.05	Efficiency of legal system in challenging regs*	3.1	92
2.06	Property rights*	3.8	91
2.07	Intellectual property protection*	2.6	122
2.08	Software piracy rate, % software installed	70	69
2.09	No. procedures to enforce a contract	41	102
2.10	No. days to enforce a contract	428	43
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 3.1 82

3.01	Phone lines/100 pop.	10.2	93
3.02	Mobile network coverage, % pop. covered	95.6	75
3.03	Secure Internet servers/million pop.	10.5	75
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	26.5	54
3.05	Electricity production, kWh/capita	1,049.9	93
3.06	Tertiary education enrollment rate, %	34.5	64
3.07	Quality scientific research institutions*	2.9	108
3.08	Availability of scientists & engineers*	3.6	101
3.09	Availability research & training services*	4.0	73
3.10	Accessibility of digital content*	4.7	82

Readiness component 3.8 112

Individual readiness 4.3 108

4.01	Quality of math & science education*	2.5	132
4.02	Quality of educational system*	2.7	123
4.03	Adult literacy rate, %	89.6	85
4.04	Residential phone installation (PPP $)	273.6	133
4.05	Residential monthly phone subscription (PPP $)	26.2	126
4.06	Fixed phone tariffs (PPP $)	0.04	21
4.07	Mobile cellular tariffs (PPP $)	0.33	64
4.08	Fixed broadband Internet tariffs (PPP $)	69.4	101
4.09	Buyer sophistication*	3.5	65

Business readiness 3.5 104

5.01	Extent of staff training*	3.8	77
5.02	Quality of management schools*	4.6	42
5.03	Company spending on R&D*	2.6	112
5.04	University-industry collaboration in R&D*	3.2	94
5.05	Business phone installation (PPP $)	273.6	124
5.06	Business monthly phone subscription (PPP $)	37.0	128
5.07	Local supplier quality*	4.6	64
5.08	Computer, communications, & other services imports, % services imports	27.9	69

Government readiness 3.6 100

6.01	Gov't prioritization of ICT*	4.0	106
6.02	Gov't procurement of advanced tech.*	3.3	92
6.03	Importance of ICT to gov't vision*	3.4	102

Usage component 3.1 81

Individual usage 3.1 80

7.01	Mobile phone subscriptions/100 pop.	84.7	83
7.02	Cellular subscriptions w/data, % total	2.8	83
7.03	Households w/ personal computer, %	18.0	81
7.04	Broadband Internet subscribers/100 pop.	2.8	80
7.05	Internet users/100 pop.	31.4	70
7.06	Internet access in schools*	3.9	66
7.07	Use of virtual social networks*	5.0	81
7.08	Impact of ICT on access to basic services*	4.2	79

Business usage 2.9 78

8.01	Firm-level technology absorption*	4.8	72
8.02	Capacity for innovation*	2.6	95
8.03	Extent of business Internet use*	4.5	95
8.04	National office patent applications/million pop	1.3	82
8.05	Patent Cooperation Treaty apps/million pop	0.2	79
8.06	High-tech exports, % goods exports	0.3	101
8.07	Impact of ICT on new services and products*	4.8	52
8.08	Impact of ICT on new organizational models*	4.4	54

Government usage 3.4 67

9.01	Gov't success in ICT promotion	3.7	110
9.02	ICT use & gov't efficiency*	4.3	67
9.03	Government Online Service Index, 0–1 (best)	0.41	44
9.04	E-Participation Index, 0–1 (best)	0.17	66

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Philippines

Key indicators

Population (millions), 2009	92.2
GDP (PPP) per capita (PPP $), 2009	3,516
GDP (US$ billions), 2009	161.2
Global Competitiveness Index 2010–2011 rank (out of 139)	85

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**86**
2009–2010 (133)	3.5	85
2008–2009 (134)	3.6	85
2007–2008 (127)	3.6	81
2006–2007 (122)	3.5	69

Environment component	3.5	94
Market environment	**4.0**	**83**
1.01 Venture capital availability*	2.5	75
1.02 Financial market sophistication*	4.5	57
1.03 Availability of latest technologies*	5.1	62
1.04 State of cluster development*	3.7	55
1.05 Burden of government regulation*	2.5	125
1.06 Extent & effect of taxation*	3.5	76
1.07 Total tax rate, % profits	45.8	89
1.08 No. days to start a business	38	110
1.09 No. procedures to start a business	15	129
1.10 Freedom of the press*	5.8	43
Political and regulatory environment	**3.6**	**95**
2.01 Effectiveness of law-making bodies*	2.5	119
2.02 Laws relating to ICT*	3.6	85
2.03 Judicial independence*	2.8	110
2.04 Efficiency of legal system in settling disputes*	2.8	121
2.05 Efficiency of legal system in challenging regs*	2.8	115
2.06 Property rights*	3.7	98
2.07 Intellectual property protection*	2.8	102
2.08 Software piracy rate, % software installed	69	68
2.09 No. procedures to enforce a contract	37	65
2.10 No. days to enforce a contract	842	117
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.0**	**86**
3.01 Phone lines/100 pop.	7.4	102
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	5.3	91
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	1.1	102
3.05 Electricity production, kWh/capita	671.9	105
3.06 Tertiary education enrollment rate, %	28.7	76
3.07 Quality scientific research institutions*	2.9	107
3.08 Availability of scientists & engineers*	3.6	96
3.09 Availability research & training services*	4.0	77
3.10 Accessibility of digital content*	4.7	81

Readiness component	3.9	99
Individual readiness	**4.8**	**74**
4.01 Quality of math & science education*	3.1	111
4.02 Quality of educational system*	3.7	68
4.03 Adult literacy rate, %	93.6	67
4.04 Residential phone installation (PPP $)	85.2	86
4.05 Residential monthly phone subscription (PPP $)	32.1	136
4.06 Fixed phone tariffs (PPP $)	0.00	1
4.07 Mobile cellular tariffs (PPP $)	0.31	54
4.08 Fixed broadband Internet tariffs (PPP $)	43.4	82
4.09 Buyer sophistication*	3.5	60
Business readiness	**3.5**	**109**
5.01 Extent of staff training*	4.3	45
5.02 Quality of management schools*	4.3	61
5.03 Company spending on R&D*	2.8	84
5.04 University-industry collaboration in R&D*	3.3	84
5.05 Business phone installation (PPP $)	157.8	104
5.06 Business monthly phone subscription (PPP $)	65.7	137
5.07 Local supplier quality*	4.4	70
5.08 Computer, communications, & other services imports, % services imports	23.2	86
Government readiness	**3.4**	**121**
6.01 Gov't prioritization of ICT*	4.1	105
6.02 Gov't procurement of advanced tech.*	2.7	128
6.03 Importance of ICT to gov't vision*	3.4	106

Usage component	3.3	71
Individual usage	**3.1**	**85**
7.01 Mobile phone subscriptions/100 pop.	100.3	62
7.02 Cellular subscriptions w/data, % total	10.2	57
7.03 Households w/ personal computer, %	14.4	87
7.04 Broadband Internet subscribers/100 pop.	1.9	85
7.05 Internet users/100 pop.	9.0	106
7.06 Internet access in schools*	3.7	76
7.07 Use of virtual social networks*	5.5	46
7.08 Impact of ICT on access to basic services*	4.0	96
Business usage	**3.6**	**32**
8.01 Firm-level technology absorption*	5.0	58
8.02 Capacity for innovation*	2.8	80
8.03 Extent of business Internet use*	4.5	92
8.04 National office patent applications/million pop	1.9	78
8.05 Patent Cooperation Treaty apps/million pop	0.2	82
8.06 High-tech exports, % goods exports	58.1	1
8.07 Impact of ICT on new services and products*	4.3	80
8.08 Impact of ICT on new organizational models*	4.0	77
Government usage	**3.2**	**81**
9.01 Gov't success in ICT promotion	3.8	105
9.02 ICT use & gov't efficiency*	3.6	113
9.03 Government Online Service Index, 0–1 (best)	0.39	48
9.04 E-Participation Index, 0–1 (best)	0.19	62

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Poland

Key indicators

Population (millions), 2009	38.1
GDP (PPP) per capita (PPP $), 2009	18,050
GDP (US$ billions), 2009	430.7
Global Competitiveness Index 2010–2011 rank (out of 139)	39

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**62**
2009–2010 (133)	3.7	65
2008–2009 (134)	3.8	69
2007–2008 (127)	3.8	62
2006–2007 (122)	3.7	58

Environment component 3.9 60

Market environment 4.0 74

1.01	Venture capital availability*	2.7	56
1.02	Financial market sophistication*	4.4	63
1.03	Availability of latest technologies*	4.7	85
1.04	State of cluster development*	2.9	107
1.05	Burden of government regulation*	2.7	110
1.06	Extent & effect of taxation*	3.1	106
1.07	Total tax rate, % profits	42.3	78
1.08	No. days to start a business	32	101
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	5.7	49

Political and regulatory environment 3.8 81

2.01	Effectiveness of law-making bodies*	3.3	83
2.02	Laws relating to ICT*	3.8	79
2.03	Judicial independence*	4.3	52
2.04	Efficiency of legal system in settling disputes*	3.1	105
2.05	Efficiency of legal system in challenging regs*	3.1	94
2.06	Property rights*	4.6	58
2.07	Intellectual property protection*	3.7	59
2.08	Software piracy rate, % software installed	54	40
2.09	No. procedures to enforce a contract	38	73
2.10	No. days to enforce a contract	830	115
2.11	Internet & telephony competition, 0–6 (best)	2	119

Infrastructure environment 3.9 43

3.01	Phone lines/100 pop.	25.2	50
3.02	Mobile network coverage, % pop. covered	99.8	33
3.03	Secure Internet servers/million pop.	123.0	34
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	27.5	52
3.05	Electricity production, kWh/capita	4,164.7	54
3.06	Tertiary education enrollment rate, %	66.9	21
3.07	Quality scientific research institutions*	4.1	47
3.08	Availability of scientists & engineers*	4.2	60
3.09	Availability research & training services*	5.1	22
3.10	Accessibility of digital content*	4.8	72

Readiness component 4.1 73

Individual readiness 4.7 83

4.01	Quality of math & science education*	4.6	40
4.02	Quality of educational system*	3.8	61
4.03	Adult literacy rate, %	99.5	10
4.04	Residential phone installation (PPP $)	162.6	121
4.05	Residential monthly phone subscription (PPP $)	26.5	127
4.06	Fixed phone tariffs (PPP $)	0.33	112
4.07	Mobile cellular tariffs (PPP $)	n/a	n/a
4.08	Fixed broadband Internet tariffs (PPP $)	32.5	59
4.09	Buyer sophistication*	3.6	51

Business readiness 4.1 54

5.01	Extent of staff training*	4.2	51
5.02	Quality of management schools*	4.2	62
5.03	Company spending on R&D*	3.0	61
5.04	University-industry collaboration in R&D*	3.6	64
5.05	Business phone installation (PPP $)	162.6	108
5.06	Business monthly phone subscription (PPP $)	21.7	89
5.07	Local supplier quality*	5.0	41
5.08	Computer, communications, & other services imports, % services imports	41.5	31

Government readiness 3.6 103

6.01	Gov't prioritization of ICT*	3.8	118
6.02	Gov't procurement of advanced tech.*	3.7	60
6.03	Importance of ICT to gov't vision*	3.2	116

Usage component 3.5 57

Individual usage 4.2 46

7.01	Mobile phone subscriptions/100 pop.	117.7	41
7.02	Cellular subscriptions w/data, % total	22.1	37
7.03	Households w/ personal computer, %	66.1	32
7.04	Broadband Internet subscribers/100 pop.	12.9	42
7.05	Internet users/100 pop.	59.0	35
7.06	Internet access in schools*	4.5	48
7.07	Use of virtual social networks*	4.2	115
7.08	Impact of ICT on access to basic services*	4.0	98

Business usage 3.1 60

8.01	Firm-level technology absorption*	4.6	82
8.02	Capacity for innovation*	3.3	50
8.03	Extent of business Internet use*	5.2	50
8.04	National office patent applications/million pop	76.0	30
8.05	Patent Cooperation Treaty apps/million pop	4.7	44
8.06	High-tech exports, % goods exports	6.4	35
8.07	Impact of ICT on new services and products*	4.2	92
8.08	Impact of ICT on new organizational models*	3.9	83

Government usage 3.1 93

9.01	Gov't success in ICT promotion	3.2	123
9.02	ICT use & gov't efficiency*	3.4	119
9.03	Government Online Service Index, 0–1 (best)	0.39	49
9.04	E-Participation Index, 0–1 (best)	0.24	50

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Portugal

Key indicators

Population (millions), 2009	10.6
GDP (PPP) per capita (PPP $), 2009	22,671
GDP (US$ billions), 2009	233.5
Global Competitiveness Index 2010–2011 rank (out of 139)	46

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.5**	**32**
2009–2010 (133)	4.4	33
2008–2009 (134)	4.6	30
2007–2008 (127)	4.6	28
2006–2007 (122)	4.5	28

Environment component	4.5	35
Market environment	**4.5**	**36**
1.01 Venture capital availability*	2.7	53
1.02 Financial market sophistication*	5.7	22
1.03 Availability of latest technologies*	6.3	19
1.04 State of cluster development*	3.7	54
1.05 Burden of government regulation*	2.5	126
1.06 Extent & effect of taxation*	2.8	122
1.07 Total tax rate, % profits	43.3	81
1.08 No. days to start a business	6	12
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.7	48
Political and regulatory environment	**4.8**	**37**
2.01 Effectiveness of law-making bodies*	3.5	70
2.02 Laws relating to ICT*	5.4	14
2.03 Judicial independence*	4.3	54
2.04 Efficiency of legal system in settling disputes*	2.8	122
2.05 Efficiency of legal system in challenging regs*	3.0	108
2.06 Property rights*	5.0	42
2.07 Intellectual property protection*	4.4	40
2.08 Software piracy rate, % software installed	40	24
2.09 No. procedures to enforce a contract	31	26
2.10 No. days to enforce a contract	547	69
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**4.2**	**34**
3.01 Phone lines/100 pop.	39.7	27
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	136.3	33
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	47.9	43
3.05 Electricity production, kWh/capita	4,420.7	50
3.06 Tertiary education enrollment rate, %	56.9	36
3.07 Quality scientific research institutions*	4.7	28
3.08 Availability of scientists & engineers*	4.6	38
3.09 Availability research & training services*	4.6	40
3.10 Accessibility of digital content*	6.0	23

Readiness component	4.7	37
Individual readiness	**4.7**	**84**
4.01 Quality of math & science education*	3.2	107
4.02 Quality of educational system*	3.6	75
4.03 Adult literacy rate, %	94.6	62
4.04 Residential phone installation (PPP $)	134.3	106
4.05 Residential monthly phone subscription (PPP $)	23.7	120
4.06 Fixed phone tariffs (PPP $)	0.23	101
4.07 Mobile cellular tariffs (PPP $)	0.30	52
4.08 Fixed broadband Internet tariffs (PPP $)	31.1	53
4.09 Buyer sophistication*	3.6	56
Business readiness	**4.3**	**45**
5.01 Extent of staff training*	3.9	72
5.02 Quality of management schools*	4.9	32
5.03 Company spending on R&D*	3.4	45
5.04 University-industry collaboration in R&D*	4.5	30
5.05 Business phone installation (PPP $)	134.3	91
5.06 Business monthly phone subscription (PPP $)	27.6	110
5.07 Local supplier quality*	4.8	51
5.08 Computer, communications, & other services imports, % services imports	40.0	37
Government readiness	**5.3**	**9**
6.01 Gov't prioritization of ICT*	6.0	8
6.02 Gov't procurement of advanced tech.*	4.4	16
6.03 Importance of ICT to gov't vision*	5.4	5

Usage component	4.2	31
Individual usage	**5.0**	**27**
7.01 Mobile phone subscriptions/100 pop.	148.8	11
7.02 Cellular subscriptions w/data, % total	37.6	20
7.03 Households w/ personal computer, %	56.0	41
7.04 Broadband Internet subscribers/100 pop.	17.4	35
7.05 Internet users/100 pop.	48.3	47
7.06 Internet access in schools*	5.6	25
7.07 Use of virtual social networks*	5.7	36
7.08 Impact of ICT on access to basic services*	5.6	10
Business usage	**3.5**	**40**
8.01 Firm-level technology absorption*	5.6	27
8.02 Capacity for innovation*	3.5	39
8.03 Extent of business Internet use*	5.6	29
8.04 National office patent applications/million pop	35.8	45
8.05 Patent Cooperation Treaty apps/million pop	11.0	35
8.06 High-tech exports, % goods exports	3.3	57
8.07 Impact of ICT on new services and products*	5.4	17
8.08 Impact of ICT on new organizational models*	4.9	28
Government usage	**4.3**	**30**
9.01 Gov't success in ICT promotion	5.5	8
9.02 ICT use & gov't efficiency*	5.7	7
9.03 Government Online Service Index, 0–1 (best)	0.39	49
9.04 E-Participation Index, 0–1 (best)	0.27	44

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Puerto Rico

Key indicators

Population (millions), 2009	4.0
GDP (PPP) per capita (PPP $), 2009	24,165
GDP (US$ billions), 2009	95.7
Global Competitiveness Index 2010–2011 rank (out of 139)	41

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.1**	**43**
2009–2010 (133)	4.1	45
2008–2009 (134)	4.2	42
2007–2008 (127)	4.3	39
2006–2007 (122)	n/a	n/a

Environment component 4.4 39

Market environment 4.5 38

1.01	Venture capital availability*	3.1	37
1.02	Financial market sophistication*	5.7	23
1.03	Availability of latest technologies*	6.1	24
1.04	State of cluster development*	4.0	45
1.05	Burden of government regulation*	2.0	137
1.06	Extent & effect of taxation*	3.1	108
1.07	Total tax rate, % profits	67.7	125
1.08	No. days to start a business	7	20
1.09	No. procedures to start a business	7	63
1.10	Freedom of the press*	6.3	15

Political and regulatory environment 4.7 39

2.01	Effectiveness of law-making bodies*	2.6	116
2.02	Laws relating to ICT*	4.6	37
2.03	Judicial independence*	4.7	41
2.04	Efficiency of legal system in settling disputes*	4.6	31
2.05	Efficiency of legal system in challenging regs*	4.3	31
2.06	Property rights*	5.9	12
2.07	Intellectual property protection*	5.8	8
2.08	Software piracy rate, % software installed	46	31
2.09	No. procedures to enforce a contract	39	83
2.10	No. days to enforce a contract	620	90
2.11	Internet & telephony competition, 0–6 (best)	n/a	n/a

Infrastructure environment 3.9 44

3.01	Phone lines/100 pop.	22.7	56
3.02	Mobile network coverage, % pop. covered	68.4	119
3.03	Secure Internet servers/million pop.	61.5	49
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	17.6	61
3.05	Electricity production, kWh/capita	6,018.4	36
3.06	Tertiary education enrollment rate, %	61.1	28
3.07	Quality scientific research institutions*	4.6	33
3.08	Availability of scientists & engineers*	5.2	14
3.09	Availability research & training services*	5.3	18
3.10	Accessibility of digital content*	5.6	35

Readiness component 4.2 66

Individual readiness 4.3 107

4.01	Quality of math & science education*	3.5	95
4.02	Quality of educational system*	4.0	51
4.03	Adult literacy rate, %	n/a	n/a
4.04	Residential phone installation (PPP $)	50.0	40
4.05	Residential monthly phone subscription (PPP $)	9.0	51
4.06	Fixed phone tariffs (PPP $)	n/a	n/a
4.07	Mobile cellular tariffs (PPP $)	n/a	n/a
4.08	Fixed broadband Internet tariffs (PPP $)	n/a	n/a
4.09	Buyer sophistication*	4.0	30

Business readiness 4.5 32

5.01	Extent of staff training*	4.9	17
5.02	Quality of management schools*	4.4	54
5.03	Company spending on R&D*	3.2	54
5.04	University-industry collaboration in R&D*	4.4	31
5.05	Business phone installation (PPP $)	120.0	82
5.06	Business monthly phone subscription (PPP $)	24.6	100
5.07	Local supplier quality*	5.4	18
5.08	Computer, communications, & other services imports, % services imports	n/a	n/a

Government readiness 3.8 90

6.01	Gov't prioritization of ICT*	4.4	87
6.02	Gov't procurement of advanced tech.*	3.5	77
6.03	Importance of ICT to gov't vision*	3.6	97

Usage component 3.7 45

Individual usage 3.7 56

7.01	Mobile phone subscriptions/100 pop.	68.1	100
7.02	Cellular subscriptions w/data, % total	15.5	48
7.03	Households w/ personal computer, %	50.3	44
7.04	Broadband Internet subscribers/100 pop.	10.8	44
7.05	Internet users/100 pop.	25.1	84
7.06	Internet access in schools*	4.2	59
7.07	Use of virtual social networks*	6.0	19
7.08	Impact of ICT on access to basic services*	4.4	71

Business usage 3.6 33

8.01	Firm-level technology absorption*	5.6	24
8.02	Capacity for innovation*	3.2	53
8.03	Extent of business Internet use*	5.6	30
8.04	National office patent applications/million pop	20.7	57
8.05	Patent Cooperation Treaty apps/million pop.	n/a	n/a
8.06	High-tech exports, % goods exports	n/a	n/a
8.07	Impact of ICT on new services and products*	4.7	54
8.08	Impact of ICT on new organizational models*	4.5	47

Government usage 3.9 44

9.01	Gov't success in ICT promotion	3.9	91
9.02	ICT use & gov't efficiency*	3.9	90
9.03	Government Online Service Index, 0–1 (best)	n/a	n/a
9.04	E-Participation Index, 0–1 (best)	n/a	n/a

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Qatar

Key indicators

Population (millions), 2009	1.6
GDP (PPP) per capita (PPP $), 2009	78,260
GDP (US$ billions), 2009	98.3
Global Competitiveness Index 2010–2011 rank (out of 139)	17

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.8**	**25**
2009–2010 (133)	4.5	30
2008–2009 (134)	4.7	29
2007–2008 (127)	4.4	32
2006–2007 (122)	4.2	36

Environment component	4.7	26
Market environment	**5.1**	**10**
1.01 Venture capital availability*	4.1	6
1.02 Financial market sophistication*	5.3	28
1.03 Availability of latest technologies*	6.1	25
1.04 State of cluster development*	4.6	21
1.05 Burden of government regulation*	4.5	5
1.06 Extent & effect of taxation*	4.8	11
1.07 Total tax rate, % profits	11.3	4
1.08 No. days to start a business	12	45
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	5.4	57
Political and regulatory environment	**4.9**	**30**
2.01 Effectiveness of law-making bodies*	4.8	18
2.02 Laws relating to ICT*	4.7	34
2.03 Judicial independence*	6.3	7
2.04 Efficiency of legal system in settling disputes*	5.6	6
2.05 Efficiency of legal system in challenging regs*	4.3	32
2.06 Property rights*	5.5	25
2.07 Intellectual property protection*	4.8	28
2.08 Software piracy rate, % software installed	51	38
2.09 No. procedures to enforce a contract	43	112
2.10 No. days to enforce a contract	570	75
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**4.2**	**35**
3.01 Phone lines/100 pop.	20.2	66
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	63.9	47
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	117.7	29
3.05 Electricity production, kWh/capita	14,134.7	10
3.06 Tertiary education enrollment rate, %	11.0	106
3.07 Quality scientific research institutions*	5.1	22
3.08 Availability of scientists & engineers*	5.3	9
3.09 Availability research & training services*	4.1	71
3.10 Accessibility of digital content*	6.0	21

Readiness component	5.5	4
Individual readiness	**5.7**	**10**
4.01 Quality of math & science education*	5.9	4
4.02 Quality of educational system*	5.7	4
4.03 Adult literacy rate, %	93.1	71
4.04 Residential phone installation (PPP $)	71.7	67
4.05 Residential monthly phone subscription (PPP $)	11.8	68
4.06 Fixed phone tariffs (PPP $)	0.00	1
4.07 Mobile cellular tariffs (PPP $)	0.20	27
4.08 Fixed broadband Internet tariffs (PPP $)	71.7	102
4.09 Buyer sophistication*	3.9	39
Business readiness	**4.8**	**21**
5.01 Extent of staff training*	4.8	19
5.02 Quality of management schools*	6.1	1
5.03 Company spending on R&D*	3.5	41
5.04 University-industry collaboration in R&D*	4.5	27
5.05 Business phone installation (PPP $)	71.7	46
5.06 Business monthly phone subscription (PPP $)	41.9	129
5.07 Local supplier quality*	5.7	9
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**5.9**	**2**
6.01 Gov't prioritization of ICT*	6.4	2
6.02 Gov't procurement of advanced tech.*	5.5	1
6.03 Importance of ICT to gov't vision*	5.7	2

Usage component	4.2	34
Individual usage	**4.9**	**28**
7.01 Mobile phone subscriptions/100 pop.	175.4	6
7.02 Cellular subscriptions w/data, % total	15.5	47
7.03 Households w/ personal computer, %	71.0	27
7.04 Broadband Internet subscribers/100 pop.	10.3	47
7.05 Internet users/100 pop.	40.0	58
7.06 Internet access in schools*	6.3	4
7.07 Use of virtual social networks*	6.1	11
7.08 Impact of ICT on access to basic services*	6.1	3
Business usage	**3.5**	**42**
8.01 Firm-level technology absorption*	6.1	8
8.02 Capacity for innovation*	3.4	45
8.03 Extent of business Internet use*	5.3	41
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	5.0	43
8.06 High-tech exports, % goods exports	0.0	127
8.07 Impact of ICT on new services and products*	5.4	20
8.08 Impact of ICT on new organizational models*	5.4	8
Government usage	**4.1**	**37**
9.01 Gov't success in ICT promotion	5.9	4
9.02 ICT use & gov't efficiency*	6.2	1
9.03 Government Online Service Index, 0–1 (best)	0.28	87
9.04 E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Romania

Key indicators

Population (millions), 2009	21.5
GDP (PPP) per capita (PPP $), 2009	11,869
GDP (US$ billions), 2009	161.5
Global Competitiveness Index 2010–2011 rank (out of 139)	67

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**65**
2009–2010 (133)	3.8	59
2008–2009 (134)	4.0	58
2007–2008 (127)	3.9	61
2006–2007 (122)	3.8	55

Environment component	3.9	59
Market environment	**3.9**	**89**
1.01 Venture capital availability*	2.4	79
1.02 Financial market sophistication*	3.9	83
1.03 Availability of latest technologies*	4.3	98
1.04 State of cluster development*	2.8	112
1.05 Burden of government regulation*	2.9	97
1.06 Extent & effect of taxation*	2.5	130
1.07 Total tax rate, % profits	44.9	86
1.08 No. days to start a business	10	39
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.5	55
Political and regulatory environment	**4.0**	**68**
2.01 Effectiveness of law-making bodies*	2.8	104
2.02 Laws relating to ICT*	3.5	87
2.03 Judicial independence*	3.5	81
2.04 Efficiency of legal system in settling disputes*	2.9	114
2.05 Efficiency of legal system in challenging regs*	2.9	110
2.06 Property rights*	4.2	78
2.07 Intellectual property protection*	3.2	80
2.08 Software piracy rate, % software installed	65	58
2.09 No. procedures to enforce a contract	31	26
2.10 No. days to enforce a contract	512	61
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.8**	**45**
3.01 Phone lines/100 pop.	25.0	51
3.02 Mobile network coverage, % pop. covered	99.9	23
3.03 Secure Internet servers/million pop.	20.5	59
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	185.7	17
3.05 Electricity production, kWh/capita	2,862.3	66
3.06 Tertiary education enrollment rate, %	65.6	22
3.07 Quality scientific research institutions*	3.3	83
3.08 Availability of scientists & engineers*	4.3	55
3.09 Availability research & training services*	3.5	95
3.10 Accessibility of digital content*	5.1	58

Readiness component	4.1	76
Individual readiness	**4.9**	**63**
4.01 Quality of math & science education*	4.6	43
4.02 Quality of educational system*	3.4	83
4.03 Adult literacy rate, %	97.6	53
4.04 Residential phone installation (PPP $)	0.0	1
4.05 Residential monthly phone subscription (PPP $)	21.4	115
4.06 Fixed phone tariffs (PPP $)	0.18	80
4.07 Mobile cellular tariffs (PPP $)	0.58	109
4.08 Fixed broadband Internet tariffs (PPP $)	12.8	4
4.09 Buyer sophistication*	3.6	55
Business readiness	**4.0**	**63**
5.01 Extent of staff training*	3.9	71
5.02 Quality of management schools*	3.7	98
5.03 Company spending on R&D*	2.7	102
5.04 University-industry collaboration in R&D*	3.1	102
5.05 Business phone installation (PPP $)	0.0	1
5.06 Business monthly phone subscription (PPP $)	31.0	120
5.07 Local supplier quality*	4.0	96
5.08 Computer, communications, & other services imports, % services imports	50.9	13
Government readiness	**3.4**	**119**
6.01 Gov't prioritization of ICT*	3.7	121
6.02 Gov't procurement of advanced tech.*	3.2	104
6.03 Importance of ICT to gov't vision*	3.3	115

Usage component	3.4	63
Individual usage	**4.0**	**52**
7.01 Mobile phone subscriptions/100 pop.	119.4	38
7.02 Cellular subscriptions w/data, % total	22.0	38
7.03 Households w/ personal computer, %	45.7	51
7.04 Broadband Internet subscribers/100 pop.	13.2	41
7.05 Internet users/100 pop.	36.6	64
7.06 Internet access in schools*	4.3	55
7.07 Use of virtual social networks*	5.1	71
7.08 Impact of ICT on access to basic services*	4.3	77
Business usage	**3.0**	**70**
8.01 Firm-level technology absorption*	4.2	107
8.02 Capacity for innovation*	2.9	72
8.03 Extent of business Internet use*	4.9	63
8.04 National office patent applications/million pop	49.1	39
8.05 Patent Cooperation Treaty apps/million pop	0.4	74
8.06 High-tech exports, % goods exports	8.7	29
8.07 Impact of ICT on new services and products*	4.2	94
8.08 Impact of ICT on new organizational models*	3.6	106
Government usage	**3.3**	**74**
9.01 Gov't success in ICT promotion	4.1	81
9.02 ICT use & gov't efficiency*	3.3	124
9.03 Government Online Service Index, 0–1 (best)	0.42	41
9.04 E-Participation Index, 0–1 (best)	0.19	62

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Russian Federation

Key indicators

Population (millions), 2009	141.9
GDP (PPP) per capita (PPP $), 2009	14,913
GDP (US$ billions), 2009	1,231.9
Global Competitiveness Index 2010–2011 rank (out of 139)	63

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.7**	**77**
2009–2010 (133)	3.6	80
2008–2009 (134)	3.8	74
2007–2008 (127)	3.7	72
2006–2007 (122)	3.5	70

Environment component	3.6	83
Market environment	**3.5**	**118**
1.01 Venture capital availability*	2.3	94
1.02 Financial market sophistication*	3.6	96
1.03 Availability of latest technologies*	4.2	121
1.04 State of cluster development*	3.2	86
1.05 Burden of government regulation*	2.5	127
1.06 Extent & effect of taxation*	3.2	96
1.07 Total tax rate, % profits	46.5	91
1.08 No. days to start a business	30	96
1.09 No. procedures to start a business	9	92
1.10 Freedom of the press*	3.5	127
Political and regulatory environment	**3.4**	**111**
2.01 Effectiveness of law-making bodies*	3.3	82
2.02 Laws relating to ICT*	3.5	88
2.03 Judicial independence*	2.7	114
2.04 Efficiency of legal system in settling disputes*	2.9	113
2.05 Efficiency of legal system in challenging regs*	2.8	114
2.06 Property rights*	2.9	127
2.07 Intellectual property protection*	2.6	118
2.08 Software piracy rate, % software installed	67	62
2.09 No. procedures to enforce a contract	37	65
2.10 No. days to enforce a contract	281	10
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**3.9**	**42**
3.01 Phone lines/100 pop.	32.2	37
3.02 Mobile network coverage, % pop. covered	95.0	76
3.03 Secure Internet servers/million pop.	10.5	74
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	5.7	83
3.05 Electricity production, kWh/capita	7,131.6	30
3.06 Tertiary education enrollment rate, %	77.2	12
3.07 Quality scientific research institutions*	3.9	53
3.08 Availability of scientists & engineers*	4.3	56
3.09 Availability research & training services*	4.1	67
3.10 Accessibility of digital content*	4.9	64

Readiness component	4.2	68
Individual readiness	**5.0**	**59**
4.01 Quality of math & science education*	4.4	54
4.02 Quality of educational system*	3.6	77
4.03 Adult literacy rate, %	99.5	10
4.04 Residential phone installation (PPP $)	399.0	135
4.05 Residential monthly phone subscription (PPP $)	9.3	54
4.06 Fixed phone tariffs (PPP $)	0.06	37
4.07 Mobile cellular tariffs (PPP $)	0.27	45
4.08 Fixed broadband Internet tariffs (PPP $)	27.4	35
4.09 Buyer sophistication*	3.7	50
Business readiness	**3.7**	**90**
5.01 Extent of staff training*	3.7	89
5.02 Quality of management schools*	3.8	92
5.03 Company spending on R&D*	3.2	50
5.04 University-industry collaboration in R&D*	3.7	61
5.05 Business phone installation (PPP $)	594.3	133
5.06 Business monthly phone subscription (PPP $)	16.5	68
5.07 Local supplier quality*	3.8	114
5.08 Computer, communications, & other services imports, % services imports	44.8	25
Government readiness	**3.8**	**89**
6.01 Gov't prioritization of ICT*	4.5	77
6.02 Gov't procurement of advanced tech.*	3.5	81
6.03 Importance of ICT to gov't vision*	3.5	100

Usage component	3.3	69
Individual usage	**3.9**	**55**
7.01 Mobile phone subscriptions/100 pop.	163.6	9
7.02 Cellular subscriptions w/data, % total	20.1	40
7.03 Households w/ personal computer, %	50.0	46
7.04 Broadband Internet subscribers/100 pop.	9.2	51
7.05 Internet users/100 pop.	29.0	74
7.06 Internet access in schools*	4.1	62
7.07 Use of virtual social networks*	4.4	102
7.08 Impact of ICT on access to basic services*	4.0	101
Business usage	**3.0**	**72**
8.01 Firm-level technology absorption*	4.0	119
8.02 Capacity for innovation*	3.5	38
8.03 Extent of business Internet use*	4.8	70
8.04 National office patent applications/million pop	180.5	19
8.05 Patent Cooperation Treaty apps/million pop	3.9	46
8.06 High-tech exports, % goods exports	1.3	74
8.07 Impact of ICT on new services and products*	4.0	100
8.08 Impact of ICT on new organizational models*	3.8	88
Government usage	**3.1**	**96**
9.01 Gov't success in ICT promotion	3.8	106
9.02 ICT use & gov't efficiency*	3.7	104
9.03 Government Online Service Index, 0–1 (best)	0.33	66
9.04 E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Saudi Arabia

Key indicators

Population (millions), 2009	25.5
GDP (PPP) per capita (PPP $), 2009	23,272
GDP (US$ billions), 2009	376.3
Global Competitiveness Index 2010–2011 rank (out of 139)	21

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.4**	**33**
2009–2010 (133)	4.3	38
2008–2009 (134)	4.3	40
2007–2008 (127)	4.1	48
2006–2007 (122)	n/a	n/a

Environment component	4.5	32
Market environment	**4.9**	**19**
1.01 Venture capital availability*	3.8	14
1.02 Financial market sophistication*	5.3	29
1.03 Availability of latest technologies*	5.6	39
1.04 State of cluster development*	4.3	27
1.05 Burden of government regulation*	4.0	17
1.06 Extent & effect of taxation*	5.3	9
1.07 Total tax rate, % profits	14.5	6
1.08 No. days to start a business	5	8
1.09 No. procedures to start a business	4	14
1.10 Freedom of the press*	4.5	87
Political and regulatory environment	**5.0**	**25**
2.01 Effectiveness of law-making bodies*	4.5	26
2.02 Laws relating to ICT*	4.7	36
2.03 Judicial independence*	5.2	29
2.04 Efficiency of legal system in settling disputes*	4.4	36
2.05 Efficiency of legal system in challenging regs*	4.4	29
2.06 Property rights*	5.4	28
2.07 Intellectual property protection*	4.8	30
2.08 Software piracy rate, % software installed	51	38
2.09 No. procedures to enforce a contract	43	112
2.10 No. days to enforce a contract	635	95
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.7**	**54**
3.01 Phone lines/100 pop.	16.2	79
3.02 Mobile network coverage, % pop. covered	98.7	65
3.03 Secure Internet servers/million pop.	11.0	73
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	17.3	62
3.05 Electricity production, kWh/capita	7,801.5	24
3.06 Tertiary education enrollment rate, %	29.9	75
3.07 Quality scientific research institutions*	4.4	37
3.08 Availability of scientists & engineers*	4.6	34
3.09 Availability research & training services*	4.7	34
3.10 Accessibility of digital content*	5.1	52

Readiness component	4.9	24
Individual readiness	**5.3**	**34**
4.01 Quality of math & science education*	4.5	49
4.02 Quality of educational system*	4.3	41
4.03 Adult literacy rate, %	85.5	97
4.04 Residential phone installation (PPP $)	128.9	104
4.05 Residential monthly phone subscription (PPP $)	12.9	77
4.06 Fixed phone tariffs (PPP $)	0.06	39
4.07 Mobile cellular tariffs (PPP $)	0.24	39
4.08 Fixed broadband Internet tariffs (PPP $)	43.0	81
4.09 Buyer sophistication*	4.3	20
Business readiness	**4.4**	**38**
5.01 Extent of staff training*	4.4	34
5.02 Quality of management schools*	4.3	60
5.03 Company spending on R&D*	4.1	24
5.04 University-industry collaboration in R&D*	4.3	33
5.05 Business phone installation (PPP $)	128.9	89
5.06 Business monthly phone subscription (PPP $)	12.9	50
5.07 Local supplier quality*	5.3	24
5.08 Computer, communications, & other services imports, % services imports	27.6	72
Government readiness	**5.1**	**12**
6.01 Gov't prioritization of ICT*	5.5	19
6.02 Gov't procurement of advanced tech.*	4.6	10
6.03 Importance of ICT to gov't vision*	5.2	9

Usage component	3.9	39
Individual usage	**4.5**	**40**
7.01 Mobile phone subscriptions/100 pop.	174.4	7
7.02 Cellular subscriptions w/data, % total	67.4	6
7.03 Households w/ personal computer, %	47.8	47
7.04 Broadband Internet subscribers/100 pop.	5.2	64
7.05 Internet users/100 pop.	38.0	60
7.06 Internet access in schools*	4.4	52
7.07 Use of virtual social networks*	5.1	73
7.08 Impact of ICT on access to basic services*	5.4	20
Business usage	**3.4**	**44**
8.01 Firm-level technology absorption*	5.6	26
8.02 Capacity for innovation*	4.0	26
8.03 Extent of business Internet use*	5.2	49
8.04 National office patent applications/million pop	5.0	73
8.05 Patent Cooperation Treaty apps/million pop	3.1	49
8.06 High-tech exports, % goods exports	0.0	121
8.07 Impact of ICT on new services and products*	5.1	33
8.08 Impact of ICT on new organizational models*	5.2	19
Government usage	**3.7**	**52**
9.01 Gov't success in ICT promotion	5.1	25
9.02 ICT use & gov't efficiency*	5.3	17
9.03 Government Online Service Index, 0–1 (best)	0.31	73
9.04 E-Participation Index, 0–1 (best)	0.10	95

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Senegal

Key indicators

Population (millions), 2009	12.8
GDP (PPP) per capita (PPP $), 2009	1,770
GDP (US$ billions), 2009	12.8
Global Competitiveness Index 2010–2011 rank (out of 139)	104

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.6**	**80**
2009–2010 (133)	3.6	75
2008–2009 (134)	3.7	80
2007–2008 (127)	3.5	85
2006–2007 (122)	n/a	n/a

Environment component	3.6	84
Market environment	**4.0**	**70**
1.01 Venture capital availability*	2.3	93
1.02 Financial market sophistication*	3.6	99
1.03 Availability of latest technologies*	5.5	53
1.04 State of cluster development*	2.8	116
1.05 Burden of government regulation*	3.4	55
1.06 Extent & effect of taxation*	3.1	100
1.07 Total tax rate, % profits	46.0	90
1.08 No. days to start a business	8	27
1.09 No. procedures to start a business	4	14
1.10 Freedom of the press*	4.9	75
Political and regulatory environment	**3.8**	**84**
2.01 Effectiveness of law-making bodies*	2.9	99
2.02 Laws relating to ICT*	4.0	65
2.03 Judicial independence*	3.1	97
2.04 Efficiency of legal system in settling disputes*	3.6	70
2.05 Efficiency of legal system in challenging regs*	3.3	81
2.06 Property rights*	4.0	84
2.07 Intellectual property protection*	3.2	81
2.08 Software piracy rate, % software installed	78	79
2.09 No. procedures to enforce a contract	44	116
2.10 No. days to enforce a contract	780	109
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.9**	**91**
3.01 Phone lines/100 pop.	2.2	116
3.02 Mobile network coverage, % pop. covered	87.0	98
3.03 Secure Internet servers/million pop.	0.9	114
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	3.7	88
3.05 Electricity production, kWh/capita	169.5	121
3.06 Tertiary education enrollment rate, %	8.0	112
3.07 Quality scientific research institutions*	4.1	48
3.08 Availability of scientists & engineers*	4.2	61
3.09 Availability research & training services*	4.5	45
3.10 Accessibility of digital content*	4.8	75

Readiness component	4.2	69
Individual readiness	**3.9**	**122**
4.01 Quality of math & science education*	3.9	71
4.02 Quality of educational system*	3.6	72
4.03 Adult literacy rate, %	41.9	131
4.04 Residential phone installation (PPP $)	36.7	27
4.05 Residential monthly phone subscription (PPP $)	21.7	116
4.06 Fixed phone tariffs (PPP $)	0.61	128
4.07 Mobile cellular tariffs (PPP $)	0.31	57
4.08 Fixed broadband Internet tariffs (PPP $)	66.1	96
4.09 Buyer sophistication*	2.3	131
Business readiness	**4.0**	**59**
5.01 Extent of staff training*	3.3	112
5.02 Quality of management schools*	4.6	40
5.03 Company spending on R&D*	3.2	49
5.04 University-industry collaboration in R&D*	3.9	51
5.05 Business phone installation (PPP $)	38.3	19
5.06 Business monthly phone subscription (PPP $)	12.3	43
5.07 Local supplier quality*	4.5	67
5.08 Computer, communications, & other services imports, % services imports	21.0	92
Government readiness	**4.6**	**34**
6.01 Gov't prioritization of ICT*	5.3	33
6.02 Gov't procurement of advanced tech.*	4.0	44
6.03 Importance of ICT to gov't vision*	4.5	41

Usage component	3.0	87
Individual usage	**2.8**	**99**
7.01 Mobile phone subscriptions/100 pop.	55.1	113
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	11.5	99
7.04 Broadband Internet subscribers/100 pop.	0.5	103
7.05 Internet users/100 pop.	14.5	94
7.06 Internet access in schools*	4.2	60
7.07 Use of virtual social networks*	4.7	91
7.08 Impact of ICT on access to basic services*	4.6	57
Business usage	**3.2**	**49**
8.01 Firm-level technology absorption*	5.3	40
8.02 Capacity for innovation*	2.8	77
8.03 Extent of business Internet use*	5.3	45
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	5.2	47
8.07 Impact of ICT on new services and products*	4.8	53
8.08 Impact of ICT on new organizational models*	4.6	43
Government usage	**3.1**	**91**
9.01 Gov't success in ICT promotion	4.8	34
9.02 ICT use & gov't efficiency*	4.6	51
9.03 Government Online Service Index, 0–1 (best)	0.18	109
9.04 E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Serbia

Key indicators

Population (millions), 2009	7.4
GDP (PPP) per capita (PPP $), 2009	10,577
GDP (US$ billions), 2009	43.0
Global Competitiveness Index 2010–2011 rank (out of 139)	96

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**93**
2009–2010 (133)	3.5	84
2008–2009 (134)	3.6	84
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.5	90
Market environment	**3.6**	**113**
1.01 Venture capital availability*	2.2	101
1.02 Financial market sophistication*	3.3	108
1.03 Availability of latest technologies*	4.2	116
1.04 State of cluster development*	2.6	121
1.05 Burden of government regulation*	2.3	130
1.06 Extent & effect of taxation*	2.8	119
1.07 Total tax rate, % profits	34.0	47
1.08 No. days to start a business	13	49
1.09 No. procedures to start a business	7	63
1.10 Freedom of the press*	4.3	97
Political and regulatory environment	**3.4**	**108**
2.01 Effectiveness of law-making bodies*	2.8	106
2.02 Laws relating to ICT*	3.5	89
2.03 Judicial independence*	2.5	123
2.04 Efficiency of legal system in settling disputes*	2.6	131
2.05 Efficiency of legal system in challenging regs*	2.7	124
2.06 Property rights*	3.2	121
2.07 Intellectual property protection*	2.6	110
2.08 Software piracy rate, % software installed	74	74
2.09 No. procedures to enforce a contract	36	54
2.10 No. days to enforce a contract	635	95
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**3.6**	**56**
3.01 Phone lines/100 pop.	31.5	39
3.02 Mobile network coverage, % pop. covered	93.7	86
3.03 Secure Internet servers/million pop.	2.4	98
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	126.6	28
3.05 Electricity production, kWh/capita	4,947.9	47
3.06 Tertiary education enrollment rate, %	47.8	49
3.07 Quality scientific research institutions*	3.9	56
3.08 Availability of scientists & engineers*	3.7	92
3.09 Availability research & training services*	3.5	100
3.10 Accessibility of digital content*	4.4	99

Readiness component	4.1	77
Individual readiness	**5.1**	**50**
4.01 Quality of math & science education*	4.5	48
4.02 Quality of educational system*	3.3	85
4.03 Adult literacy rate, %	96.6	58
4.04 Residential phone installation (PPP $)	147.6	116
4.05 Residential monthly phone subscription (PPP $)	4.9	26
4.06 Fixed phone tariffs (PPP $)	0.04	19
4.07 Mobile cellular tariffs (PPP $)	0.22	33
4.08 Fixed broadband Internet tariffs (PPP $)	35.7	68
4.09 Buyer sophistication*	2.4	130
Business readiness	**3.6**	**98**
5.01 Extent of staff training*	3.0	129
5.02 Quality of management schools*	3.6	101
5.03 Company spending on R&D*	2.6	107
5.04 University-industry collaboration in R&D*	3.5	70
5.05 Business phone installation (PPP $)	295.3	127
5.06 Business monthly phone subscription (PPP $)	5.8	12
5.07 Local supplier quality*	3.9	107
5.08 Computer, communications, & other services imports, % services imports	40.4	35
Government readiness	**3.6**	**101**
6.01 Gov't prioritization of ICT*	4.3	95
6.02 Gov't procurement of advanced tech.*	3.2	97
6.03 Importance of ICT to gov't vision*	3.3	111

Usage component	2.9	94
Individual usage	**3.5**	**67**
7.01 Mobile phone subscriptions/100 pop.	100.6	61
7.02 Cellular subscriptions w/data, % total	8.7	62
7.03 Households w/ personal computer, %	46.8	50
7.04 Broadband Internet subscribers/100 pop.	6.0	60
7.05 Internet users/100 pop.	41.7	53
7.06 Internet access in schools*	3.5	87
7.07 Use of virtual social networks*	4.4	101
7.08 Impact of ICT on access to basic services*	3.7	119
Business usage	**2.5**	**121**
8.01 Firm-level technology absorption*	3.7	133
8.02 Capacity for innovation*	2.7	82
8.03 Extent of business Internet use*	3.6	134
8.04 National office patent applications/million pop	43.6	40
8.05 Patent Cooperation Treaty apps/million pop	2.6	51
8.06 High-tech exports, % goods exports	n/a	n/a
8.07 Impact of ICT on new services and products*	3.1	130
8.08 Impact of ICT on new organizational models*	3.0	128
Government usage	**2.8**	**114**
9.01 Gov't success in ICT promotion	3.7	108
9.02 ICT use & gov't efficiency*	3.8	99
9.03 Government Online Service Index, 0–1 (best)	0.22	103
9.04 E-Participation Index, 0–1 (best)	0.04	117

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Singapore

Key indicators

Population (millions), 2009	5.0
GDP (PPP) per capita (PPP $), 2009	50,180
GDP (US$ billions), 2009	182.2
Global Competitiveness Index 2010–2011 rank (out of 139)	3

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.6**	**2**
2009–2010 (133)	5.6	2
2008–2009 (134)	5.7	4
2007–2008 (127)	5.5	5
2006–2007 (122)	5.6	3

Environment component	5.6	4
Market environment	**5.4**	**5**
1.01 Venture capital availability*	4.2	3
1.02 Financial market sophistication*	6.1	10
1.03 Availability of latest technologies*	6.3	20
1.04 State of cluster development*	5.2	5
1.05 Burden of government regulation*	5.5	1
1.06 Extent & effect of taxation*	5.6	3
1.07 Total tax rate, % profits	25.4	23
1.08 No. days to start a business	3	3
1.09 No. procedures to start a business	3	7
1.10 Freedom of the press*	3.7	122
Political and regulatory environment	**6.2**	**1**
2.01 Effectiveness of law-making bodies*	6.5	1
2.02 Laws relating to ICT*	5.9	2
2.03 Judicial independence*	5.6	21
2.04 Efficiency of legal system in settling disputes*	6.3	1
2.05 Efficiency of legal system in challenging regs*	5.3	6
2.06 Property rights*	6.3	3
2.07 Intellectual property protection*	6.1	3
2.08 Software piracy rate, % software installed	35	18
2.09 No. procedures to enforce a contract	21	2
2.10 No. days to enforce a contract	150	1
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**5.3**	**12**
3.01 Phone lines/100 pop.	40.7	26
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	420.8	22
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	790.0	3
3.05 Electricity production, kWh/capita	8,964.4	16
3.06 Tertiary education enrollment rate, %	60.0	30
3.07 Quality scientific research institutions*	5.5	11
3.08 Availability of scientists & engineers*	5.3	10
3.09 Availability research & training services*	5.3	19
3.10 Accessibility of digital content*	6.3	12

Readiness component	5.8	1
Individual readiness	**6.1**	**1**
4.01 Quality of math & science education*	6.5	1
4.02 Quality of educational system*	6.1	1
4.03 Adult literacy rate, %	94.5	64
4.04 Residential phone installation (PPP $)	51.0	43
4.05 Residential monthly phone subscription (PPP $)	9.4	55
4.06 Fixed phone tariffs (PPP $)	0.05	30
4.07 Mobile cellular tariffs (PPP $)	0.15	17
4.08 Fixed broadband Internet tariffs (PPP $)	22.6	22
4.09 Buyer sophistication*	4.6	10
Business readiness	**5.3**	**5**
5.01 Extent of staff training*	5.5	4
5.02 Quality of management schools*	5.7	6
5.03 Company spending on R&D*	5.0	8
5.04 University-industry collaboration in R&D*	5.4	6
5.05 Business phone installation (PPP $)	51.0	29
5.06 Business monthly phone subscription (PPP $)	13.6	53
5.07 Local supplier quality*	5.1	39
5.08 Computer, communications, & other services imports, % services imports	42.3	29
Government readiness	**6.0**	**1**
6.01 Gov't prioritization of ICT*	6.4	1
6.02 Gov't procurement of advanced tech.*	5.4	2
6.03 Importance of ICT to gov't vision*	6.2	1

Usage component	5.4	4
Individual usage	**5.7**	**7**
7.01 Mobile phone subscriptions/100 pop.	145.2	14
7.02 Cellular subscriptions w/data, % total	49.7	12
7.03 Households w/ personal computer, %	83.2	9
7.04 Broadband Internet subscribers/100 pop.	24.7	20
7.05 Internet users/100 pop.	68.3	26
7.06 Internet access in schools*	6.2	5
7.07 Use of virtual social networks*	6.0	16
7.08 Impact of ICT on access to basic services*	6.1	2
Business usage	**4.7**	**10**
8.01 Firm-level technology absorption*	6.0	15
8.02 Capacity for innovation*	4.3	17
8.03 Extent of business Internet use*	6.0	18
8.04 National office patent applications/million pop	150.4	22
8.05 Patent Cooperation Treaty apps/million pop	127.7	16
8.06 High-tech exports, % goods exports	37.4	4
8.07 Impact of ICT on new services and products*	5.8	4
8.08 Impact of ICT on new organizational models*	5.5	5
Government usage	**5.6**	**3**
9.01 Gov't success in ICT promotion	6.2	1
9.02 ICT use & gov't efficiency*	6.1	2
9.03 Government Online Service Index, 0–1 (best)	0.69	10
9.04 E-Participation Index, 0–1 (best)	0.69	9

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Slovak Republic

Key indicators

Population (millions), 2009	5.4
GDP (PPP) per capita (PPP $), 2009	21,245
GDP (US$ billions), 2009	88.2
Global Competitiveness Index 2010–2011 rank (out of 139)	60

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**69**
2009–2010 (133)	3.9	55
2008–2009 (134)	4.2	43
2007–2008 (127)	4.2	43
2006–2007 (122)	4.1	41

Environment component	4.1	46
Market environment	**4.3**	**50**
1.01 Venture capital availability*	2.6	61
1.02 Financial market sophistication*	4.8	46
1.03 Availability of latest technologies*	5.6	40
1.04 State of cluster development*	3.6	64
1.05 Burden of government regulation*	2.8	104
1.06 Extent & effect of taxation*	4.1	27
1.07 Total tax rate, % profits	48.7	98
1.08 No. days to start a business	16	66
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.1	67
Political and regulatory environment	**4.2**	**55**
2.01 Effectiveness of law-making bodies*	3.0	94
2.02 Laws relating to ICT*	3.9	67
2.03 Judicial independence*	2.9	105
2.04 Efficiency of legal system in settling disputes*	2.6	132
2.05 Efficiency of legal system in challenging regs*	2.4	130
2.06 Property rights*	4.2	73
2.07 Intellectual property protection*	3.8	56
2.08 Software piracy rate, % software installed	43	29
2.09 No. procedures to enforce a contract	31	26
2.10 No. days to enforce a contract	565	72
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.8**	**47**
3.01 Phone lines/100 pop.	22.6	59
3.02 Mobile network coverage, % pop. covered	99.8	32
3.03 Secure Internet servers/million pop.	79.2	45
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	75.7	33
3.05 Electricity production, kWh/capita	5,167.8	46
3.06 Tertiary education enrollment rate, %	53.6	40
3.07 Quality scientific research institutions*	3.3	90
3.08 Availability of scientists & engineers*	4.0	71
3.09 Availability research & training services*	4.6	41
3.10 Accessibility of digital content*	5.5	36

Readiness component	3.8	115
Individual readiness	**4.2**	**111**
4.01 Quality of math & science education*	4.1	65
4.02 Quality of educational system*	3.1	110
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	75.8	74
4.05 Residential monthly phone subscription (PPP $)	18.9	104
4.06 Fixed phone tariffs (PPP $)	0.44	120
4.07 Mobile cellular tariffs (PPP $)	0.82	121
4.08 Fixed broadband Internet tariffs (PPP $)	37.8	74
4.09 Buyer sophistication*	3.1	93
Business readiness	**3.9**	**69**
5.01 Extent of staff training*	3.9	74
5.02 Quality of management schools*	3.4	113
5.03 Company spending on R&D*	3.0	68
5.04 University-industry collaboration in R&D*	3.3	86
5.05 Business phone installation (PPP $)	75.8	53
5.06 Business monthly phone subscription (PPP $)	26.5	106
5.07 Local supplier quality*	4.9	47
5.08 Computer, communications, & other services imports, % services imports	37.4	43
Government readiness	**3.2**	**126**
6.01 Gov't prioritization of ICT*	3.6	127
6.02 Gov't procurement of advanced tech.*	2.7	126
6.03 Importance of ICT to gov't vision*	3.2	120

Usage component	3.5	54
Individual usage	**4.6**	**37**
7.01 Mobile phone subscriptions/100 pop.	101.7	59
7.02 Cellular subscriptions w/data, % total	40.7	17
7.03 Households w/ personal computer, %	64.0	34
7.04 Broadband Internet subscribers/100 pop.	14.3	39
7.05 Internet users/100 pop.	75.2	18
7.06 Internet access in schools*	5.0	35
7.07 Use of virtual social networks*	5.6	42
7.08 Impact of ICT on access to basic services*	3.8	118
Business usage	**3.1**	**64**
8.01 Firm-level technology absorption*	5.0	54
8.02 Capacity for innovation*	2.9	69
8.03 Extent of business Internet use*	5.4	38
8.04 National office patent applications/million pop	32.5	47
8.05 Patent Cooperation Treaty apps/million pop	8.3	38
8.06 High-tech exports, % goods exports	5.5	42
8.07 Impact of ICT on new services and products*	4.2	95
8.08 Impact of ICT on new organizational models*	3.7	92
Government usage	**2.8**	**107**
9.01 Gov't success in ICT promotion	3.4	120
9.02 ICT use & gov't efficiency*	3.5	118
9.03 Government Online Service Index, 0–1 (best)	0.35	60
9.04 E-Participation Index, 0–1 (best)	0.07	105

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Slovenia

Key indicators

Population (millions), 2009	2.0
GDP (PPP) per capita (PPP $), 2009	27,470
GDP (US$ billions), 2009	48.6
Global Competitiveness Index 2010–2011 rank (out of 139)	45

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.4**	**34**
2009–2010 (133)	4.5	31
2008–2009 (134)	4.6	31
2007–2008 (127)	4.5	30
2006–2007 (122)	4.4	30

Environment component	4.5	34
Market environment	**4.5**	**40**
1.01 Venture capital availability*	2.9	45
1.02 Financial market sophistication*	4.4	66
1.03 Availability of latest technologies*	5.6	38
1.04 State of cluster development*	3.8	49
1.05 Burden of government regulation*	3.5	51
1.06 Extent & effect of taxation*	3.3	88
1.07 Total tax rate, % profits	35.4	54
1.08 No. days to start a business	6	12
1.09 No. procedures to start a business	2	3
1.10 Freedom of the press*	4.8	77
Political and regulatory environment	**4.5**	**44**
2.01 Effectiveness of law-making bodies*	3.5	66
2.02 Laws relating to ICT*	5.1	24
2.03 Judicial independence*	4.2	55
2.04 Efficiency of legal system in settling disputes*	3.4	80
2.05 Efficiency of legal system in challenging regs*	3.4	78
2.06 Property rights*	4.6	57
2.07 Intellectual property protection*	4.4	39
2.08 Software piracy rate, % software installed	46	31
2.09 No. procedures to enforce a contract	32	33
2.10 No. days to enforce a contract	1290	129
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**4.6**	**26**
3.01 Phone lines/100 pop.	51.2	14
3.02 Mobile network coverage, % pop. covered	99.7	39
3.03 Secure Internet servers/million pop.	210.0	28
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	67.2	36
3.05 Electricity production, kWh/capita	7,454.0	27
3.06 Tertiary education enrollment rate, %	86.7	4
3.07 Quality scientific research institutions*	4.7	27
3.08 Availability of scientists & engineers*	4.0	73
3.09 Availability research & training services*	4.7	35
3.10 Accessibility of digital content*	5.7	32

Readiness component	4.6	43
Individual readiness	**5.2**	**41**
4.01 Quality of math & science education*	5.2	17
4.02 Quality of educational system*	4.2	47
4.03 Adult literacy rate, %	99.7	3
4.04 Residential phone installation (PPP $)	140.7	114
4.05 Residential monthly phone subscription (PPP $)	17.6	97
4.06 Fixed phone tariffs (PPP $)	0.14	65
4.07 Mobile cellular tariffs (PPP $)	0.28	49
4.08 Fixed broadband Internet tariffs (PPP $)	23.7	26
4.09 Buyer sophistication*	3.5	63
Business readiness	**4.4**	**35**
5.01 Extent of staff training*	4.1	64
5.02 Quality of management schools*	4.6	44
5.03 Company spending on R&D*	3.7	32
5.04 University-industry collaboration in R&D*	4.2	37
5.05 Business phone installation (PPP $)	140.7	96
5.06 Business monthly phone subscription (PPP $)	17.6	76
5.07 Local supplier quality*	5.2	32
5.08 Computer, communications, & other services imports, % services imports	44.7	26
Government readiness	**4.2**	**61**
6.01 Gov't prioritization of ICT*	4.8	54
6.02 Gov't procurement of advanced tech.*	3.7	63
6.03 Importance of ICT to gov't vision*	4.0	65

Usage component	4.2	32
Individual usage	**4.9**	**30**
7.01 Mobile phone subscriptions/100 pop.	104.0	56
7.02 Cellular subscriptions w/data, % total	27.5	30
7.03 Households w/ personal computer, %	71.2	25
7.04 Broadband Internet subscribers/100 pop.	23.7	22
7.05 Internet users/100 pop.	64.3	30
7.06 Internet access in schools*	5.7	23
7.07 Use of virtual social networks*	5.2	64
7.08 Impact of ICT on access to basic services*	4.9	44
Business usage	**3.5**	**41**
8.01 Firm-level technology absorption*	4.8	71
8.02 Capacity for innovation*	4.2	22
8.03 Extent of business Internet use*	5.4	36
8.04 National office patent applications/million pop	182.6	18
8.05 Patent Cooperation Treaty apps/million pop	59.2	24
8.06 High-tech exports, % goods exports	6.0	37
8.07 Impact of ICT on new services and products*	4.6	62
8.08 Impact of ICT on new organizational models*	4.1	67
Government usage	**4.2**	**32**
9.01 Gov't success in ICT promotion	4.7	40
9.02 ICT use & gov't efficiency*	4.7	39
9.03 Government Online Service Index, 0–1 (best)	0.40	46
9.04 E-Participation Index, 0–1 (best)	0.51	20

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

South Africa

Key indicators

Population (millions), 2009	49.3
GDP (PPP) per capita (PPP $), 2009	10,229
GDP (US$ billions), 2009	287.2
Global Competitiveness Index 2010–2011 rank (out of 139)	54

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**61**
2009–2010 (133)	3.8	62
2008–2009 (134)	4.1	52
2007–2008 (127)	4.1	51
2006–2007 (122)	4.0	47

Environment component 4.4 38

Market environment		**4.8**	**25**
1.01	Venture capital availability*	3.0	39
1.02	Financial market sophistication*	6.4	6
1.03	Availability of latest technologies*	5.5	51
1.04	State of cluster development*	4.0	39
1.05	Burden of government regulation*	3.0	93
1.06	Extent & effect of taxation*	4.1	31
1.07	Total tax rate, % profits	30.5	35
1.08	No. days to start a business	22	82
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	6.2	20
Political and regulatory environment		**5.1**	**23**
2.01	Effectiveness of law-making bodies*	4.4	29
2.02	Laws relating to ICT*	4.8	32
2.03	Judicial independence*	4.7	43
2.04	Efficiency of legal system in settling disputes*	5.1	19
2.05	Efficiency of legal system in challenging regs*	4.7	20
2.06	Property rights*	5.4	29
2.07	Intellectual property protection*	4.9	27
2.08	Software piracy rate, % software installed	35	18
2.09	No. procedures to enforce a contract	30	16
2.10	No. days to enforce a contract	600	86
2.11	Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment		**3.3**	**73**
3.01	Phone lines/100 pop.	8.6	98
3.02	Mobile network coverage, % pop. covered	99.8	38
3.03	Secure Internet servers/million pop.	40.4	52
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.7	106
3.05	Electricity production, kWh/capita	5,398.1	43
3.06	Tertiary education enrollment rate, %	15.4	99
3.07	Quality scientific research institutions*	4.7	29
3.08	Availability of scientists & engineers*	3.3	115
3.09	Availability research & training services*	4.4	49
3.10	Accessibility of digital content*	4.6	90

Readiness component 4.1 79

Individual readiness		**4.2**	**113**
4.01	Quality of math & science education*	2.0	136
4.02	Quality of educational system*	2.5	129
4.03	Adult literacy rate, %	89.0	87
4.04	Residential phone installation (PPP $)	98.0	92
4.05	Residential monthly phone subscription (PPP $)	27.4	129
4.06	Fixed phone tariffs (PPP $)	0.27	107
4.07	Mobile cellular tariffs (PPP $)	0.54	102
4.08	Fixed broadband Internet tariffs (PPP $)	41.7	79
4.09	Buyer sophistication*	4.1	29
Business readiness		**4.4**	**40**
5.01	Extent of staff training*	4.7	26
5.02	Quality of management schools*	5.1	21
5.03	Company spending on R&D*	3.5	40
5.04	University-industry collaboration in R&D*	4.6	24
5.05	Business phone installation (PPP $)	98.0	71
5.06	Business monthly phone subscription (PPP $)	36.4	127
5.07	Local supplier quality*	5.3	22
5.08	Computer, communications, & other services imports, % services imports	26.1	77
Government readiness		**3.7**	**92**
6.01	Gov't prioritization of ICT*	4.2	98
6.02	Gov't procurement of advanced tech.*	3.2	102
6.03	Importance of ICT to gov't vision*	3.7	87

Usage component 3.1 83

Individual usage		**2.9**	**95**
7.01	Mobile phone subscriptions/100 pop.	92.7	73
7.02	Cellular subscriptions w/data, % total	11.4	53
7.03	Households w/ personal computer, %	17.0	83
7.04	Broadband Internet subscribers/100 pop.	1.0	94
7.05	Internet users/100 pop.	8.8	107
7.06	Internet access in schools*	3.2	99
7.07	Use of virtual social networks*	4.8	88
7.08	Impact of ICT on access to basic services*	4.0	95
Business usage		**3.2**	**52**
8.01	Firm-level technology absorption*	5.4	35
8.02	Capacity for innovation*	3.4	47
8.03	Extent of business Internet use*	5.1	52
8.04	National office patent applications/million pop	26.3	52
8.05	Patent Cooperation Treaty apps/million pop	5.6	41
8.06	High-tech exports, % goods exports	2.9	59
8.07	Impact of ICT on new services and products*	4.6	63
8.08	Impact of ICT on new organizational models*	4.3	57
Government usage		**3.2**	**76**
9.01	Gov't success in ICT promotion	3.9	92
9.02	ICT use & gov't efficiency*	4.1	80
9.03	Government Online Service Index, 0–1 (best)	0.31	75
9.04	E-Participation Index, 0–1 (best)	0.19	62

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Spain

Key indicators

Population (millions), 2009	45.8
GDP (PPP) per capita (PPP $), 2009	29,625
GDP (US$ billions), 2009	1,467.9
Global Competitiveness Index 2010–2011 rank (out of 139)	42

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.3**	**37**
2009–2010 (133)	4.4	34
2008–2009 (134)	4.5	34
2007–2008 (127)	4.5	31
2006–2007 (122)	4.4	32

Environment component	4.5	37
Market environment	**4.3**	**49**
1.01 Venture capital availability*	2.6	58
1.02 Financial market sophistication*	5.7	24
1.03 Availability of latest technologies*	5.8	32
1.04 State of cluster development*	4.1	36
1.05 Burden of government regulation*	2.8	109
1.06 Extent & effect of taxation*	3.0	111
1.07 Total tax rate, % profits	56.5	114
1.08 No. days to start a business	47	118
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	5.8	41
Political and regulatory environment	**4.6**	**40**
2.01 Effectiveness of law-making bodies*	3.5	69
2.02 Laws relating to ICT*	4.5	40
2.03 Judicial independence*	3.8	65
2.04 Efficiency of legal system in settling disputes*	3.6	73
2.05 Efficiency of legal system in challenging regs*	3.7	64
2.06 Property rights*	4.9	44
2.07 Intellectual property protection*	4.3	41
2.08 Software piracy rate, % software installed	42	28
2.09 No. procedures to enforce a contract	39	83
2.10 No. days to enforce a contract	515	63
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**4.4**	**29**
3.01 Phone lines/100 pop.	45.3	19
3.02 Mobile network coverage, % pop. covered	99.8	33
3.03 Secure Internet servers/million pop.	193.0	30
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	110.1	31
3.05 Electricity production, kWh/capita	6,690.2	31
3.06 Tertiary education enrollment rate, %	70.6	17
3.07 Quality scientific research institutions*	4.2	43
3.08 Availability of scientists & engineers*	4.4	47
3.09 Availability research & training services*	5.0	26
3.10 Accessibility of digital content*	5.5	38

Readiness component	4.2	70
Individual readiness	**4.2**	**109**
4.01 Quality of math & science education*	3.1	113
4.02 Quality of educational system*	3.1	106
4.03 Adult literacy rate, %	97.6	52
4.04 Residential phone installation (PPP $)	137.8	110
4.05 Residential monthly phone subscription (PPP $)	23.1	118
4.06 Fixed phone tariffs (PPP $)	0.21	92
4.07 Mobile cellular tariffs (PPP $)	0.83	123
4.08 Fixed broadband Internet tariffs (PPP $)	28.3	40
4.09 Buyer sophistication*	3.8	47
Business readiness	**4.6**	**31**
5.01 Extent of staff training*	3.7	88
5.02 Quality of management schools*	5.6	8
5.03 Company spending on R&D*	3.2	47
5.04 University-industry collaboration in R&D*	4.0	46
5.05 Business phone installation (PPP $)	98.2	72
5.06 Business monthly phone subscription (PPP $)	23.1	95
5.07 Local supplier quality*	5.2	26
5.08 Computer, communications, & other services imports, % services imports	52.5	11
Government readiness	**3.7**	**93**
6.01 Gov't prioritization of ICT*	4.2	100
6.02 Gov't procurement of advanced tech.*	3.4	87
6.03 Importance of ICT to gov't vision*	3.6	98

Usage component	4.4	28
Individual usage	**4.8**	**32**
7.01 Mobile phone subscriptions/100 pop.	113.8	44
7.02 Cellular subscriptions w/data, % total	45.2	15
7.03 Households w/ personal computer, %	66.3	31
7.04 Broadband Internet subscribers/100 pop.	21.6	28
7.05 Internet users/100 pop.	62.6	32
7.06 Internet access in schools*	4.4	53
7.07 Use of virtual social networks*	5.3	62
7.08 Impact of ICT on access to basic services*	4.6	60
Business usage	**3.3**	**46**
8.01 Firm-level technology absorption*	5.2	49
8.02 Capacity for innovation*	3.4	42
8.03 Extent of business Internet use*	4.9	67
8.04 National office patent applications/million pop	78.2	29
8.05 Patent Cooperation Treaty apps/million pop	37.5	28
8.06 High-tech exports, % goods exports	4.7	50
8.07 Impact of ICT on new services and products*	4.9	44
8.08 Impact of ICT on new organizational models*	4.5	45
Government usage	**5.0**	**15**
9.01 Gov't success in ICT promotion	3.8	102
9.02 ICT use & gov't efficiency*	4.4	58
9.03 Government Online Service Index, 0–1 (best)	0.77	5
9.04 E-Participation Index, 0–1 (best)	0.83	3

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Sri Lanka

Key indicators

Population (millions), 2009	20.2
GDP (PPP) per capita (PPP $), 2009	4,764
GDP (US$ billions), 2009	42.2
Global Competitiveness Index 2010–2011 rank (out of 139)	62

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**66**
2009–2010 (133)	3.7	72
2008–2009 (134)	3.8	72
2007–2008 (127)	3.6	79
2006–2007 (122)	3.3	86

Environment component 3.7 75

Market environment 4.1 62

1.01	Venture capital availability*	3.2	33
1.02	Financial market sophistication*	4.5	59
1.03	Availability of latest technologies*	5.2	61
1.04	State of cluster development*	4.1	33
1.05	Burden of government regulation*	3.3	67
1.06	Extent & effect of taxation*	3.7	52
1.07	Total tax rate, % profits	64.7	121
1.08	No. days to start a business	35	106
1.09	No. procedures to start a business	4	14
1.10	Freedom of the press*	3.7	123

Political and regulatory environment 3.7 90

2.01	Effectiveness of law-making bodies*	4.0	44
2.02	Laws relating to ICT*	4.3	48
2.03	Judicial independence*	4.7	45
2.04	Efficiency of legal system in settling disputes*	4.3	41
2.05	Efficiency of legal system in challenging regs*	4.1	46
2.06	Property rights*	4.4	63
2.07	Intellectual property protection*	4.1	45
2.08	Software piracy rate, % software installed	89	102
2.09	No. procedures to enforce a contract	40	94
2.10	No. days to enforce a contract	1318	130
2.11	Internet & telephony competition, 0–6 (best)	2	119

Infrastructure environment 3.2 76

3.01	Phone lines/100 pop.	17.0	77
3.02	Mobile network coverage, % pop. covered	95.0	76
3.03	Secure Internet servers/million pop.	3.5	95
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	1.9	97
3.05	Electricity production, kWh/capita	494.8	113
3.06	Tertiary education enrollment rate, %	17.1	95
3.07	Quality scientific research institutions*	4.1	49
3.08	Availability of scientists & engineers*	4.4	49
3.09	Availability research & training services*	4.4	46
3.10	Accessibility of digital content*	4.6	87

Readiness component 4.6 42

Individual readiness 5.3 31

4.01	Quality of math & science education*	4.5	47
4.02	Quality of educational system*	4.2	44
4.03	Adult literacy rate, %	90.6	81
4.04	Residential phone installation (PPP $)	244.8	130
4.05	Residential monthly phone subscription (PPP $)	6.9	42
4.06	Fixed phone tariffs (PPP $)	0.20	90
4.07	Mobile cellular tariffs (PPP $)	0.04	2
4.08	Fixed broadband Internet tariffs (PPP $)	10.1	2
4.09	Buyer sophistication*	4.0	32

Business readiness 4.0 64

5.01	Extent of staff training*	4.4	37
5.02	Quality of management schools*	4.7	37
5.03	Company spending on R&D*	3.8	30
5.04	University-industry collaboration in R&D*	3.9	49
5.05	Business phone installation (PPP $)	244.8	121
5.06	Business monthly phone subscription (PPP $)	19.1	81
5.07	Local supplier quality*	4.9	48
5.08	Computer, communications, & other services imports, % services imports	15.2	104

Government readiness 4.6 36

6.01	Gov't prioritization of ICT*	5.2	43
6.02	Gov't procurement of advanced tech.*	4.1	39
6.03	Importance of ICT to gov't vision*	4.5	37

Usage component 3.1 82

Individual usage 2.8 100

7.01	Mobile phone subscriptions/100 pop.	69.6	98
7.02	Cellular subscriptions w/data, % total	8.1	64
7.03	Households w/ personal computer, %	9.5	105
7.04	Broadband Internet subscribers/100 pop.	0.8	96
7.05	Internet users/100 pop.	8.8	108
7.06	Internet access in schools*	3.6	82
7.07	Use of virtual social networks*	4.3	109
7.08	Impact of ICT on access to basic services*	4.8	48

Business usage 3.2 57

8.01	Firm-level technology absorption*	5.2	47
8.02	Capacity for innovation*	3.5	41
8.03	Extent of business Internet use*	5.2	46
8.04	National office patent applications/million pop	9.9	63
8.05	Patent Cooperation Treaty apps/million pop	0.4	73
8.06	High-tech exports, % goods exports	0.9	84
8.07	Impact of ICT on new services and products*	4.7	57
8.08	Impact of ICT on new organizational models*	4.5	49

Government usage 3.5 57

9.01	Gov't success in ICT promotion	4.9	31
9.02	ICT use & gov't efficiency*	4.6	49
9.03	Government Online Service Index, 0–1 (best)	0.26	94
9.04	E-Participation Index, 0–1 (best)	0.14	78

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Swaziland

Key indicators

Population (millions), 2009	1.0
GDP (PPP) per capita (PPP $), 2009	5,743
GDP (US$ billions), 2009	3.0
Global Competitiveness Index 2010–2011 rank (out of 139)	126

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**2.9**	**134**
2009–2010 (133)	n/a	n/a
2008–2009 (134)	n/a	n/a
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	3.0	127
Market environment	**3.5**	**115**
1.01 Venture capital availability*	2.3	89
1.02 Financial market sophistication*	3.6	95
1.03 Availability of latest technologies*	3.6	133
1.04 State of cluster development*	3.1	92
1.05 Burden of government regulation*	3.2	70
1.06 Extent & effect of taxation*	3.5	72
1.07 Total tax rate, % profits	36.8	56
1.08 No. days to start a business	56	122
1.09 No. procedures to start a business	12	116
1.10 Freedom of the press*	4.3	93
Political and regulatory environment	**3.2**	**119**
2.01 Effectiveness of law-making bodies*	3.2	86
2.02 Laws relating to ICT*	2.6	131
2.03 Judicial independence*	3.6	71
2.04 Efficiency of legal system in settling disputes*	4.0	48
2.05 Efficiency of legal system in challenging regs*	3.8	59
2.06 Property rights*	4.9	46
2.07 Intellectual property protection*	3.2	77
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	40	94
2.10 No. days to enforce a contract	972	123
2.11 Internet & telephony competition, 0–6 (best)	0	131
Infrastructure environment	**2.3**	**127**
3.01 Phone lines/100 pop.	3.7	109
3.02 Mobile network coverage, % pop. covered	91.0	90
3.03 Secure Internet servers/million pop.	4.2	92
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.4	115
3.05 Electricity production, kWh/capita	383.0	114
3.06 Tertiary education enrollment rate, %	4.4	122
3.07 Quality scientific research institutions*	2.4	130
3.08 Availability of scientists & engineers*	2.4	138
3.09 Availability research & training services*	2.3	136
3.10 Accessibility of digital content*	3.4	128

Readiness component	3.6	126
Individual readiness	**4.1**	**115**
4.01 Quality of math & science education*	3.5	90
4.02 Quality of educational system*	3.2	100
4.03 Adult literacy rate, %	86.5	94
4.04 Residential phone installation (PPP $)	50.4	41
4.05 Residential monthly phone subscription (PPP $)	5.6	31
4.06 Fixed phone tariffs (PPP $)	0.13	63
4.07 Mobile cellular tariffs (PPP $)	0.52	98
4.08 Fixed broadband Internet tariffs (PPP $)	1,501.8	133
4.09 Buyer sophistication*	2.8	115
Business readiness	**3.7**	**87**
5.01 Extent of staff training*	3.6	96
5.02 Quality of management schools*	2.7	133
5.03 Company spending on R&D*	2.4	130
5.04 University-industry collaboration in R&D*	2.8	122
5.05 Business phone installation (PPP $)	84.2	65
5.06 Business monthly phone subscription (PPP $)	10.1	29
5.07 Local supplier quality*	4.1	92
5.08 Computer, communications, & other services imports, % services imports	47.7	20
Government readiness	**3.0**	**130**
6.01 Gov't prioritization of ICT*	3.4	129
6.02 Gov't procurement of advanced tech.*	2.7	130
6.03 Importance of ICT to gov't vision*	3.0	128

Usage component	2.1	136
Individual usage	**2.3**	**118**
7.01 Mobile phone subscriptions/100 pop.	55.4	112
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	13.5	92
7.04 Broadband Internet subscribers/100 pop.	0.1	112
7.05 Internet users/100 pop.	7.6	111
7.06 Internet access in schools*	2.8	115
7.07 Use of virtual social networks*	4.0	118
7.08 Impact of ICT on access to basic services*	3.2	129
Business usage	**2.2**	**137**
8.01 Firm-level technology absorption*	3.7	131
8.02 Capacity for innovation*	2.2	129
8.03 Extent of business Internet use*	3.9	122
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.0	115
8.07 Impact of ICT on new services and products*	2.8	137
8.08 Impact of ICT on new organizational models*	2.6	136
Government usage	**1.8**	**138**
9.01 Gov't success in ICT promotion	n/a	n/a
9.02 ICT use & gov't efficiency*	2.9	134
9.03 Government Online Service Index, 0–1 (best)	0.00	135
9.04 E-Participation Index, 0–1 (best)	0.11	93

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Sweden

Key indicators

Population (millions), 2009	9.3
GDP (PPP) per capita (PPP $), 2009	35,951
GDP (US$ billions), 2009	406.1
Global Competitiveness Index 2010–2011 rank (out of 139)	2

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.6**	**1**
2009–2010 (133)	5.7	1
2008–2009 (134)	5.8	2
2007–2008 (127)	5.7	2
2006–2007 (122)	5.7	2

Environment component	5.9	1
Market environment	**5.4**	**7**
1.01 Venture capital availability*	4.0	7
1.02 Financial market sophistication*	6.4	7
1.03 Availability of latest technologies*	6.8	1
1.04 State of cluster development*	5.1	8
1.05 Burden of government regulation*	4.0	15
1.06 Extent & effect of taxation*	3.0	109
1.07 Total tax rate, % profits	54.6	110
1.08 No. days to start a business	15	61
1.09 No. procedures to start a business	3	7
1.10 Freedom of the press*	6.8	2
Political and regulatory environment	**6.2**	**2**
2.01 Effectiveness of law-making bodies*	5.9	2
2.02 Laws relating to ICT*	5.9	1
2.03 Judicial independence*	6.6	2
2.04 Efficiency of legal system in settling disputes*	6.1	2
2.05 Efficiency of legal system in challenging regs*	5.8	1
2.06 Property rights*	6.3	5
2.07 Intellectual property protection*	6.2	1
2.08 Software piracy rate, % software installed	25	5
2.09 No. procedures to enforce a contract	30	16
2.10 No. days to enforce a contract	508	58
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**6.1**	**2**
3.01 Phone lines/100 pop.	55.7	8
3.02 Mobile network coverage, % pop. covered	99.0	48
3.03 Secure Internet servers/million pop.	856.7	14
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	498.3	6
3.05 Electricity production, kWh/capita	16,267.9	6
3.06 Tertiary education enrollment rate, %	71.1	16
3.07 Quality scientific research institutions*	5.9	5
3.08 Availability of scientists & engineers*	5.8	3
3.09 Availability research & training services*	6.1	3
3.10 Accessibility of digital content*	6.5	3

Readiness component	5.5	3
Individual readiness	**5.4**	**23**
4.01 Quality of math & science education*	5.0	20
4.02 Quality of educational system*	5.4	8
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	76.6	76
4.05 Residential monthly phone subscription (PPP $)	16.4	90
4.06 Fixed phone tariffs (PPP $)	0.15	66
4.07 Mobile cellular tariffs (PPP $)	0.48	91
4.08 Fixed broadband Internet tariffs (PPP $)	28.2	39
4.09 Buyer sophistication*	5.0	3
Business readiness	**5.7**	**2**
5.01 Extent of staff training*	5.7	1
5.02 Quality of management schools*	5.6	7
5.03 Company spending on R&D*	6.0	1
5.04 University-industry collaboration in R&D*	5.5	5
5.05 Business phone installation (PPP $)	77.1	59
5.06 Business monthly phone subscription (PPP $)	15.0	63
5.07 Local supplier quality*	6.0	5
5.08 Computer, communications, & other services imports, % services imports	56.2	6
Government readiness	**5.3**	**8**
6.01 Gov't prioritization of ICT*	6.1	7
6.02 Gov't procurement of advanced tech.*	4.5	13
6.03 Importance of ICT to gov't vision*	5.4	8

Usage component	5.4	3
Individual usage	**6.4**	**1**
7.01 Mobile phone subscriptions/100 pop.	125.9	29
7.02 Cellular subscriptions w/data, % total	100.0	1
7.03 Households w/ personal computer, %	87.5	5
7.04 Broadband Internet subscribers/100 pop.	31.8	8
7.05 Internet users/100 pop.	90.8	3
7.06 Internet access in schools*	6.4	3
7.07 Use of virtual social networks*	6.5	2
7.08 Impact of ICT on access to basic services*	6.2	1
Business usage	**4.9**	**6**
8.01 Firm-level technology absorption*	6.4	2
8.02 Capacity for innovation*	5.7	3
8.03 Extent of business Internet use*	6.6	1
8.04 National office patent applications/million pop	236.1	12
8.05 Patent Cooperation Treaty apps/million pop	338.8	4
8.06 High-tech exports, % goods exports	12.1	24
8.07 Impact of ICT on new services and products*	6.3	1
8.08 Impact of ICT on new organizational models*	6.0	1
Government usage	**4.9**	**17**
9.01 Gov't success in ICT promotion	5.6	7
9.02 ICT use & gov't efficiency*	6.0	3
9.03 Government Online Service Index, 0–1 (best)	0.53	24
9.04 E-Participation Index, 0–1 (best)	0.49	23

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Switzerland

Key indicators

Population (millions), 2009	7.7
GDP (PPP) per capita (PPP $), 2009	40,484
GDP (US$ billions), 2009	491.9
Global Competitiveness Index 2010–2011 rank (out of 139)	1

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.3**	**4**
2009–2010 (133)	5.5	4
2008–2009 (134)	5.6	5
2007–2008 (127)	5.5	3
2006–2007 (122)	5.6	5

Environment component	5.7	2
Market environment	**5.4**	**2**
1.01 Venture capital availability*	3.5	20
1.02 Financial market sophistication*	6.6	2
1.03 Availability of latest technologies*	6.6	5
1.04 State of cluster development*	5.2	4
1.05 Burden of government regulation*	4.2	13
1.06 Extent & effect of taxation*	5.0	10
1.07 Total tax rate, % profits	30.1	33
1.08 No. days to start a business	20	79
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	6.6	7
Political and regulatory environment	**6.0**	**6**
2.01 Effectiveness of law-making bodies*	5.0	14
2.02 Laws relating to ICT*	5.4	13
2.03 Judicial independence*	6.4	4
2.04 Efficiency of legal system in settling disputes*	5.4	10
2.05 Efficiency of legal system in challenging regs*	5.4	5
2.06 Property rights*	6.4	1
2.07 Intellectual property protection*	6.0	4
2.08 Software piracy rate, % software installed	25	5
2.09 No. procedures to enforce a contract	31	26
2.10 No. days to enforce a contract	417	38
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**5.8**	**3**
3.01 Phone lines/100 pop.	61.8	2
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	1,119.6	6
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	294.1	9
3.05 Electricity production, kWh/capita	8,801.7	18
3.06 Tertiary education enrollment rate, %	49.4	48
3.07 Quality scientific research institutions*	6.2	2
3.08 Availability of scientists & engineers*	5.3	11
3.09 Availability research & training services*	6.5	1
3.10 Accessibility of digital content*	6.6	2

Readiness component	5.4	5
Individual readiness	**5.6**	**12**
4.01 Quality of math & science education*	5.8	5
4.02 Quality of educational system*	6.0	2
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	28.0	16
4.05 Residential monthly phone subscription (PPP $)	16.5	91
4.06 Fixed phone tariffs (PPP $)	0.20	89
4.07 Mobile cellular tariffs (PPP $)	0.51	95
4.08 Fixed broadband Internet tariffs (PPP $)	22.2	20
4.09 Buyer sophistication*	5.2	2
Business readiness	**5.7**	**1**
5.01 Extent of staff training*	5.5	2
5.02 Quality of management schools*	6.1	2
5.03 Company spending on R&D*	5.9	2
5.04 University-industry collaboration in R&D*	5.7	2
5.05 Business phone installation (PPP $)	29.8	10
5.06 Business monthly phone subscription (PPP $)	17.5	75
5.07 Local supplier quality*	6.2	2
5.08 Computer, communications, & other services imports, % services imports	45.8	22
Government readiness	**4.8**	**23**
6.01 Gov't prioritization of ICT*	5.6	16
6.02 Gov't procurement of advanced tech.*	4.4	15
6.03 Importance of ICT to gov't vision*	4.5	39

Usage component	4.9	15
Individual usage	**5.7**	**9**
7.01 Mobile phone subscriptions/100 pop.	122.3	35
7.02 Cellular subscriptions w/data, % total	30.3	25
7.03 Households w/ personal computer, %	80.6	14
7.04 Broadband Internet subscribers/100 pop.	35.5	3
7.05 Internet users/100 pop.	81.3	10
7.06 Internet access in schools*	6.2	7
7.07 Use of virtual social networks*	6.2	8
7.08 Impact of ICT on access to basic services*	5.4	19
Business usage	**4.9**	**5**
8.01 Firm-level technology absorption*	6.3	4
8.02 Capacity for innovation*	5.7	4
8.03 Extent of business Internet use*	6.0	15
8.04 National office patent applications/million pop	217.8	14
8.05 Patent Cooperation Treaty apps/million pop	467.1	2
8.06 High-tech exports, % goods exports	21.2	10
8.07 Impact of ICT on new services and products*	5.7	11
8.08 Impact of ICT on new organizational models*	5.2	18
Government usage	**4.0**	**41**
9.01 Gov't success in ICT promotion	4.9	33
9.02 ICT use & gov't efficiency*	5.2	22
9.03 Government Online Service Index, 0–1 (best)	0.44	37
9.04 E-Participation Index, 0–1 (best)	0.20	56

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Syria

Key indicators

Population (millions), 2009	20.1
GDP (PPP) per capita (PPP $), 2009	4,939
GDP (US$ billions), 2009	52.6
Global Competitiveness Index 2010–2011 rank (out of 139)	97

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.1**	**124**
2009–2010 (133)	3.1	105
2008–2009 (134)	3.4	94
2007–2008 (127)	3.1	110
2006–2007 (122)	n/a	n/a

Environment component 3.1 121

Market environment		**3.3**	**129**
1.01	Venture capital availability*	2.1	112
1.02	Financial market sophistication*	2.4	130
1.03	Availability of latest technologies*	4.0	125
1.04	State of cluster development*	2.9	101
1.05	Burden of government regulation*	2.3	129
1.06	Extent & effect of taxation*	3.6	66
1.07	Total tax rate, % profits	42.9	80
1.08	No. days to start a business	13	49
1.09	No. procedures to start a business	7	63
1.10	Freedom of the press*	3.0	134
Political and regulatory environment		**3.1**	**130**
2.01	Effectiveness of law-making bodies*	3.1	90
2.02	Laws relating to ICT*	2.3	136
2.03	Judicial independence*	2.9	106
2.04	Efficiency of legal system in settling disputes*	2.9	117
2.05	Efficiency of legal system in challenging regs*	2.7	120
2.06	Property rights*	4.4	61
2.07	Intellectual property protection*	3.3	74
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	55	134
2.10	No. days to enforce a contract	872	120
2.11	Internet & telephony competition, 0–6 (best)	2	119
Infrastructure environment		**2.9**	**95**
3.01	Phone lines/100 pop.	17.7	73
3.02	Mobile network coverage, % pop. covered	97.0	69
3.03	Secure Internet servers/million pop.	0.3	127
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	2.6	90
3.05	Electricity production, kWh/capita	1,924.1	81
3.06	Tertiary education enrollment rate, %	27.4	79
3.07	Quality scientific research institutions*	2.5	126
3.08	Availability of scientists & engineers*	4.2	62
3.09	Availability research & training services*	3.3	114
3.10	Accessibility of digital content*	3.3	130

Readiness component 3.7 117

Individual readiness		**4.7**	**81**
4.01	Quality of math & science education*	3.9	69
4.02	Quality of educational system*	3.1	108
4.03	Adult literacy rate, %	83.6	101
4.04	Residential phone installation (PPP $)	70.6	66
4.05	Residential monthly phone subscription (PPP $)	1.9	7
4.06	Fixed phone tariffs (PPP $)	0.02	15
4.07	Mobile cellular tariffs (PPP $)	n/a	n/a
4.08	Fixed broadband Internet tariffs (PPP $)	114.3	116
4.09	Buyer sophistication*	2.5	126
Business readiness		**3.1**	**133**
5.01	Extent of staff training*	2.5	138
5.02	Quality of management schools*	3.4	114
5.03	Company spending on R&D*	2.0	136
5.04	University-industry collaboration in R&D*	2.3	136
5.05	Business phone installation (PPP $)	70.6	45
5.06	Business monthly phone subscription (PPP $)	1.9	3
5.07	Local supplier quality*	3.7	123
5.08	Computer, communications, & other services imports, % services imports	7.4	121
Government readiness		**3.4**	**120**
6.01	Gov't prioritization of ICT*	4.0	110
6.02	Gov't procurement of advanced tech.*	2.9	118
6.03	Importance of ICT to gov't vision*	3.2	117

Usage component 2.3 131

Individual usage		**2.4**	**113**
7.01	Mobile phone subscriptions/100 pop.	45.6	117
7.02	Cellular subscriptions w/data, % total	11.0	55
7.03	Households w/ personal computer, %	38.5	57
7.04	Broadband Internet subscribers/100 pop.	0.2	110
7.05	Internet users/100 pop.	20.4	90
7.06	Internet access in schools*	2.1	130
7.07	Use of virtual social networks*	2.8	136
7.08	Impact of ICT on access to basic services*	3.5	126
Business usage		**2.2**	**135**
8.01	Firm-level technology absorption*	4.7	75
8.02	Capacity for innovation*	2.1	133
8.03	Extent of business Internet use*	3.5	136
8.04	National office patent applications/million pop	5.9	69
8.05	Patent Cooperation Treaty apps/million pop	0.6	70
8.06	High-tech exports, % goods exports	0.6	89
8.07	Impact of ICT on new services and products*	2.8	136
8.08	Impact of ICT on new organizational models*	2.7	134
Government usage		**2.4**	**134**
9.01	Gov't success in ICT promotion	3.8	98
9.02	ICT use & gov't efficiency*	3.3	127
9.03	Government Online Service Index, 0–1 (best)	0.04	131
9.04	E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Taiwan, China

Key indicators

Population (millions), 2009	23.1
GDP (PPP) per capita (PPP $), 2009	31,776
GDP (US$ billions), 2009	378.5
Global Competitiveness Index 2010–2011 rank (out of 139)	13

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.3**	**6**
2009–2010 (133)	5.2	11
2008–2009 (134)	5.3	13
2007–2008 (127)	5.2	17
2006–2007 (122)	5.3	13

Environment component	5.1	19
Market environment	**5.0**	**15**
1.01 Venture capital availability*	3.9	11
1.02 Financial market sophistication*	5.2	33
1.03 Availability of latest technologies*	5.8	33
1.04 State of cluster development*	5.4	3
1.05 Burden of government regulation*	3.7	29
1.06 Extent & effect of taxation*	4.2	25
1.07 Total tax rate, % profits	41.9	76
1.08 No. days to start a business	15	61
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	6.3	17
Political and regulatory environment	**4.9**	**28**
2.01 Effectiveness of law-making bodies*	3.2	85
2.02 Laws relating to ICT*	5.3	20
2.03 Judicial independence*	4.6	48
2.04 Efficiency of legal system in settling disputes*	4.0	50
2.05 Efficiency of legal system in challenging regs*	4.1	45
2.06 Property rights*	5.6	19
2.07 Intellectual property protection*	4.9	26
2.08 Software piracy rate, % software installed	38	23
2.09 No. procedures to enforce a contract	47	125
2.10 No. days to enforce a contract	510	59
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**5.3**	**13**
3.01 Phone lines/100 pop.	63.2	1
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	471.1	21
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	143.2	23
3.05 Electricity production, kWh/capita	10,344.2	13
3.06 Tertiary education enrollment rate, %	83.2	5
3.07 Quality scientific research institutions*	5.2	17
3.08 Availability of scientists & engineers*	5.5	8
3.09 Availability research & training services*	5.2	21
3.10 Accessibility of digital content*	6.1	20

Readiness component	5.3	7
Individual readiness	**5.6**	**13**
4.01 Quality of math & science education*	5.7	6
4.02 Quality of educational system*	5.0	17
4.03 Adult literacy rate, %	97.8	49
4.04 Residential phone installation (PPP $)	129.2	105
4.05 Residential monthly phone subscription (PPP $)	3.9	18
4.06 Fixed phone tariffs (PPP $)	0.08	44
4.07 Mobile cellular tariffs (PPP $)	0.44	88
4.08 Fixed broadband Internet tariffs (PPP $)	15.7	7
4.09 Buyer sophistication*	4.7	5
Business readiness	**5.0**	**12**
5.01 Extent of staff training*	4.7	31
5.02 Quality of management schools*	5.0	27
5.03 Company spending on R&D*	5.0	9
5.04 University-industry collaboration in R&D*	5.2	12
5.05 Business phone installation (PPP $)	99.9	73
5.06 Business monthly phone subscription (PPP $)	12.8	49
5.07 Local supplier quality*	5.7	11
5.08 Computer, communications, & other services imports, % services imports	36.4	46
Government readiness	**5.4**	**5**
6.01 Gov't prioritization of ICT*	6.0	9
6.02 Gov't procurement of advanced tech.*	4.7	7
6.03 Importance of ICT to gov't vision*	5.4	6

Usage component	5.5	2
Individual usage	**5.4**	**15**
7.01 Mobile phone subscriptions/100 pop.	116.7	43
7.02 Cellular subscriptions w/data, % total	52.7	9
7.03 Households w/ personal computer, %	69.4	28
7.04 Broadband Internet subscribers/100 pop.	21.4	29
7.05 Internet users/100 pop.	69.9	24
7.06 Internet access in schools*	6.1	8
7.07 Use of virtual social networks*	5.9	21
7.08 Impact of ICT on access to basic services*	6.1	4
Business usage	**5.3**	**1**
8.01 Firm-level technology absorption*	6.1	10
8.02 Capacity for innovation*	4.7	14
8.03 Extent of business Internet use*	6.1	10
8.04 National office patent applications/million pop	3,392.1	1
8.05 Patent Cooperation Treaty apps/million pop	n/a	n/a
8.06 High-tech exports, % goods exports	42.2	3
8.07 Impact of ICT on new services and products*	6.0	2
8.08 Impact of ICT on new organizational models*	5.5	6
Government usage	**5.8**	**2**
9.01 Gov't success in ICT promotion	5.8	5
9.02 ICT use & gov't efficiency*	5.7	5
9.03 Government Online Service Index, 0–1 (best)	n/a	n/a
9.04 E-Participation Index, 0–1 (best)	n/a	n/a

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Tajikistan

Key indicators

Population (millions), 2009	7.5
GDP (PPP) per capita (PPP $), 2009	1,827
GDP (US$ billions), 2009	5.0
Global Competitiveness Index 2010–2011 rank (out of 139)	116

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**112**
2009–2010 (133)	3.1	109
2008–2009 (134)	3.2	104
2007–2008 (127)	3.2	98
2006–2007 (122)	n/a	n/a

Environment component 3.1 123

Market environment		**3.5**	**121**
1.01	Venture capital availability*	2.5	69
1.02	Financial market sophistication*	3.0	117
1.03	Availability of latest technologies*	4.2	119
1.04	State of cluster development*	2.5	127
1.05	Burden of government regulation*	3.6	42
1.06	Extent & effect of taxation*	3.5	77
1.07	Total tax rate, % profits	86.0	132
1.08	No. days to start a business	27	89
1.09	No. procedures to start a business	8	76
1.10	Freedom of the press*	4.1	111
Political and regulatory environment		**3.4**	**112**
2.01	Effectiveness of law-making bodies*	4.0	43
2.02	Laws relating to ICT*	3.2	104
2.03	Judicial independence*	3.2	93
2.04	Efficiency of legal system in settling disputes*	3.7	63
2.05	Efficiency of legal system in challenging regs*	3.7	63
2.06	Property rights*	3.7	96
2.07	Intellectual property protection*	3.1	82
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	34	41
2.10	No. days to enforce a contract	430	44
2.11	Internet & telephony competition, 0–6 (best)	0	131
Infrastructure environment		**2.3**	**126**
3.01	Phone lines/100 pop.	4.2	108
3.02	Mobile network coverage, % pop. covered	n/a	n/a
3.03	Secure Internet servers/million pop.	0.3	130
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.4	114
3.05	Electricity production, kWh/capita	2,600.4	71
3.06	Tertiary education enrollment rate, %	20.2	89
3.07	Quality scientific research institutions*	3.0	99
3.08	Availability of scientists & engineers*	3.4	110
3.09	Availability research & training services*	3.1	120
3.10	Accessibility of digital content*	4.2	102

Readiness component 4.0 88

Individual readiness		**4.5**	**92**
4.01	Quality of math & science education*	2.8	121
4.02	Quality of educational system*	3.0	112
4.03	Adult literacy rate, %	99.7	3
4.04	Residential phone installation (PPP $)	16.2	10
4.05	Residential monthly phone subscription (PPP $)	1.4	5
4.06	Fixed phone tariffs (PPP $)	0.04	22
4.07	Mobile cellular tariffs (PPP $)	0.16	18
4.08	Fixed broadband Internet tariffs (PPP $)	1,065.1	130
4.09	Buyer sophistication*	3.0	104
Business readiness		**3.6**	**95**
5.01	Extent of staff training*	3.3	117
5.02	Quality of management schools*	2.8	132
5.03	Company spending on R&D*	2.5	117
5.04	University-industry collaboration in R&D*	3.1	107
5.05	Business phone installation (PPP $)	67.6	41
5.06	Business monthly phone subscription (PPP $)	7.8	24
5.07	Local supplier quality*	3.6	125
5.08	Computer, communications, & other services imports, % services imports	38.2	40
Government readiness		**3.9**	**80**
6.01	Gov't prioritization of ICT*	4.3	89
6.02	Gov't procurement of advanced tech.*	3.7	65
6.03	Importance of ICT to gov't vision*	3.7	84

Usage component 2.6 112

Individual usage		**2.4**	**114**
7.01	Mobile phone subscriptions/100 pop.	70.5	97
7.02	Cellular subscriptions w/data, % total	2.6	88
7.03	Households w/ personal computer, %	2.0	132
7.04	Broadband Internet subscribers/100 pop.	0.1	118
7.05	Internet users/100 pop.	10.1	102
7.06	Internet access in schools*	3.3	94
7.07	Use of virtual social networks*	3.2	130
7.08	Impact of ICT on access to basic services*	4.1	91
Business usage		**2.7**	**99**
8.01	Firm-level technology absorption*	4.0	121
8.02	Capacity for innovation*	2.7	88
8.03	Extent of business Internet use*	4.1	113
8.04	National office patent applications/million pop	1.6	80
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	n/a	n/a
8.07	Impact of ICT on new services and products*	3.7	118
8.08	Impact of ICT on new organizational models*	3.3	119
Government usage		**2.7**	**119**
9.01	Gov't success in ICT promotion	4.2	73
9.02	ICT use & gov't efficiency*	3.9	92
9.03	Government Online Service Index, 0–1 (best)	0.09	127
9.04	E-Participation Index, 0–1 (best)	0.03	123

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Tanzania

Key indicators

Population (millions), 2009	40.5
GDP (PPP) per capita (PPP $), 2009	1,421
GDP (US$ billions), 2009	21.3
Global Competitiveness Index 2010–2011 rank (out of 139)	113

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**118**
2009–2010 (133)	3.0	120
2008–2009 (134)	3.0	119
2007–2008 (127)	3.2	100
2006–2007 (122)	3.1	91

Environment component	3.3	104
Market environment	**3.6**	**107**
1.01 Venture capital availability*	2.6	64
1.02 Financial market sophistication*	3.1	113
1.03 Availability of latest technologies*	3.8	131
1.04 State of cluster development*	3.5	67
1.05 Burden of government regulation*	3.3	65
1.06 Extent & effect of taxation*	3.6	64
1.07 Total tax rate, % profits	45.2	88
1.08 No. days to start a business	29	94
1.09 No. procedures to start a business	12	116
1.10 Freedom of the press*	4.3	96
Political and regulatory environment	**3.9**	**77**
2.01 Effectiveness of law-making bodies*	3.8	53
2.02 Laws relating to ICT*	3.5	93
2.03 Judicial independence*	3.5	76
2.04 Efficiency of legal system in settling disputes*	3.7	64
2.05 Efficiency of legal system in challenging regs*	3.5	71
2.06 Property rights*	3.7	103
2.07 Intellectual property protection*	3.3	73
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	38	73
2.10 No. days to enforce a contract	462	49
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.5**	**120**
3.01 Phone lines/100 pop.	0.4	134
3.02 Mobile network coverage, % pop. covered	85.0	100
3.03 Secure Internet servers/million pop.	0.2	133
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.0	136
3.05 Electricity production, kWh/capita	101.1	126
3.06 Tertiary education enrollment rate, %	1.5	135
3.07 Quality scientific research institutions*	3.3	87
3.08 Availability of scientists & engineers*	3.4	112
3.09 Availability research & training services*	3.4	107
3.10 Accessibility of digital content*	3.7	120

Readiness component	3.7	124
Individual readiness	**3.7**	**130**
4.01 Quality of math & science education*	2.7	126
4.02 Quality of educational system*	3.2	98
4.03 Adult literacy rate, %	72.6	114
4.04 Residential phone installation (PPP $)	40.4	33
4.05 Residential monthly phone subscription (PPP $)	10.1	60
4.06 Fixed phone tariffs (PPP $)	0.73	131
4.07 Mobile cellular tariffs (PPP $)	0.73	118
4.08 Fixed broadband Internet tariffs (PPP $)	60.6	90
4.09 Buyer sophistication*	2.9	112
Business readiness	**3.6**	**102**
5.01 Extent of staff training*	3.4	105
5.02 Quality of management schools*	3.0	127
5.03 Company spending on R&D*	3.0	71
5.04 University-industry collaboration in R&D*	3.4	76
5.05 Business phone installation (PPP $)	40.4	21
5.06 Business monthly phone subscription (PPP $)	10.1	30
5.07 Local supplier quality*	3.8	115
5.08 Computer, communications, & other services imports, % services imports	14.8	105
Government readiness	**3.8**	**87**
6.01 Gov't prioritization of ICT*	4.2	101
6.02 Gov't procurement of advanced tech.*	3.6	73
6.03 Importance of ICT to gov't vision*	3.7	83

Usage component	2.5	125
Individual usage	**2.1**	**127**
7.01 Mobile phone subscriptions/100 pop.	39.9	123
7.02 Cellular subscriptions w/data, % total	3.4	78
7.03 Households w/ personal computer, %	2.5	127
7.04 Broadband Internet subscribers/100 pop.	0.0	132
7.05 Internet users/100 pop.	1.6	132
7.06 Internet access in schools*	2.6	122
7.07 Use of virtual social networks*	3.6	126
7.08 Impact of ICT on access to basic services*	3.8	116
Business usage	**2.5**	**120**
8.01 Firm-level technology absorption*	4.0	122
8.02 Capacity for innovation*	2.8	78
8.03 Extent of business Internet use*	4.0	121
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.9	85
8.07 Impact of ICT on new services and products*	3.7	120
8.08 Impact of ICT on new organizational models*	3.5	112
Government usage	**2.8**	**117**
9.01 Gov't success in ICT promotion	3.9	89
9.02 ICT use & gov't efficiency*	3.8	97
9.03 Government Online Service Index, 0–1 (best)	0.17	110
9.04 E-Participation Index, 0–1 (best)	0.04	117

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Thailand

Key indicators

Population (millions), 2009	67.0
GDP (PPP) per capita (PPP $), 2009	8,051
GDP (US$ billions), 2009	264.0
Global Competitiveness Index 2010–2011 rank (out of 139)	38

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**59**
2009–2010 (133)	4.0	47
2008–2009 (134)	4.1	47
2007–2008 (127)	4.2	40
2006–2007 (122)	4.2	37

Environment component 3.9 64

Market environment 4.5 39

1.01	Venture capital availability*	2.9	44
1.02	Financial market sophistication*	5.1	38
1.03	Availability of latest technologies*	5.1	64
1.04	State of cluster development*	4.1	34
1.05	Burden of government regulation*	3.6	41
1.06	Extent & effect of taxation*	3.7	53
1.07	Total tax rate, % profits	37.4	60
1.08	No. days to start a business	32	101
1.09	No. procedures to start a business	7	63
1.10	Freedom of the press*	5.4	59

Political and regulatory environment 4.2 58

2.01	Effectiveness of law-making bodies*	3.4	76
2.02	Laws relating to ICT*	3.8	76
2.03	Judicial independence*	4.3	53
2.04	Efficiency of legal system in settling disputes*	4.1	45
2.05	Efficiency of legal system in challenging regs*	4.0	47
2.06	Property rights*	3.9	88
2.07	Intellectual property protection*	3.1	83
2.08	Software piracy rate, % software installed	75	76
2.09	No. procedures to enforce a contract	36	54
2.10	No. days to enforce a contract	479	52
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 3.0 85

3.01	Phone lines/100 pop.	10.6	91
3.02	Mobile network coverage, % pop. covered	37.8	127
3.03	Secure Internet servers/million pop.	9.8	76
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	8.2	76
3.05	Electricity production, kWh/capita	2,140.7	77
3.06	Tertiary education enrollment rate, %	44.7	53
3.07	Quality scientific research institutions*	3.8	59
3.08	Availability of scientists & engineers*	4.5	40
3.09	Availability research & training services*	4.1	69
3.10	Accessibility of digital content*	5.0	60

Readiness component 4.4 53

Individual readiness 4.8 75

4.01	Quality of math & science education*	4.3	57
4.02	Quality of educational system*	3.7	65
4.03	Adult literacy rate, %	93.5	68
4.04	Residential phone installation (PPP $)	200.8	127
4.05	Residential monthly phone subscription (PPP $)	6.0	36
4.06	Fixed phone tariffs (PPP $)	0.54	124
4.07	Mobile cellular tariffs (PPP $)	0.11	12
4.08	Fixed broadband Internet tariffs (PPP $)	37.8	73
4.09	Buyer sophistication*	3.8	46

Business readiness 4.2 48

5.01	Extent of staff training*	4.1	61
5.02	Quality of management schools*	4.4	58
5.03	Company spending on R&D*	3.2	48
5.04	University-industry collaboration in R&D*	4.1	42
5.05	Business phone installation (PPP $)	210.3	114
5.06	Business monthly phone subscription (PPP $)	6.3	14
5.07	Local supplier quality*	5.0	43
5.08	Computer, communications, & other services imports, % services imports	37.9	41

Government readiness 4.1 71

6.01	Gov't prioritization of ICT*	4.5	79
6.02	Gov't procurement of advanced tech.*	3.7	58
6.03	Importance of ICT to gov't vision*	4.0	68

Usage component 3.4 61

Individual usage 3.3 72

7.01	Mobile phone subscriptions/100 pop.	97.3	65
7.02	Cellular subscriptions w/data, % total	2.1	91
7.03	Households w/ personal computer, %	20.3	77
7.04	Broadband Internet subscribers/100 pop.	1.5	89
7.05	Internet users/100 pop.	25.8	83
7.06	Internet access in schools*	4.7	43
7.07	Use of virtual social networks*	5.0	78
7.08	Impact of ICT on access to basic services*	4.7	51

Business usage 3.6 34

8.01	Firm-level technology absorption*	4.9	65
8.02	Capacity for innovation*	3.1	56
8.03	Extent of business Internet use*	5.1	56
8.04	National office patent applications/million pop	11.8	61
8.05	Patent Cooperation Treaty apps/million pop	1.0	64
8.06	High-tech exports, % goods exports	20.2	11
8.07	Impact of ICT on new services and products*	4.8	50
8.08	Impact of ICT on new organizational models*	4.5	46

Government usage 3.4 63

9.01	Gov't success in ICT promotion	4.6	46
9.02	ICT use & gov't efficiency*	4.5	52
9.03	Government Online Service Index, 0–1 (best)	0.33	65
9.04	E-Participation Index, 0–1 (best)	0.09	99

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Timor-Leste

Key indicators

Population (millions), 2009	1.1
GDP (PPP) per capita (PPP $), 2009	2,522
GDP (US$ billions), 2009	0.6
Global Competitiveness Index 2010–2011 rank (out of 139)	133

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**2.7**	**136**
2009–2010 (133)	2.7	130
2008–2009 (134)	2.5	133
2007–2008 (127)	n/a	n/a
2006–2007 (122)	n/a	n/a

Environment component	2.9	132
Market environment	**3.6**	**110**
1.01 Venture capital availability*	2.6	59
1.02 Financial market sophistication*	2.2	135
1.03 Availability of latest technologies*	3.5	135
1.04 State of cluster development*	3.0	93
1.05 Burden of government regulation*	3.5	52
1.06 Extent & effect of taxation*	4.5	16
1.07 Total tax rate, % profits	0.2	1
1.08 No. days to start a business	83	130
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	4.6	85
Political and regulatory environment	**2.9**	**134**
2.01 Effectiveness of law-making bodies*	3.7	55
2.02 Laws relating to ICT*	2.5	134
2.03 Judicial independence*	3.7	69
2.04 Efficiency of legal system in settling disputes*	3.2	95
2.05 Efficiency of legal system in challenging regs*	3.2	88
2.06 Property rights*	2.8	130
2.07 Intellectual property protection*	2.3	131
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	51	132
2.10 No. days to enforce a contract	1285	128
2.11 Internet & telephony competition, 0–6 (best)	n/a	n/a
Infrastructure environment	**2.2**	**128**
3.01 Phone lines/100 pop.	0.2	138
3.02 Mobile network coverage, % pop. covered	69.0	117
3.03 Secure Internet servers/million pop.	1.0	112
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.1	128
3.05 Electricity production, kWh/capita	n/a	n/a
3.06 Tertiary education enrollment rate, %	15.2	100
3.07 Quality scientific research institutions*	2.1	134
3.08 Availability of scientists & engineers*	2.4	137
3.09 Availability research & training services*	2.6	135
3.10 Accessibility of digital content*	2.8	136

Readiness component	3.0	138
Individual readiness	**2.7**	**138**
4.01 Quality of math & science education*	2.0	137
4.02 Quality of educational system*	3.0	113
4.03 Adult literacy rate, %	42.0	130
4.04 Residential phone installation (PPP $)	69.5	64
4.05 Residential monthly phone subscription (PPP $)	27.8	130
4.06 Fixed phone tariffs (PPP $)	0.81	132
4.07 Mobile cellular tariffs (PPP $)	n/a	n/a
4.08 Fixed broadband Internet tariffs (PPP $)	n/a	n/a
4.09 Buyer sophistication*	2.7	118
Business readiness	**3.0**	**137**
5.01 Extent of staff training*	3.2	125
5.02 Quality of management schools*	2.2	137
5.03 Company spending on R&D*	2.4	127
5.04 University-industry collaboration in R&D*	2.5	131
5.05 Business phone installation (PPP $)	69.5	44
5.06 Business monthly phone subscription (PPP $)	33.1	124
5.07 Local supplier quality*	3.0	137
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**3.4**	**114**
6.01 Gov't prioritization of ICT*	3.7	123
6.02 Gov't procurement of advanced tech.*	3.5	79
6.03 Importance of ICT to gov't vision*	3.2	121

Usage component	2.2	134
Individual usage	**2.0**	**130**
7.01 Mobile phone subscriptions/100 pop.	29.1	129
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	n/a	n/a
7.04 Broadband Internet subscribers/100 pop.	0.0	133
7.05 Internet users/100 pop.	0.2	138
7.06 Internet access in schools*	2.0	133
7.07 Use of virtual social networks*	4.5	98
7.08 Impact of ICT on access to basic services*	2.7	138
Business usage	**2.3**	**133**
8.01 Firm-level technology absorption*	3.2	138
8.02 Capacity for innovation*	2.3	123
8.03 Extent of business Internet use*	3.7	132
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	n/a	n/a
8.07 Impact of ICT on new services and products*	2.9	134
8.08 Impact of ICT on new organizational models*	2.7	135
Government usage	**2.4**	**132**
9.01 Gov't success in ICT promotion	3.3	121
9.02 ICT use & gov't efficiency*	3.3	126
9.03 Government Online Service Index, 0–1 (best)	0.13	120
9.04 E-Participation Index, 0–1 (best)	0.01	126

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Trinidad and Tobago

Key indicators

Population (millions), 2009	1.3
GDP (PPP) per capita (PPP $), 2009	25,572
GDP (US$ billions), 2009	19.6
Global Competitiveness Index 2010–2011 rank (out of 139)	84

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**63**
2009–2010 (133)	3.6	79
2008–2009 (134)	3.7	81
2007–2008 (127)	3.6	82
2006–2007 (122)	3.6	68

Environment component 3.9 61

Market environment		**4.2**	**55**
1.01	Venture capital availability*	2.5	68
1.02	Financial market sophistication*	4.7	49
1.03	Availability of latest technologies*	5.2	60
1.04	State of cluster development*	3.2	83
1.05	Burden of government regulation*	3.5	50
1.06	Extent & effect of taxation*	4.2	26
1.07	Total tax rate, % profits	33.1	44
1.08	No. days to start a business	43	116
1.09	No. procedures to start a business	9	92
1.10	Freedom of the press*	5.6	51
Political and regulatory environment		**3.9**	**73**
2.01	Effectiveness of law-making bodies*	3.7	60
2.02	Laws relating to ICT*	3.2	108
2.03	Judicial independence*	4.7	44
2.04	Efficiency of legal system in settling disputes*	3.8	61
2.05	Efficiency of legal system in challenging regs*	3.9	53
2.06	Property rights*	4.2	74
2.07	Intellectual property protection*	3.3	72
2.08	Software piracy rate, % software installed	n/a	n/a
2.09	No. procedures to enforce a contract	42	109
2.10	No. days to enforce a contract	1340	131
2.11	Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment		**3.5**	**61**
3.01	Phone lines/100 pop.	22.7	58
3.02	Mobile network coverage, % pop. covered	100.0	1
3.03	Secure Internet servers/million pop.	46.3	50
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	79.2	32
3.05	Electricity production, kWh/capita	5,768.6	37
3.06	Tertiary education enrollment rate, %	11.6	104
3.07	Quality scientific research institutions*	3.6	69
3.08	Availability of scientists & engineers*	4.1	65
3.09	Availability research & training services*	4.2	59
3.10	Accessibility of digital content*	5.1	54

Readiness component 4.2 63

Individual readiness		**5.2**	**44**
4.01	Quality of math & science education*	4.8	32
4.02	Quality of educational system*	4.6	30
4.03	Adult literacy rate, %	98.7	42
4.04	Residential phone installation (PPP $)	38.7	30
4.05	Residential monthly phone subscription (PPP $)	25.8	125
4.06	Fixed phone tariffs (PPP $)	0.19	86
4.07	Mobile cellular tariffs (PPP $)	0.34	67
4.08	Fixed broadband Internet tariffs (PPP $)	20.4	14
4.09	Buyer sophistication*	3.6	54
Business readiness		**3.7**	**89**
5.01	Extent of staff training*	4.2	50
5.02	Quality of management schools*	4.9	34
5.03	Company spending on R&D*	2.6	113
5.04	University-industry collaboration in R&D*	3.5	67
5.05	Business phone installation (PPP $)	51.6	31
5.06	Business monthly phone subscription (PPP $)	64.5	136
5.07	Local supplier quality*	4.6	63
5.08	Computer, communications, & other services imports, % services imports	22.1	89
Government readiness		**3.9**	**86**
6.01	Gov't prioritization of ICT*	4.5	78
6.02	Gov't procurement of advanced tech.*	3.3	96
6.03	Importance of ICT to gov't vision*	3.8	75

Usage component 3.4 66

Individual usage		**4.2**	**49**
7.01	Mobile phone subscriptions/100 pop.	137.9	18
7.02	Cellular subscriptions w/data, % total	20.9	39
7.03	Households w/ personal computer, %	50.0	45
7.04	Broadband Internet subscribers/100 pop.	9.4	50
7.05	Internet users/100 pop.	44.3	51
7.06	Internet access in schools*	4.0	65
7.07	Use of virtual social networks*	5.7	35
7.08	Impact of ICT on access to basic services*	4.2	81
Business usage		**2.7**	**97**
8.01	Firm-level technology absorption*	4.6	79
8.02	Capacity for innovation*	2.0	137
8.03	Extent of business Internet use*	4.7	73
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	0.0	117
8.07	Impact of ICT on new services and products*	4.2	89
8.08	Impact of ICT on new organizational models*	4.0	73
Government usage		**3.2**	**79**
9.01	Gov't success in ICT promotion	4.2	71
9.02	ICT use & gov't efficiency*	3.8	94
9.03	Government Online Service Index, 0–1 (best)	0.34	63
9.04	E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Tunisia

Key indicators

Population (millions), 2009	10.4
GDP (PPP) per capita (PPP $), 2009	9,154
GDP (US$ billions), 2009	43.5
Global Competitiveness Index 2010–2011 rank (out of 139)	32

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.4**	**35**
2009–2010 (133)	4.2	39
2008–2009 (134)	4.3	38
2007–2008 (127)	4.3	35
2006–2007 (122)	4.2	35

Environment component	4.2	45
Market environment	**4.3**	**52**
1.01 Venture capital availability*	3.5	21
1.02 Financial market sophistication*	4.6	56
1.03 Availability of latest technologies*	5.6	42
1.04 State of cluster development*	3.4	74
1.05 Burden of government regulation*	4.2	14
1.06 Extent & effect of taxation*	4.5	14
1.07 Total tax rate, % profits	62.8	117
1.08 No. days to start a business	11	43
1.09 No. procedures to start a business	10	104
1.10 Freedom of the press*	4.1	108
Political and regulatory environment	**4.6**	**42**
2.01 Effectiveness of law-making bodies*	4.9	16
2.02 Laws relating to ICT*	5.0	28
2.03 Judicial independence*	4.8	39
2.04 Efficiency of legal system in settling disputes*	5.2	17
2.05 Efficiency of legal system in challenging regs*	4.8	19
2.06 Property rights*	5.4	31
2.07 Intellectual property protection*	4.4	37
2.08 Software piracy rate, % software installed	72	71
2.09 No. procedures to enforce a contract	39	83
2.10 No. days to enforce a contract	565	72
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**3.6**	**57**
3.01 Phone lines/100 pop.	12.4	86
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	12.5	66
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	27.0	53
3.05 Electricity production, kWh/capita	1,433.8	88
3.06 Tertiary education enrollment rate, %	33.7	69
3.07 Quality scientific research institutions*	4.3	38
3.08 Availability of scientists & engineers*	5.6	7
3.09 Availability research & training services*	5.0	27
3.10 Accessibility of digital content*	4.9	61

Readiness component	5.1	18
Individual readiness	**5.6**	**17**
4.01 Quality of math & science education*	5.6	8
4.02 Quality of educational system*	5.0	20
4.03 Adult literacy rate, %	78.0	106
4.04 Residential phone installation (PPP $)	32.4	22
4.05 Residential monthly phone subscription (PPP $)	4.3	23
4.06 Fixed phone tariffs (PPP $)	0.05	28
4.07 Mobile cellular tariffs (PPP $)	0.36	74
4.08 Fixed broadband Internet tariffs (PPP $)	24.3	29
4.09 Buyer sophistication*	3.8	40
Business readiness	**4.4**	**37**
5.01 Extent of staff training*	4.8	18
5.02 Quality of management schools*	5.1	22
5.03 Company spending on R&D*	3.6	35
5.04 University-industry collaboration in R&D*	4.1	41
5.05 Business phone installation (PPP $)	80.9	62
5.06 Business monthly phone subscription (PPP $)	16.2	67
5.07 Local supplier quality*	4.9	45
5.08 Computer, communications, & other services imports, % services imports	22.6	87
Government readiness	**5.3**	**6**
6.01 Gov't prioritization of ICT*	6.1	4
6.02 Gov't procurement of advanced tech.*	4.5	14
6.03 Importance of ICT to gov't vision*	5.4	7

Usage component	3.8	42
Individual usage	**3.6**	**61**
7.01 Mobile phone subscriptions/100 pop.	95.4	69
7.02 Cellular subscriptions w/data, % total	0.0	110
7.03 Households w/ personal computer, %	13.1	93
7.04 Broadband Internet subscribers/100 pop.	3.6	75
7.05 Internet users/100 pop.	34.1	66
7.06 Internet access in schools*	4.5	47
7.07 Use of virtual social networks*	6.0	17
7.08 Impact of ICT on access to basic services*	5.6	13
Business usage	**3.4**	**43**
8.01 Firm-level technology absorption*	5.4	33
8.02 Capacity for innovation*	3.5	36
8.03 Extent of business Internet use*	4.9	64
8.04 National office patent applications/million pop	5.3	72
8.05 Patent Cooperation Treaty apps/million pop	0.9	68
8.06 High-tech exports, % goods exports	5.2	46
8.07 Impact of ICT on new services and products*	5.5	15
8.08 Impact of ICT on new organizational models*	5.1	21
Government usage	**4.4**	**27**
9.01 Gov't success in ICT promotion	5.7	6
9.02 ICT use & gov't efficiency*	5.3	16
9.03 Government Online Service Index, 0–1 (best)	0.48	29
9.04 E-Participation Index, 0–1 (best)	0.30	38

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Turkey

Key indicators

Population (millions), 2009	70.5
GDP (PPP) per capita (PPP $), 2009	12,466
GDP (US$ billions), 2009	614.5
Global Competitiveness Index 2010–2011 rank (out of 139)	61

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.8**	**71**
2009–2010 (133)	3.7	69
2008–2009 (134)	3.9	61
2007–2008 (127)	4.0	55
2006–2007 (122)	3.9	52

Environment component	3.9	63
Market environment	**4.0**	**80**
1.01 Venture capital availability*	2.2	98
1.02 Financial market sophistication*	5.0	40
1.03 Availability of latest technologies*	5.5	48
1.04 State of cluster development*	3.6	61
1.05 Burden of government regulation*	3.1	80
1.06 Extent & effect of taxation*	2.9	117
1.07 Total tax rate, % profits	44.5	84
1.08 No. days to start a business	6	12
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	2.9	135
Political and regulatory environment	**4.1**	**61**
2.01 Effectiveness of law-making bodies*	4.0	47
2.02 Laws relating to ICT*	4.3	49
2.03 Judicial independence*	3.4	82
2.04 Efficiency of legal system in settling disputes*	3.6	72
2.05 Efficiency of legal system in challenging regs*	3.4	73
2.06 Property rights*	4.0	82
2.07 Intellectual property protection*	2.6	116
2.08 Software piracy rate, % software installed	63	55
2.09 No. procedures to enforce a contract	35	46
2.10 No. days to enforce a contract	420	40
2.11 Internet & telephony competition, 0–6 (best)	5	62
Infrastructure environment	**3.5**	**60**
3.01 Phone lines/100 pop.	22.1	60
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	66.1	46
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	43.2	47
3.05 Electricity production, kWh/capita	2,624.0	70
3.06 Tertiary education enrollment rate, %	38.4	60
3.07 Quality scientific research institutions*	3.3	89
3.08 Availability of scientists & engineers*	4.5	44
3.09 Availability research & training services*	4.2	58
3.10 Accessibility of digital content*	5.1	49

Readiness component	4.1	81
Individual readiness	**4.5**	**94**
4.01 Quality of math & science education*	3.4	98
4.02 Quality of educational system*	3.2	94
4.03 Adult literacy rate, %	88.7	88
4.04 Residential phone installation (PPP $)	8.2	7
4.05 Residential monthly phone subscription (PPP $)	16.1	89
4.06 Fixed phone tariffs (PPP $)	0.26	106
4.07 Mobile cellular tariffs (PPP $)	0.70	116
4.08 Fixed broadband Internet tariffs (PPP $)	29.2	45
4.09 Buyer sophistication*	2.9	114
Business readiness	**3.6**	**93**
5.01 Extent of staff training*	3.7	84
5.02 Quality of management schools*	3.6	104
5.03 Company spending on R&D*	3.0	62
5.04 University-industry collaboration in R&D*	3.4	81
5.05 Business phone installation (PPP $)	8.2	4
5.06 Business monthly phone subscription (PPP $)	45.6	133
5.07 Local supplier quality*	4.6	59
5.08 Computer, communications, & other services imports, % services imports	18.5	99
Government readiness	**4.1**	**64**
6.01 Gov't prioritization of ICT*	4.9	53
6.02 Gov't procurement of advanced tech.*	3.7	61
6.03 Importance of ICT to gov't vision*	3.8	77

Usage component	3.4	62
Individual usage	**3.6**	**58**
7.01 Mobile phone subscriptions/100 pop.	83.9	87
7.02 Cellular subscriptions w/data, % total	11.3	54
7.03 Households w/ personal computer, %	37.4	60
7.04 Broadband Internet subscribers/100 pop.	8.5	54
7.05 Internet users/100 pop.	36.4	65
7.06 Internet access in schools*	4.3	57
7.07 Use of virtual social networks*	5.0	79
7.08 Impact of ICT on access to basic services*	4.7	55
Business usage	**3.1**	**61**
8.01 Firm-level technology absorption*	5.1	51
8.02 Capacity for innovation*	3.1	55
8.03 Extent of business Internet use*	5.1	55
8.04 National office patent applications/million pop	34.2	46
8.05 Patent Cooperation Treaty apps/million pop	5.4	42
8.06 High-tech exports, % goods exports	1.5	70
8.07 Impact of ICT on new services and products*	4.8	51
8.08 Impact of ICT on new organizational models*	4.2	58
Government usage	**3.5**	**55**
9.01 Gov't success in ICT promotion	4.0	87
9.02 ICT use & gov't efficiency*	4.8	38
9.03 Government Online Service Index, 0–1 (best)	0.35	60
9.04 E-Participation Index, 0–1 (best)	0.21	53

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Uganda

Key indicators

Population (millions), 2009	32.8
GDP (PPP) per capita (PPP $), 2009	1,210
GDP (US$ billions), 2009	15.8
Global Competitiveness Index 2010–2011 rank (out of 139)	118

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.3**	**107**
2009–2010 (133)	3.0	115
2008–2009 (134)	3.0	120
2007–2008 (127)	3.1	109
2006–2007 (122)	3.0	100

Environment component	3.4	102
Market environment	**3.5**	**114**
1.01 Venture capital availability*	1.9	121
1.02 Financial market sophistication*	3.0	118
1.03 Availability of latest technologies*	4.4	92
1.04 State of cluster development*	2.8	117
1.05 Burden of government regulation*	3.9	23
1.06 Extent & effect of taxation*	3.3	84
1.07 Total tax rate, % profits	35.7	55
1.08 No. days to start a business	25	87
1.09 No. procedures to start a business	18	135
1.10 Freedom of the press*	4.7	79
Political and regulatory environment	**4.0**	**67**
2.01 Effectiveness of law-making bodies*	3.4	75
2.02 Laws relating to ICT*	3.1	109
2.03 Judicial independence*	3.4	83
2.04 Efficiency of legal system in settling disputes*	3.7	62
2.05 Efficiency of legal system in challenging regs*	3.7	62
2.06 Property rights*	3.8	93
2.07 Intellectual property protection*	2.8	99
2.08 Software piracy rate, % software installed	n/a	n/a
2.09 No. procedures to enforce a contract	38	73
2.10 No. days to enforce a contract	490	55
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.6**	**116**
3.01 Phone lines/100 pop.	0.7	130
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	0.3	129
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.4	116
3.05 Electricity production, kWh/capita	73.6	130
3.06 Tertiary education enrollment rate, %	3.7	126
3.07 Quality scientific research institutions*	3.0	98
3.08 Availability of scientists & engineers*	3.6	102
3.09 Availability research & training services*	3.4	101
3.10 Accessibility of digital content*	3.5	124

Readiness component	3.9	105
Individual readiness	**3.9**	**121**
4.01 Quality of math & science education*	3.3	101
4.02 Quality of educational system*	3.6	71
4.03 Adult literacy rate, %	74.6	109
4.04 Residential phone installation (PPP $)	149.7	117
4.05 Residential monthly phone subscription (PPP $)	12.5	71
4.06 Fixed phone tariffs (PPP $)	0.47	122
4.07 Mobile cellular tariffs (PPP $)	0.47	90
4.08 Fixed broadband Internet tariffs (PPP $)	106.1	115
4.09 Buyer sophistication*	2.4	128
Business readiness	**3.6**	**101**
5.01 Extent of staff training*	3.6	99
5.02 Quality of management schools*	3.9	84
5.03 Company spending on R&D*	2.7	94
5.04 University-industry collaboration in R&D*	3.4	77
5.05 Business phone installation (PPP $)	149.7	100
5.06 Business monthly phone subscription (PPP $)	12.5	45
5.07 Local supplier quality*	4.1	90
5.08 Computer, communications, & other services imports, % services imports	15.8	103
Government readiness	**4.1**	**65**
6.01 Gov't prioritization of ICT*	4.7	65
6.02 Gov't procurement of advanced tech.*	3.4	90
6.03 Importance of ICT to gov't vision*	4.3	49

Usage component	2.5	118
Individual usage	**2.2**	**121**
7.01 Mobile phone subscriptions/100 pop.	28.7	130
7.02 Cellular subscriptions w/data, % total	3.8	77
7.03 Households w/ personal computer, %	1.6	134
7.04 Broadband Internet subscribers/100 pop.	0.0	129
7.05 Internet users/100 pop.	9.8	105
7.06 Internet access in schools*	2.8	114
7.07 Use of virtual social networks*	3.5	127
7.08 Impact of ICT on access to basic services*	4.3	76
Business usage	**2.6**	**111**
8.01 Firm-level technology absorption*	4.3	103
8.02 Capacity for innovation*	2.2	128
8.03 Extent of business Internet use*	4.2	108
8.04 National office patent applications/million pop	0.2	89
8.05 Patent Cooperation Treaty apps/million pop	0.0	100
8.06 High-tech exports, % goods exports	0.4	95
8.07 Impact of ICT on new services and products*	4.4	75
8.08 Impact of ICT on new organizational models*	3.6	104
Government usage	**2.8**	**109**
9.01 Gov't success in ICT promotion	4.2	70
9.02 ICT use & gov't efficiency*	4.0	83
9.03 Government Online Service Index, 0–1 (best)	0.10	124
9.04 E-Participation Index, 0–1 (best)	0.07	105

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Ukraine

Key indicators

Population (millions), 2009	45.7
GDP (PPP) per capita (PPP $), 2009	6,330
GDP (US$ billions), 2009	117.4
Global Competitiveness Index 2010–2011 rank (out of 139)	89

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.5**	**90**
2009–2010 (133)	3.5	82
2008–2009 (134)	3.9	62
2007–2008 (127)	3.7	70
2006–2007 (122)	3.5	75

Environment component 3.4 98

Market environment 3.4 128

1.01	Venture capital availability*	1.9	120
1.02	Financial market sophistication*	3.1	114
1.03	Availability of latest technologies*	4.5	91
1.04	State of cluster development*	2.9	105
1.05	Burden of government regulation*	2.6	124
1.06	Extent & effect of taxation*	2.3	135
1.07	Total tax rate, % profits	55.5	112
1.08	No. days to start a business	27	89
1.09	No. procedures to start a business	10	104
1.10	Freedom of the press*	4.1	109

Political and regulatory environment 3.2 122

2.01	Effectiveness of law-making bodies*	2.0	133
2.02	Laws relating to ICT*	3.4	97
2.03	Judicial independence*	2.0	133
2.04	Efficiency of legal system in settling disputes*	2.3	137
2.05	Efficiency of legal system in challenging regs*	2.3	137
2.06	Property rights*	2.6	134
2.07	Intellectual property protection*	2.6	112
2.08	Software piracy rate, % software installed	85	96
2.09	No. procedures to enforce a contract	30	16
2.10	No. days to enforce a contract	345	20
2.11	Internet & telephony competition, 0–6 (best)	5	62

Infrastructure environment 3.8 48

3.01	Phone lines/100 pop.	28.5	45
3.02	Mobile network coverage, % pop. covered	96.2	73
3.03	Secure Internet servers/million pop.	6.0	89
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	2.1	96
3.05	Electricity production, kWh/capita	4,217.2	51
3.06	Tertiary education enrollment rate, %	79.4	8
3.07	Quality scientific research institutions*	3.6	68
3.08	Availability of scientists & engineers*	4.3	53
3.09	Availability research & training services*	3.9	84
3.10	Accessibility of digital content*	5.1	57

Readiness component 4.1 82

Individual readiness 5.4 28

4.01	Quality of math & science education*	4.6	42
4.02	Quality of educational system*	3.9	56
4.03	Adult literacy rate, %	99.7	3
4.04	Residential phone installation (PPP $)	65.8	60
4.05	Residential monthly phone subscription (PPP $)	6.5	39
4.06	Fixed phone tariffs (PPP $)	0.05	34
4.07	Mobile cellular tariffs (PPP $)	0.26	43
4.08	Fixed broadband Internet tariffs (PPP $)	19.7	11
4.09	Buyer sophistication*	3.2	83

Business readiness 3.5 106

5.01	Extent of staff training*	3.4	108
5.02	Quality of management schools*	3.5	107
5.03	Company spending on R&D*	3.0	69
5.04	University-industry collaboration in R&D*	3.5	71
5.05	Business phone installation (PPP $)	263.2	123
5.06	Business monthly phone subscription (PPP $)	6.5	16
5.07	Local supplier quality*	4.0	100
5.08	Computer, communications, & other services imports, % services imports	25.0	80

Government readiness 3.3 122

6.01	Gov't prioritization of ICT*	3.8	120
6.02	Gov't procurement of advanced tech.*	3.1	111
6.03	Importance of ICT to gov't vision*	2.9	130

Usage component 3.1 86

Individual usage 3.1 84

7.01	Mobile phone subscriptions/100 pop.	121.1	37
7.02	Cellular subscriptions w/data, % total	3.1	80
7.03	Households w/ personal computer, %	21.2	76
7.04	Broadband Internet subscribers/100 pop.	4.2	69
7.05	Internet users/100 pop.	17.0	92
7.06	Internet access in schools*	3.8	68
7.07	Use of virtual social networks*	4.0	119
7.08	Impact of ICT on access to basic services*	3.9	105

Business usage 2.9 74

8.01	Firm-level technology absorption*	4.4	95
8.02	Capacity for innovation*	3.5	37
8.03	Extent of business Internet use*	4.7	75
8.04	National office patent applications/million pop	52.9	38
8.05	Patent Cooperation Treaty apps/million pop	2.1	53
8.06	High-tech exports, % goods exports	3.7	56
8.07	Impact of ICT on new services and products*	4.1	96
8.08	Impact of ICT on new organizational models*	3.6	98

Government usage 3.2 75

9.01	Gov't success in ICT promotion	3.8	103
9.02	ICT use & gov't efficiency*	3.6	112
9.03	Government Online Service Index, 0–1 (best)	0.35	60
9.04	E-Participation Index, 0–1 (best)	0.26	47

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

United Arab Emirates

Key indicators

Population (millions), 2009	4.9
GDP (PPP) per capita (PPP $), 2009	36,843
GDP (US$ billions), 2009	223.9
Global Competitiveness Index 2010–2011 rank (out of 139)	25

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.8**	**24**
2009–2010 (133)	4.9	23
2008–2009 (134)	4.8	27
2007–2008 (127)	4.6	29
2006–2007 (122)	4.4	29

Environment component	4.8	25
Market environment	**5.0**	**18**
1.01 Venture capital availability*	3.7	16
1.02 Financial market sophistication*	5.2	36
1.03 Availability of latest technologies*	6.4	11
1.04 State of cluster development*	4.3	28
1.05 Burden of government regulation*	4.3	10
1.06 Extent & effect of taxation*	5.5	5
1.07 Total tax rate, % profits	14.1	5
1.08 No. days to start a business	15	61
1.09 No. procedures to start a business	8	76
1.10 Freedom of the press*	4.7	81
Political and regulatory environment	**4.8**	**34**
2.01 Effectiveness of law-making bodies*	4.6	22
2.02 Laws relating to ICT*	5.2	21
2.03 Judicial independence*	4.9	36
2.04 Efficiency of legal system in settling disputes*	4.9	22
2.05 Efficiency of legal system in challenging regs*	4.5	25
2.06 Property rights*	5.0	43
2.07 Intellectual property protection*	5.3	19
2.08 Software piracy rate, % software installed	36	21
2.09 No. procedures to enforce a contract	49	128
2.10 No. days to enforce a contract	537	65
2.11 Internet & telephony competition, 0–6 (best)	3	107
Infrastructure environment	**4.5**	**28**
3.01 Phone lines/100 pop.	33.9	35
3.02 Mobile network coverage, % pop. covered	100.0	1
3.03 Secure Internet servers/million pop.	164.8	32
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	132.3	26
3.05 Electricity production, kWh/capita	17,439.9	5
3.06 Tertiary education enrollment rate, %	25.2	83
3.07 Quality scientific research institutions*	4.1	45
3.08 Availability of scientists & engineers*	5.0	20
3.09 Availability research & training services*	5.1	23
3.10 Accessibility of digital content*	5.9	26

Readiness component	5.4	6
Individual readiness	**5.8**	**5**
4.01 Quality of math & science education*	4.9	26
4.02 Quality of educational system*	4.7	27
4.03 Adult literacy rate, %	90.0	82
4.04 Residential phone installation (PPP $)	49.4	39
4.05 Residential monthly phone subscription (PPP $)	4.1	21
4.06 Fixed phone tariffs (PPP $)	0.04	23
4.07 Mobile cellular tariffs (PPP $)	0.07	5
4.08 Fixed broadband Internet tariffs (PPP $)	40.9	78
4.09 Buyer sophistication*	4.3	22
Business readiness	**4.8**	**24**
5.01 Extent of staff training*	4.7	29
5.02 Quality of management schools*	5.0	28
5.03 Company spending on R&D*	3.9	28
5.04 University-industry collaboration in R&D*	4.1	43
5.05 Business phone installation (PPP $)	49.4	28
5.06 Business monthly phone subscription (PPP $)	13.7	54
5.07 Local supplier quality*	5.1	38
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**5.6**	**3**
6.01 Gov't prioritization of ICT*	6.1	6
6.02 Gov't procurement of advanced tech.*	5.0	3
6.03 Importance of ICT to gov't vision*	5.7	3

Usage component	4.3	30
Individual usage	**5.2**	**21**
7.01 Mobile phone subscriptions/100 pop.	232.1	1
7.02 Cellular subscriptions w/data, % total	23.8	35
7.03 Households w/ personal computer, %	74.0	21
7.04 Broadband Internet subscribers/100 pop.	15.0	38
7.05 Internet users/100 pop.	75.0	19
7.06 Internet access in schools*	5.4	29
7.07 Use of virtual social networks*	5.9	22
7.08 Impact of ICT on access to basic services*	6.0	5
Business usage	**3.5**	**39**
8.01 Firm-level technology absorption*	6.2	5
8.02 Capacity for innovation*	3.6	35
8.03 Extent of business Internet use*	5.5	33
8.04 National office patent applications/million pop.	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	6.3	40
8.06 High-tech exports, % goods exports	0.0	120
8.07 Impact of ICT on new services and products*	5.5	14
8.08 Impact of ICT on new organizational models*	5.1	22
Government usage	**4.1**	**40**
9.01 Gov't success in ICT promotion	6.1	2
9.02 ICT use & gov't efficiency*	6.0	4
9.03 Government Online Service Index, 0–1 (best)	0.25	96
9.04 E-Participation Index, 0–1 (best)	0.13	80

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

United Kingdom

Key indicators

Population (millions), 2009	61.8
GDP (PPP) per capita (PPP $), 2009	34,388
GDP (US$ billions), 2009	2,178.9
Global Competitiveness Index 2010–2011 rank (out of 139)	12

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.1**	**15**
2009–2010 (133)	5.2	13
2008–2009 (134)	5.3	15
2007–2008 (127)	5.3	12
2006–2007 (122)	5.5	9

Environment component 5.5 9

Market environment 5.0 17

1.01	Venture capital availability*	3.0	38
1.02	Financial market sophistication*	6.5	3
1.03	Availability of latest technologies*	6.4	15
1.04	State of cluster development*	5.0	10
1.05	Burden of government regulation*	3.1	88
1.06	Extent & effect of taxation*	3.2	94
1.07	Total tax rate, % profits	37.3	58
1.08	No. days to start a business	13	49
1.09	No. procedures to start a business	6	33
1.10	Freedom of the press*	6.3	18

Political and regulatory environment 5.8 10

2.01	Effectiveness of law-making bodies*	5.1	12
2.02	Laws relating to ICT*	5.4	16
2.03	Judicial independence*	6.3	8
2.04	Efficiency of legal system in settling disputes*	5.5	8
2.05	Efficiency of legal system in challenging regs*	4.9	16
2.06	Property rights*	5.8	17
2.07	Intellectual property protection*	5.5	17
2.08	Software piracy rate, % software installed	27	12
2.09	No. procedures to enforce a contract	28	11
2.10	No. days to enforce a contract	399	32
2.11	Internet & telephony competition, 0–6 (best)	6	1

Infrastructure environment 5.6 7

3.01	Phone lines/100 pop.	52.2	13
3.02	Mobile network coverage, % pop. covered	99.8	33
3.03	Secure Internet servers/million pop.	904.9	13
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	396.6	7
3.05	Electricity production, kWh/capita	6,432.9	33
3.06	Tertiary education enrollment rate, %	57.4	35
3.07	Quality scientific research institutions*	6.0	3
3.08	Availability of scientists & engineers*	4.8	29
3.09	Availability research & training services*	5.7	12
3.10	Accessibility of digital content*	6.3	10

Readiness component 4.9 31

Individual readiness 5.1 54

4.01	Quality of math & science education*	4.4	55
4.02	Quality of educational system*	4.7	28
4.03	Adult literacy rate, %	99.0	14
4.04	Residential phone installation (PPP $)	198.0	126
4.05	Residential monthly phone subscription (PPP $)	20.2	108
4.06	Fixed phone tariffs (PPP $)	0.22	96
4.07	Mobile cellular tariffs (PPP $)	0.32	60
4.08	Fixed broadband Internet tariffs (PPP $)	24.2	28
4.09	Buyer sophistication*	4.6	8

Business readiness 4.9 17

5.01	Extent of staff training*	4.7	28
5.02	Quality of management schools*	5.5	10
5.03	Company spending on R&D*	4.6	14
5.04	University-industry collaboration in R&D*	5.6	4
5.05	Business phone installation (PPP $)	172.0	109
5.06	Business monthly phone subscription (PPP $)	24.0	99
5.07	Local supplier quality*	5.2	30
5.08	Computer, communications, & other services imports, % services imports	42.9	28

Government readiness 4.6 39

6.01	Gov't prioritization of ICT*	5.3	32
6.02	Gov't procurement of advanced tech.*	3.8	52
6.03	Importance of ICT to gov't vision*	4.5	38

Usage component 5.0 9

Individual usage 5.6 12

7.01	Mobile phone subscriptions/100 pop.	130.6	24
7.02	Cellular subscriptions w/data, % total	29.1	28
7.03	Households w/ personal computer, %	81.2	13
7.04	Broadband Internet subscribers/100 pop.	29.6	12
7.05	Internet users/100 pop.	83.6	7
7.06	Internet access in schools*	5.8	18
7.07	Use of virtual social networks*	6.4	3
7.08	Impact of ICT on access to basic services*	4.9	39

Business usage 4.4 12

8.01	Firm-level technology absorption*	5.7	21
8.02	Capacity for innovation*	4.7	15
8.03	Extent of business Internet use*	6.2	6
8.04	National office patent applications/million pop	258.5	10
8.05	Patent Cooperation Treaty apps/million pop	78.5	22
8.06	High-tech exports, % goods exports	16.9	16
8.07	Impact of ICT on new services and products*	5.8	6
8.08	Impact of ICT on new organizational models*	5.5	3

Government usage 5.1 10

9.01	Gov't success in ICT promotion	4.5	50
9.02	ICT use & gov't efficiency*	4.7	42
9.03	Government Online Service Index, 0–1 (best)	0.77	4
9.04	E-Participation Index, 0–1 (best)	0.77	4

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

United States

Key indicators

Population (millions), 2009	307.4
GDP (PPP) per capita (PPP $), 2009	45,934
GDP (US$ billions), 2009	14,119.1
Global Competitiveness Index 2010–2011 rank (out of 139)	4

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**5.3**	**5**
2009–2010 (133)	5.5	5
2008–2009 (134)	5.7	3
2007–2008 (127)	5.5	4
2006–2007 (122)	5.5	7

Environment component	5.4	14
Market environment	**5.1**	**13**
1.01 Venture capital availability*	3.8	13
1.02 Financial market sophistication*	6.0	15
1.03 Availability of latest technologies*	6.4	7
1.04 State of cluster development*	5.1	6
1.05 Burden of government regulation*	3.5	48
1.06 Extent & effect of taxation*	3.5	70
1.07 Total tax rate, % profits	46.8	92
1.08 No. days to start a business	6	12
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	5.9	38
Political and regulatory environment	**5.4**	**20**
2.01 Effectiveness of law-making bodies*	4.0	45
2.02 Laws relating to ICT*	5.4	15
2.03 Judicial independence*	5.0	34
2.04 Efficiency of legal system in settling disputes*	4.6	33
2.05 Efficiency of legal system in challenging regs*	4.3	35
2.06 Property rights*	5.1	40
2.07 Intellectual property protection*	5.1	24
2.08 Software piracy rate, % software installed	20	1
2.09 No. procedures to enforce a contract	32	33
2.10 No. days to enforce a contract	300	14
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**5.7**	**5**
3.01 Phone lines/100 pop.	44.8	20
3.02 Mobile network coverage, % pop. covered	99.6	40
3.03 Secure Internet servers/million pop.	1,234.1	3
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	112.8	30
3.05 Electricity production, kWh/capita	14,334.2	9
3.06 Tertiary education enrollment rate, %	82.9	6
3.07 Quality scientific research institutions*	6.0	4
3.08 Availability of scientists & engineers*	5.7	4
3.09 Availability research & training services*	5.8	10
3.10 Accessibility of digital content*	6.1	18

Readiness component	5.3	8
Individual readiness	**5.7**	**11**
4.01 Quality of math & science education*	4.4	52
4.02 Quality of educational system*	4.8	26
4.03 Adult literacy rate, %	99.0	14
4.04 Residential phone installation (PPP $)	39.0	31
4.05 Residential monthly phone subscription (PPP $)	12.8	76
4.06 Fixed phone tariffs (PPP $)	0.00	1
4.07 Mobile cellular tariffs (PPP $)	0.25	42
4.08 Fixed broadband Internet tariffs (PPP $)	20.0	12
4.09 Buyer sophistication*	4.5	13
Business readiness	**5.2**	**6**
5.01 Extent of staff training*	5.1	10
5.02 Quality of management schools*	5.5	11
5.03 Company spending on R&D*	5.4	6
5.04 University-industry collaboration in R&D*	5.8	1
5.05 Business phone installation (PPP $)	72.3	48
5.06 Business monthly phone subscription (PPP $)	17.5	74
5.07 Local supplier quality*	5.6	14
5.08 Computer, communications, & other services imports, % services imports	34.6	54
Government readiness	**5.0**	**17**
6.01 Gov't prioritization of ICT*	5.5	20
6.02 Gov't procurement of advanced tech.*	4.7	5
6.03 Importance of ICT to gov't vision*	4.8	22

Usage component	5.3	5
Individual usage	**5.3**	**19**
7.01 Mobile phone subscriptions/100 pop.	90.8	76
7.02 Cellular subscriptions w/data, % total	42.9	16
7.03 Households w/ personal computer, %	72.5	24
7.04 Broadband Internet subscribers/100 pop.	25.8	18
7.05 Internet users/100 pop.	78.0	15
7.06 Internet access in schools*	5.9	14
7.07 Use of virtual social networks*	6.1	12
7.08 Impact of ICT on access to basic services*	5.3	22
Business usage	**5.0**	**3**
8.01 Firm-level technology absorption*	6.0	11
8.02 Capacity for innovation*	5.3	6
8.03 Extent of business Internet use*	6.2	7
8.04 National office patent applications/million pop	732.6	4
8.05 Patent Cooperation Treaty apps/million pop	146.1	13
8.06 High-tech exports, % goods exports	15.8	19
8.07 Impact of ICT on new services and products*	5.7	10
8.08 Impact of ICT on new organizational models*	5.6	2
Government usage	**5.6**	**4**
9.01 Gov't success in ICT promotion	5.2	20
9.02 ICT use & gov't efficiency*	5.1	27
9.03 Government Online Service Index, 0–1 (best)	0.94	2
9.04 E-Participation Index, 0–1 (best)	0.76	6

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Uruguay

Key indicators

Population (millions), 2009	3.3
GDP (PPP) per capita (PPP $), 2009	13,144
GDP (US$ billions), 2009	31.5
Global Competitiveness Index 2010–2011 rank (out of 139)	64

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**4.1**	**45**
2009–2010 (133)	3.8	57
2008–2009 (134)	3.8	65
2007–2008 (127)	3.7	65
2006–2007 (122)	3.7	60

Environment component 4.0 55

Market environment 3.9 85

1.01	Venture capital availability*	2.5	74
1.02	Financial market sophistication*	3.9	84
1.03	Availability of latest technologies*	5.0	69
1.04	State of cluster development*	3.2	82
1.05	Burden of government regulation*	3.1	82
1.06	Extent & effect of taxation*	3.1	103
1.07	Total tax rate, % profits	42.0	77
1.08	No. days to start a business	65	126
1.09	No. procedures to start a business	11	113
1.10	Freedom of the press*	6.0	26

Political and regulatory environment 4.3 49

2.01	Effectiveness of law-making bodies*	3.5	72
2.02	Laws relating to ICT*	4.0	59
2.03	Judicial independence*	5.3	27
2.04	Efficiency of legal system in settling disputes*	3.9	54
2.05	Efficiency of legal system in challenging regs*	4.3	34
2.06	Property rights*	4.7	49
2.07	Intellectual property protection*	3.9	52
2.08	Software piracy rate, % software installed	68	67
2.09	No. procedures to enforce a contract	41	102
2.10	No. days to enforce a contract	720	102
2.11	Internet & telephony competition, 0–6 (best)	5	62

Infrastructure environment 3.7 53

3.01	Phone lines/100 pop.	28.4	46
3.02	Mobile network coverage, % pop. covered	100.0	1
3.03	Secure Internet servers/million pop.	35.6	54
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	9.0	74
3.05	Electricity production, kWh/capita	2,835.8	67
3.06	Tertiary education enrollment rate, %	64.3	24
3.07	Quality scientific research institutions*	3.8	62
3.08	Availability of scientists & engineers*	3.9	84
3.09	Availability research & training services*	4.3	57
3.10	Accessibility of digital content*	5.4	41

Readiness component 4.4 48

Individual readiness 5.0 61

4.01	Quality of math & science education*	3.5	91
4.02	Quality of educational system*	3.7	66
4.03	Adult literacy rate, %	98.2	47
4.04	Residential phone installation (PPP $)	59.2	50
4.05	Residential monthly phone subscription (PPP $)	11.0	63
4.06	Fixed phone tariffs (PPP $)	0.18	81
4.07	Mobile cellular tariffs (PPP $)	0.36	73
4.08	Fixed broadband Internet tariffs (PPP $)	21.2	15
4.09	Buyer sophistication*	3.3	76

Business readiness 4.0 65

5.01	Extent of staff training*	3.7	85
5.02	Quality of management schools*	4.7	39
5.03	Company spending on R&D*	3.1	56
5.04	University-industry collaboration in R&D*	3.8	57
5.05	Business phone installation (PPP $)	59.2	33
5.06	Business monthly phone subscription (PPP $)	20.6	86
5.07	Local supplier quality*	4.4	73
5.08	Computer, communications, & other services imports, % services imports	21.4	91

Government readiness 4.4 49

6.01	Gov't prioritization of ICT*	5.1	45
6.02	Gov't procurement of advanced tech.*	3.7	68
6.03	Importance of ICT to gov't vision*	4.4	45

Usage component 3.8 44

Individual usage 4.2 47

7.01	Mobile phone subscriptions/100 pop.	122.3	34
7.02	Cellular subscriptions w/data, % total	2.6	87
7.03	Households w/ personal computer, %	47.6	48
7.04	Broadband Internet subscribers/100 pop.	9.0	52
7.05	Internet users/100 pop.	41.8	52
7.06	Internet access in schools*	5.5	26
7.07	Use of virtual social networks*	5.9	24
7.08	Impact of ICT on access to basic services*	5.1	31

Business usage 3.1 63

8.01	Firm-level technology absorption*	4.6	78
8.02	Capacity for innovation*	3.0	64
8.03	Extent of business Internet use*	4.9	69
8.04	National office patent applications/million pop	9.9	64
8.05	Patent Cooperation Treaty apps/million pop	1.5	57
8.06	High-tech exports, % goods exports	1.3	76
8.07	Impact of ICT on new services and products*	5.0	39
8.08	Impact of ICT on new organizational models*	4.8	30

Government usage 4.0 43

9.01	Gov't success in ICT promotion	4.8	37
9.02	ICT use & gov't efficiency*	4.7	44
9.03	Government Online Service Index, 0–1 (best)	0.48	31
9.04	E-Participation Index, 0–1 (best)	0.26	47

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Venezuela

Key indicators

Population (millions), 2009	28.6
GDP (PPP) per capita (PPP $), 2009	12,184
GDP (US$ billions), 2009	325.7
Global Competitiveness Index 2010–2011 rank (out of 139)	122

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.2**	**119**
2009–2010 (133)	3.1	112
2008–2009 (134)	3.4	96
2007–2008 (127)	3.4	86
2006–2007 (122)	3.3	83

Environment component	3.0	128
Market environment	**2.7**	**138**
1.01 Venture capital availability*	2.0	118
1.02 Financial market sophistication*	3.5	102
1.03 Availability of latest technologies*	4.3	100
1.04 State of cluster development*	2.4	131
1.05 Burden of government regulation*	2.1	134
1.06 Extent & effect of taxation*	3.2	97
1.07 Total tax rate, % profits	52.6	107
1.08 No. days to start a business	141	135
1.09 No. procedures to start a business	17	134
1.10 Freedom of the press*	3.0	133
Political and regulatory environment	**2.9**	**133**
2.01 Effectiveness of law-making bodies*	1.6	138
2.02 Laws relating to ICT*	2.9	116
2.03 Judicial independence*	1.7	138
2.04 Efficiency of legal system in settling disputes*	2.0	138
2.05 Efficiency of legal system in challenging regs*	1.5	138
2.06 Property rights*	1.8	138
2.07 Intellectual property protection*	1.9	136
2.08 Software piracy rate, % software installed	87	99
2.09 No. procedures to enforce a contract	29	13
2.10 No. days to enforce a contract	510	59
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**3.4**	**67**
3.01 Phone lines/100 pop.	24.0	54
3.02 Mobile network coverage, % pop. covered	90.0	91
3.03 Secure Internet servers/million pop.	7.4	85
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	6.3	82
3.05 Electricity production, kWh/capita	4,178.9	52
3.06 Tertiary education enrollment rate, %	78.6	9
3.07 Quality scientific research institutions*	3.0	100
3.08 Availability of scientists & engineers*	3.4	108
3.09 Availability research & training services*	3.0	122
3.10 Accessibility of digital content*	4.3	100

Readiness component	3.7	120
Individual readiness	**4.4**	**101**
4.01 Quality of math & science education*	2.9	115
4.02 Quality of educational system*	2.6	126
4.03 Adult literacy rate, %	95.2	60
4.04 Residential phone installation (PPP $)	38.2	29
4.05 Residential monthly phone subscription (PPP $)	6.6	40
4.06 Fixed phone tariffs (PPP $)	0.10	55
4.07 Mobile cellular tariffs (PPP $)	0.83	124
4.08 Fixed broadband Internet tariffs (PPP $)	62.5	94
4.09 Buyer sophistication*	3.2	82
Business readiness	**3.9**	**76**
5.01 Extent of staff training*	3.7	90
5.02 Quality of management schools*	4.4	57
5.03 Company spending on R&D*	2.5	120
5.04 University-industry collaboration in R&D*	3.4	75
5.05 Business phone installation (PPP $)	48.1	26
5.06 Business monthly phone subscription (PPP $)	15.3	64
5.07 Local supplier quality*	3.6	128
5.08 Computer, communications, & other services imports, % services imports	33.4	61
Government readiness	**2.9**	**132**
6.01 Gov't prioritization of ICT*	3.5	128
6.02 Gov't procurement of advanced tech.*	2.4	136
6.03 Importance of ICT to gov't vision*	2.8	131

Usage component	2.8	102
Individual usage	**3.1**	**83**
7.01 Mobile phone subscriptions/100 pop.	98.4	64
7.02 Cellular subscriptions w/data, % total	12.4	52
7.03 Households w/ personal computer, %	15.3	84
7.04 Broadband Internet subscribers/100 pop.	4.7	67
7.05 Internet users/100 pop.	31.2	71
7.06 Internet access in schools*	3.1	101
7.07 Use of virtual social networks*	5.4	55
7.08 Impact of ICT on access to basic services*	3.1	133
Business usage	**2.5**	**124**
8.01 Firm-level technology absorption*	4.2	109
8.02 Capacity for innovation*	2.3	126
8.03 Extent of business Internet use*	4.2	110
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.0	96
8.06 High-tech exports, % goods exports	0.1	110
8.07 Impact of ICT on new services and products*	3.9	108
8.08 Impact of ICT on new organizational models*	3.4	118
Government usage	**2.7**	**122**
9.01 Gov't success in ICT promotion	2.9	128
9.02 ICT use & gov't efficiency*	3.1	132
9.03 Government Online Service Index, 0–1 (best)	0.30	77
9.04 E-Participation Index, 0–1 (best)	0.14	78

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Vietnam

Key indicators

Population (millions), 2009	87.2
GDP (PPP) per capita (PPP $), 2009	2,942
GDP (US$ billions), 2009	93.2
Global Competitiveness Index 2010–2011 rank (out of 139)	59

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.9**	**55**
2009–2010 (133)	3.9	54
2008–2009 (134)	3.8	70
2007–2008 (127)	3.7	73
2006–2007 (122)	3.4	82

Environment component	3.7	78
Market environment	**3.9**	**84**
1.01 Venture capital availability*	2.7	57
1.02 Financial market sophistication*	3.8	92
1.03 Availability of latest technologies*	4.3	101
1.04 State of cluster development*	4.9	13
1.05 Burden of government regulation*	2.6	119
1.06 Extent & effect of taxation*	3.7	57
1.07 Total tax rate, % profits	33.1	44
1.08 No. days to start a business	44	117
1.09 No. procedures to start a business	9	92
1.10 Freedom of the press*	4.1	104
Political and regulatory environment	**4.1**	**60**
2.01 Effectiveness of law-making bodies*	4.1	40
2.02 Laws relating to ICT*	4.0	64
2.03 Judicial independence*	3.9	63
2.04 Efficiency of legal system in settling disputes*	3.8	60
2.05 Efficiency of legal system in challenging regs*	3.8	57
2.06 Property rights*	4.1	80
2.07 Intellectual property protection*	2.7	108
2.08 Software piracy rate, % software installed	85	96
2.09 No. procedures to enforce a contract	34	41
2.10 No. days to enforce a contract	295	13
2.11 Internet & telephony competition, 0–6 (best)	6	1
Infrastructure environment	**2.9**	**92**
3.01 Phone lines/100 pop.	19.8	68
3.02 Mobile network coverage, % pop. covered	70.0	115
3.03 Secure Internet servers/million pop.	1.9	103
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	10.3	73
3.05 Electricity production, kWh/capita	816.0	98
3.06 Tertiary education enrollment rate, %	9.7	109
3.07 Quality scientific research institutions*	3.8	63
3.08 Availability of scientists & engineers*	4.1	66
3.09 Availability research & training services*	3.4	104
3.10 Accessibility of digital content*	5.2	47

Readiness component	4.8	35
Individual readiness	**5.3**	**33**
4.01 Quality of math & science education*	4.4	51
4.02 Quality of educational system*	3.8	60
4.03 Adult literacy rate, %	92.5	73
4.04 Residential phone installation (PPP $)	81.7	82
4.05 Residential monthly phone subscription (PPP $)	4.4	24
4.06 Fixed phone tariffs (PPP $)	0.06	35
4.07 Mobile cellular tariffs (PPP $)	0.32	58
4.08 Fixed broadband Internet tariffs (PPP $)	45.3	83
4.09 Buyer sophistication*	3.8	45
Business readiness	**4.2**	**51**
5.01 Extent of staff training*	4.1	57
5.02 Quality of management schools*	3.5	106
5.03 Company spending on R&D*	3.6	33
5.04 University-industry collaboration in R&D*	3.7	62
5.05 Business phone installation (PPP $)	81.7	64
5.06 Business monthly phone subscription (PPP $)	5.5	11
5.07 Local supplier quality*	4.1	91
5.08 Computer, communications, & other services imports, % services imports	n/a	n/a
Government readiness	**4.9**	**20**
6.01 Gov't prioritization of ICT*	5.5	18
6.02 Gov't procurement of advanced tech.*	4.4	17
6.03 Importance of ICT to gov't vision*	4.7	26

Usage component	3.3	73
Individual usage	**3.3**	**74**
7.01 Mobile phone subscriptions/100 pop.	111.5	47
7.02 Cellular subscriptions w/data, % total	0.1	108
7.03 Households w/ personal computer, %	10.2	102
7.04 Broadband Internet subscribers/100 pop.	3.6	74
7.05 Internet users/100 pop.	26.6	81
7.06 Internet access in schools*	4.5	49
7.07 Use of virtual social networks*	4.6	96
7.08 Impact of ICT on access to basic services*	4.8	46
Business usage	**3.2**	**55**
8.01 Firm-level technology absorption*	5.0	59
8.02 Capacity for innovation*	3.6	32
8.03 Extent of business Internet use*	5.3	43
8.04 National office patent applications/million pop	2.1	77
8.05 Patent Cooperation Treaty apps/million pop	0.1	88
8.06 High-tech exports, % goods exports	3.0	58
8.07 Impact of ICT on new services and products*	4.9	45
8.08 Impact of ICT on new organizational models*	3.9	79
Government usage	**3.4**	**68**
9.01 Gov't success in ICT promotion	4.5	54
9.02 ICT use & gov't efficiency*	4.6	45
9.03 Government Online Service Index, 0–1 (best)	0.30	77
9.04 E-Participation Index, 0–1 (best)	0.09	99

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Zambia

Key indicators

Population (millions), 2009	12.0
GDP (PPP) per capita (PPP $), 2009	1,539
GDP (US$ billions), 2009	12.8
Global Competitiveness Index 2010–2011 rank (out of 139)	115

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**3.4**	**102**
2009–2010 (133)	3.3	97
2008–2009 (134)	3.3	102
2007–2008 (127)	3.0	112
2006–2007 (122)	2.8	112

Environment component	3.6	88
Market environment	**4.1**	**64**
1.01 Venture capital availability*	2.0	117
1.02 Financial market sophistication*	3.8	87
1.03 Availability of latest technologies*	4.6	88
1.04 State of cluster development*	3.4	69
1.05 Burden of government regulation*	3.8	27
1.06 Extent & effect of taxation*	3.5	78
1.07 Total tax rate, % profits	16.1	10
1.08 No. days to start a business	18	70
1.09 No. procedures to start a business	6	33
1.10 Freedom of the press*	4.9	74
Political and regulatory environment	**3.9**	**76**
2.01 Effectiveness of law-making bodies*	3.9	48
2.02 Laws relating to ICT*	3.5	86
2.03 Judicial independence*	3.8	68
2.04 Efficiency of legal system in settling disputes*	3.9	53
2.05 Efficiency of legal system in challenging regs*	3.6	65
2.06 Property rights*	4.1	79
2.07 Intellectual property protection*	3.6	64
2.08 Software piracy rate, % software installed	82	90
2.09 No. procedures to enforce a contract	35	46
2.10 No. days to enforce a contract	471	51
2.11 Internet & telephony competition, 0–6 (best)	4	85
Infrastructure environment	**2.7**	**111**
3.01 Phone lines/100 pop.	0.7	131
3.02 Mobile network coverage, % pop. covered	90.0	91
3.03 Secure Internet servers/million pop.	0.7	117
3.04 Int'l Internet bandwidth, Mb/s per 10,000 pop	0.4	117
3.05 Electricity production, kWh/capita	800.1	100
3.06 Tertiary education enrollment rate, %	2.4	133
3.07 Quality scientific research institutions*	3.5	74
3.08 Availability of scientists & engineers*	3.8	88
3.09 Availability research & training services*	3.8	86
3.10 Accessibility of digital content*	3.7	116

Readiness component	4.0	94
Individual readiness	**4.1**	**116**
4.01 Quality of math & science education*	3.8	76
4.02 Quality of educational system*	4.0	52
4.03 Adult literacy rate, %	70.7	115
4.04 Residential phone installation (PPP $)	14.4	9
4.05 Residential monthly phone subscription (PPP $)	5.8	34
4.06 Fixed phone tariffs (PPP $)	1.14	134
4.07 Mobile cellular tariffs (PPP $)	0.53	99
4.08 Fixed broadband Internet tariffs (PPP $)	68.8	99
4.09 Buyer sophistication*	2.9	107
Business readiness	**3.9**	**73**
5.01 Extent of staff training*	3.8	80
5.02 Quality of management schools*	4.0	78
5.03 Company spending on R&D*	2.8	86
5.04 University-industry collaboration in R&D*	3.5	66
5.05 Business phone installation (PPP $)	43.1	23
5.06 Business monthly phone subscription (PPP $)	11.5	38
5.07 Local supplier quality*	4.0	98
5.08 Computer, communications, & other services imports, % services imports	26.0	78
Government readiness	**4.0**	**75**
6.01 Gov't prioritization of ICT*	4.4	86
6.02 Gov't procurement of advanced tech.*	3.6	71
6.03 Importance of ICT to gov't vision*	4.1	64

Usage component	2.5	117
Individual usage	**2.2**	**120**
7.01 Mobile phone subscriptions/100 pop.	34.1	125
7.02 Cellular subscriptions w/data, % total	0.1	107
7.03 Households w/ personal computer, %	2.1	131
7.04 Broadband Internet subscribers/100 pop.	0.1	116
7.05 Internet users/100 pop.	6.3	113
7.06 Internet access in schools*	2.8	112
7.07 Use of virtual social networks*	4.2	116
7.08 Impact of ICT on access to basic services*	4.2	87
Business usage	**2.7**	**101**
8.01 Firm-level technology absorption*	4.5	85
8.02 Capacity for innovation*	2.5	104
8.03 Extent of business Internet use*	4.5	91
8.04 National office patent applications/million pop	n/a	n/a
8.05 Patent Cooperation Treaty apps/million pop	0.1	89
8.06 High-tech exports, % goods exports	0.1	109
8.07 Impact of ICT on new services and products*	4.2	87
8.08 Impact of ICT on new organizational models*	3.6	103
Government usage	**2.7**	**118**
9.01 Gov't success in ICT promotion	4.1	80
9.02 ICT use & gov't efficiency*	4.1	78
9.03 Government Online Service Index, 0–1 (best)	0.10	123
9.04 E-Participation Index, 0–1 (best)	0.00	135

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Zimbabwe

Key indicators

Population (millions), 2009	11.7
GDP (PPP) per capita (PPP $), 2009	370
GDP (US$ billions), 2009	4.6
Global Competitiveness Index 2010–2011 rank (out of 139)	136

Networked Readiness Index

Edition (No. of economies)	Score	Rank
2010–2011 (138)	**2.9**	**132**
2009–2010 (133)	2.7	132
2008–2009 (134)	2.5	132
2007–2008 (127)	2.5	125
2006–2007 (122)	2.6	117

Environment component 2.9 131

Market environment 3.1 132

1.01	Venture capital availability*	1.7	133
1.02	Financial market sophistication*	3.8	90
1.03	Availability of latest technologies*	3.6	132
1.04	State of cluster development*	2.7	119
1.05	Burden of government regulation*	3.1	79
1.06	Extent & effect of taxation*	3.2	92
1.07	Total tax rate, % profits	40.3	67
1.08	No. days to start a business	90	132
1.09	No. procedures to start a business	9	92
1.10	Freedom of the press*	2.4	138

Political and regulatory environment 3.2 120

2.01	Effectiveness of law-making bodies*	3.3	79
2.02	Laws relating to ICT*	2.8	122
2.03	Judicial independence*	2.3	130
2.04	Efficiency of legal system in settling disputes*	3.4	87
2.05	Efficiency of legal system in challenging regs*	2.4	129
2.06	Property rights*	2.2	137
2.07	Intellectual property protection*	3.1	87
2.08	Software piracy rate, % software installed	92	106
2.09	No. procedures to enforce a contract	38	73
2.10	No. days to enforce a contract	410	35
2.11	Internet & telephony competition, 0–6 (best)	5	62

Infrastructure environment 2.4 125

3.01	Phone lines/100 pop.	3.1	111
3.02	Mobile network coverage, % pop. covered	75.0	112
3.03	Secure Internet servers/million pop.	0.6	118
3.04	Int'l Internet bandwidth, Mb/s per 10,000 pop	0.2	121
3.05	Electricity production, kWh/capita	737.4	101
3.06	Tertiary education enrollment rate, %	3.8	125
3.07	Quality scientific research institutions*	2.9	106
3.08	Availability of scientists & engineers*	2.9	130
3.09	Availability research & training services*	3.3	109
3.10	Accessibility of digital content*	3.3	131

Readiness component 3.7 121

Individual readiness 4.4 98

4.01	Quality of math & science education*	3.8	75
4.02	Quality of educational system*	4.2	46
4.03	Adult literacy rate, %	91.4	78
4.04	Residential phone installation (PPP $)	n/a	n/a
4.05	Residential monthly phone subscription (PPP $)	n/a	n/a
4.06	Fixed phone tariffs (PPP $)	n/a	n/a
4.07	Mobile cellular tariffs (PPP $)	n/a	n/a
4.08	Fixed broadband Internet tariffs (PPP $)	n/a	n/a
4.09	Buyer sophistication*	3.0	103

Business readiness 3.5 110

5.01	Extent of staff training*	3.9	70
5.02	Quality of management schools*	4.1	72
5.03	Company spending on R&D*	2.5	116
5.04	University-industry collaboration in R&D*	3.1	104
5.05	Business phone installation (PPP $)	n/a	n/a
5.06	Business monthly phone subscription (PPP $)	n/a	n/a
5.07	Local supplier quality*	3.7	118
5.08	Computer, communications, & other services imports, % services imports	n/a	n/a

Government readiness 3.2 124

6.01	Gov't prioritization of ICT*	3.9	116
6.02	Gov't procurement of advanced tech.*	2.8	123
6.03	Importance of ICT to gov't vision*	3.0	127

Usage component 2.2 135

Individual usage 2.0 133

7.01	Mobile phone subscriptions/100 pop.	23.9	133
7.02	Cellular subscriptions w/data, % total	0.0	110
7.03	Households w/ personal computer, %	4.0	119
7.04	Broadband Internet subscribers/100 pop.	0.2	106
7.05	Internet users/100 pop.	11.4	98
7.06	Internet access in schools*	2.3	127
7.07	Use of virtual social networks*	3.8	125
7.08	Impact of ICT on access to basic services*	3.2	132

Business usage 2.4 128

8.01	Firm-level technology absorption*	4.0	125
8.02	Capacity for innovation*	2.3	121
8.03	Extent of business Internet use*	4.1	117
8.04	National office patent applications/million pop.	n/a	n/a
8.05	Patent Cooperation Treaty apps/million pop	0.0	100
8.06	High-tech exports, % goods exports	0.3	100
8.07	Impact of ICT on new services and products*	3.6	123
8.08	Impact of ICT on new organizational models*	3.0	127

Government usage 2.1 137

9.01	Gov't success in ICT promotion	2.9	126
9.02	ICT use & gov't efficiency*	2.6	138
9.03	Government Online Service Index, 0–1 (best)	0.13	121
9.04	E-Participation Index, 0–1 (best)	0.03	123

* Out of a 1–7 (best) scale. This indicator is derived from the World Economic Forum's Executive Opinion Survey.

Note: For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 159.

Part 4

Data Tables

How to Read the Data Tables

ROBERTO CROTTI, World Economic Forum

The following pages present the data by variable and for all 138 economies included in *The Global Information Technology Report 2010–2011.*

The Data Tables are organized in nine sections, which correspond to the nine pillars of the Networked Readiness Index (NRI).

Environment

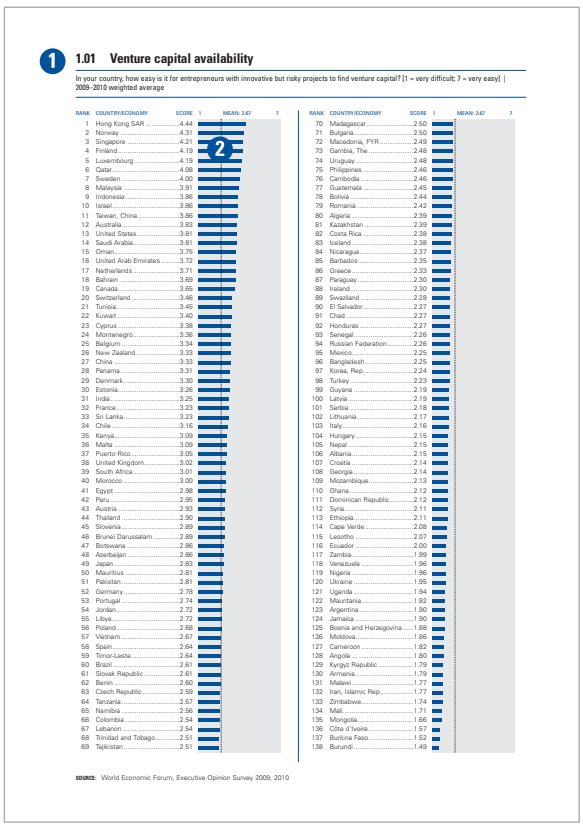
1. Market environment
2. Political and regulatory environment
3. Infrastructure environment

Readiness

4. Individual readiness
5. Business readiness
6. Government readiness

Usage

7. Individual usage
8. Business usage
9. Government usage



Two types of data are used in the NRI:

Executive Opinion Survey indicators

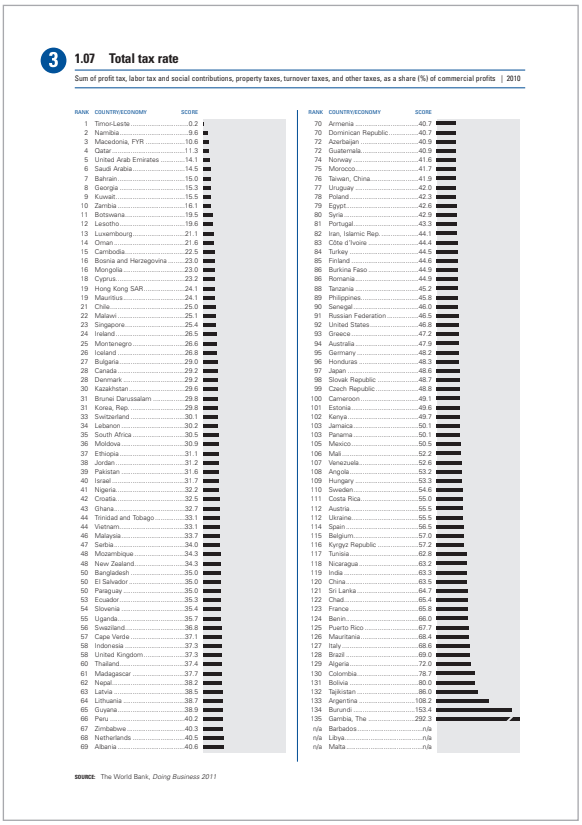
1 In the tables, country scores for indicators derived from the World Economic Forum's Executive Opinion Survey (Survey) are represented by blue-colored bar graphs, and their titles are followed by an asterisk.

Survey questions ask for responses on a scale of 1 to 7, where an answer of 1 corresponds to the lowest possible score and an answer of 7 corresponds to the highest possible score. For each Survey question, individual responses from the 2009 and 2010 editions of the Survey are combined and aggregated at the country level in order to produce country scores. For more information on the Executive Opinion Survey, please refer to Chapter 1.1.

For each Survey variable, the corresponding question and the two extreme answers are shown. Scores are reported with a precision of two decimal points, although the exact figures are used to determine rankings.

For example, in the case of variable 5.02 on the quality of management schools, although Argentina, ranked 16th, and Australia, ranked 17th, are listed with the same rounded score of 5.29, their rankings are based on the exact figures (5.2899952 and 5.2864537, respectively).

2 A dotted line on the graph indicates the mean score across the sample of 138 economies.



3 **1.07 Total tax rate**

Sum of profit tax, labor tax and social contributions, property taxes, turnover taxes, and other taxes, as a share (%) of commercial profits | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	Timor-Leste	0.2
2	Namibia	9.6
3	Macedonia, FYR	10.6
4	Qatar	11.3
5	United Arab Emirates	14.1
6	Saudi Arabia	14.5
7	Bahrain	15.0
8	Georgia	15.3
9	Kuwait	15.5
10	Zambia	16.1
11	Botswana	19.5
12	Lesotho	19.6
13	Luxembourg	21.1
14	Oman	21.6
15	Cambodia	22.5
16	Bosnia and Herzegovina	23.0
16	Mongolia	23.0
18	Cyprus	23.2
19	Hong Kong SAR	24.1
19	Mauritius	24.1
21	Chile	25.0
22	Malawi	25.1
23	Singapore	25.4
24	Ireland	26.5
25	Montenegro	26.6
26	Iceland	26.8
27	Bulgaria	29.0
28	Canada	29.2
28	Denmark	29.2
30	Kazakhstan	29.6
31	Brunei Darussalam	29.8
31	Korea, Rep.	29.8
33	Switzerland	30.1
34	Lebanon	30.2
35	South Africa	30.5
36	Moldova	30.9
37	Ethiopia	31.1
38	Jordan	31.2
39	Pakistan	31.6
40	Israel	31.7
41	Nigeria	32.2
42	Croatia	32.5
43	Ghana	32.7
44	Trinidad and Tobago	33.1
44	Vietnam	33.1
46	Malaysia	33.7
47	Serbia	34.0
48	Mozambique	34.3
48	New Zealand	34.3
50	Bangladesh	35.0
50	El Salvador	35.0
50	Paraguay	35.0
53	Ecuador	35.3
54	Slovenia	35.4
55	Uganda	35.7
56	Swaziland	36.8
57	Cape Verde	37.1
58	Indonesia	37.3
58	United Kingdom	37.3
60	Thailand	37.4
61	Madagascar	37.7
62	Nepal	38.2
63	Latvia	38.5
64	Lithuania	38.7
65	Guyana	38.9
66	Peru	40.2
67	Zimbabwe	40.3
68	Netherlands	40.5
69	Albania	40.6
70	Armenia	40.7
70	Dominican Republic	40.7
72	Azerbaijan	40.9
72	Guatemala	40.9
74	Norway	41.6
75	Morocco	41.7
76	Taiwan, China	41.9
77	Uruguay	42.0
78	Poland	42.3
79	Egypt	42.6
80	Syria	42.9
81	Portugal	43.3
82	Iran, Islamic Rep.	44.1
83	Côte d Ivoire	44.4
84	Turkey	44.5
85	Finland	44.6
86	Burkina Faso	44.9
86	Romania	44.9
88	Tanzania	45.2
89	Philippines	45.8
90	Senegal	46.0
91	Russian Federation	46.5
92	United States	46.8
93	Greece	47.2
94	Australia	47.9
95	Germany	48.2
96	Honduras	48.3
97	Japan	48.6
98	Slovak Republic	48.7
99	Czech Republic	48.8
100	Cameroon	49.1
101	Estonia	49.6
102	Kenya	49.7
103	Jamaica	50.1
103	Panama	50.1
105	Mexico	50.5
106	Mali	52.2
107	Venezuela	52.6
108	Angola	53.2
109	Hungary	53.3
110	Sweden	54.6
111	Costa Rica	55.0
112	Austria	55.5
112	Ukraine	55.5
114	Spain	56.5
115	Belgium	57.0
116	Kyrgyz Republic	57.2
117	Tunisia	62.8
118	Nicaragua	63.2
119	India	63.3
120	China	63.5
121	Sri Lanka	64.7
122	Chad	65.4
123	France	65.8
124	Benin	66.0
125	Puerto Rico	67.7
126	Mauritania	68.4
127	Italy	68.6
128	Brazil	69.0
129	Algeria	72.0
130	Colombia	78.7
131	Bolivia	80.0
132	Tajikistan	86.0
133	Argentina	108.2
134	Burundi	153.4
135	Gambia, The	292.3
n/a	Barbados	n/a
n/a	Libya	n/a
n/a	Malta	n/a

SOURCE The World Bank, *Doing Business 2011*

Other indicators

3 Indicators not derived from the Executive Opinion Survey are presented in black-shaded bar graphs.

While Survey data provide qualitative information, these indicators typically provide objective measures of a quantity (e.g., gross domestic product, mobile cellular tariffs, number of Internet users, number of procedures required to start a business). We use the latest data available from international organizations (such as the International Telecommunication Union, the World Bank, and various United Nations agencies), complemented, if necessary, by national sources. A short description of the indicator appears at the top of the page. The base year (i.e., the year when a majority of the data was collected) follows the description. When, for a particular country, the year differs from the base year, this is indicated in a footnote.

The section "Technical Notes and Sources" at the end of this *Report* provides further details on each indicator, including its definition, method of computation, and full sources. When data are not available or too outdated, "n/a" is used in lieu of the rank and the value. In some cases, true ties between two or more countries are possible. In such cases, shared rankings are indicated accordingly. For example, the time required to start a business is the same—5 days—in Albania, Canada, Iceland, and Saudi Arabia. Therefore, in Table 1.08 these four countries are shown sharing the 8th place and are listed in alphabetical order.

Index of Data Tables

Subindex A Environment component

Subindex B: Readiness component

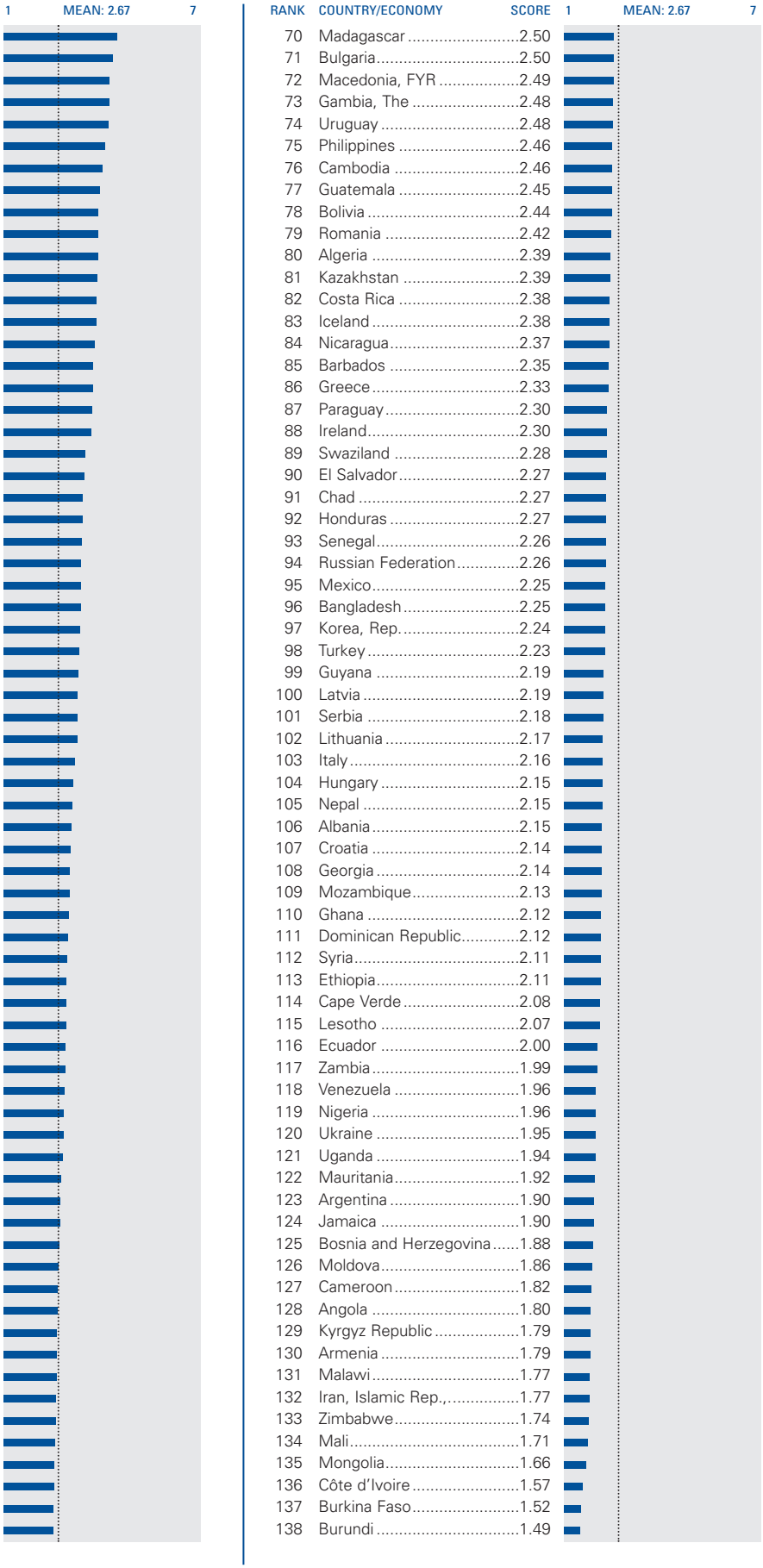
Subindex C: Usage component

1st pillar
Market environment

1.01 Venture capital availability

In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? v1 = very difficult; 7 = very easy] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Hong Kong SAR	4.44
2	Norway	4.31
3	Singapore	4.21
4	Finland	4.19
5	Luxembourg	4.19
6	Qatar	4.08
7	Sweden	4.00
8	Malaysia	3.91
9	Indonesia	3.86
10	Israel	3.86
11	Taiwan, China	3.86
12	Australia	3.83
13	United States	3.81
14	Saudi Arabia	3.81
15	Oman	3.75
16	United Arab Emirates	3.72
17	Netherlands	3.71
18	Bahrain	3.69
19	Canada	3.65
20	Switzerland	3.46
21	Tunisia	3.45
22	Kuwait	3.40
23	Cyprus	3.38
24	Montenegro	3.36
25	Belgium	3.34
26	New Zealand	3.33
27	China	3.33
28	Panama	3.31
29	Denmark	3.30
30	Estonia	3.26
31	India	3.25
32	France	3.23
33	Sri Lanka	3.23
34	Chile	3.16
35	Kenya	3.09
36	Malta	3.09
37	Puerto Rico	3.05
38	United Kingdom	3.02
39	South Africa	3.01
40	Morocco	3.00
41	Egypt	2.98
42	Peru	2.95
43	Austria	2.93
44	Thailand	2.90
45	Slovenia	2.89
46	Brunei Darussalam	2.89
47	Botswana	2.86
48	Azerbaijan	2.86
49	Japan	2.83
50	Mauritius	2.81
51	Pakistan	2.81
52	Germany	2.78
53	Portugal	2.74
54	Jordan	2.72
55	Libya	2.72
56	Poland	2.68
57	Vietnam	2.67
58	Spain	2.64
59	Timor-Leste	2.64
60	Brazil	2.61
61	Slovak Republic	2.61
62	Benin	2.60
63	Czech Republic	2.59
64	Tanzania	2.57
65	Namibia	2.56
66	Colombia	2.54
67	Lebanon	2.54
68	Trinidad and Tobago	2.51
69	Tajikistan	2.51
70	Madagascar	2.50
71	Bulgaria	2.50
72	Macedonia, FYR	2.49
73	Gambia, The	2.48
74	Uruguay	2.48
75	Philippines	2.46
76	Cambodia	2.46
77	Guatemala	2.45
78	Bolivia	2.44
79	Romania	2.42
80	Algeria	2.39
81	Kazakhstan	2.39
82	Costa Rica	2.38
83	Iceland	2.38
84	Nicaragua	2.37
85	Barbados	2.35
86	Greece	2.33
87	Paraguay	2.30
88	Ireland	2.30
89	Swaziland	2.28
90	El Salvador	2.27
91	Chad	2.27
92	Honduras	2.27
93	Senegal	2.26
94	Russian Federation	2.26
95	Mexico	2.25
96	Bangladesh	2.25
97	Korea, Rep.	2.24
98	Turkey	2.23
99	Guyana	2.19
100	Latvia	2.19
101	Serbia	2.18
102	Lithuania	2.17
103	Italy	2.16
104	Hungary	2.15
105	Nepal	2.15
106	Albania	2.15
107	Croatia	2.14
108	Georgia	2.14
109	Mozambique	2.13
110	Ghana	2.12
111	Dominican Republic	2.12
112	Syria	2.11
113	Ethiopia	2.11
114	Cape Verde	2.08
115	Lesotho	2.07
116	Ecuador	2.00
117	Zambia	1.99
118	Venezuela	1.96
119	Nigeria	1.96
120	Ukraine	1.95
121	Uganda	1.94
122	Mauritania	1.92
123	Argentina	1.90
124	Jamaica	1.90
125	Bosnia and Herzegovina	1.88
126	Moldova	1.86
127	Cameroon	1.82
128	Angola	1.80
129	Kyrgyz Republic	1.79
130	Armenia	1.79
131	Malawi	1.77
132	Iran, Islamic Rep.,	1.77
133	Zimbabwe	1.74
134	Mali	1.71
135	Mongolia	1.66
136	Côte d'Ivoire	1.57
137	Burkina Faso	1.52
138	Burundi	1.49

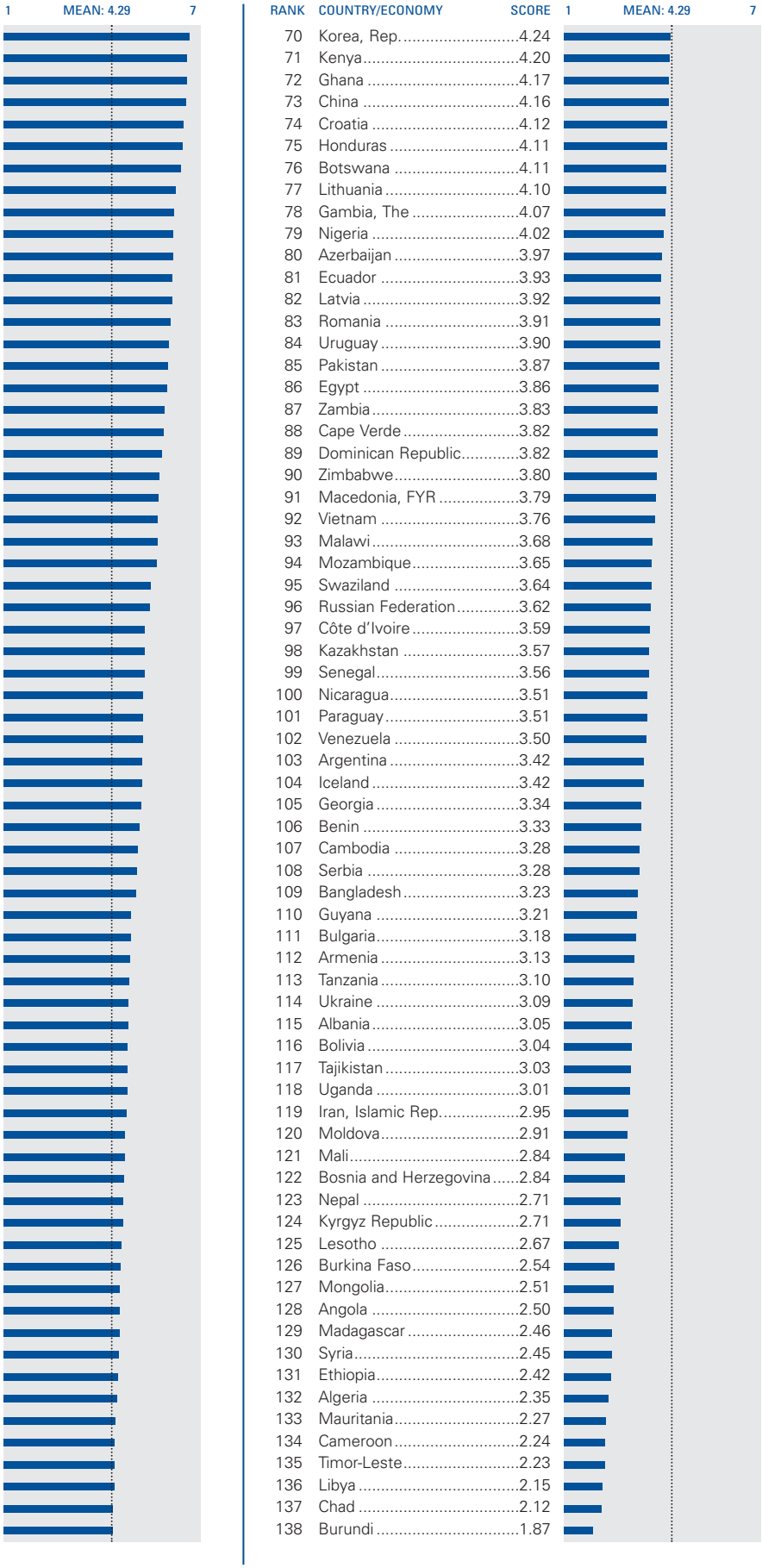


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

1.02 Financial market sophistication

How would you assess the level of sophistication of financial markets in your country? [1 = poor by international standards; 7 = excellent by international standards] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Luxembourg	6.63
2	Switzerland	6.56
3	United Kingdom	6.55
4	Canada	6.53
5	Hong Kong SAR	6.44
6	South Africa	6.42
7	Sweden	6.36
8	France	6.21
9	Norway	6.15
10	Singapore	6.13
11	Australia	6.13
12	Finland	6.10
13	Netherlands	6.10
14	Brazil	6.04
15	United States	5.99
16	Germany	5.99
17	Panama	5.96
18	Belgium	5.87
19	Chile	5.86
20	Israel	5.80
21	Denmark	5.72
22	Portugal	5.69
23	Puerto Rico	5.66
24	Spain	5.65
25	Austria	5.63
26	Bahrain	5.46
27	Malaysia	5.42
28	Qatar	5.27
29	Saudi Arabia	5.26
30	New Zealand	5.26
31	Namibia	5.22
32	Malta	5.21
33	Taiwan, China	5.21
34	Estonia	5.20
35	India	5.20
36	United Arab Emirates	5.17
37	Japan	5.10
38	Thailand	5.07
39	Ireland	5.04
40	Turkey	5.00
41	Cyprus	4.86
42	Jamaica	4.84
43	Mauritius	4.83
44	El Salvador	4.81
45	Peru	4.79
46	Slovak Republic	4.77
47	Oman	4.76
48	Barbados	4.76
49	Trinidad and Tobago	4.75
50	Lebanon	4.72
51	Czech Republic	4.67
52	Jordan	4.66
53	Hungary	4.65
54	Mexico	4.62
55	Indonesia	4.62
56	Tunisia	4.57
57	Philippines	4.53
58	Kuwait	4.52
59	Sri Lanka	4.51
60	Morocco	4.50
61	Montenegro	4.48
62	Colombia	4.46
63	Poland	4.43
64	Italy	4.39
65	Guatemala	4.35
66	Slovenia	4.35
67	Greece	4.34
68	Brunei Darussalam	4.31
69	Costa Rica	4.30
70	Korea, Rep.	4.24
71	Kenya	4.20
72	Ghana	4.17
73	China	4.16
74	Croatia	4.12
75	Honduras	4.11
76	Botswana	4.11
77	Lithuania	4.10
78	Gambia, The	4.07
79	Nigeria	4.02
80	Azerbaijan	3.97
81	Ecuador	3.93
82	Latvia	3.92
83	Romania	3.91
84	Uruguay	3.90
85	Pakistan	3.87
86	Egypt	3.86
87	Zambia	3.83
88	Cape Verde	3.82
89	Dominican Republic	3.82
90	Zimbabwe	3.80
91	Macedonia, FYR	3.79
92	Vietnam	3.76
93	Malawi	3.68
94	Mozambique	3.65
95	Swaziland	3.64
96	Russian Federation	3.62
97	Côte d'Ivoire	3.59
98	Kazakhstan	3.57
99	Senegal	3.56
100	Nicaragua	3.51
101	Paraguay	3.51
102	Venezuela	3.50
103	Argentina	3.42
104	Iceland	3.42
105	Georgia	3.34
106	Benin	3.33
107	Cambodia	3.28
108	Serbia	3.28
109	Bangladesh	3.23
110	Guyana	3.21
111	Bulgaria	3.18
112	Armenia	3.13
113	Tanzania	3.10
114	Ukraine	3.09
115	Albania	3.05
116	Bolivia	3.04
117	Tajikistan	3.03
118	Uganda	3.01
119	Iran, Islamic Rep.	2.95
120	Moldova	2.91
121	Mali	2.84
122	Bosnia and Herzegovina	2.84
123	Nepal	2.71
124	Kyrgyz Republic	2.71
125	Lesotho	2.67
126	Burkina Faso	2.54
127	Mongolia	2.51
128	Angola	2.50
129	Madagascar	2.46
130	Syria	2.45
131	Ethiopia	2.42
132	Algeria	2.35
133	Mauritania	2.27
134	Cameroon	2.24
135	Timor-Leste	2.23
136	Libya	2.15
137	Chad	2.12
138	Burundi	1.87

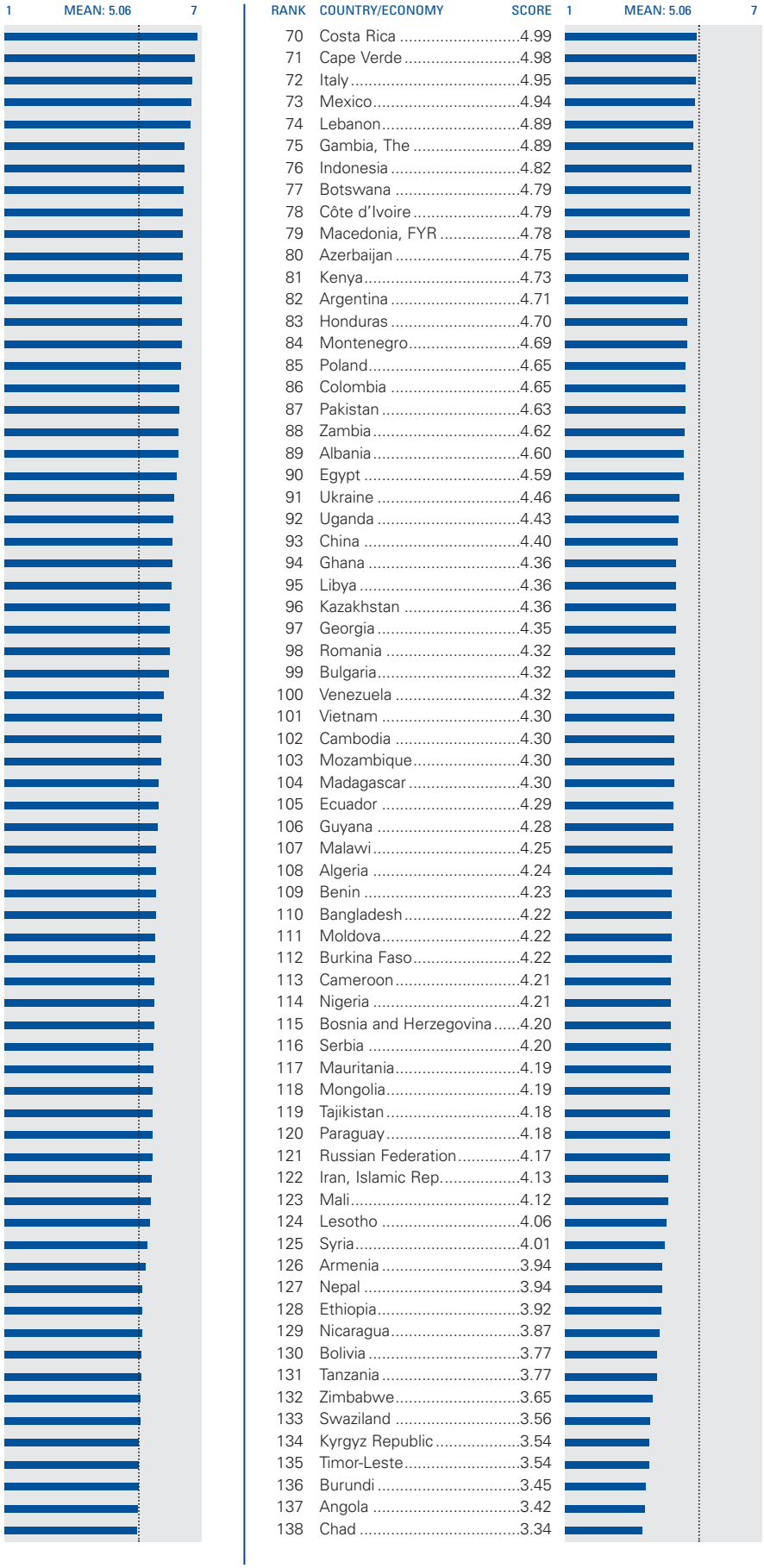


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

1.03 Availability of latest technologies

To what extent are the latest technologies available in your country? [1 = not available; 7 = widely available] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	6.84
2	Iceland	6.77
3	Norway	6.69
4	Finland	6.65
5	Switzerland	6.63
6	Israel	6.45
7	United States	6.44
8	Austria	6.42
9	Netherlands	6.41
10	Hong Kong SAR	6.40
11	United Arab Emirates	6.40
12	Belgium	6.37
13	Denmark	6.36
14	Canada	6.36
15	United Kingdom	6.36
16	France	6.36
17	Germany	6.30
18	Japan	6.28
19	Portugal	6.26
20	Singapore	6.26
21	Luxembourg	6.20
22	Australia	6.13
23	Korea, Rep.	6.11
24	Puerto Rico	6.09
25	Qatar	6.07
26	Chile	6.05
27	New Zealand	6.01
28	Barbados	6.01
29	Bahrain	6.01
30	Malta	5.98
31	Estonia	5.81
32	Spain	5.78
33	Taiwan, China	5.75
34	Ireland	5.75
35	Malaysia	5.68
36	Cyprus	5.67
37	Lithuania	5.64
38	Slovenia	5.60
39	Saudi Arabia	5.59
40	Slovak Republic	5.58
41	India	5.58
42	Tunisia	5.57
43	Panama	5.56
44	Namibia	5.54
45	Guatemala	5.52
46	Czech Republic	5.52
47	Hungary	5.50
48	Turkey	5.50
49	Jordan	5.48
50	Brazil	5.48
51	South Africa	5.48
52	Jamaica	5.48
53	Senegal	5.46
54	Mauritius	5.44
55	Croatia	5.39
56	Dominican Republic	5.32
57	Oman	5.26
58	Brunei Darussalam	5.18
59	Greece	5.18
60	Trinidad and Tobago	5.16
61	Sri Lanka	5.15
62	Philippines	5.14
63	Kuwait	5.11
64	Thailand	5.11
65	Latvia	5.06
66	Peru	5.06
67	El Salvador	5.06
68	Morocco	5.04
69	Uruguay	5.02
70	Costa Rica	4.99
71	Cape Verde	4.98
72	Italy	4.95
73	Mexico	4.94
74	Lebanon	4.89
75	Gambia, The	4.89
76	Indonesia	4.82
77	Botswana	4.79
78	Côte d'Ivoire	4.79
79	Macedonia, FYR	4.78
80	Azerbaijan	4.75
81	Kenya	4.73
82	Argentina	4.71
83	Honduras	4.70
84	Montenegro	4.69
85	Poland	4.65
86	Colombia	4.65
87	Pakistan	4.63
88	Zambia	4.62
89	Albania	4.60
90	Egypt	4.59
91	Ukraine	4.46
92	Uganda	4.43
93	China	4.40
94	Ghana	4.36
95	Libya	4.36
96	Kazakhstan	4.36
97	Georgia	4.35
98	Romania	4.32
99	Bulgaria	4.32
100	Venezuela	4.32
101	Vietnam	4.30
102	Cambodia	4.30
103	Mozambique	4.30
104	Madagascar	4.30
105	Ecuador	4.29
106	Guyana	4.28
107	Malawi	4.25
108	Algeria	4.24
109	Benin	4.23
110	Bangladesh	4.22
111	Moldova	4.22
112	Burkina Faso	4.22
113	Cameroon	4.21
114	Nigeria	4.21
115	Bosnia and Herzegovina	4.20
116	Serbia	4.20
117	Mauritania	4.19
118	Mongolia	4.19
119	Tajikistan	4.18
120	Paraguay	4.18
121	Russian Federation	4.17
122	Iran, Islamic Rep.	4.13
123	Mali	4.12
124	Lesotho	4.06
125	Syria	4.01
126	Armenia	3.94
127	Nepal	3.94
128	Ethiopia	3.92
129	Nicaragua	3.87
130	Bolivia	3.77
131	Tanzania	3.77
132	Zimbabwe	3.65
133	Swaziland	3.56
134	Kyrgyz Republic	3.54
135	Timor-Leste	3.54
136	Burundi	3.45
137	Angola	3.42
138	Chad	3.34

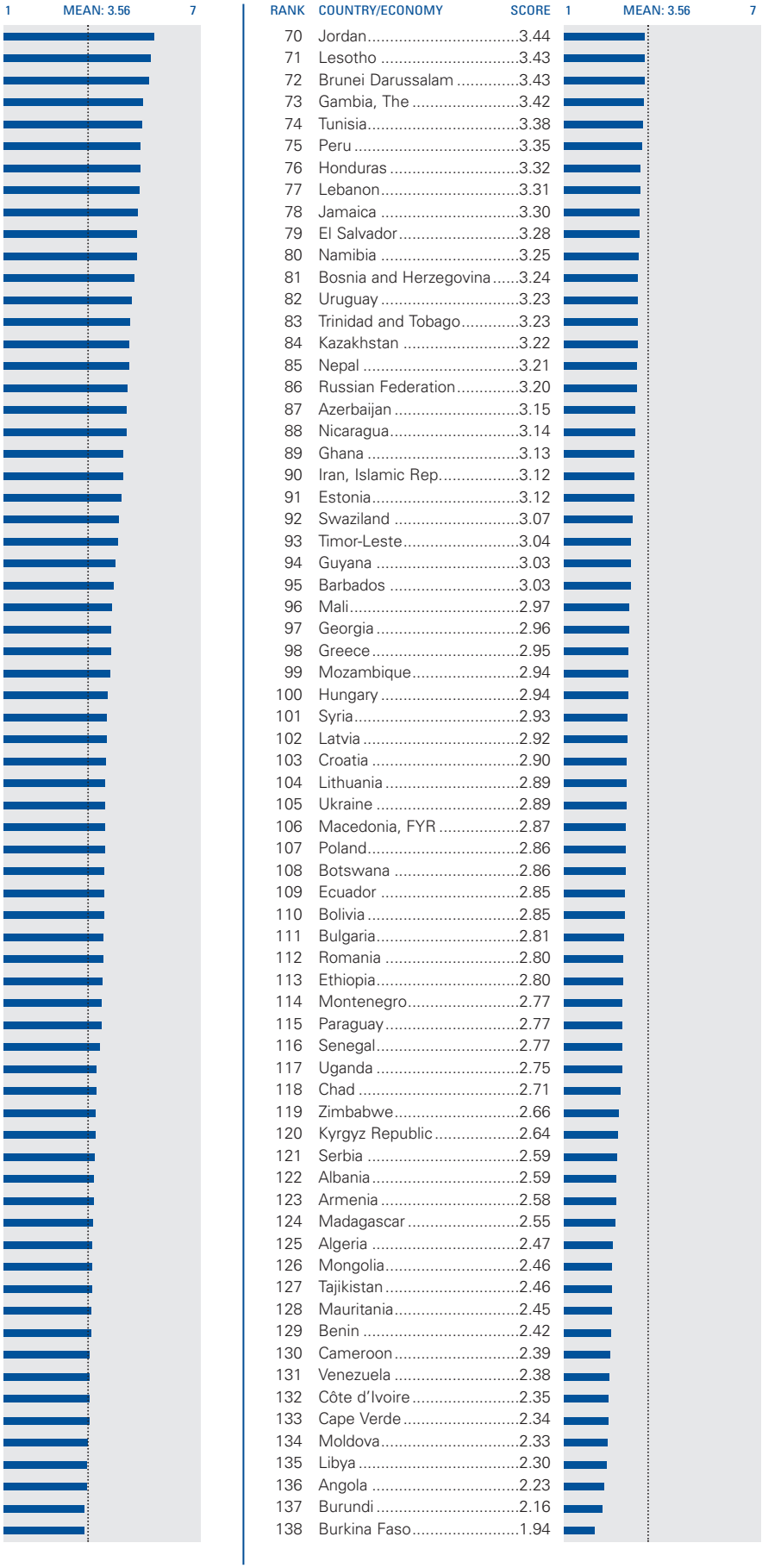


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

1.04 State of cluster development

In your country's economy, how prevalent are well-developed and deep clusters? [1 = nonexistent; 7 = widespread in many fields] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Italy	5.55
2	Japan	5.45
3	Taiwan, China	5.40
4	Switzerland	5.21
5	Singapore	5.19
6	United States	5.15
7	Hong Kong SAR	5.15
8	Sweden	5.12
9	Finland	5.06
10	United Kingdom	5.04
11	Canada	5.04
12	Germany	4.96
13	Vietnam	4.88
14	Bahrain	4.83
15	Malaysia	4.80
16	Luxembourg	4.79
17	China	4.74
18	Norway	4.71
19	Netherlands	4.71
20	Denmark	4.63
21	Qatar	4.61
22	Austria	4.57
23	Brazil	4.48
24	Indonesia	4.47
25	Korea, Rep.	4.37
26	Belgium	4.33
27	Saudi Arabia	4.27
28	United Arab Emirates	4.25
29	India	4.25
30	France	4.24
31	Oman	4.14
32	Ireland	4.13
33	Sri Lanka	4.12
34	Thailand	4.10
35	Australia	4.08
36	Spain	4.08
37	Mauritius	4.07
38	Chile	4.06
39	South Africa	4.04
40	Colombia	4.03
41	Czech Republic	4.03
42	Guatemala	4.02
43	Kenya	4.02
44	Cyprus	4.00
45	Puerto Rico	3.95
46	Pakistan	3.95
47	Panama	3.90
48	Nigeria	3.80
49	Slovenia	3.80
50	Mexico	3.79
51	Cambodia	3.79
52	Costa Rica	3.77
53	Bangladesh	3.73
54	Portugal	3.73
55	Philippines	3.69
56	New Zealand	3.68
57	Malawi	3.68
58	Malta	3.66
59	Kuwait	3.65
60	Iceland	3.65
61	Turkey	3.60
62	Argentina	3.59
63	Dominican Republic	3.59
64	Slovak Republic	3.59
65	Egypt	3.55
66	Israel	3.52
67	Tanzania	3.51
68	Morocco	3.45
69	Zambia	3.44
70	Jordan	3.44
71	Lesotho	3.43
72	Brunei Darussalam	3.43
73	Gambia, The	3.42
74	Tunisia	3.38
75	Peru	3.35
76	Honduras	3.32
77	Lebanon	3.31
78	Jamaica	3.30
79	El Salvador	3.28
80	Namibia	3.25
81	Bosnia and Herzegovina	3.24
82	Uruguay	3.23
83	Trinidad and Tobago	3.23
84	Kazakhstan	3.22
85	Nepal	3.21
86	Russian Federation	3.20
87	Azerbaijan	3.15
88	Nicaragua	3.14
89	Ghana	3.13
90	Iran, Islamic Rep.	3.12
91	Estonia	3.12
92	Swaziland	3.07
93	Timor-Leste	3.04
94	Guyana	3.03
95	Barbados	3.03
96	Mali	2.97
97	Georgia	2.96
98	Greece	2.95
99	Mozambique	2.94
100	Hungary	2.94
101	Syria	2.93
102	Latvia	2.92
103	Croatia	2.90
104	Lithuania	2.89
105	Ukraine	2.89
106	Macedonia, FYR	2.87
107	Poland	2.86
108	Botswana	2.86
109	Ecuador	2.85
110	Bolivia	2.85
111	Bulgaria	2.81
112	Romania	2.80
113	Ethiopia	2.80
114	Montenegro	2.77
115	Paraguay	2.77
116	Senegal	2.77
117	Uganda	2.75
118	Chad	2.71
119	Zimbabwe	2.66
120	Kyrgyz Republic	2.64
121	Serbia	2.59
122	Albania	2.59
123	Armenia	2.58
124	Madagascar	2.55
125	Algeria	2.47
126	Mongolia	2.46
127	Tajikistan	2.46
128	Mauritania	2.45
129	Benin	2.42
130	Cameroon	2.39
131	Venezuela	2.38
132	Côte d'Ivoire	2.35
133	Cape Verde	2.34
134	Moldova	2.33
135	Libya	2.30
136	Angola	2.23
137	Burundi	2.16
138	Burkina Faso	1.94

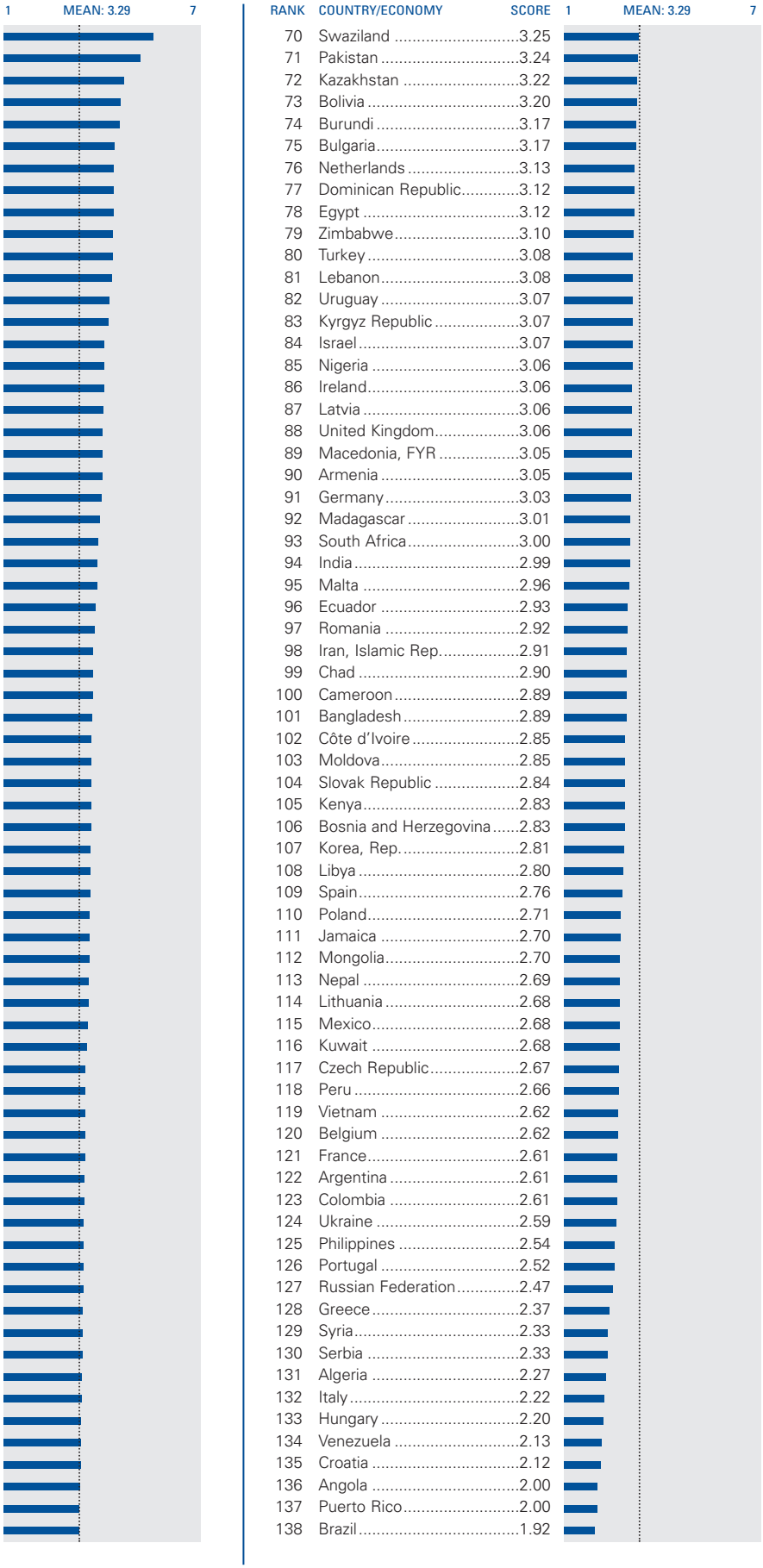


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

1.05 Burden of government regulation

How burdensome is it for businesses in your country to comply with governmental administrative requirements (e.g., permits, regulations, reporting)? [1 = extremely burdensome; 7 = not burdensome at all] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	5.53
2	Hong Kong SAR	5.15
3	Georgia	4.65
4	Gambia, The	4.55
5	Qatar	4.52
6	Estonia	4.35
7	Oman	4.34
8	Mauritania	4.33
9	Finland	4.32
10	United Arab Emirates	4.31
11	Iceland	4.30
12	Barbados	4.28
13	Switzerland	4.21
14	Tunisia	4.17
15	Sweden	4.04
16	Malaysia	4.04
17	Saudi Arabia	4.04
18	Bahrain	4.01
19	Albania	4.00
20	China	4.00
21	Luxembourg	3.98
22	Cyprus	3.97
23	Uganda	3.92
24	New Zealand	3.85
25	Denmark	3.83
26	Ethiopia	3.82
27	Zambia	3.79
28	Mauritius	3.77
29	Taiwan, China	3.72
30	Montenegro	3.70
31	Azerbaijan	3.69
32	Brunei Darussalam	3.69
33	Benin	3.66
34	Honduras	3.66
35	Indonesia	3.65
36	Malawi	3.65
37	Namibia	3.64
38	Austria	3.63
39	Panama	3.62
40	Canada	3.62
41	Thailand	3.60
42	Tajikistan	3.59
43	Botswana	3.59
44	Chile	3.59
45	Guatemala	3.58
46	Ghana	3.54
47	Guyana	3.53
48	United States	3.48
49	Jordan	3.48
50	Trinidad and Tobago	3.47
51	Slovenia	3.47
52	Timor-Leste	3.46
53	Mali	3.44
54	El Salvador	3.43
55	Senegal	3.42
56	Mozambique	3.41
57	Paraguay	3.41
58	Norway	3.41
59	Australia	3.40
60	Morocco	3.39
61	Lesotho	3.39
62	Nicaragua	3.36
63	Cambodia	3.36
64	Burkina Faso	3.34
65	Tanzania	3.34
66	Cape Verde	3.34
67	Sri Lanka	3.33
68	Costa Rica	3.30
69	Japan	3.28
70	Swaziland	3.25
71	Pakistan	3.24
72	Kazakhstan	3.22
73	Bolivia	3.20
74	Burundi	3.17
75	Bulgaria	3.17
76	Netherlands	3.13
77	Dominican Republic	3.12
78	Egypt	3.12
79	Zimbabwe	3.10
80	Turkey	3.08
81	Lebanon	3.08
82	Uruguay	3.07
83	Kyrgyz Republic	3.07
84	Israel	3.07
85	Nigeria	3.06
86	Ireland	3.06
87	Latvia	3.06
88	United Kingdom	3.06
89	Macedonia, FYR	3.05
90	Armenia	3.05
91	Germany	3.03
92	Madagascar	3.01
93	South Africa	3.00
94	India	2.99
95	Malta	2.96
96	Ecuador	2.93
97	Romania	2.92
98	Iran, Islamic Rep.	2.91
99	Chad	2.90
100	Cameroon	2.89
101	Bangladesh	2.89
102	Côte d'Ivoire	2.85
103	Moldova	2.85
104	Slovak Republic	2.84
105	Kenya	2.83
106	Bosnia and Herzegovina	2.83
107	Korea, Rep.	2.81
108	Libya	2.80
109	Spain	2.76
110	Poland	2.71
111	Jamaica	2.70
112	Mongolia	2.70
113	Nepal	2.69
114	Lithuania	2.68
115	Mexico	2.68
116	Kuwait	2.68
117	Czech Republic	2.67
118	Peru	2.66
119	Vietnam	2.62
120	Belgium	2.62
121	France	2.61
122	Argentina	2.61
123	Colombia	2.61
124	Ukraine	2.59
125	Philippines	2.54
126	Portugal	2.52
127	Russian Federation	2.47
128	Greece	2.37
129	Syria	2.33
130	Serbia	2.33
131	Algeria	2.27
132	Italy	2.22
133	Hungary	2.20
134	Venezuela	2.13
135	Croatia	2.12
136	Angola	2.00
137	Puerto Rico	2.00
138	Brazil	1.92

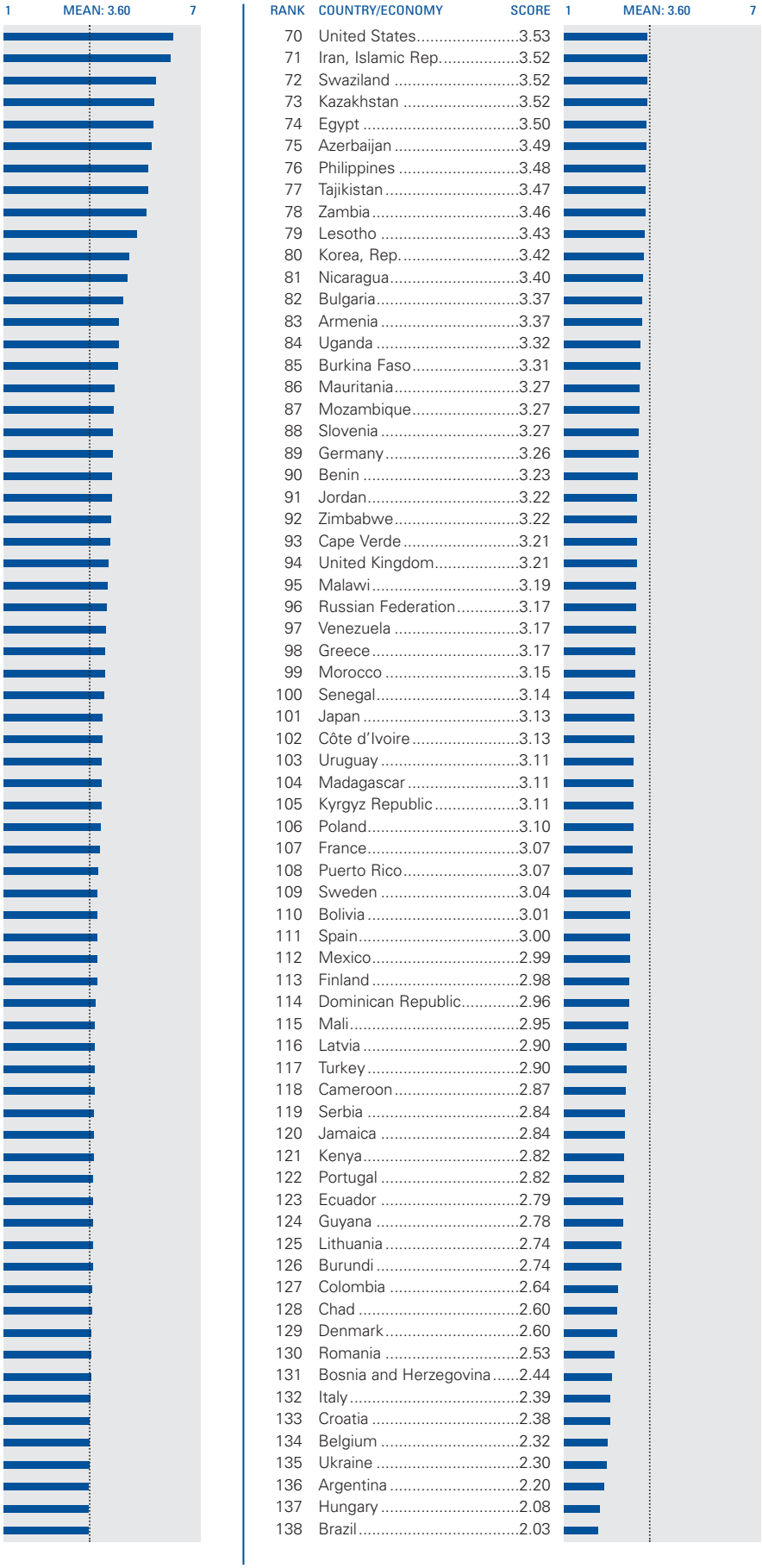


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

1.06 Extent and effect of taxation

What impact does the level of taxes in your country have on incentives to work or invest? [1 = significantly limits incentives to work or invest; 7 = has no impact on incentives to work or invest] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Bahrain	6.14
2	Hong Kong SAR	6.05
3	Singapore	5.60
4	Oman	5.56
5	United Arab Emirates	5.53
6	Kuwait	5.49
7	Luxembourg	5.38
8	Mauritius	5.38
9	Saudi Arabia	5.33
10	Switzerland	5.03
11	Qatar	4.81
12	Cyprus	4.75
13	Botswana	4.62
14	Tunisia	4.50
15	Brunei Darussalam	4.49
16	Timor-Leste	4.46
17	Indonesia	4.36
18	Estonia	4.34
19	Chile	4.31
20	Barbados	4.29
21	Montenegro	4.29
22	Lebanon	4.28
23	Paraguay	4.26
24	Georgia	4.21
25	Taiwan, China	4.17
26	Trinidad and Tobago	4.15
27	Slovak Republic	4.13
28	Malaysia	4.10
29	China	4.06
30	Angola	4.06
31	South Africa	4.05
32	Malta	3.99
33	Namibia	3.98
34	Libya	3.97
35	El Salvador	3.97
36	India	3.97
37	Iceland	3.93
38	Ireland	3.92
39	Albania	3.85
40	Ghana	3.85
41	Costa Rica	3.85
42	Macedonia, FYR	3.84
43	Panama	3.83
44	New Zealand	3.83
45	Israel	3.78
46	Pakistan	3.76
47	Peru	3.76
48	Canada	3.76
49	Czech Republic	3.75
50	Nigeria	3.74
51	Honduras	3.73
52	Sri Lanka	3.73
53	Thailand	3.71
54	Bangladesh	3.71
55	Moldova	3.71
56	Algeria	3.70
57	Vietnam	3.70
58	Netherlands	3.69
59	Gambia, The	3.67
60	Cambodia	3.66
61	Ethiopia	3.65
62	Austria	3.64
63	Norway	3.63
64	Tanzania	3.59
65	Australia	3.59
66	Syria	3.59
67	Guatemala	3.58
68	Mongolia	3.58
69	Nepal	3.57
70	United States	3.53
71	Iran, Islamic Rep.	3.52
72	Swaziland	3.52
73	Kazakhstan	3.52
74	Egypt	3.50
75	Azerbaijan	3.49
76	Philippines	3.48
77	Tajikistan	3.47
78	Zambia	3.46
79	Lesotho	3.43
80	Korea, Rep.	3.42
81	Nicaragua	3.40
82	Bulgaria	3.37
83	Armenia	3.37
84	Uganda	3.32
85	Burkina Faso	3.31
86	Mauritania	3.27
87	Mozambique	3.27
88	Slovenia	3.27
89	Germany	3.26
90	Benin	3.23
91	Jordan	3.22
92	Zimbabwe	3.22
93	Cape Verde	3.21
94	United Kingdom	3.21
95	Malawi	3.19
96	Russian Federation	3.17
97	Venezuela	3.17
98	Greece	3.17
99	Morocco	3.15
100	Senegal	3.14
101	Japan	3.13
102	Côte d'Ivoire	3.13
103	Uruguay	3.11
104	Madagascar	3.11
105	Kyrgyz Republic	3.11
106	Poland	3.10
107	France	3.07
108	Puerto Rico	3.07
109	Sweden	3.04
110	Bolivia	3.01
111	Spain	3.00
112	Mexico	2.99
113	Finland	2.98
114	Dominican Republic	2.96
115	Mali	2.95
116	Latvia	2.90
117	Turkey	2.90
118	Cameroon	2.87
119	Serbia	2.84
120	Jamaica	2.84
121	Kenya	2.82
122	Portugal	2.82
123	Ecuador	2.79
124	Guyana	2.78
125	Lithuania	2.74
126	Burundi	2.74
127	Colombia	2.64
128	Chad	2.60
129	Denmark	2.60
130	Romania	2.53
131	Bosnia and Herzegovina	2.44
132	Italy	2.39
133	Croatia	2.38
134	Belgium	2.32
135	Ukraine	2.30
136	Argentina	2.20
137	Hungary	2.08
138	Brazil	2.03



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

1.07 Total tax rate

Sum of profit tax, labor tax and social contributions, property taxes, turnover taxes, and other taxes, as a share (%) of commercial profits | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	Timor-Leste	0.2
2	Namibia	9.6
3	Macedonia, FYR	10.6
4	Qatar	11.3
5	United Arab Emirates	14.1
6	Saudi Arabia	14.5
7	Bahrain	15.0
8	Georgia	15.3
9	Kuwait	15.5
10	Zambia	16.1
11	Botswana	19.5
12	Lesotho	19.6
13	Luxembourg	21.1
14	Oman	21.6
15	Cambodia	22.5
16	Bosnia and Herzegovina	23.0
16	Mongolia	23.0
18	Cyprus	23.2
19	Hong Kong SAR	24.1
19	Mauritius	24.1
21	Chile	25.0
22	Malawi	25.1
23	Singapore	25.4
24	Ireland	26.5
25	Montenegro	26.6
26	Iceland	26.8
27	Bulgaria	29.0
28	Canada	29.2
28	Denmark	29.2
30	Kazakhstan	29.6
31	Brunei Darussalam	29.8
31	Korea, Rep.	29.8
33	Switzerland	30.1
34	Lebanon	30.2
35	South Africa	30.5
36	Moldova	30.9
37	Ethiopia	31.1
38	Jordan	31.2
39	Pakistan	31.6
40	Israel	31.7
41	Nigeria	32.2
42	Croatia	32.5
43	Ghana	32.7
44	Trinidad and Tobago	33.1
44	Vietnam	33.1
46	Malaysia	33.7
47	Serbia	34.0
48	Mozambique	34.3
48	New Zealand	34.3
50	Bangladesh	35.0
50	El Salvador	35.0
50	Paraguay	35.0
53	Ecuador	35.3
54	Slovenia	35.4
55	Uganda	35.7
56	Swaziland	36.8
57	Cape Verde	37.1
58	Indonesia	37.3
58	United Kingdom	37.3
60	Thailand	37.4
61	Madagascar	37.7
62	Nepal	38.2
63	Latvia	38.5
64	Lithuania	38.7
65	Guyana	38.9
66	Peru	40.2
67	Zimbabwe	40.3
68	Netherlands	40.5
69	Albania	40.6
70	Armenia	40.7
70	Dominican Republic	40.7
72	Azerbaijan	40.9
72	Guatemala	40.9
74	Norway	41.6
75	Morocco	41.7
76	Taiwan, China	41.9
77	Uruguay	42.0
78	Poland	42.3
79	Egypt	42.6
80	Syria	42.9
81	Portugal	43.3
82	Iran, Islamic Rep.	44.1
83	Côte d'Ivoire	44.4
84	Turkey	44.5
85	Finland	44.6
86	Burkina Faso	44.9
86	Romania	44.9
88	Tanzania	45.2
89	Philippines	45.8
90	Senegal	46.0
91	Russian Federation	46.5
92	United States	46.8
93	Greece	47.2
94	Australia	47.9
95	Germany	48.2
96	Honduras	48.3
97	Japan	48.6
98	Slovak Republic	48.7
99	Czech Republic	48.8
100	Cameroon	49.1
101	Estonia	49.6
102	Kenya	49.7
103	Jamaica	50.1
103	Panama	50.1
105	Mexico	50.5
106	Mali	52.2
107	Venezuela	52.6
108	Angola	53.2
109	Hungary	53.3
110	Sweden	54.6
111	Costa Rica	55.0
112	Austria	55.5
112	Ukraine	55.5
114	Spain	56.5
115	Belgium	57.0
116	Kyrgyz Republic	57.2
117	Tunisia	62.8
118	Nicaragua	63.2
119	India	63.3
120	China	63.5
121	Sri Lanka	64.7
122	Chad	65.4
123	France	65.8
124	Benin	66.0
125	Puerto Rico	67.7
126	Mauritania	68.4
127	Italy	68.6
128	Brazil	69.0
129	Algeria	72.0
130	Colombia	78.7
131	Bolivia	80.0
132	Tajikistan	86.0
133	Argentina	108.2
134	Burundi	153.4
135	Gambia, The	292.3
n/a	Barbados	n/a
n/a	Libya	n/a
n/a	Malta	n/a

SOURCE: The World Bank, *Doing Business 2011*

1.08 Time required to start a business

Number of days required to start a business | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	New Zealand	1
2	Australia	2
3	Georgia	3
3	Macedonia, FYR	3
3	Singapore	3
6	Belgium	4
6	Hungary	4
8	Albania	5
8	Canada	5
8	Iceland	5
8	Saudi Arabia	5
12	Denmark	6
12	Hong Kong SAR	6
12	Italy	6
12	Mauritius	6
12	Portugal	6
12	Slovenia	6
12	Turkey	6
12	United States	6
20	Croatia	7
20	Egypt	7
20	Estonia	7
20	France	7
20	Madagascar	7
20	Norway	7
20	Puerto Rico	7
27	Azerbaijan	8
27	Cyprus	8
27	Iran, Islamic Rep.	8
27	Jamaica	8
27	Mali	8
27	Netherlands	8
27	Senegal	8
34	Bahrain	9
34	Ethiopia	9
34	Lebanon	9
34	Mexico	9
34	Panama	9
39	Kyrgyz Republic	10
39	Moldova	10
39	Montenegro	10
39	Romania	10
43	Cape Verde	11
43	Tunisia	11
45	Ghana	12
45	Morocco	12
45	Oman	12
45	Qatar	12
49	Ireland	13
49	Jordan	13
49	Mongolia	13
49	Mozambique	13
49	Serbia	13
49	Syria	13
49	United Kingdom	13
56	Burkina Faso	14
56	Colombia	14
56	Finland	14
56	Honduras	14
56	Korea, Rep.	14
61	Armenia	15
61	Germany	15
61	Sweden	15
61	Taiwan, China	15
61	United Arab Emirates	15
66	Latvia	16
66	Slovak Republic	16
68	El Salvador	17
68	Malaysia	17
70	Bulgaria	18
70	Zambia	18
72	Bangladesh	19
72	Cameroon	19
72	Dominican Republic	19
72	Greece	19
72	Kazakhstan	19
72	Luxembourg	19
72	Mauritania	19
79	Czech Republic	20
79	Switzerland	20
81	Pakistan	21
82	Chile	22
82	Lithuania	22
82	South Africa	22
85	Japan	23
86	Algeria	24
87	Uganda	25
88	Argentina	26
89	Gambia, The	27
89	Peru	27
89	Tajikistan	27
89	Ukraine	27
93	Austria	28
94	India	29
94	Tanzania	29
96	Guyana	30
96	Russian Federation	30
98	Benin	31
98	Nepal	31
98	Nigeria	31
101	Burundi	32
101	Poland	32
101	Thailand	32
104	Kenya	33
105	Israel	34
106	Kuwait	35
106	Paraguay	35
106	Sri Lanka	35
109	Guatemala	37
110	China	38
110	Philippines	38
112	Malawi	39
112	Nicaragua	39
114	Côte d'Ivoire	40
114	Lesotho	40
116	Trinidad and Tobago	43
117	Vietnam	44
118	Indonesia	47
118	Spain	47
120	Bolivia	50
121	Bosnia and Herzegovina	55
122	Ecuador	56
122	Swaziland	56
124	Costa Rica	60
125	Botswana	61
126	Uruguay	65
127	Namibia	66
128	Angola	68
129	Chad	75
130	Timor-Leste	83
131	Cambodia	85
132	Zimbabwe	90
133	Brunei Darussalam	105
134	Brazil	120
135	Venezuela	141
n/a	Barbados	n/a
n/a	Libya	n/a
n/a	Malta	n/a

SOURCE: The World Bank, *Doing Business 2011*

1.09 Number of procedures required to start a business

Number of procedures required to start a business | 2010

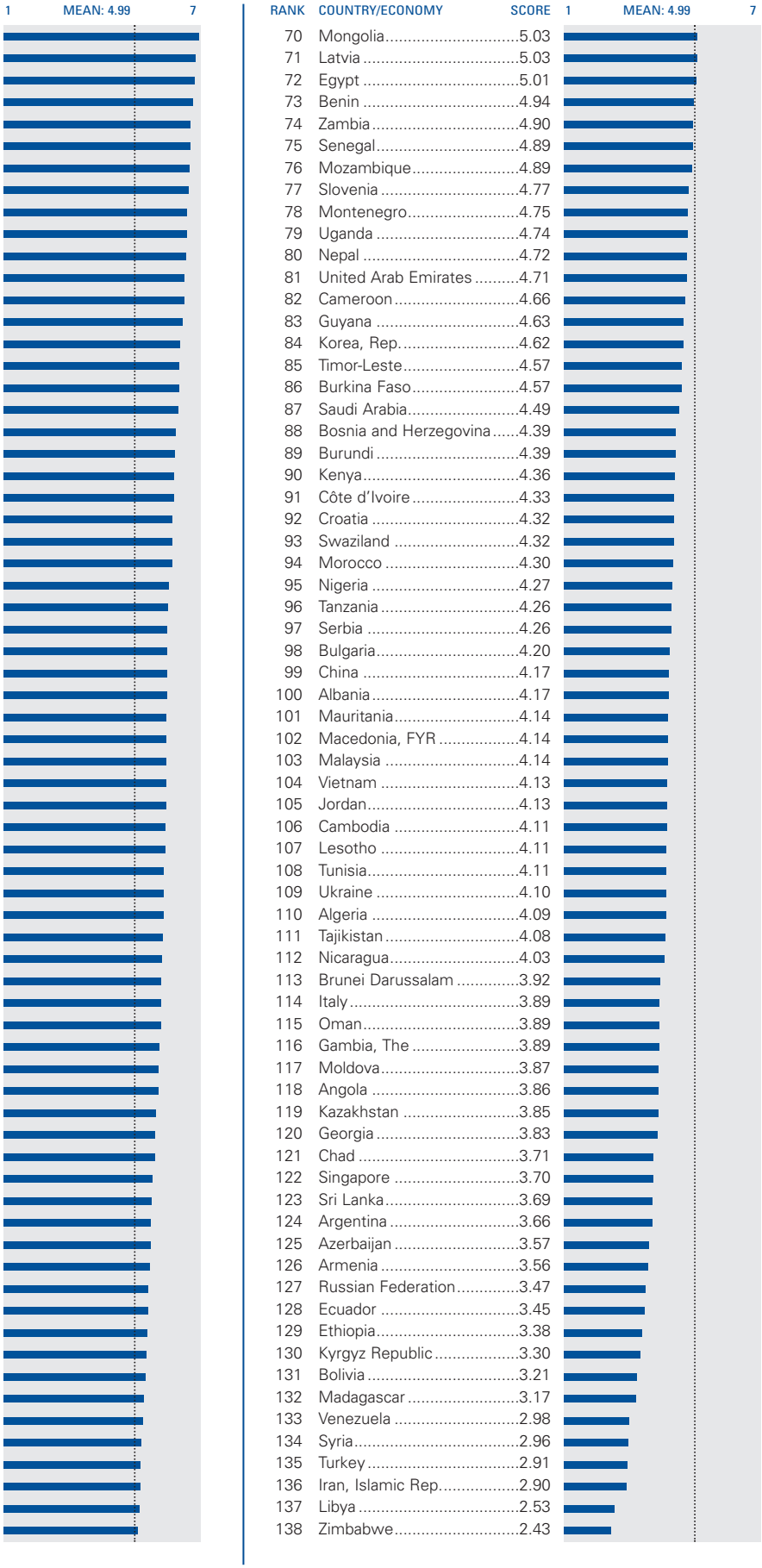
RANK	COUNTRY/ECONOMY	SCORE
1	Canada	1
1	New Zealand	1
3	Australia	2
3	Kyrgyz Republic	2
3	Madagascar	2
3	Slovenia	2
7	Belgium	3
7	Finland	3
7	Georgia	3
7	Hong Kong SAR	3
7	Macedonia, FYR	3
7	Singapore	3
7	Sweden	3
14	Bulgaria	4
14	Burkina Faso	4
14	Denmark	4
14	Hungary	4
14	Ireland	4
14	Saudi Arabia	4
14	Senegal	4
14	Sri Lanka	4
22	Albania	5
22	Estonia	5
22	Ethiopia	5
22	France	5
22	Iceland	5
22	Israel	5
22	Latvia	5
22	Lebanon	5
22	Mauritius	5
22	Norway	5
22	Oman	5
33	Armenia	6
33	Azerbaijan	6
33	Cameroon	6
33	Croatia	6
33	Cyprus	6
33	Egypt	6
33	Iran, Islamic Rep.	6
33	Italy	6
33	Jamaica	6
33	Kazakhstan	6
33	Lithuania	6
33	Luxembourg	6
33	Mali	6
33	Mexico	6
33	Morocco	6
33	Netherlands	6
33	Nicaragua	6
33	Panama	6
33	Peru	6
33	Poland	6
33	Portugal	6
33	Romania	6
33	Slovak Republic	6
33	South Africa	6
33	Switzerland	6
33	Taiwan, China	6
33	Turkey	6
33	United Kingdom	6
33	United States	6
33	Zambia	6
63	Bahrain	7
63	Bangladesh	7
63	Benin	7
63	Ghana	7
63	Lesotho	7
63	Mongolia	7
63	Montenegro	7
63	Nepal	7
63	Paraguay	7
63	Puerto Rico	7
63	Serbia	7
63	Syria	7
63	Thailand	7
76	Angola	8
76	Austria	8
76	Cape Verde	8
76	Chile	8
76	Dominican Republic	8
76	El Salvador	8
76	Gambia, The	8
76	Guyana	8
76	Japan	8
76	Jordan	8
76	Korea, Rep.	8
76	Moldova	8
76	Nigeria	8
76	Qatar	8
76	Tajikistan	8
76	United Arab Emirates	8
92	Cambodia	9
92	Colombia	9
92	Czech Republic	9
92	Germany	9
92	Indonesia	9
92	Malaysia	9
92	Mauritania	9
92	Mozambique	9
92	Russian Federation	9
92	Trinidad and Tobago	9
92	Vietnam	9
92	Zimbabwe	9
104	Botswana	10
104	Côte d'Ivoire	10
104	Malawi	10
104	Namibia	10
104	Pakistan	10
104	Spain	10
104	Timor-Leste	10
104	Tunisia	10
104	Ukraine	10
113	Burundi	11
113	Kenya	11
113	Uruguay	11
116	Bosnia and Herzegovina	12
116	Costa Rica	12
116	Guatemala	12
116	India	12
116	Swaziland	12
116	Tanzania	12
122	Chad	13
122	Ecuador	13
122	Honduras	13
122	Kuwait	13
126	Algeria	14
126	Argentina	14
126	China	14
129	Bolivia	15
129	Brazil	15
129	Brunei Darussalam	15
129	Greece	15
129	Philippines	15
134	Venezuela	17
135	Uganda	18
n/a	Barbados	n/a
n/a	Libya	n/a
n/a	Malta	n/a

SOURCE: The World Bank, *Doing Business 2011*

1.10 Freedom of the press

How free is the press in your country? [1 = totally restricted; 7 = completely free] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Denmark	6.91
2	Sweden	6.82
3	Norway	6.80
4	Netherlands	6.74
5	New Zealand	6.66
6	Finland	6.65
7	Switzerland	6.61
8	Germany	6.59
9	Canada	6.56
10	Belgium	6.54
11	Costa Rica	6.51
12	Israel	6.47
13	Chile	6.46
14	Ireland	6.42
15	Puerto Rico	6.33
16	Australia	6.31
17	Taiwan, China	6.31
18	United Kingdom	6.28
19	Luxembourg	6.21
20	South Africa	6.19
21	Austria	6.16
22	Peru	6.15
23	Greece	6.11
24	Japan	6.10
25	India	6.10
26	Uruguay	6.01
27	Estonia	5.98
28	Bangladesh	5.95
29	Malta	5.94
30	Cyprus	5.94
31	Brazil	5.94
32	Hong Kong SAR	5.93
33	France	5.93
34	Jamaica	5.92
35	Paraguay	5.92
36	Ghana	5.91
37	Kuwait	5.90
38	United States	5.89
39	El Salvador	5.85
40	Barbados	5.85
41	Spain	5.84
42	Guatemala	5.82
43	Philippines	5.79
44	Panama	5.77
45	Iceland	5.76
46	Namibia	5.76
47	Mauritius	5.72
48	Portugal	5.68
49	Poland	5.68
50	Honduras	5.61
51	Trinidad and Tobago	5.59
52	Lebanon	5.58
53	Mali	5.50
54	Mexico	5.47
55	Romania	5.45
56	Lithuania	5.44
57	Qatar	5.42
58	Pakistan	5.38
59	Thailand	5.37
60	Hungary	5.35
61	Indonesia	5.33
62	Bahrain	5.30
63	Czech Republic	5.26
64	Colombia	5.22
65	Cape Verde	5.15
66	Dominican Republic	5.15
67	Slovak Republic	5.13
68	Botswana	5.12
69	Malawi	5.07
70	Mongolia	5.03
71	Latvia	5.03
72	Egypt	5.01
73	Benin	4.94
74	Zambia	4.90
75	Senegal	4.89
76	Mozambique	4.89
77	Slovenia	4.77
78	Montenegro	4.75
79	Uganda	4.74
80	Nepal	4.72
81	United Arab Emirates	4.71
82	Cameroon	4.66
83	Guyana	4.63
84	Korea, Rep.	4.62
85	Timor-Leste	4.57
86	Burkina Faso	4.57
87	Saudi Arabia	4.49
88	Bosnia and Herzegovina	4.39
89	Burundi	4.39
90	Kenya	4.36
91	Côte d'Ivoire	4.33
92	Croatia	4.32
93	Swaziland	4.32
94	Morocco	4.30
95	Nigeria	4.27
96	Tanzania	4.26
97	Serbia	4.26
98	Bulgaria	4.20
99	China	4.17
100	Albania	4.17
101	Mauritania	4.14
102	Macedonia, FYR	4.14
103	Malaysia	4.14
104	Vietnam	4.13
105	Jordan	4.13
106	Cambodia	4.11
107	Lesotho	4.11
108	Tunisia	4.11
109	Ukraine	4.10
110	Algeria	4.09
111	Tajikistan	4.08
112	Nicaragua	4.03
113	Brunei Darussalam	3.92
114	Italy	3.89
115	Oman	3.89
116	Gambia, The	3.89
117	Moldova	3.87
118	Angola	3.86
119	Kazakhstan	3.85
120	Georgia	3.83
121	Chad	3.71
122	Singapore	3.70
123	Sri Lanka	3.69
124	Argentina	3.66
125	Azerbaijan	3.57
126	Armenia	3.56
127	Russian Federation	3.47
128	Ecuador	3.45
129	Ethiopia	3.38
130	Kyrgyz Republic	3.30
131	Bolivia	3.21
132	Madagascar	3.17
133	Venezuela	2.98
134	Syria	2.96
135	Turkey	2.91
136	Iran, Islamic Rep.	2.90
137	Libya	2.53
138	Zimbabwe	2.43



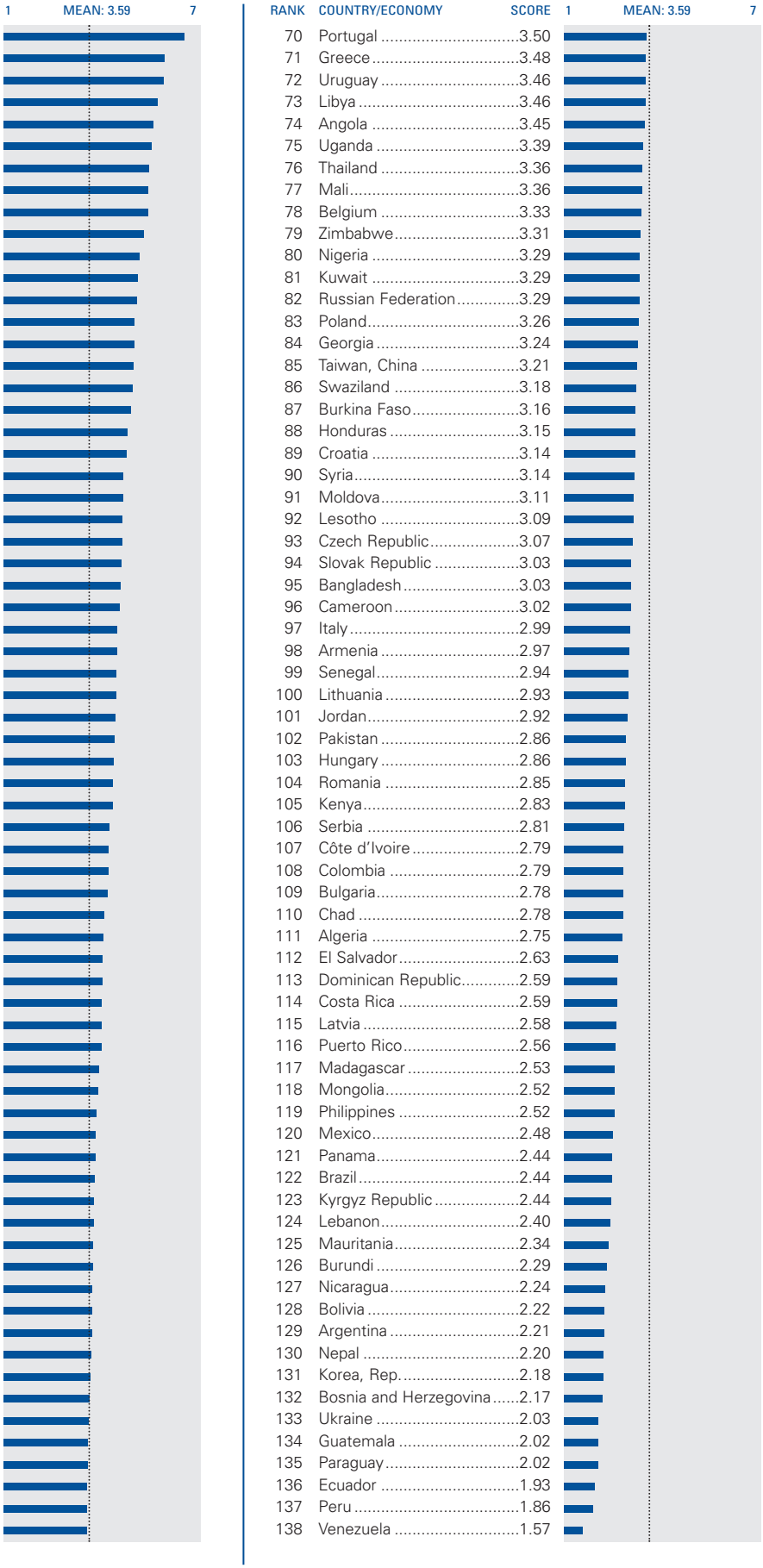
SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2nd pillar
Political and regulatory environment

2.01 Effectiveness of law-making bodies

How effective is your national parliament/congress as a law-making institution? [1 = very ineffective; 7 = very effective, among the best in the world] | 2009–2010 weighted average

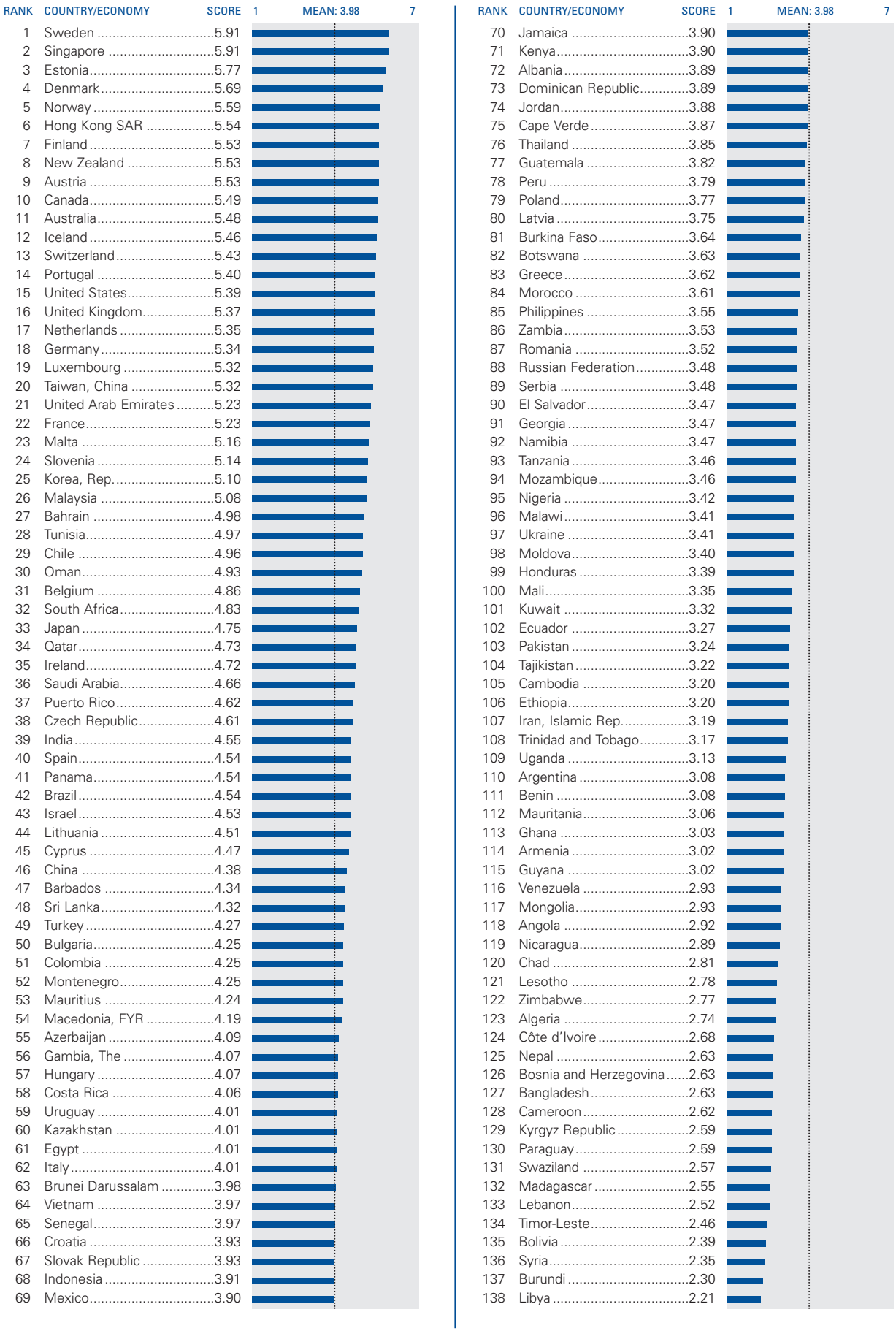
RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.49
2	Sweden	5.88
3	New Zealand	5.84
4	Australia	5.66
5	Luxembourg	5.54
6	Finland	5.48
7	Barbados	5.41
8	Denmark	5.39
9	Oman	5.37
10	Norway	5.24
11	Canada	5.11
12	United Kingdom	5.06
13	France	5.05
14	Switzerland	4.96
15	Germany	4.95
16	Tunisia	4.94
17	Mauritius	4.91
18	Qatar	4.84
19	Malta	4.76
20	Gambia, The	4.74
21	Malaysia	4.63
22	United Arab Emirates	4.62
23	Netherlands	4.60
24	Namibia	4.59
25	Botswana	4.57
26	Saudi Arabia	4.53
27	Cyprus	4.53
28	Austria	4.43
29	South Africa	4.42
30	China	4.41
31	Japan	4.40
32	Ghana	4.38
33	Cape Verde	4.37
34	Brunei Darussalam	4.32
35	Israel	4.32
36	India	4.30
37	Estonia	4.21
38	Iceland	4.19
39	Hong Kong SAR	4.17
40	Vietnam	4.15
41	Albania	4.05
42	Ireland	4.02
43	Tajikistan	4.00
44	Sri Lanka	3.99
45	United States	3.98
46	Chile	3.96
47	Turkey	3.95
48	Zambia	3.89
49	Montenegro	3.85
50	Iran, Islamic Rep.	3.81
51	Azerbaijan	3.77
52	Egypt	3.77
53	Tanzania	3.76
54	Ethiopia	3.74
55	Timor-Leste	3.74
56	Malawi	3.72
57	Kazakhstan	3.71
58	Morocco	3.68
59	Bahrain	3.68
60	Trinidad and Tobago	3.67
61	Mozambique	3.66
62	Cambodia	3.62
63	Indonesia	3.60
64	Macedonia, FYR	3.58
65	Jamaica	3.55
66	Slovenia	3.54
67	Benin	3.52
68	Guyana	3.52
69	Spain	3.51
70	Portugal	3.50
71	Greece	3.48
72	Uruguay	3.46
73	Libya	3.46
74	Angola	3.45
75	Uganda	3.39
76	Thailand	3.36
77	Mali	3.36
78	Belgium	3.33
79	Zimbabwe	3.31
80	Nigeria	3.29
81	Kuwait	3.29
82	Russian Federation	3.29
83	Poland	3.26
84	Georgia	3.24
85	Taiwan, China	3.21
86	Swaziland	3.18
87	Burkina Faso	3.16
88	Honduras	3.15
89	Croatia	3.14
90	Syria	3.14
91	Moldova	3.11
92	Lesotho	3.09
93	Czech Republic	3.07
94	Slovak Republic	3.03
95	Bangladesh	3.03
96	Cameroon	3.02
97	Italy	2.99
98	Armenia	2.97
99	Senegal	2.94
100	Lithuania	2.93
101	Jordan	2.92
102	Pakistan	2.86
103	Hungary	2.86
104	Romania	2.85
105	Kenya	2.83
106	Serbia	2.81
107	Côte d'Ivoire	2.79
108	Colombia	2.79
109	Bulgaria	2.78
110	Chad	2.78
111	Algeria	2.75
112	El Salvador	2.63
113	Dominican Republic	2.59
114	Costa Rica	2.59
115	Latvia	2.58
116	Puerto Rico	2.56
117	Madagascar	2.53
118	Mongolia	2.52
119	Philippines	2.52
120	Mexico	2.48
121	Panama	2.44
122	Brazil	2.44
123	Kyrgyz Republic	2.44
124	Lebanon	2.40
125	Mauritania	2.34
126	Burundi	2.29
127	Nicaragua	2.24
128	Bolivia	2.22
129	Argentina	2.21
130	Nepal	2.20
131	Korea, Rep.	2.18
132	Bosnia and Herzegovina	2.17
133	Ukraine	2.03
134	Guatemala	2.02
135	Paraguay	2.02
136	Ecuador	1.93
137	Peru	1.86
138	Venezuela	1.57



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2.02 Laws relating to ICT

How would you assess your country's laws relating to the use of information and communication technologies (e.g., electronic commerce, digital signatures, consumer protection)? [1 = nonexistent; 7 = well developed] | 2009–2010 weighted average

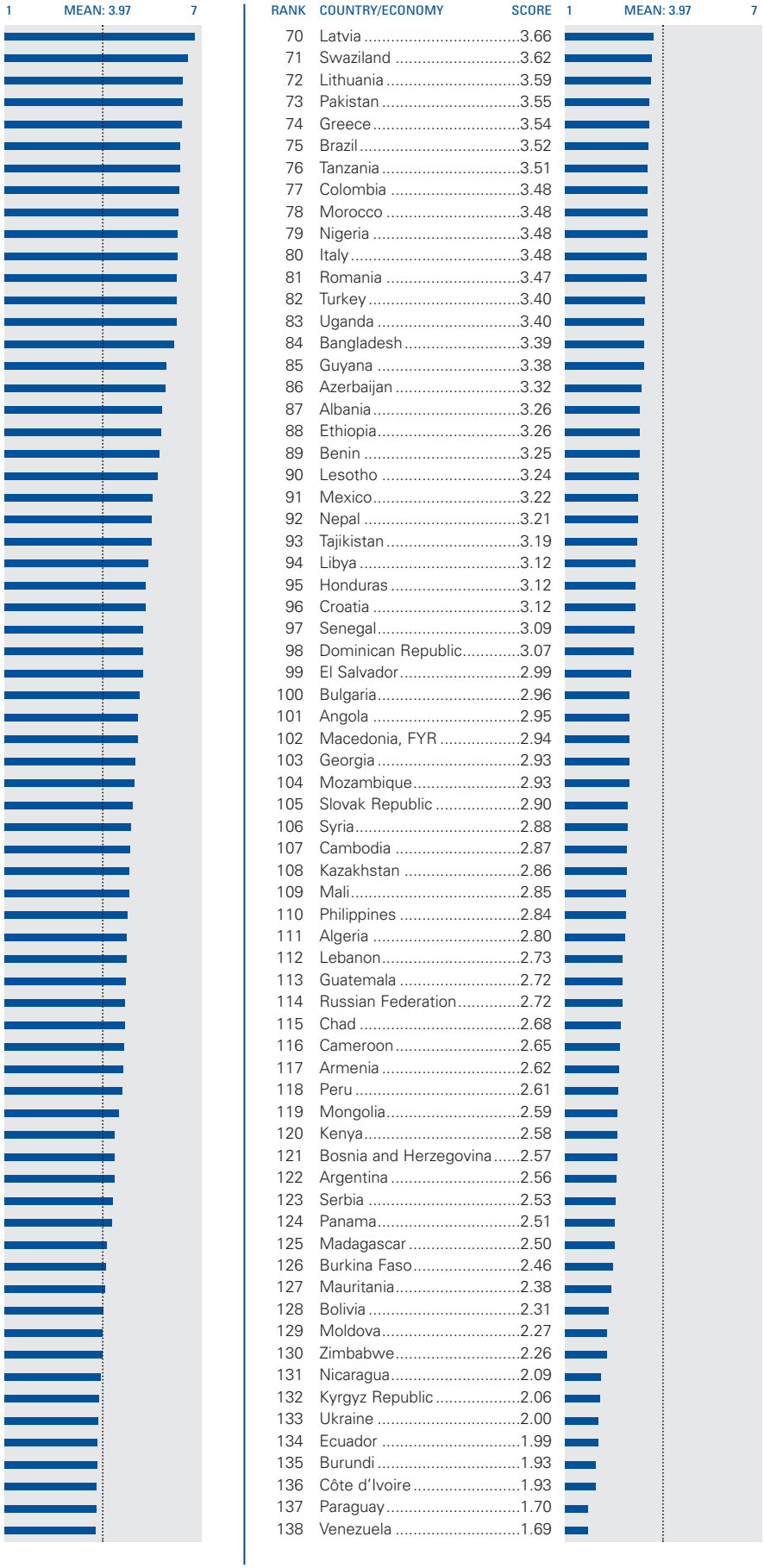


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2.03 Judicial independence

To what extent is the judiciary in your country independent from influences of members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	New Zealand	6.76
2	Sweden	6.56
3	Denmark	6.40
4	Switzerland	6.39
5	Germany	6.37
6	Finland	6.33
7	Qatar	6.32
8	United Kingdom	6.29
9	Australia	6.28
10	Ireland	6.25
11	Canada	6.24
12	Netherlands	6.23
13	Norway	6.22
14	Israel	6.21
15	Hong Kong SAR	6.15
16	Iceland	5.91
17	Luxembourg	5.87
18	Austria	5.77
19	Barbados	5.74
20	Japan	5.70
21	Singapore	5.64
22	Cyprus	5.49
23	Namibia	5.46
24	Estonia	5.46
25	Chile	5.36
26	Costa Rica	5.28
27	Uruguay	5.26
28	Belgium	5.20
29	Saudi Arabia	5.20
30	Botswana	5.20
31	Oman	5.10
32	Malta	5.04
33	Bahrain	5.04
34	United States	4.97
35	Kuwait	4.93
36	United Arab Emirates	4.89
37	Mauritius	4.83
38	France	4.79
39	Tunisia	4.79
40	India	4.77
41	Puerto Rico	4.73
42	Brunei Darussalam	4.71
43	South Africa	4.70
44	Trinidad and Tobago	4.67
45	Sri Lanka	4.65
46	Malawi	4.65
47	Jordan	4.61
48	Taiwan, China	4.60
49	Gambia, The	4.56
50	Jamaica	4.45
51	Malaysia	4.34
52	Poland	4.33
53	Thailand	4.32
54	Portugal	4.29
55	Slovenia	4.25
56	Montenegro	4.10
57	Cape Verde	4.06
58	Hungary	4.04
59	Korea, Rep.	3.99
60	Czech Republic	3.97
61	China	3.97
62	Egypt	3.91
63	Vietnam	3.87
64	Iran, Islamic Rep.	3.84
65	Spain	3.82
66	Indonesia	3.80
67	Ghana	3.79
68	Zambia	3.79
69	Timor-Leste	3.74
70	Latvia	3.66
71	Swaziland	3.62
72	Lithuania	3.59
73	Pakistan	3.55
74	Greece	3.54
75	Brazil	3.52
76	Tanzania	3.51
77	Colombia	3.48
78	Morocco	3.48
79	Nigeria	3.48
80	Italy	3.48
81	Romania	3.47
82	Turkey	3.40
83	Uganda	3.40
84	Bangladesh	3.39
85	Guyana	3.38
86	Azerbaijan	3.32
87	Albania	3.26
88	Ethiopia	3.26
89	Benin	3.25
90	Lesotho	3.24
91	Mexico	3.22
92	Nepal	3.21
93	Tajikistan	3.19
94	Libya	3.12
95	Honduras	3.12
96	Croatia	3.12
97	Senegal	3.09
98	Dominican Republic	3.07
99	El Salvador	2.99
100	Bulgaria	2.96
101	Angola	2.95
102	Macedonia, FYR	2.94
103	Georgia	2.93
104	Mozambique	2.93
105	Slovak Republic	2.90
106	Syria	2.88
107	Cambodia	2.87
108	Kazakhstan	2.86
109	Mali	2.85
110	Philippines	2.84
111	Algeria	2.80
112	Lebanon	2.73
113	Guatemala	2.72
114	Russian Federation	2.72
115	Chad	2.68
116	Cameroon	2.65
117	Armenia	2.62
118	Peru	2.61
119	Mongolia	2.59
120	Kenya	2.58
121	Bosnia and Herzegovina	2.57
122	Argentina	2.56
123	Serbia	2.53
124	Panama	2.51
125	Madagascar	2.50
126	Burkina Faso	2.46
127	Mauritania	2.38
128	Bolivia	2.31
129	Moldova	2.27
130	Zimbabwe	2.26
131	Nicaragua	2.09
132	Kyrgyz Republic	2.06
133	Ukraine	2.00
134	Ecuador	1.99
135	Burundi	1.93
136	Côte d'Ivoire	1.93
137	Paraguay	1.70
138	Venezuela	1.69

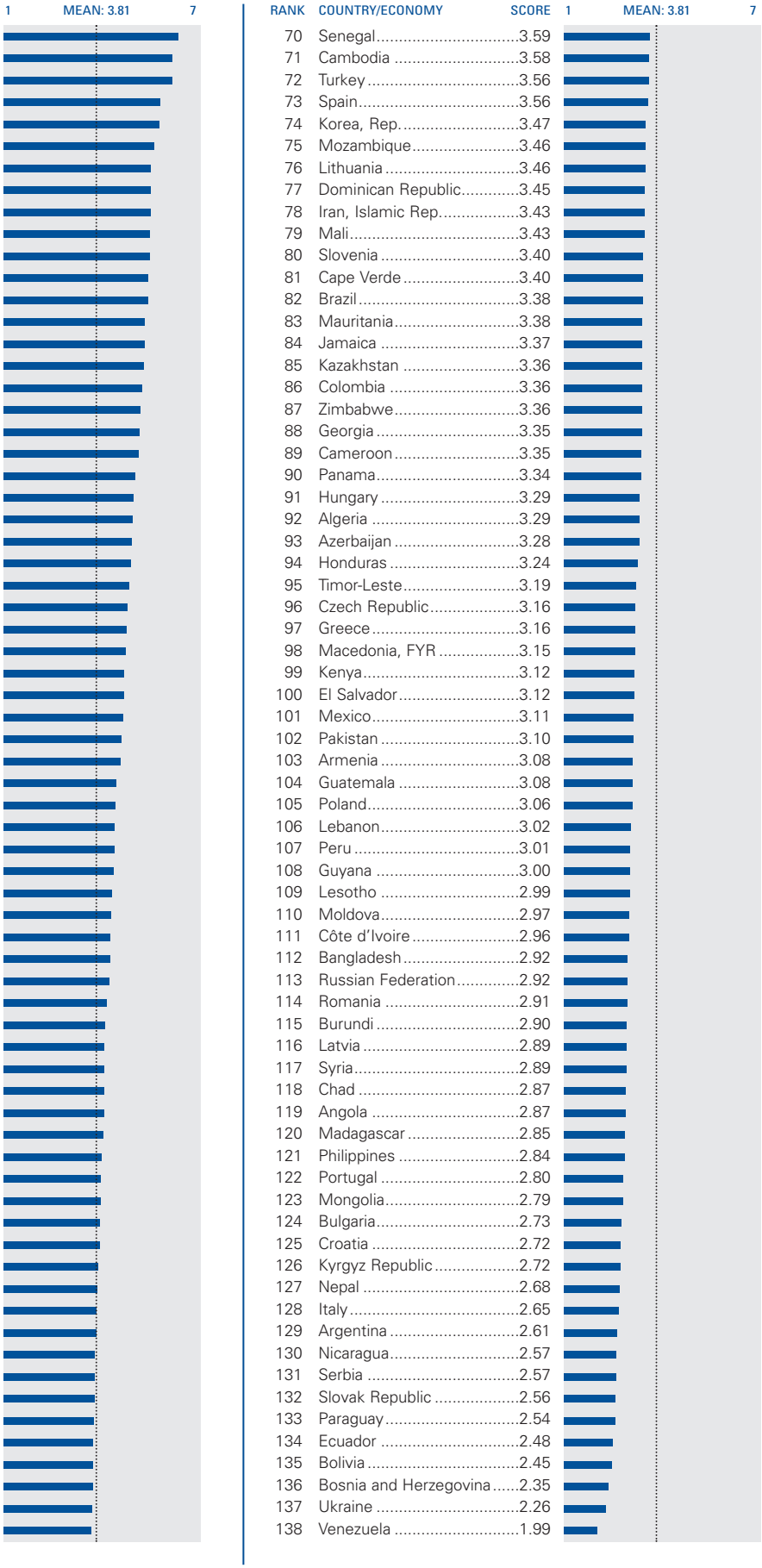


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2.04 Efficiency of legal framework in settling disputes

How efficient is the legal framework in your country for private businesses to settle disputes? [1 = extremely inefficient; 7 = highly efficient] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.30
2	Sweden	6.12
3	Hong Kong SAR	6.11
4	Norway	5.75
5	New Zealand	5.72
6	Qatar	5.56
7	Finland	5.46
8	United Kingdom	5.46
9	Netherlands	5.45
10	Switzerland	5.42
11	Luxembourg	5.42
12	Australia	5.38
13	Denmark	5.36
14	Canada	5.26
15	Germany	5.26
16	Oman	5.24
17	Tunisia	5.18
18	Austria	5.14
19	South Africa	5.12
20	Iceland	5.08
21	Barbados	4.97
22	United Arab Emirates	4.94
23	France	4.91
24	Namibia	4.89
25	Gambia, The	4.86
26	Chile	4.80
27	Japan	4.74
28	Cyprus	4.72
29	Mauritius	4.70
30	Malaysia	4.65
31	Puerto Rico	4.64
32	Botswana	4.62
33	United States	4.58
34	Ireland	4.54
35	Brunei Darussalam	4.42
36	Saudi Arabia	4.39
37	Kuwait	4.36
38	Jordan	4.36
39	Egypt	4.34
40	Estonia	4.27
41	Sri Lanka	4.26
42	Malta	4.22
43	China	4.21
44	Israel	4.19
45	Thailand	4.13
46	India	4.07
47	Montenegro	4.05
48	Swaziland	4.04
49	Ghana	4.04
50	Taiwan, China	4.03
51	Belgium	4.03
52	Costa Rica	3.97
53	Zambia	3.93
54	Uruguay	3.93
55	Malawi	3.92
56	Morocco	3.90
57	Bahrain	3.86
58	Albania	3.82
59	Indonesia	3.81
60	Vietnam	3.80
61	Trinidad and Tobago	3.77
62	Uganda	3.75
63	Tajikistan	3.75
64	Tanzania	3.72
65	Benin	3.72
66	Ethiopia	3.71
67	Nigeria	3.70
68	Burkina Faso	3.67
69	Libya	3.65
70	Senegal	3.59
71	Cambodia	3.58
72	Turkey	3.56
73	Spain	3.56
74	Korea, Rep.	3.47
75	Mozambique	3.46
76	Lithuania	3.46
77	Dominican Republic	3.45
78	Iran, Islamic Rep.	3.43
79	Mali	3.43
80	Slovenia	3.40
81	Cape Verde	3.40
82	Brazil	3.38
83	Mauritania	3.38
84	Jamaica	3.37
85	Kazakhstan	3.36
86	Colombia	3.36
87	Zimbabwe	3.36
88	Georgia	3.35
89	Cameroon	3.35
90	Panama	3.34
91	Hungary	3.29
92	Algeria	3.29
93	Azerbaijan	3.28
94	Honduras	3.24
95	Timor-Leste	3.19
96	Czech Republic	3.16
97	Greece	3.16
98	Macedonia, FYR	3.15
99	Kenya	3.12
100	El Salvador	3.12
101	Mexico	3.11
102	Pakistan	3.10
103	Armenia	3.08
104	Guatemala	3.08
105	Poland	3.06
106	Lebanon	3.02
107	Peru	3.01
108	Guyana	3.00
109	Lesotho	2.99
110	Moldova	2.97
111	Côte d'Ivoire	2.96
112	Bangladesh	2.92
113	Russian Federation	2.92
114	Romania	2.91
115	Burundi	2.90
116	Latvia	2.89
117	Syria	2.89
118	Chad	2.87
119	Angola	2.87
120	Madagascar	2.85
121	Philippines	2.84
122	Portugal	2.80
123	Mongolia	2.79
124	Bulgaria	2.73
125	Croatia	2.72
126	Kyrgyz Republic	2.72
127	Nepal	2.68
128	Italy	2.65
129	Argentina	2.61
130	Nicaragua	2.57
131	Serbia	2.57
132	Slovak Republic	2.56
133	Paraguay	2.54
134	Ecuador	2.48
135	Bolivia	2.45
136	Bosnia and Herzegovina	2.35
137	Ukraine	2.26
138	Venezuela	1.99

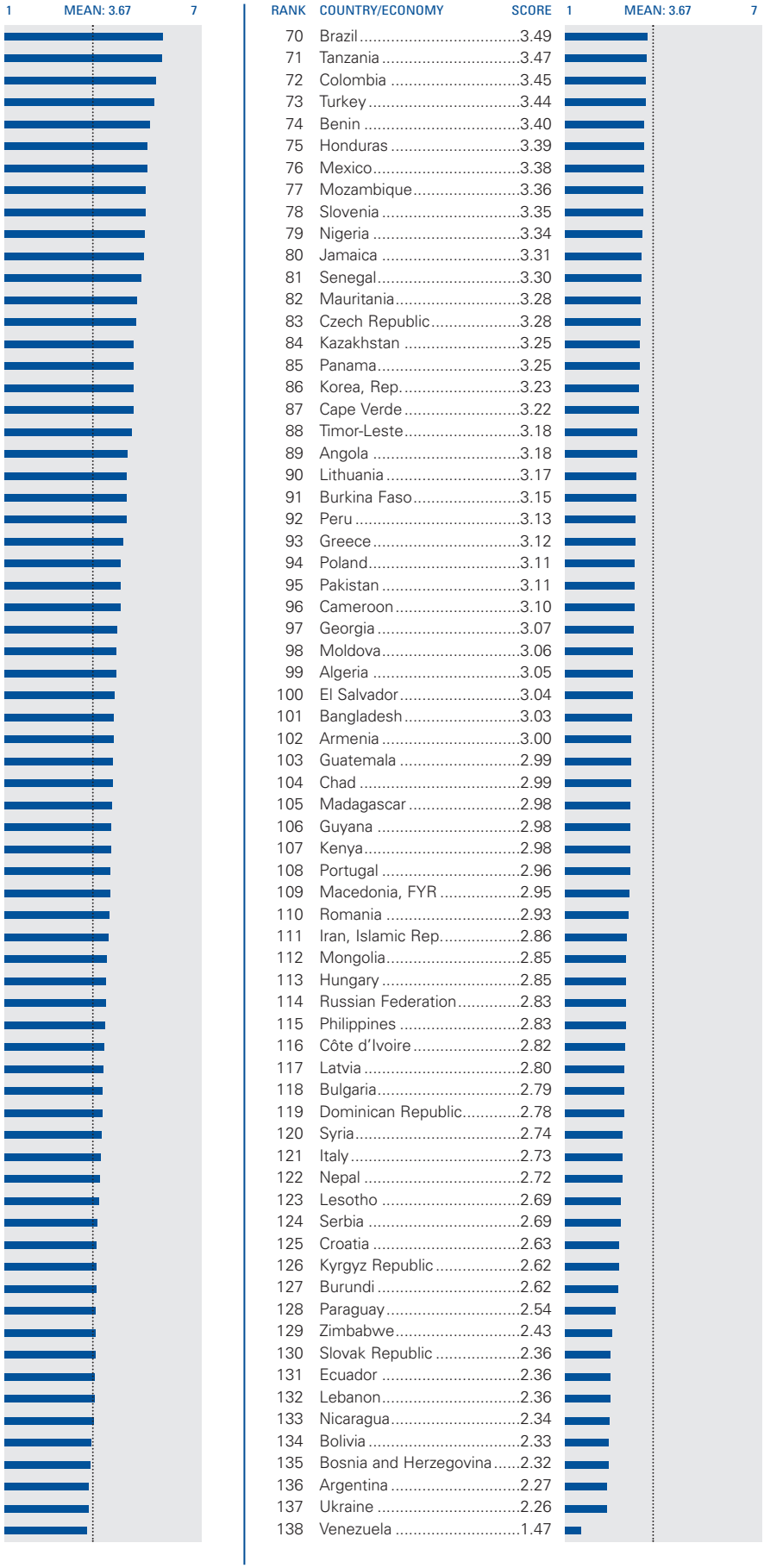


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2.05 Efficiency of legal framework in challenging regulations

How efficient is the legal framework in your country for private businesses to challenge the legality of government actions and/or regulations? [1 = extremely inefficient; 7 = highly efficient] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	5.81
2	Hong Kong SAR	5.77
3	Luxembourg	5.58
4	Finland	5.55
5	Switzerland	5.40
6	Singapore	5.34
7	New Zealand	5.33
8	Germany	5.28
9	Norway	5.27
10	Austria	5.24
11	Denmark	5.22
12	Netherlands	5.14
13	Australia	5.00
14	Iceland	4.99
15	Namibia	4.91
16	United Kingdom	4.91
17	France	4.91
18	Canada	4.90
19	Tunisia	4.84
20	South Africa	4.72
21	Cyprus	4.71
22	Barbados	4.70
23	Oman	4.69
24	Chile	4.60
25	United Arab Emirates	4.51
26	Botswana	4.51
27	Ireland	4.51
28	Mauritius	4.42
29	Saudi Arabia	4.40
30	Malaysia	4.38
31	Puerto Rico	4.34
32	Qatar	4.31
33	Japan	4.31
34	Uruguay	4.27
35	United States	4.27
36	Gambia, The	4.25
37	India	4.22
38	Costa Rica	4.22
39	Montenegro	4.20
40	Estonia	4.19
41	Kuwait	4.16
42	Israel	4.14
43	Belgium	4.09
44	Bahrain	4.08
45	Taiwan, China	4.06
46	Sri Lanka	4.05
47	Thailand	4.02
48	Malta	3.99
49	Jordan	3.98
50	China	3.97
51	Malawi	3.95
52	Morocco	3.91
53	Trinidad and Tobago	3.90
54	Indonesia	3.86
55	Albania	3.81
56	Ghana	3.78
57	Vietnam	3.78
58	Brunei Darussalam	3.77
59	Swaziland	3.77
60	Cambodia	3.75
61	Azerbaijan	3.75
62	Uganda	3.74
63	Tajikistan	3.73
64	Spain	3.72
65	Zambia	3.62
66	Mali	3.60
67	Libya	3.54
68	Egypt	3.54
69	Ethiopia	3.49
70	Brazil	3.49
71	Tanzania	3.47
72	Colombia	3.45
73	Turkey	3.44
74	Benin	3.40
75	Honduras	3.39
76	Mexico	3.38
77	Mozambique	3.36
78	Slovenia	3.35
79	Nigeria	3.34
80	Jamaica	3.31
81	Senegal	3.30
82	Mauritania	3.28
83	Czech Republic	3.28
84	Kazakhstan	3.25
85	Panama	3.25
86	Korea, Rep.	3.23
87	Cape Verde	3.22
88	Timor-Leste	3.18
89	Angola	3.18
90	Lithuania	3.17
91	Burkina Faso	3.15
92	Peru	3.13
93	Greece	3.12
94	Poland	3.11
95	Pakistan	3.11
96	Cameroon	3.10
97	Georgia	3.07
98	Moldova	3.06
99	Algeria	3.05
100	El Salvador	3.04
101	Bangladesh	3.03
102	Armenia	3.00
103	Guatemala	2.99
104	Chad	2.99
105	Madagascar	2.98
106	Guyana	2.98
107	Kenya	2.98
108	Portugal	2.96
109	Macedonia, FYR	2.95
110	Romania	2.93
111	Iran, Islamic Rep.	2.86
112	Mongolia	2.85
113	Hungary	2.85
114	Russian Federation	2.83
115	Philippines	2.83
116	Côte d'Ivoire	2.82
117	Latvia	2.80
118	Bulgaria	2.79
119	Dominican Republic	2.78
120	Syria	2.74
121	Italy	2.73
122	Nepal	2.72
123	Lesotho	2.69
124	Serbia	2.69
125	Croatia	2.63
126	Kyrgyz Republic	2.62
127	Burundi	2.62
128	Paraguay	2.54
129	Zimbabwe	2.43
130	Slovak Republic	2.36
131	Ecuador	2.36
132	Lebanon	2.36
133	Nicaragua	2.34
134	Bolivia	2.33
135	Bosnia and Herzegovina	2.32
136	Argentina	2.27
137	Ukraine	2.26
138	Venezuela	1.47

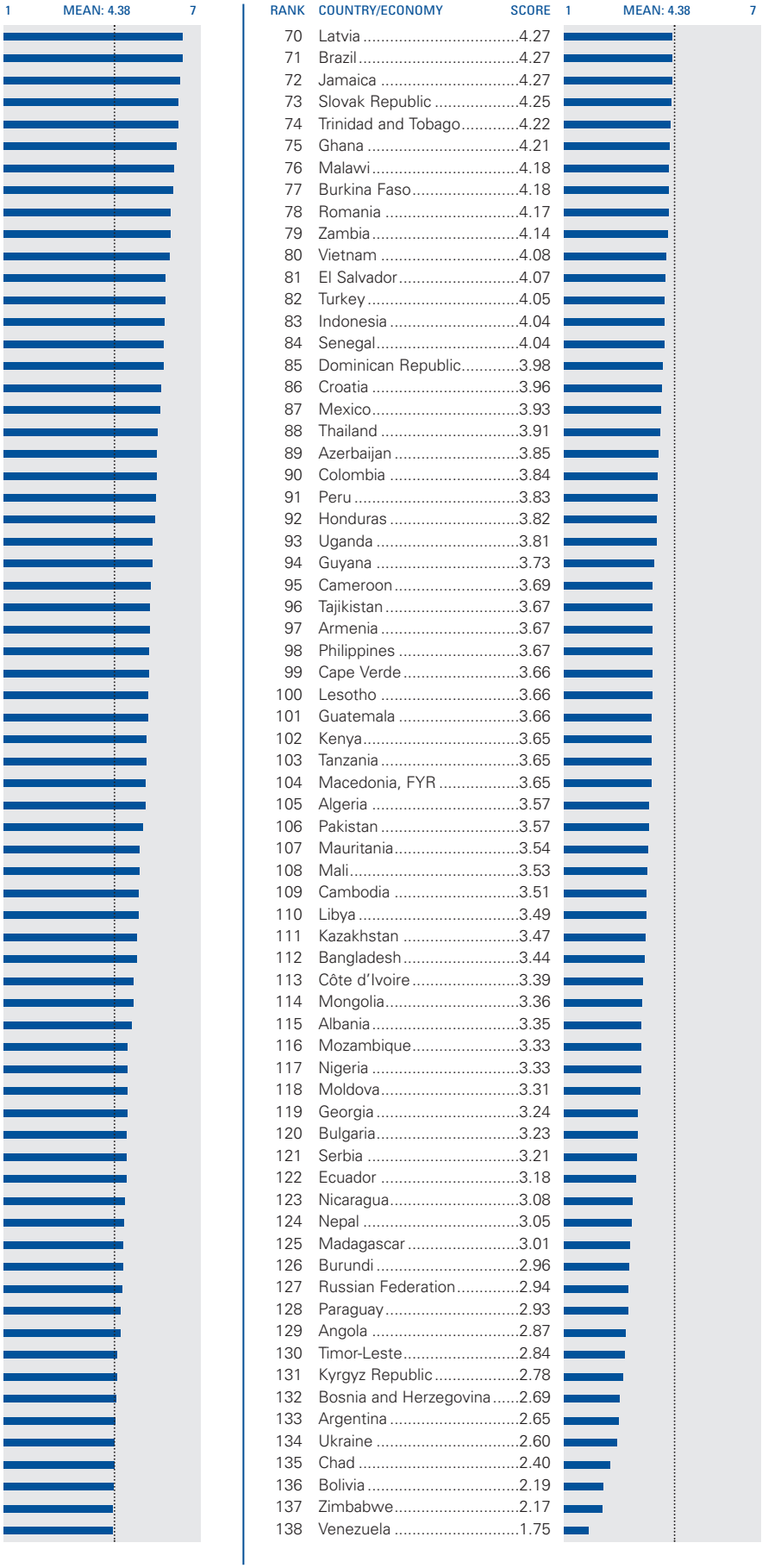


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2.06 Property rights

How would you rate the protection of property rights, including financial assets, in your country? [1 = very weak; 7 = very strong] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Switzerland	6.41
2	Finland	6.41
3	Singapore	6.34
4	Hong Kong SAR	6.29
5	Sweden	6.28
6	Luxembourg	6.24
7	Austria	6.15
8	Germany	6.12
9	Norway	6.07
10	Canada	6.06
11	Denmark	6.03
12	Puerto Rico	5.90
13	Ireland	5.89
14	Australia	5.87
15	Netherlands	5.84
16	France	5.83
17	United Kingdom	5.75
18	New Zealand	5.73
19	Taiwan, China	5.65
20	Namibia	5.64
21	Bahrain	5.62
22	Barbados	5.62
23	Japan	5.58
24	Oman	5.51
25	Qatar	5.49
26	Belgium	5.45
27	Cyprus	5.43
28	Saudi Arabia	5.42
29	South Africa	5.40
30	Jordan	5.40
31	Tunisia	5.38
32	Iceland	5.38
33	Estonia	5.33
34	Malta	5.31
35	Botswana	5.30
36	Mauritius	5.29
37	Chile	5.21
38	China	5.11
39	Gambia, The	5.10
40	United States	5.10
41	Malaysia	5.09
42	Portugal	5.04
43	United Arab Emirates	5.03
44	Spain	4.92
45	Kuwait	4.92
46	Swaziland	4.87
47	Montenegro	4.75
48	Israel	4.75
49	Uruguay	4.74
50	Panama	4.74
51	Brunei Darussalam	4.72
52	Greece	4.72
53	Korea, Rep.	4.71
54	Benin	4.67
55	Egypt	4.63
56	Lebanon	4.63
57	Slovenia	4.63
58	Poland	4.59
59	Ethiopia	4.54
60	India	4.54
61	Syria	4.43
62	Morocco	4.42
63	Sri Lanka	4.42
64	Czech Republic	4.39
65	Hungary	4.36
66	Costa Rica	4.35
67	Lithuania	4.34
68	Italy	4.30
69	Iran, Islamic Rep.	4.29
70	Latvia	4.27
71	Brazil	4.27
72	Jamaica	4.27
73	Slovak Republic	4.25
74	Trinidad and Tobago	4.22
75	Ghana	4.21
76	Malawi	4.18
77	Burkina Faso	4.18
78	Romania	4.17
79	Zambia	4.14
80	Vietnam	4.08
81	El Salvador	4.07
82	Turkey	4.05
83	Indonesia	4.04
84	Senegal	4.04
85	Dominican Republic	3.98
86	Croatia	3.96
87	Mexico	3.93
88	Thailand	3.91
89	Azerbaijan	3.85
90	Colombia	3.84
91	Peru	3.83
92	Honduras	3.82
93	Uganda	3.81
94	Guyana	3.73
95	Cameroon	3.69
96	Tajikistan	3.67
97	Armenia	3.67
98	Philippines	3.67
99	Cape Verde	3.66
100	Lesotho	3.66
101	Guatemala	3.66
102	Kenya	3.65
103	Tanzania	3.65
104	Macedonia, FYR	3.65
105	Algeria	3.57
106	Pakistan	3.57
107	Mauritania	3.54
108	Mali	3.53
109	Cambodia	3.51
110	Libya	3.49
111	Kazakhstan	3.47
112	Bangladesh	3.44
113	Côte d'Ivoire	3.39
114	Mongolia	3.36
115	Albania	3.35
116	Mozambique	3.33
117	Nigeria	3.33
118	Moldova	3.31
119	Georgia	3.24
120	Bulgaria	3.23
121	Serbia	3.21
122	Ecuador	3.18
123	Nicaragua	3.08
124	Nepal	3.05
125	Madagascar	3.01
126	Burundi	2.96
127	Russian Federation	2.94
128	Paraguay	2.93
129	Angola	2.87
130	Timor-Leste	2.84
131	Kyrgyz Republic	2.78
132	Bosnia and Herzegovina	2.69
133	Argentina	2.65
134	Ukraine	2.60
135	Chad	2.40
136	Bolivia	2.19
137	Zimbabwe	2.17
138	Venezuela	1.75

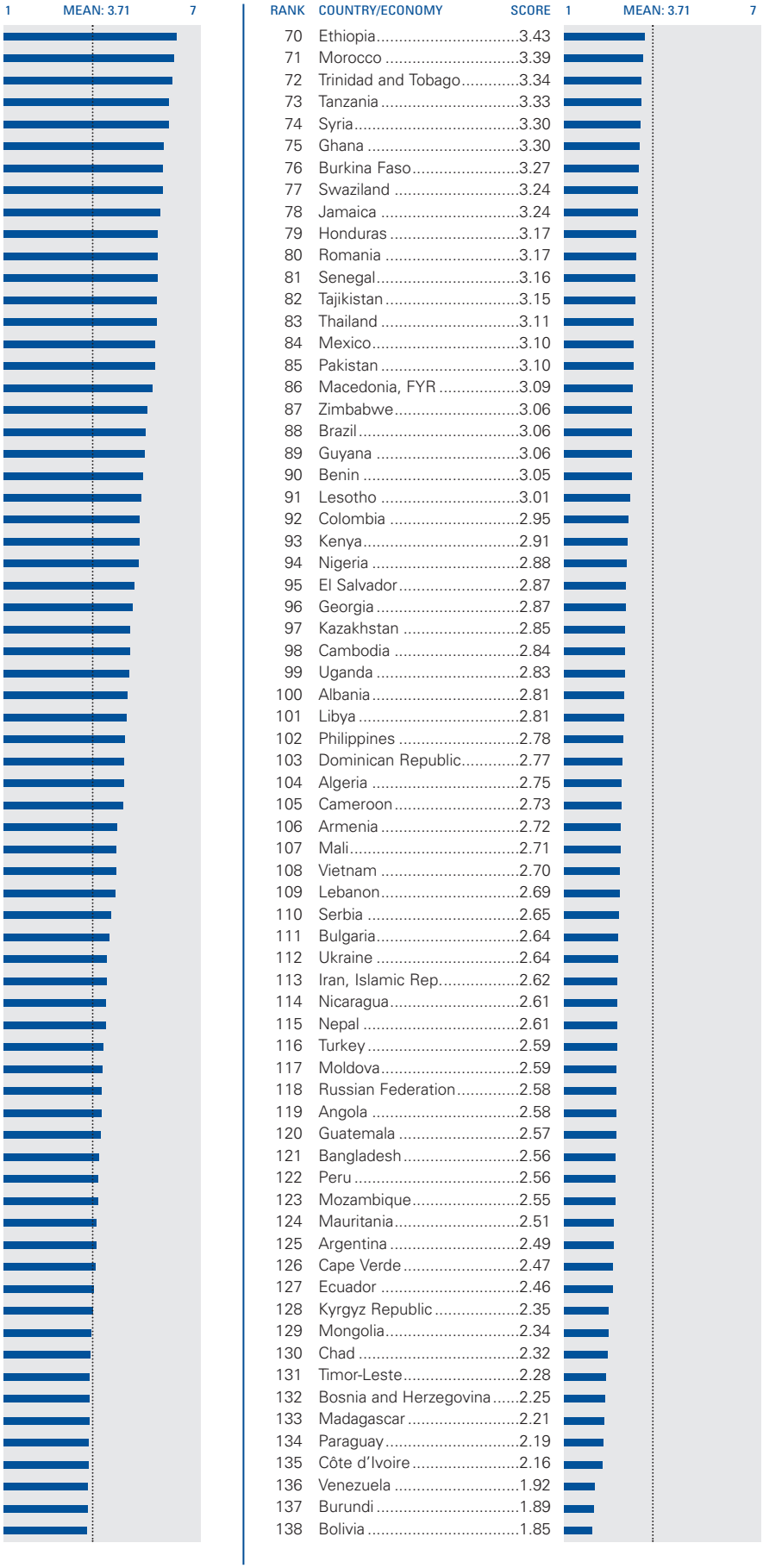


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2.07 Intellectual property protection

How would you rate intellectual property protection, including anti-counterfeiting measures, in your country? [1 = very weak; 7 = very strong] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	6.23
2	Finland	6.16
3	Singapore	6.12
4	Switzerland	6.01
5	Luxembourg	6.00
6	France	5.86
7	New Zealand	5.82
8	Puerto Rico	5.81
9	Germany	5.75
10	Netherlands	5.68
11	Austria	5.68
12	Denmark	5.67
13	Canada	5.63
14	Australia	5.63
15	Ireland	5.60
16	Norway	5.59
17	United Kingdom	5.50
18	Hong Kong SAR	5.35
19	United Arab Emirates	5.30
20	Oman	5.28
21	Japan	5.22
22	Bahrain	5.17
23	Belgium	5.12
24	United States	5.11
25	Iceland	5.09
26	Taiwan, China	4.95
27	South Africa	4.92
28	Qatar	4.83
29	Barbados	4.83
30	Saudi Arabia	4.80
31	Namibia	4.76
32	Cyprus	4.72
33	Malaysia	4.67
34	Estonia	4.64
35	Gambia, The	4.64
36	Malta	4.63
37	Tunisia	4.45
38	Jordan	4.41
39	Slovenia	4.41
40	Portugal	4.38
41	Spain	4.26
42	Israel	4.20
43	Korea, Rep.	4.13
44	Botswana	4.11
45	Sri Lanka	4.10
46	Kuwait	4.10
47	Panama	4.03
48	China	3.99
49	Greece	3.96
50	Hungary	3.96
51	Czech Republic	3.94
52	Uruguay	3.88
53	Mauritius	3.87
54	Brunei Darussalam	3.87
55	Malawi	3.80
56	Slovak Republic	3.80
57	Indonesia	3.78
58	Chile	3.73
59	Poland	3.72
60	Italy	3.66
61	Montenegro	3.63
62	Azerbaijan	3.60
63	Latvia	3.59
64	Zambia	3.59
65	India	3.58
66	Egypt	3.58
67	Costa Rica	3.56
68	Lithuania	3.54
69	Croatia	3.53
70	Ethiopia	3.43
71	Morocco	3.39
72	Trinidad and Tobago	3.34
73	Tanzania	3.33
74	Syria	3.30
75	Ghana	3.30
76	Burkina Faso	3.27
77	Swaziland	3.24
78	Jamaica	3.24
79	Honduras	3.17
80	Romania	3.17
81	Senegal	3.16
82	Tajikistan	3.15
83	Thailand	3.11
84	Mexico	3.10
85	Pakistan	3.10
86	Macedonia, FYR	3.09
87	Zimbabwe	3.06
88	Brazil	3.06
89	Guyana	3.06
90	Benin	3.05
91	Lesotho	3.01
92	Colombia	2.95
93	Kenya	2.91
94	Nigeria	2.88
95	El Salvador	2.87
96	Georgia	2.87
97	Kazakhstan	2.85
98	Cambodia	2.84
99	Uganda	2.83
100	Albania	2.81
101	Libya	2.81
102	Philippines	2.78
103	Dominican Republic	2.77
104	Algeria	2.75
105	Cameroon	2.73
106	Armenia	2.72
107	Mali	2.71
108	Vietnam	2.70
109	Lebanon	2.69
110	Serbia	2.65
111	Bulgaria	2.64
112	Ukraine	2.64
113	Iran, Islamic Rep.	2.62
114	Nicaragua	2.61
115	Nepal	2.61
116	Turkey	2.59
117	Moldova	2.59
118	Russian Federation	2.58
119	Angola	2.58
120	Guatemala	2.57
121	Bangladesh	2.56
122	Peru	2.56
123	Mozambique	2.55
124	Mauritania	2.51
125	Argentina	2.49
126	Cape Verde	2.47
127	Ecuador	2.46
128	Kyrgyz Republic	2.35
129	Mongolia	2.34
130	Chad	2.32
131	Timor-Leste	2.28
132	Bosnia and Herzegovina	2.25
133	Madagascar	2.21
134	Paraguay	2.19
135	Côte d'Ivoire	2.16
136	Venezuela	1.92
137	Burundi	1.89
138	Bolivia	1.85



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

2.08 Software piracy rate

Unlicensed software units as a percentage of total software units installed | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	United States	20
2	Japan	21
2	Luxembourg	21
4	New Zealand	22
5	Australia	25
5	Austria	25
5	Belgium	25
5	Finland	25
5	Sweden	25
5	Switzerland	25
11	Denmark	26
12	United Kingdom	27
13	Germany	28
13	Netherlands	28
15	Canada	29
15	Norway	29
17	Israel	33
18	Ireland	35
18	Singapore	35
18	South Africa	35
21	United Arab Emirates	36
22	Czech Republic	37
23	Taiwan, China	38
24	France	40
24	Portugal	40
26	Hungary	41
26	Korea, Rep.	41
28	Spain	42
29	Slovak Republic	43
30	Malta	45
31	Puerto Rico	46
31	Slovenia	46
33	Hong Kong SAR	47
34	Cyprus	48
35	Iceland	49
35	Italy	49
37	Estonia	50
38	Qatar	51
38	Saudi Arabia	51
40	Bahrain	54
40	Croatia	54
40	Lithuania	54
40	Poland	54
44	Colombia	55
45	Brazil	56
45	Latvia	56
45	Mauritius	56
48	Jordan	57
49	Greece	58
49	Malaysia	58
51	Costa Rica	59
51	Egypt	59
53	Kuwait	60
53	Mexico	60
55	Oman	63
55	Turkey	63
57	Chile	64
58	India	65
58	Romania	65
60	Bosnia and Herzegovina	66
60	Morocco	66
62	Brunei Darussalam	67
62	Bulgaria	67
62	Ecuador	67
62	Macedonia, FYR	67
62	Russian Federation	67
67	Uruguay	68
68	Philippines	69
69	Peru	70
70	Argentina	71
71	Lebanon	72
71	Tunisia	72
73	Panama	73
74	Honduras	74
74	Serbia	74
76	Albania	75
76	Thailand	75
78	Dominican Republic	77
79	Kazakhstan	78
79	Senegal	78
81	Botswana	79
81	China	79
81	Côte d'Ivoire	79
81	Kenya	79
81	Nicaragua	79
86	Bolivia	80
86	El Salvador	80
86	Guatemala	80
89	Montenegro	81
90	Paraguay	82
90	Zambia	82
92	Cameroon	83
92	Nigeria	83
94	Algeria	84
94	Pakistan	84
96	Ukraine	85
96	Vietnam	85
98	Indonesia	86
99	Venezuela	87
100	Azerbaijan	88
100	Libya	88
102	Sri Lanka	89
103	Armenia	90
104	Bangladesh	91
104	Moldova	91
106	Zimbabwe	92
107	Georgia	95
n/a	Angola	n/a
n/a	Barbados	n/a
n/a	Benin	n/a
n/a	Burkina Faso	n/a
n/a	Burundi	n/a
n/a	Cambodia	n/a
n/a	Cape Verde	n/a
n/a	Chad	n/a
n/a	Ethiopia	n/a
n/a	Gambia, The	n/a
n/a	Ghana	n/a
n/a	Guyana	n/a
n/a	Iran, Islamic Rep.	n/a
n/a	Jamaica	n/a
n/a	Kyrgyz Republic	n/a
n/a	Lesotho	n/a
n/a	Madagascar	n/a
n/a	Malawi	n/a
n/a	Mali	n/a
n/a	Mauritania	n/a
n/a	Mongolia	n/a
n/a	Mozambique	n/a
n/a	Namibia	n/a
n/a	Nepal	n/a
n/a	Swaziland	n/a
n/a	Syria	n/a
n/a	Tajikistan	n/a
n/a	Tanzania	n/a
n/a	Timor-Leste	n/a
n/a	Trinidad and Tobago	n/a
n/a	Uganda	n/a

SOURCE: Business Software Alliance/International Data Corporation, *Global Software Piracy Study 2009* (May 2010)

2.09 Number of procedures to enforce a contract

Number of procedures to resolve a dispute, counted from the moment the plaintiff files a lawsuit in court until the moment of payment | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	Ireland	20
2	Singapore	21
3	Hong Kong SAR	24
4	Austria	25
5	Belgium	26
5	Luxembourg	26
5	Netherlands	26
8	Czech Republic	27
8	Iceland	27
8	Latvia	27
11	Australia	28
11	United Kingdom	28
13	Botswana	29
13	France	29
13	Venezuela	29
16	El Salvador	30
16	Germany	30
16	Japan	30
16	Lithuania	30
16	Malaysia	30
16	Mozambique	30
16	New Zealand	30
16	South Africa	30
16	Sweden	30
16	Ukraine	30
26	Guatemala	31
26	Moldova	31
26	Panama	31
26	Portugal	31
26	Romania	31
26	Slovak Republic	31
26	Switzerland	31
33	Finland	32
33	Gambia, The	32
33	Mongolia	32
33	Slovenia	32
33	United States	32
38	Côte d'Ivoire	33
38	Namibia	33
38	Norway	33
41	China	34
41	Colombia	34
41	Dominican Republic	34
41	Tajikistan	34
41	Vietnam	34
46	Denmark	35
46	Hungary	35
46	Israel	35
46	Jamaica	35
46	Korea, Rep.	35
46	Nicaragua	35
46	Turkey	35
46	Zambia	35
54	Argentina	36
54	Canada	36
54	Chile	36
54	Estonia	36
54	Georgia	36
54	Ghana	36
54	Guyana	36
54	Mali	36
54	Mauritius	36
54	Serbia	36
54	Thailand	36
65	Bosnia and Herzegovina	37
65	Burkina Faso	37
65	Cape Verde	37
65	Ethiopia	37
65	Lebanon	37
65	Macedonia, FYR	37
65	Philippines	37
65	Russian Federation	37
73	Croatia	38
73	Jordan	38
73	Kazakhstan	38
73	Madagascar	38
73	Mexico	38
73	Paraguay	38
73	Poland	38
73	Tanzania	38
73	Uganda	38
73	Zimbabwe	38
83	Albania	39
83	Azerbaijan	39
83	Bulgaria	39
83	Ecuador	39
83	Greece	39
83	Iran, Islamic Rep.	39
83	Kyrgyz Republic	39
83	Nepal	39
83	Puerto Rico	39
83	Spain	39
83	Tunisia	39
94	Bolivia	40
94	Costa Rica	40
94	Indonesia	40
94	Kenya	40
94	Morocco	40
94	Nigeria	40
94	Sri Lanka	40
94	Swaziland	40
102	Bangladesh	41
102	Chad	41
102	Egypt	41
102	Italy	41
102	Lesotho	41
102	Peru	41
102	Uruguay	41
109	Benin	42
109	Malawi	42
109	Trinidad and Tobago	42
112	Cameroon	43
112	Cyprus	43
112	Qatar	43
112	Saudi Arabia	43
116	Burundi	44
116	Cambodia	44
116	Senegal	44
119	Brazil	45
119	Honduras	45
121	Algeria	46
121	Angola	46
121	India	46
121	Mauritania	46
125	Pakistan	47
125	Taiwan, China	47
127	Bahrain	48
128	Armenia	49
128	Montenegro	49
128	United Arab Emirates	49
131	Kuwait	50
132	Oman	51
132	Timor-Leste	51
134	Syria	55
135	Brunei Darussalam	58
n/a	Barbados	n/a
n/a	Libya	n/a
n/a	Malta	n/a

SOURCE: The World Bank, *Doing Business 2011*

2.10 Time to enforce a contract

Number of days to resolve a dispute, counted from the moment the plaintiff decides to file the lawsuit in court until payment | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	150
2	New Zealand	216
3	Korea, Rep.	230
4	Azerbaijan	237
5	Kyrgyz Republic	260
6	Namibia	270
7	Lithuania	275
8	Hong Kong SAR	280
8	Norway	280
10	Russian Federation	281
11	Armenia	285
11	Georgia	285
13	Vietnam	295
14	United States	300
15	Latvia	309
16	Malawi	312
17	Mongolia	314
18	Luxembourg	321
19	France	331
20	Ukraine	345
21	Japan	360
22	Moldova	365
23	Macedonia, FYR	370
23	Mauritania	370
25	Finland	375
26	Albania	390
26	Kazakhstan	390
28	Germany	394
29	Australia	395
29	Hungary	395
31	Austria	397
32	United Kingdom	399
33	Cambodia	401
34	China	406
35	Denmark	410
35	Zimbabwe	410
37	Mexico	415
38	Iceland	417
38	Switzerland	417
40	Turkey	420
41	Cape Verde	425
41	Estonia	425
43	Peru	428
44	Tajikistan	430
45	Gambia, The	434
46	Burkina Faso	446
47	Nigeria	457
48	Dominican Republic	460
49	Tanzania	462
50	Kenya	465
51	Zambia	471
52	Thailand	479
53	Chile	480
54	Ghana	487
55	Uganda	490
56	Belgium	505
56	Iran, Islamic Rep.	505
58	Sweden	508
59	Taiwan, China	510
59	Venezuela	510
61	Romania	512
62	Netherlands	514
63	Ireland	515
63	Spain	515
65	United Arab Emirates	537
66	Brunei Darussalam	540
66	Nicaragua	540
68	Montenegro	545
69	Portugal	547
70	Croatia	561
71	Bulgaria	564
72	Slovak Republic	565
72	Tunisia	565
74	Kuwait	566
75	Canada	570
75	Indonesia	570
75	Qatar	570
78	Guyana	581
79	Malaysia	585
80	Ecuador	588
81	Argentina	590
82	Bolivia	591
82	Paraguay	591
84	Bosnia and Herzegovina	595
85	Oman	598
86	South Africa	600
87	Czech Republic	611
88	Morocco	615
89	Brazil	616
90	Ethiopia	620
90	Mali	620
90	Puerto Rico	620
93	Botswana	625
94	Algeria	630
95	Bahrain	635
95	Saudi Arabia	635
95	Serbia	635
98	Mauritius	645
99	Jamaica	655
100	Panama	686
101	Jordan	689
102	Uruguay	720
103	Lebanon	721
104	Mozambique	730
105	Cyprus	735
105	Nepal	735
107	Chad	743
108	Côte d'Ivoire	770
109	Senegal	780
110	Lesotho	785
111	El Salvador	786
112	Cameroon	800
113	Greece	819
114	Benin	825
115	Poland	830
116	Burundi	832
117	Philippines	842
118	Costa Rica	852
119	Madagascar	871
120	Syria	872
121	Israel	890
122	Honduras	900
123	Swaziland	972
124	Pakistan	976
125	Egypt	1,010
126	Angola	1,011
127	Italy	1,210
128	Timor-Leste	1,285
129	Slovenia	1,290
130	Sri Lanka	1,318
131	Trinidad and Tobago	1,340
132	Colombia	1,346
133	India	1,420
134	Bangladesh	1,442
135	Guatemala	1,459
n/a	Barbados	n/a
n/a	Libya	n/a
n/a	Malta	n/a

SOURCE: The World Bank, *Doing Business 2011*

2.11 Internet and telephony sectors competition index

Level of competition index for Internet services, international long distance services, and mobile telephone services on a 0 to 6 (best) scale | 2004–2008

RANK	COUNTRY/ECONOMY	SCORE
1	Angola	6
1	Argentina	6
1	Australia	6
1	Bosnia and Herzegovina	6
1	Brazil	6
1	Burundi	6
1	Canada	6
1	Chile	6
1	Colombia	6
1	Croatia	6
1	Dominican Republic	6
1	Ecuador	6
1	El Salvador	6
1	Finland	6
1	France	6
1	Georgia	6
1	Germany	6
1	Guatemala	6
1	Iceland	6
1	India	6
1	Ireland	6
1	Italy	6
1	Japan	6
1	Jordan	6
1	Korea, Rep.	6
1	Kyrgyz Republic	6
1	Latvia	6
1	Lesotho	6
1	Luxembourg	6
1	Malaysia	6
1	Malta	6
1	Mauritania	6
1	Mauritius	6
1	Mexico	6
1	Moldova	6
1	Montenegro	6
1	Morocco	6
1	Netherlands	6
1	New Zealand	6
1	Nicaragua	6
1	Norway	6
1	Pakistan	6
1	Peru	6
1	Philippines	6
1	Portugal	6
1	Romania	6
1	Saudi Arabia	6
1	Senegal	6
1	Singapore	6
1	Slovak Republic	6
1	Slovenia	6
1	Spain	6
1	Sweden	6
1	Switzerland	6
1	Taiwan, China[1]	6
1	Thailand	6
1	Uganda	6
1	United Kingdom	6
1	United States	6
1	Venezuela	6
1	Vietnam	6
62	Austria	5
62	Bahrain	5
62	Belgium	5
62	Cyprus	5
62	Czech Republic	5
62	Denmark	5
62	Estonia	5
62	Gambia, The	5
62	Greece	5
62	Hungary	5
62	Indonesia	5
62	Jamaica	5
62	Kenya	5
62	Lithuania	5
62	Mongolia	5
62	Panama	5
62	Serbia	5
62	South Africa	5
62	Trinidad and Tobago	5
62	Turkey	5
62	Ukraine	5
62	Uruguay	5
62	Zimbabwe	5
85	Albania	4
85	Algeria	4
85	Azerbaijan	4
85	Bangladesh	4
85	Bolivia	4
85	Bulgaria	4
85	Burkina Faso	4
85	Cameroon	4
85	China	4
85	Côte d'Ivoire	4
85	Egypt	4
85	Ghana	4
85	Israel	4
85	Macedonia, FYR	4
85	Madagascar	4
85	Malawi	4
85	Mali	4
85	Mozambique	4
85	Nepal	4
85	Paraguay	4
85	Tanzania	4
85	Zambia	4
107	Armenia	3
107	Barbados	3
107	Botswana	3
107	Cambodia	3
107	Iran, Islamic Rep.	3
107	Kazakhstan	3
107	Namibia	3
107	Nigeria	3
107	Qatar	3
107	Russian Federation	3
107	Tunisia	3
107	United Arab Emirates	3
119	Benin	2
119	Brunei Darussalam	2
119	Cape Verde	2
119	Chad	2
119	Guyana	2
119	Lebanon	2
119	Poland	2
119	Sri Lanka	2
119	Syria	2
128	Costa Rica	1
128	Kuwait	1
128	Oman	1
131	Ethiopia	0
131	Honduras	0
131	Libya	0
131	Swaziland	0
131	Tajikistan	0
n/a	Hong Kong SAR	n/a
n/a	Puerto Rico	n/a
n/a	Timor-Leste	n/a

SOURCE: The World Bank, *Information and Communications for Development Online Database* (accessed in December 2010)

[1] 2009

3rd pillar
Infrastructure environment

3.01 Telephone lines

Number of main telephone lines per 100 population | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Taiwan, China	63.2
2	Switzerland	61.8
3	Hong Kong SAR	60.9
4	Malta	59.9
5	Germany	59.3
6	Iceland	57.4
7	France	56.9
8	Sweden	55.7
9	Luxembourg	54.2
10	Korea, Rep.	53.7
11	Barbados	53.0
12	Canada	52.5
13	United Kingdom	52.2
14	Slovenia	51.2
15	Cyprus	47.6
16	Greece	47.0
17	Ireland	46.1
18	Israel	45.3
19	Spain	45.3
20	United States	44.8
21	Netherlands	44.1
22	New Zealand	43.8
23	Belgium	43.5
24	Australia	42.4
25	Croatia	42.1
26	Singapore	40.7
27	Portugal	39.7
28	Austria	38.9
29	Denmark	37.7
30	Norway	37.1
31	Estonia	36.8
32	Italy	36.2
33	Iran, Islamic Rep.	34.8
34	Japan	34.1
35	United Arab Emirates	33.9
36	Costa Rica	32.8
37	Russian Federation	32.2
38	Moldova	31.6
39	Serbia	31.5
40	Hungary	30.7
41	Bahrain	30.1
42	Mauritius	29.6
43	Bulgaria	29.2
44	Latvia	28.6
45	Ukraine	28.5
46	Uruguay	28.4
47	Montenegro	27.5
48	Finland	26.9
49	Bosnia and Herzegovina	26.5
50	Poland	25.2
51	Romania	25.0
52	Kazakhstan	24.7
53	Argentina	24.3
54	Venezuela	24.0
55	China	23.3
56	Puerto Rico	22.7
57	Lithuania	22.7
58	Trinidad and Tobago	22.7
59	Slovak Republic	22.6
60	Turkey	22.1
61	Brazil	21.4
62	Macedonia, FYR	21.4
63	Chile	21.1
64	Armenia	20.4
65	Czech Republic	20.4
66	Qatar	20.2
67	Brunei Darussalam	20.2
68	Vietnam	19.8
69	Lebanon	19.0
70	Kuwait	18.5
71	Guyana	18.3
72	El Salvador	17.8
73	Syria	17.7
74	Mexico	17.6
75	Malaysia	17.6
76	Libya	17.1
77	Sri Lanka	17.0
78	Colombia	16.4
79	Saudi Arabia	16.2
80	Azerbaijan	15.9
81	Panama	15.6
82	Indonesia	14.8
83	Ecuador	14.7
84	Georgia	14.6
85	Cape Verde	14.2
86	Tunisia	12.4
87	Egypt	12.4
88	Albania	11.5
89	Jamaica	11.1
90	Morocco	11.0
91	Thailand	10.6
92	Oman	10.5
93	Peru	10.2
94	Guatemala	10.1
95	Honduras	9.6
96	Dominican Republic	9.6
97	Kyrgyz Republic	9.1
98	South Africa	8.6
99	Bolivia	8.2
100	Jordan	7.9
101	Algeria	7.4
102	Philippines	7.4
103	Mongolia	7.1
104	Botswana	7.0
105	Namibia	6.5
106	Paraguay	6.1
107	Nicaragua	4.4
108	Tajikistan	4.2
109	Swaziland	3.7
110	India	3.1
111	Zimbabwe	3.1
112	Gambia, The	2.9
113	Nepal	2.8
114	Mauritania	2.3
115	Cameroon	2.2
116	Senegal	2.2
117	Pakistan	1.9
118	Lesotho	1.9
119	Kenya	1.7
120	Angola	1.6
121	Benin	1.4
122	Côte d'Ivoire	1.3
123	Malawi	1.1
124	Ghana	1.1
125	Ethiopia	1.1
126	Burkina Faso	1.0
127	Madagascar	0.9
128	Bangladesh	0.9
129	Nigeria	0.9
130	Uganda	0.7
131	Zambia	0.7
132	Mali	0.7
133	Chad	0.5
134	Tanzania	0.4
135	Burundi	0.4
136	Cambodia	0.4
137	Mozambique	0.3
138	Timor-Leste	0.2

SOURCE: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

3.02 Mobile network coverage rate

Percentage of total population covered by a mobile network signal | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Bahrain	100.0
1	Chile	100.0
1	Croatia	100.0
1	Hong Kong SAR	100.0
1	Israel[3]	100.0
1	Kuwait[1]	100.0
1	Lithuania	100.0
1	Malta	100.0
1	Nicaragua	100.0
1	Qatar	100.0
1	Singapore	100.0
1	Switzerland	100.0
1	Taiwan, China	100.0
1	Trinidad and Tobago	100.0
1	Tunisia	100.0
1	Turkey	100.0
1	Uganda[3]	100.0
1	United Arab Emirates	100.0
1	Uruguay	100.0
20	Estonia	100.0
21	Cyprus	100.0
22	Bulgaria	100.0
23	Barbados[2]	99.9
23	Belgium	99.9
23	Greece	99.9
23	Japan	99.9
23	Luxembourg	99.9
23	Macedonia, FYR[2]	99.9
23	Mexico	99.9
23	Romania	99.9
31	Korea, Rep.	99.9
32	Slovak Republic	99.8
33	Czech Republic	99.8
33	Italy[2]	99.8
33	Poland	99.8
33	Spain	99.8
33	United Kingdom	99.8
38	South Africa[2]	99.8
39	Slovenia	99.7
40	Azerbaijan	99.6
40	Egypt	99.6
40	United States	99.6
43	Bosnia and Herzegovina	99.5
43	Finland[3]	99.5
45	China	99.5
46	Albania[3]	99.3
46	Georgia	99.3
48	Australia	99.0
48	Austria	99.0
48	Botswana[3]	99.0
48	Cambodia	99.0
48	Canada	99.0
48	France[2]	99.0
48	Germany[3]	99.0
48	Hungary	99.0
48	Iceland	99.0
48	Ireland	99.0
48	Jordan	99.0
48	Mauritius	99.0
48	Montenegro[1]	99.0
48	Philippines	99.0
48	Portugal	99.0
48	Sweden	99.0
64	Latvia[2]	98.8
65	Saudi Arabia	98.7
66	Morocco[1]	98.0
66	Netherlands[3]	98.0
68	Moldova[2]	98.0
69	New Zealand	97.0
69	Syria	97.0
71	Brazil	96.6
72	Oman	96.5
73	Ukraine[1]	96.2
74	Guyana	96.0
75	Peru	95.6
76	El Salvador[2]	95.0
76	Iran, Islamic Rep.[2]	95.0
76	Jamaica[2]	95.0
76	Lebanon	95.0
76	Malaysia	95.0
76	Namibia[2]	95.0
76	Russian Federation[1]	95.0
76	Sri Lanka[3]	95.0
84	Argentina[2]	94.1
85	Kazakhstan[3]	94.0
86	Serbia	93.7
87	Malawi[1]	93.0
88	Côte d'Ivoire	92.2
89	Pakistan	92.0
90	Swaziland[3]	91.0
91	Bangladesh[1]	90.0
91	Indonesia[1]	90.0
91	Nigeria	90.0
91	Venezuela[2]	90.0
91	Zambia	90.0
96	Honduras[2]	89.9
97	Armenia[1]	87.8
98	Senegal	87.0
99	Panama	85.2
100	Gambia, The[2]	85.0
100	Tanzania	85.0
102	Kenya	84.5
103	Ecuador[1]	84.0
104	Burundi	83.0
104	Colombia[1]	83.0
104	India	83.0
107	Kyrgyz Republic	82.8
108	Mongolia	82.2
109	Benin	82.0
110	Algeria[2]	81.5
111	Guatemala[1]	76.0
112	Ghana	75.0
112	Zimbabwe[3]	75.0
114	Libya[1]	70.7
115	Vietnam[1]	70.0
116	Costa Rica	69.5
117	Cape Verde	69.0
117	Timor-Leste[2]	69.0
119	Puerto Rico	68.4
120	Mauritania[3]	62.0
121	Burkina Faso[1]	61.1
122	Cameroon[1]	58.0
123	Lesotho[1]	55.0
124	Dominican Republic	51.1
125	Bolivia[2]	45.9
126	Angola[1]	40.0
127	Thailand[2]	37.8
128	Mozambique	29.1
129	Chad[1]	24.0
130	Madagascar[1]	23.0
131	Mali[1]	20.0
132	Ethiopia[1]	10.0
132	Nepal[1]	10.0
n/a	Brunei Darussalam	n/a
n/a	Denmark	n/a
n/a	Norway	n/a
n/a	Paraguay	n/a
n/a	Tajikistan	n/a

SOURCE: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010))

[1] 2006 [2] 2007 [3] 2008

3.03 Secure Internet servers

Secure Internet servers per million population | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	1,711.3
2	Netherlands	1,414.0
3	United States	1,234.1
4	Australia	1,212.2
5	Denmark	1,166.2
6	Switzerland	1,119.6
7	Luxembourg	1,076.6
8	New Zealand	1,059.1
9	Norway	1,011.2
10	Malta	985.6
11	Canada	983.9
12	Korea, Rep.	926.7
13	United Kingdom[2]	904.9
14	Sweden	856.7
15	Finland	802.3
16	Ireland	744.2
17	Germany	641.1
18	Austria	553.8
19	Cyprus	552.2
20	Japan	519.6
21	Taiwan, China	471.1
22	Singapore	420.8
23	Hong Kong SAR	352.4
24	Estonia	314.8
25	Barbados	312.7
26	Belgium	310.3
27	Israel	290.9
28	Slovenia	210.0
29	France	209.8
30	Spain	193.0
31	Czech Republic	185.5
32	United Arab Emirates	164.8
33	Portugal	136.3
34	Poland	123.0
35	Lithuania	121.3
36	Croatia	116.7
37	Latvia	114.4
38	Hungary	113.5
39	Italy	109.3
40	Costa Rica	98.3
41	Bahrain	94.8
42	Panama	85.7
43	Kuwait	85.2
44	Greece	79.2
45	Slovak Republic	79.2
46	Turkey	66.1
47	Qatar	63.9
48	Mauritius	61.9
49	Puerto Rico	61.5
50	Trinidad and Tobago	46.3
51	Brunei Darussalam	42.5
52	South Africa	40.4
53	Chile	39.1
54	Uruguay	35.6
55	Jamaica	35.6
56	Bulgaria	34.7
57	Malaysia	33.6
58	Brazil	25.9
59	Romania	20.5
60	Argentina	19.7
61	Montenegro	19.2
62	Mexico	17.2
63	Macedonia, FYR	16.6
64	Lebanon	15.4
65	Dominican Republic	14.2
66	Tunisia	12.5
67	Jordan	12.1
68	Colombia	12.1
69	Ecuador	12.0
70	Cape Verde	11.9
71	El Salvador	11.8
72	Oman[2]	11.5
73	Saudi Arabia	11.0
74	Russian Federation	10.5
75	Peru	10.5
76	Thailand	9.8
77	Moldova	9.7
78	Guatemala	8.8
79	Namibia	8.8
80	Georgia	8.7
81	Bosnia and Herzegovina	8.5
82	Mongolia	8.2
83	Guyana	7.9
84	Armenia	7.5
85	Venezuela	7.4
86	Honduras	7.1
87	Albania	7.0
88	Nicaragua	6.3
89	Ukraine	6.0
90	Paraguay	5.7
91	Philippines	5.3
92	Swaziland	4.2
93	Bolivia	4.0
94	Botswana	3.6
95	Sri Lanka	3.5
96	Kazakhstan	3.3
97	Gambia, The	2.9
98	Serbia[2]	2.4
99	Mauritania	2.1
100	Angola	2.1
101	Morocco	1.9
102	Azerbaijan	1.9
103	Vietnam	1.9
104	India	1.6
105	Cambodia	1.5
106	Egypt	1.4
107	Indonesia	1.4
108	Kenya	1.3
109	China	1.2
110	Libya	1.1
111	Nepal	1.1
112	Timor-Leste[1]	1.0
113	Kyrgyz Republic	0.9
114	Senegal	0.9
115	Nigeria	0.8
116	Ghana	0.7
117	Zambia	0.7
118	Zimbabwe	0.6
119	Pakistan	0.6
120	Côte d'Ivoire	0.6
121	Algeria	0.5
122	Mali	0.5
123	Cameroon	0.5
124	Lesotho	0.5
125	Madagascar	0.4
126	Mozambique	0.3
127	Syria	0.3
128	Iran, Islamic Rep.	0.3
129	Uganda	0.3
130	Tajikistan	0.3
131	Malawi	0.3
132	Burundi	0.2
133	Tanzania	0.2
134	Burkina Faso	0.2
135	Bangladesh	0.2
136	Benin	0.1
137	Ethiopia	0.1
n/a	Chad	n/a

SOURCES: The World Bank, *World Development Indicators Online* (accessed in January 2011); national sources

[1] 2005 [2] 2008

3.04 International Internet bandwidth

International Internet bandwidth (Mb/s) per 10,000 population | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Luxembourg	70,301.7
2	Hong Kong SAR	5,792.7
3	Singapore	790.0
4	Netherlands[2]	781.5
5	Iceland	626.8
6	Sweden[2]	498.3
7	United Kingdom[2]	396.6
8	Denmark[2]	345.1
9	Switzerland[2]	294.1
10	France[2]	293.6
11	Bulgaria	271.2
12	Norway[2]	269.1
13	Germany[2]	256.5
14	Belgium[2]	249.5
15	Croatia	219.8
16	Austria	203.2
17	Romania	185.7
18	Finland[2]	172.2
19	Canada[2]	161.9
20	Panama[2]	159.6
21	Estonia	156.7
22	Ireland[2]	152.6
23	Taiwan, China	143.2
24	Lithuania	143.0
25	Barbados	139.9
26	United Arab Emirates	132.3
27	Italy[3]	129.9
28	Serbia	126.6
29	Qatar	117.7
30	United States[2]	112.8
31	Spain[2]	110.1
32	Trinidad and Tobago[3]	79.2
33	Slovak Republic	75.7
34	Malta[3]	75.5
35	Czech Republic[2]	70.8
36	Slovenia[2]	67.2
37	Moldova	66.6
38	Korea, Rep.	60.7
39	Hungary	59.9
40	Japan[3]	57.7
41	Australia	54.6
42	Malaysia	51.0
43	Portugal[2]	47.9
44	New Zealand[2]	45.4
45	Greece[2]	45.4
46	Costa Rica	43.3
47	Turkey	43.2
48	Chile[2]	40.8
49	Latvia[2]	35.4
50	Colombia	29.4
51	Mongolia	29.2
52	Poland[2]	27.5
53	Tunisia	27.0
54	Peru[2]	26.5
55	Bahrain	25.2
56	Argentina[2]	23.2
57	Brazil[3]	21.1
58	Israel[2]	20.0
59	Albania	19.0
60	Jordan	18.1
61	Puerto Rico	17.6
62	Saudi Arabia	17.3
63	Cyprus[2]	16.0
64	Morocco	16.0
65	Brunei Darussalam[3]	15.8
66	Mauritius	14.6
67	Azerbaijan	14.0
68	Dominican Republic	13.9
69	Oman	13.7
70	Montenegro[2]	12.1
71	Egypt	12.0
72	Bosnia and Herzegovina	11.9
73	Vietnam	10.3
74	Uruguay[2]	9.0
75	Kuwait[2]	8.7
76	Thailand[3]	8.2
77	Georgia[2]	7.5
78	Jamaica	7.4
79	Kazakhstan[3]	7.0
80	Paraguay	6.6
81	China	6.5
82	Venezuela[2]	6.3
83	Russian Federation[2]	5.7
84	Ecuador	4.8
85	Cape Verde	4.4
86	Lebanon	4.3
87	Kenya	4.2
88	Senegal	3.7
89	Mexico	3.1
90	Syria	2.6
91	El Salvador	2.4
92	Honduras[2]	2.4
93	Bolivia[3]	2.3
94	Botswana[3]	2.2
95	India	2.2
96	Ukraine[2]	2.1
97	Sri Lanka[3]	1.9
98	Guatemala[2]	1.9
99	Iran, Islamic Rep.[3]	1.5
100	Nicaragua[2]	1.4
101	Pakistan	1.1
102	Philippines[2]	1.1
103	Indonesia[3]	1.1
104	Ghana	1.0
105	Mauritania[3]	0.8
106	South Africa[2]	0.7
107	Kyrgyz Republic	0.6
108	Mozambique	0.6
109	Libya[2]	0.5
110	Mali	0.5
111	Guyana[2]	0.5
112	Côte d'Ivoire[2]	0.4
113	Gambia, The[2]	0.4
114	Tajikistan[2]	0.4
115	Swaziland	0.4
116	Uganda	0.4
117	Zambia	0.4
118	Burkina Faso	0.3
119	Namibia[2]	0.3
120	Cameroon	0.2
121	Zimbabwe	0.2
122	Benin	0.2
123	Armenia[1]	0.2
124	Cambodia[2]	0.2
125	Macedonia, FYR[2]	0.2
126	Angola[2]	0.2
127	Madagascar	0.1
128	Timor-Leste[2]	0.1
129	Nepal[2]	0.0
130	Lesotho[3]	0.0
131	Algeria[1]	0.0
132	Nigeria[2]	0.0
133	Malawi[2]	0.0
134	Bangladesh[2]	0.0
135	Ethiopia[2]	0.0
136	Tanzania[2]	0.0
137	Burundi	0.0
138	Chad	0.0

SOURCE: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

[1] 2005 [2] 2007 [3] 2008

3.05 Electricity production

Electricity production (kWh) per capita | 2007

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	38,441.3
2	Norway[2]	28,954.3
3	Canada	19,399.9
4	Kuwait	18,307.8
5	United Arab Emirates	17,439.9
6	Sweden	16,267.9
7	Finland[2]	15,362.7
8	Bahrain	14,360.9
9	United States[2]	14,334.2
10	Qatar	14,134.7
11	Australia	12,084.0
12	New Zealand	10,369.4
13	Taiwan, China[2]	10,344.2
14	France	9,111.8
15	Estonia	9,085.7
16	Singapore[2]	8,964.4
17	Brunei Darussalam	8,821.6
18	Switzerland	8,801.7
19	Japan[2]	8,793.1
20	Korea, Rep.	8,789.6
21	Paraguay	8,769.1
22	Czech Republic	8,492.6
23	Belgium	8,237.2
24	Saudi Arabia	7,801.5
25	Germany	7,652.6
26	Israel[2]	7,490.6
27	Slovenia	7,454.0
28	Austria[2]	7,341.2
29	Denmark[2]	7,169.2
30	Russian Federation	7,131.6
31	Spain[2]	6,690.2
32	Luxembourg	6,648.0
33	United Kingdom	6,432.9
34	Ireland	6,398.3
35	Netherlands[2]	6,302.2
36	Puerto Rico	6,018.4
37	Trinidad and Tobago	5,768.6
38	Cyprus	5,705.0
39	Hong Kong SAR	5,624.1
40	Malta	5,613.0
41	Bulgaria[2]	5,605.5
42	Greece	5,602.8
43	South Africa	5,398.1
44	Oman	5,297.7
45	Italy	5,191.0
46	Slovak Republic	5,167.8
47	Serbia	4,947.9
48	Kazakhstan	4,946.7
49	Montenegro[1]	4,585.2
50	Portugal	4,420.7
51	Ukraine	4,217.2
52	Venezuela	4,178.9
53	Libya	4,165.0
54	Poland	4,164.7
55	Lithuania	3,990.4
56	Hungary[2]	3,973.8
57	Barbados	3,940.4
58	Malaysia	3,815.8
59	Chile	3,517.0
60	Macedonia, FYR	3,298.8
61	Bosnia and Herzegovina	3,129.4
62	Kyrgyz Republic	3,101.7
63	Argentina	2,914.1
64	Jamaica	2,908.3
65	Iran, Islamic Rep.	2,872.2
66	Romania	2,862.3
67	Uruguay	2,835.8
68	Azerbaijan	2,821.4
69	Croatia[2]	2,723.4
70	Turkey[2]	2,624.0
71	Tajikistan	2,600.4
72	China[2]	2,488.2
73	Mexico[2]	2,445.5
74	Brazil	2,341.4
75	Lebanon	2,300.3
76	Jordan	2,290.9
77	Thailand[2]	2,140.7
78	Latvia	2,096.1
79	Costa Rica	2,029.7
80	Panama	1,937.0
81	Syria	1,924.1
82	Armenia	1,919.6
83	Georgia[2]	1,911.3
84	Mauritius	1,841.1
85	Egypt	1,562.9
86	Dominican Republic	1,512.1
87	Mongolia	1,467.8
88	Tunisia[2]	1,433.8
89	Ecuador	1,299.3
90	Colombia	1,246.9
91	Algeria	1,098.6
92	Guyana	1,074.5
93	Peru[2]	1,049.9
94	Moldova	1,048.7
95	El Salvador	950.7
96	Albania	913.0
97	Honduras	880.4
98	Vietnam	816.0
99	Namibia	811.0
100	Zambia	800.1
101	Zimbabwe	737.4
102	Mozambique	735.1
103	Morocco[2]	732.1
104	India	714.3
105	Philippines	671.9
106	Guatemala	655.6
107	Indonesia	633.1
108	Bolivia	602.0
109	Botswana	591.3
110	Pakistan	588.5
111	Nicaragua	573.5
112	Cape Verde	508.4
113	Sri Lanka[2]	494.8
114	Swaziland	383.0
115	Cameroon	308.3
116	Ghana	305.1
117	Côte d'Ivoire	279.8
118	Lesotho	247.1
119	Angola	215.8
120	Kenya[2]	179.4
121	Senegal	169.5
122	Nigeria	155.5
123	Bangladesh	154.5
124	Mauritania	132.3
125	Malawi	117.0
126	Tanzania	101.1
127	Nepal	99.2
128	Gambia, The	99.0
129	Cambodia	94.2
130	Uganda	73.6
131	Madagascar	56.2
132	Ethiopia	44.5
133	Burkina Faso	41.5
134	Mali	41.5
135	Benin	15.7
136	Burundi	11.7
137	Chad	9.4
n/a	Timor-Leste	n/a

SOURCES: The World Bank, *World Development Indicators Online* (accessed in January 2011); US Central Intelligence Agency (CIA), *The World Factbook* (accessed in January 2011)

[1] 2005 [2] 2008

3.06 Tertiary education enrollment rate

Gross tertiary education enrollment rate (%) | 2008

RANK	COUNTRY/ECONOMY	SCORE
1	Korea, Rep.	98.1
2	Finland	94.4
3	Greece[7]	90.8
4	Slovenia	86.7
5	Taiwan, China	83.2
6	United States	82.9
7	Denmark[7]	80.3
8	Ukraine	79.4
9	Venezuela	78.6
10	New Zealand	78.5
11	Lithuania	77.3
12	Russian Federation	77.2
13	Australia	77.0
14	Iceland	74.6
15	Norway	73.2
16	Sweden	71.1
17	Spain	70.6
18	Latvia	69.2
19	Argentina[7]	67.7
20	Italy[7]	67.1
21	Poland[7]	66.9
22	Romania	65.6
23	Hungary	65.0
24	Uruguay[7]	64.3
25	Estonia	63.7
26	Belgium	63.0
27	Canada[4]	62.3
28	Puerto Rico	61.1
29	Netherlands	60.6
30	Singapore[8]	60.0
31	Israel	59.7
32	Czech Republic	58.6
33	Ireland	58.3
34	Japan	58.0
35	United Kingdom	57.4
36	Portugal[7]	56.9
37	Libya[3]	55.7
38	Austria	54.7
39	France	54.6
40	Slovak Republic	53.6
41	Barbados[7]	53.1
42	Montenegro[8]	52.1
43	Chile[7]	52.1
44	Kyrgyz Republic	52.0
45	Lebanon	51.5
46	Bulgaria	51.0
47	Mongolia	49.8
48	Switzerland	49.4
49	Serbia	47.8
50	Croatia[7]	47.0
51	Germany	46.3
52	Panama[7]	45.0
53	Thailand	44.7
54	Cyprus	42.6
55	Ecuador	42.4
56	Kazakhstan[8]	41.0
57	Jordan	40.7
58	Macedonia, FYR	40.4
59	Moldova	40.0
60	Turkey	38.4
61	Bolivia[7]	38.3
62	Iran, Islamic Rep.	36.1
63	Colombia	35.4
64	Peru[6]	34.5
65	Brazil	34.4
66	Georgia	34.3
67	Hong Kong SAR[7]	34.3
68	Armenia[7]	34.2
69	Tunisia	33.7
70	Bosnia and Herzegovina[7]	33.5
71	Dominican Republic[4]	33.3
72	Malta[7]	33.0
73	Malaysia[7]	32.1
74	Bahrain[6]	29.9
75	Saudi Arabia	29.9
76	Philippines	28.7
77	Paraguay[7]	28.6
78	Egypt	28.5
79	Syria	27.4
80	Mexico	27.2
81	Oman	26.9
82	Costa Rica[5]	25.3
83	United Arab Emirates	25.2
84	El Salvador	24.6
85	Jamaica	24.2
86	Algeria[7]	24.0
87	China	22.7
88	Indonesia	21.3
89	Tajikistan	20.2
90	Albania[4]	19.3
91	Kuwait[4]	18.9
92	Honduras	18.7
93	Nicaragua[3]	18.0
94	Guatemala[7]	17.7
95	Sri Lanka[4]	17.1
96	Mauritius[8]	16.0
97	Brunei Darussalam	16.0
98	Azerbaijan	15.8
99	South Africa	15.4
100	Timor-Leste[8]	15.2
101	India[7]	13.5
102	Morocco	12.3
103	Cape Verde	11.9
104	Trinidad and Tobago[5]	11.6
105	Guyana	11.5
106	Qatar	11.0
107	Nigeria[5]	10.1
108	Luxembourg[6]	10.0
109	Vietnam[2]	9.7
110	Namibia	8.9
111	Côte d'Ivoire[7]	8.4
112	Senegal	8.0
113	Cameroon	7.8
114	Botswana[6]	7.6
115	Cambodia	7.0
116	Bangladesh[7]	7.0
117	Ghana[7]	6.2
118	Benin[6]	5.8
119	Nepal[4]	5.6
120	Mali	5.4
121	Pakistan	5.2
122	Swaziland[6]	4.4
123	Kenya[8]	4.1
124	Mauritania[7]	3.8
125	Zimbabwe[3]	3.8
126	Uganda	3.7
127	Lesotho[6]	3.6
128	Ethiopia	3.6
129	Madagascar	3.4
130	Burkina Faso	3.1
131	Angola[6]	2.8
132	Burundi	2.5
133	Zambia[1]	2.4
134	Chad	1.9
135	Tanzania[7]	1.5
136	Mozambique[5]	1.5
137	Gambia, The[4]	1.2
138	Malawi[7]	0.5

SOURCES: The World Bank, *World Development Indicators Online* (accesed in January 2011); national sources

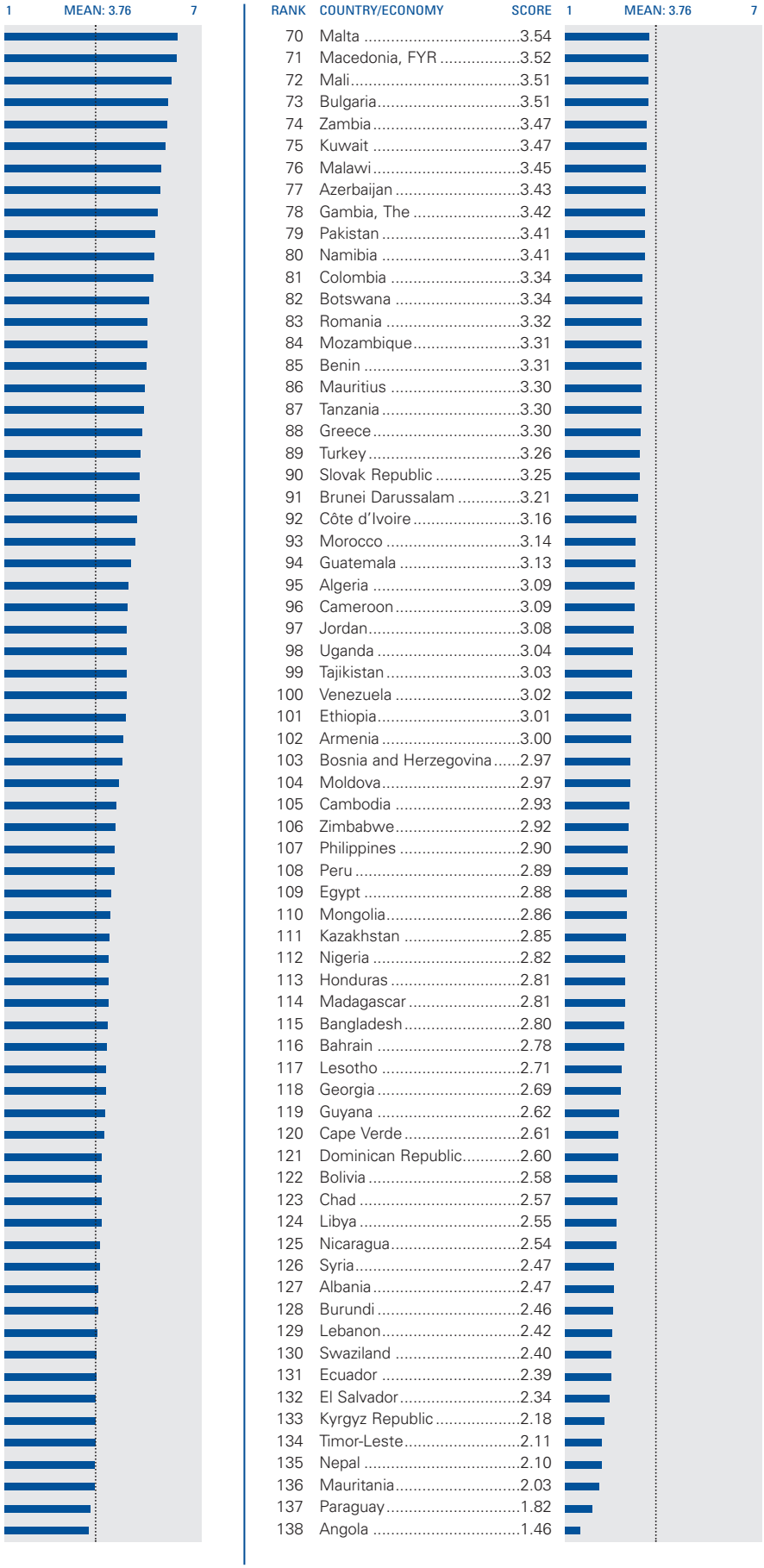
[1] 2000 [2] 2001 [3] 2003 [4] 2004 [5] 2005 [6] 2006 [7] 2007 [8] 2009

3.07 Quality of scientific research institutions

How would you assess the quality of scientific research institutions in your country? [1 = very poor; 7 = the best in their field internationally] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Israel	6.24
2	Switzerland	6.20
3	United Kingdom	6.05
4	United States	5.95
5	Sweden	5.92
6	Germany	5.87
7	Belgium	5.74
8	Canada	5.71
9	Netherlands	5.63
10	Australia	5.57
11	Singapore	5.54
12	Denmark	5.52
13	Finland	5.37
14	New Zealand	5.33
15	Japan	5.32
16	Ireland	5.29
17	Taiwan, China	5.24
18	Hungary	5.22
19	France	5.18
20	Austria	5.12
21	Czech Republic	5.09
22	Qatar	5.08
23	Norway	5.00
24	Iceland	4.95
25	Korea, Rep.	4.82
26	Estonia	4.75
27	Slovenia	4.71
28	Portugal	4.70
29	South Africa	4.70
30	India	4.70
31	Costa Rica	4.69
32	Malaysia	4.67
33	Puerto Rico	4.60
34	Luxembourg	4.56
35	Hong Kong SAR	4.46
36	Montenegro	4.39
37	Saudi Arabia	4.35
38	Tunisia	4.34
39	China	4.32
40	Lithuania	4.23
41	Cyprus	4.21
42	Brazil	4.19
43	Spain	4.16
44	Indonesia	4.16
45	United Arab Emirates	4.14
46	Argentina	4.11
47	Poland	4.09
48	Senegal	4.08
49	Sri Lanka	4.07
50	Barbados	4.05
51	Croatia	4.01
52	Iran, Islamic Rep.	3.95
53	Russian Federation	3.94
54	Kenya	3.93
55	Chile	3.93
56	Serbia	3.89
57	Oman	3.88
58	Burkina Faso	3.84
59	Thailand	3.83
60	Mexico	3.80
61	Latvia	3.79
62	Uruguay	3.77
63	Vietnam	3.77
64	Ghana	3.76
65	Italy	3.75
66	Panama	3.74
67	Jamaica	3.72
68	Ukraine	3.61
69	Trinidad and Tobago	3.55

RANK	COUNTRY/ECONOMY	SCORE
70	Malta	3.54
71	Macedonia, FYR	3.52
72	Mali	3.51
73	Bulgaria	3.51
74	Zambia	3.47
75	Kuwait	3.47
76	Malawi	3.45
77	Azerbaijan	3.43
78	Gambia, The	3.42
79	Pakistan	3.41
80	Namibia	3.41
81	Colombia	3.34
82	Botswana	3.34
83	Romania	3.32
84	Mozambique	3.31
85	Benin	3.31
86	Mauritius	3.30
87	Tanzania	3.30
88	Greece	3.30
89	Turkey	3.26
90	Slovak Republic	3.25
91	Brunei Darussalam	3.21
92	Côte d'Ivoire	3.16
93	Morocco	3.14
94	Guatemala	3.13
95	Algeria	3.09
96	Cameroon	3.09
97	Jordan	3.08
98	Uganda	3.04
99	Tajikistan	3.03
100	Venezuela	3.02
101	Ethiopia	3.01
102	Armenia	3.00
103	Bosnia and Herzegovina	2.97
104	Moldova	2.97
105	Cambodia	2.93
106	Zimbabwe	2.92
107	Philippines	2.90
108	Peru	2.89
109	Egypt	2.88
110	Mongolia	2.86
111	Kazakhstan	2.85
112	Nigeria	2.82
113	Honduras	2.81
114	Madagascar	2.81
115	Bangladesh	2.80
116	Bahrain	2.78
117	Lesotho	2.71
118	Georgia	2.69
119	Guyana	2.62
120	Cape Verde	2.61
121	Dominican Republic	2.60
122	Bolivia	2.58
123	Chad	2.57
124	Libya	2.55
125	Nicaragua	2.54
126	Syria	2.47
127	Albania	2.47
128	Burundi	2.46
129	Lebanon	2.42
130	Swaziland	2.40
131	Ecuador	2.39
132	El Salvador	2.34
133	Kyrgyz Republic	2.18
134	Timor-Leste	2.11
135	Nepal	2.10
136	Mauritania	2.03
137	Paraguay	1.82
138	Angola	1.46

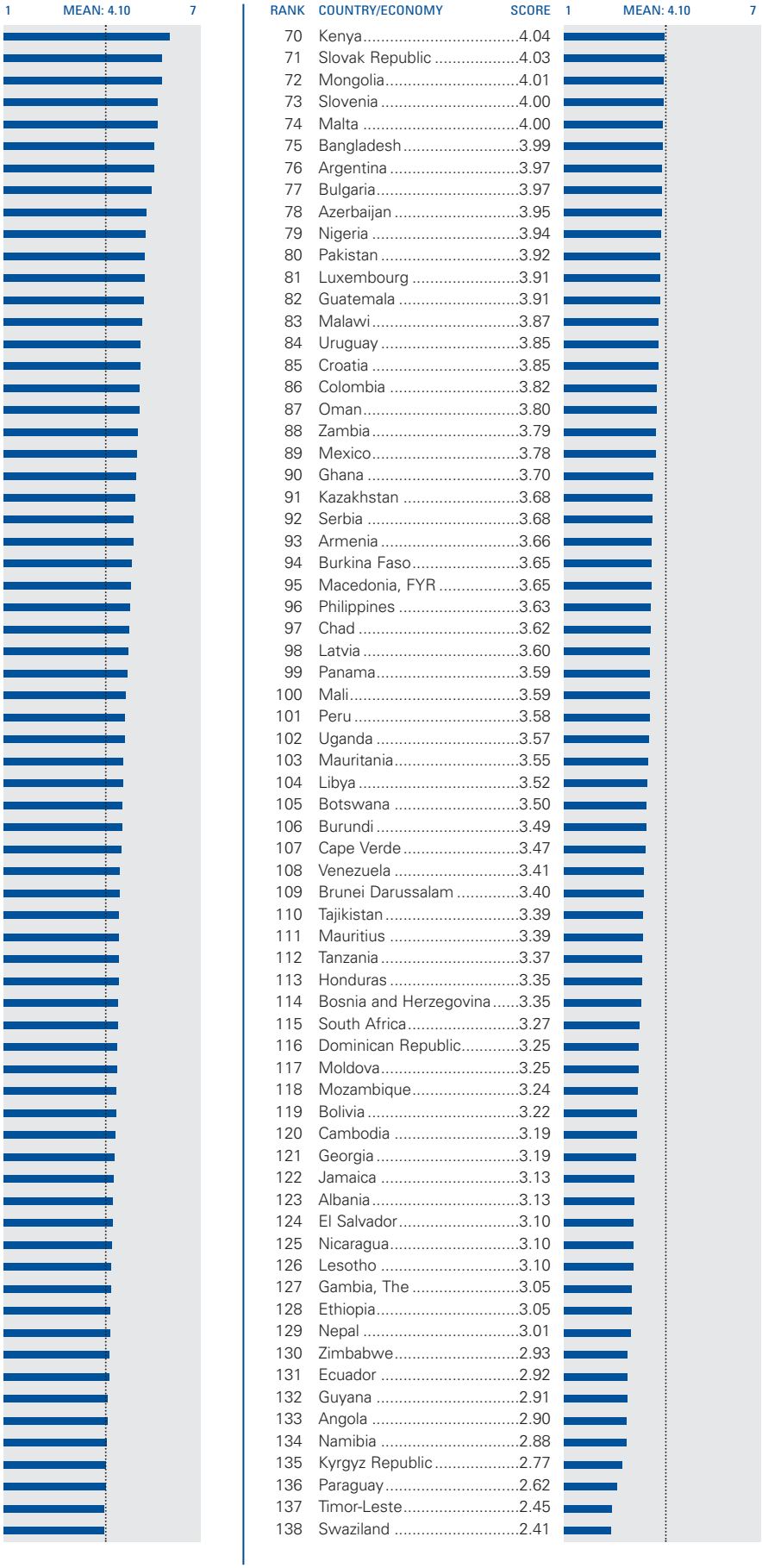


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

3.08 Availability of scientists and engineers

To what extent are scientists and engineers available in your country? [1 = not at all; 7 = widely available] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Finland	6.02
2	Japan	5.80
3	Sweden	5.79
4	United States	5.67
5	Iceland	5.66
6	Canada	5.56
7	Tunisia	5.55
8	Taiwan, China	5.47
9	Qatar	5.33
10	Singapore	5.31
11	Switzerland	5.27
12	France	5.26
13	Belgium	5.23
14	Puerto Rico	5.18
15	India	5.15
16	Ireland	5.13
17	Israel	5.12
18	Norway	5.11
19	Denmark	5.06
20	United Arab Emirates	5.02
21	Greece	5.01
22	Netherlands	4.97
23	Korea, Rep.	4.94
24	Chile	4.93
25	Egypt	4.88
26	Jordan	4.86
27	Germany	4.82
28	Costa Rica	4.79
29	United Kingdom	4.78
30	Austria	4.75
31	Indonesia	4.70
32	Cyprus	4.67
33	Malaysia	4.67
34	Saudi Arabia	4.63
35	China	4.62
36	Lebanon	4.60
37	Iran, Islamic Rep.	4.59
38	Portugal	4.56
39	Cameroon	4.53
40	Thailand	4.51
41	Bahrain	4.50
42	Côte d'Ivoire	4.50
43	Algeria	4.49
44	Turkey	4.48
45	Australia	4.47
46	Morocco	4.45
47	Spain	4.44
48	Hungary	4.43
49	Sri Lanka	4.41
50	Czech Republic	4.40
51	Lithuania	4.39
52	Madagascar	4.36
53	Ukraine	4.33
54	Italy	4.31
55	Romania	4.31
56	Russian Federation	4.27
57	Kuwait	4.25
58	Estonia	4.24
59	Benin	4.24
60	Poland	4.21
61	Senegal	4.21
62	Syria	4.19
63	Montenegro	4.16
64	Hong Kong SAR	4.13
65	Trinidad and Tobago	4.13
66	Vietnam	4.10
67	New Zealand	4.10
68	Brazil	4.05
69	Barbados	4.04
70	Kenya	4.04
71	Slovak Republic	4.03
72	Mongolia	4.01
73	Slovenia	4.00
74	Malta	4.00
75	Bangladesh	3.99
76	Argentina	3.97
77	Bulgaria	3.97
78	Azerbaijan	3.95
79	Nigeria	3.94
80	Pakistan	3.92
81	Luxembourg	3.91
82	Guatemala	3.91
83	Malawi	3.87
84	Uruguay	3.85
85	Croatia	3.85
86	Colombia	3.82
87	Oman	3.80
88	Zambia	3.79
89	Mexico	3.78
90	Ghana	3.70
91	Kazakhstan	3.68
92	Serbia	3.68
93	Armenia	3.66
94	Burkina Faso	3.65
95	Macedonia, FYR	3.65
96	Philippines	3.63
97	Chad	3.62
98	Latvia	3.60
99	Panama	3.59
100	Mali	3.59
101	Peru	3.58
102	Uganda	3.57
103	Mauritania	3.55
104	Libya	3.52
105	Botswana	3.50
106	Burundi	3.49
107	Cape Verde	3.47
108	Venezuela	3.41
109	Brunei Darussalam	3.40
110	Tajikistan	3.39
111	Mauritius	3.39
112	Tanzania	3.37
113	Honduras	3.35
114	Bosnia and Herzegovina	3.35
115	South Africa	3.27
116	Dominican Republic	3.25
117	Moldova	3.25
118	Mozambique	3.24
119	Bolivia	3.22
120	Cambodia	3.19
121	Georgia	3.19
122	Jamaica	3.13
123	Albania	3.13
124	El Salvador	3.10
125	Nicaragua	3.10
126	Lesotho	3.10
127	Gambia, The	3.05
128	Ethiopia	3.05
129	Nepal	3.01
130	Zimbabwe	2.93
131	Ecuador	2.92
132	Guyana	2.91
133	Angola	2.90
134	Namibia	2.88
135	Kyrgyz Republic	2.77
136	Paraguay	2.62
137	Timor-Leste	2.45
138	Swaziland	2.41



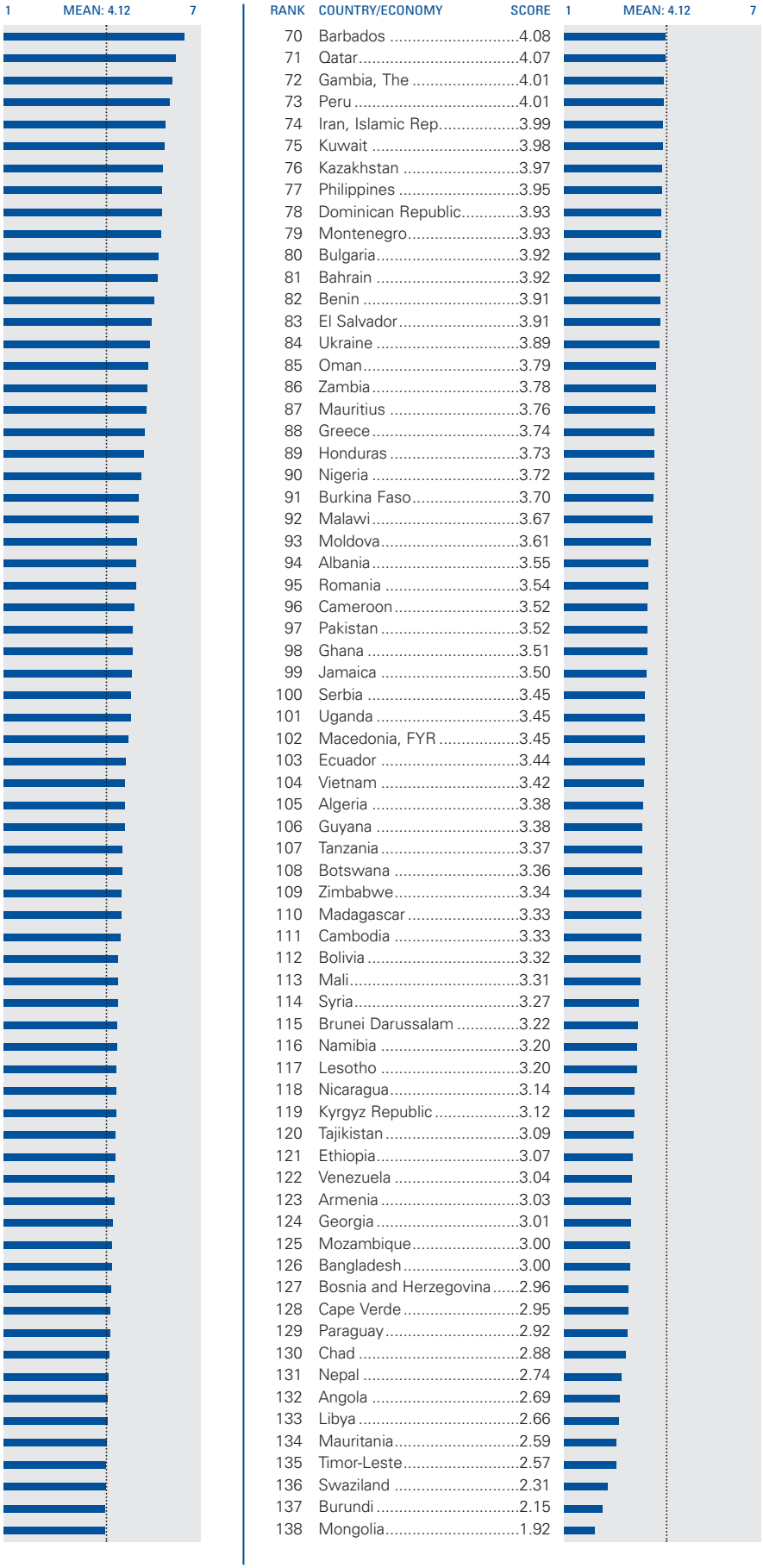
SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

3.09 Local availability of specialized research and training services

In your country, to what extent are high-quality, specialized training services available? [1 = not available; 7 = widely available] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Switzerland	6.47
2	Germany	6.21
3	Sweden	6.11
4	Netherlands	6.02
5	France	5.89
6	Austria	5.89
7	Finland	5.81
8	Denmark	5.80
9	Belgium	5.79
10	United States	5.76
11	Canada	5.69
12	United Kingdom	5.67
13	Japan	5.55
14	Norway	5.49
15	Hong Kong SAR	5.42
16	Iceland	5.37
17	Czech Republic	5.36
18	Puerto Rico	5.33
19	Singapore	5.27
20	Australia	5.26
21	Taiwan, China	5.17
22	Poland	5.09
23	United Arab Emirates	5.08
24	Ireland	5.05
25	Malaysia	5.02
26	Spain	5.01
27	Tunisia	4.97
28	Luxembourg	4.91
29	New Zealand	4.90
30	Israel	4.88
31	Chile	4.86
32	Costa Rica	4.86
33	Estonia	4.77
34	Saudi Arabia	4.70
35	Slovenia	4.68
36	Brazil	4.67
37	Italy	4.67
38	Lithuania	4.61
39	Korea, Rep.	4.60
40	Portugal	4.57
41	Slovak Republic	4.56
42	Argentina	4.53
43	Cyprus	4.47
44	Malta	4.46
45	Senegal	4.45
46	Sri Lanka	4.45
47	Hungary	4.43
48	Jordan	4.42
49	South Africa	4.41
50	China	4.41
51	India	4.39
52	Indonesia	4.39
53	Lebanon	4.37
54	Guatemala	4.36
55	Mexico	4.30
56	Kenya	4.29
57	Uruguay	4.27
58	Turkey	4.24
59	Trinidad and Tobago	4.24
60	Morocco	4.23
61	Croatia	4.21
62	Panama	4.18
63	Côte d'Ivoire	4.16
64	Egypt	4.15
65	Colombia	4.12
66	Azerbaijan	4.10
67	Russian Federation	4.09
68	Latvia	4.08
69	Thailand	4.08

RANK	COUNTRY/ECONOMY	SCORE
70	Barbados	4.08
71	Qatar	4.07
72	Gambia, The	4.01
73	Peru	4.01
74	Iran, Islamic Rep.	3.99
75	Kuwait	3.98
76	Kazakhstan	3.97
77	Philippines	3.95
78	Dominican Republic	3.93
79	Montenegro	3.93
80	Bulgaria	3.92
81	Bahrain	3.92
82	Benin	3.91
83	El Salvador	3.91
84	Ukraine	3.89
85	Oman	3.79
86	Zambia	3.78
87	Mauritius	3.76
88	Greece	3.74
89	Honduras	3.73
90	Nigeria	3.72
91	Burkina Faso	3.70
92	Malawi	3.67
93	Moldova	3.61
94	Albania	3.55
95	Romania	3.54
96	Cameroon	3.52
97	Pakistan	3.52
98	Ghana	3.51
99	Jamaica	3.50
100	Serbia	3.45
101	Uganda	3.45
102	Macedonia, FYR	3.45
103	Ecuador	3.44
104	Vietnam	3.42
105	Algeria	3.38
106	Guyana	3.38
107	Tanzania	3.37
108	Botswana	3.36
109	Zimbabwe	3.34
110	Madagascar	3.33
111	Cambodia	3.33
112	Bolivia	3.32
113	Mali	3.31
114	Syria	3.27
115	Brunei Darussalam	3.22
116	Namibia	3.20
117	Lesotho	3.20
118	Nicaragua	3.14
119	Kyrgyz Republic	3.12
120	Tajikistan	3.09
121	Ethiopia	3.07
122	Venezuela	3.04
123	Armenia	3.03
124	Georgia	3.01
125	Mozambique	3.00
126	Bangladesh	3.00
127	Bosnia and Herzegovina	2.96
128	Cape Verde	2.95
129	Paraguay	2.92
130	Chad	2.88
131	Nepal	2.74
132	Angola	2.69
133	Libya	2.66
134	Mauritania	2.59
135	Timor-Leste	2.57
136	Swaziland	2.31
137	Burundi	2.15
138	Mongolia	1.92

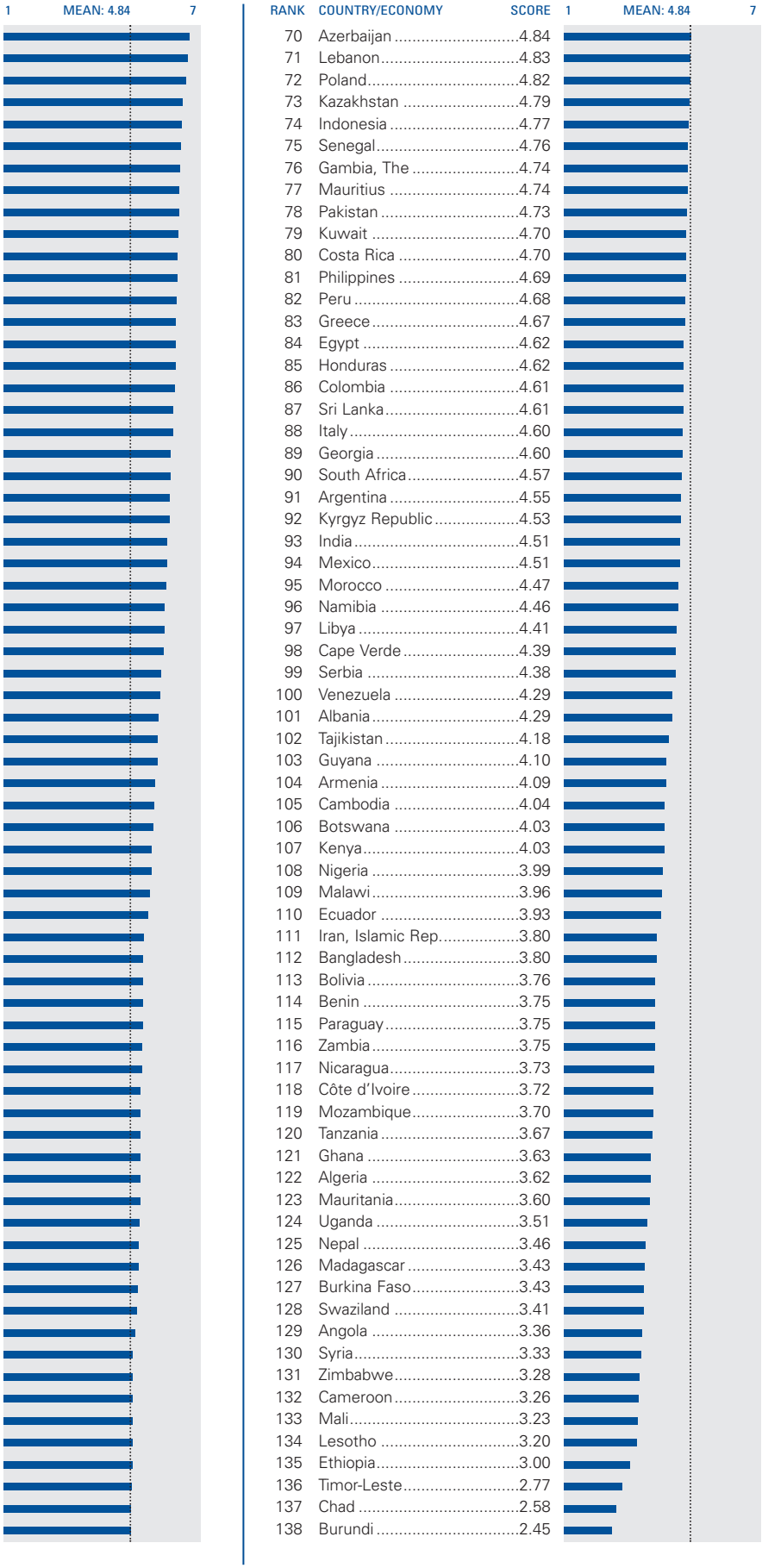


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

3.10 Accessibility of digital content

In your country, how accessible is digital content (e.g., text and audiovisual content, software products) via multiple platforms (e.g., fixed-line Internet, wireless Internet, mobile network, satellite, etc.)? [1 = not accessible at all; 7 = widely accessible] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	6.62
2	Switzerland	6.58
3	Sweden	6.53
4	Austria	6.41
5	Estonia	6.39
6	Norway	6.38
7	Hong Kong SAR	6.34
8	Japan	6.32
9	Netherlands	6.30
10	United Kingdom	6.29
11	Israel	6.27
12	Singapore	6.25
13	Denmark	6.24
14	Korea, Rep.	6.21
15	Canada	6.21
16	Finland	6.21
17	Germany	6.17
18	United States	6.14
19	Belgium	6.13
20	Taiwan, China	6.06
21	Qatar	6.04
22	Lithuania	6.02
23	Portugal	6.02
24	Czech Republic	5.96
25	Hungary	5.94
26	United Arab Emirates	5.91
27	Luxembourg	5.87
28	Bahrain	5.86
29	Malta	5.84
30	Barbados	5.77
31	New Zealand	5.74
32	Slovenia	5.69
33	Australia	5.67
34	China	5.65
35	Puerto Rico	5.58
36	Slovak Republic	5.55
37	France	5.52
38	Spain	5.49
39	Malaysia	5.48
40	Latvia	5.41
41	Uruguay	5.38
42	Cyprus	5.25
43	Montenegro	5.22
44	Guatemala	5.22
45	Jordan	5.21
46	Chile	5.21
47	Vietnam	5.19
48	Croatia	5.18
49	Turkey	5.15
50	Ireland	5.14
51	Dominican Republic	5.14
52	Saudi Arabia	5.14
53	Brunei Darussalam	5.14
54	Trinidad and Tobago	5.13
55	Bulgaria	5.12
56	Oman	5.09
57	Ukraine	5.09
58	Romania	5.06
59	Bosnia and Herzegovina	5.04
60	Thailand	4.98
61	Tunisia	4.91
62	Jamaica	4.91
63	Brazil	4.91
64	Russian Federation	4.91
65	Mongolia	4.90
66	Panama	4.89
67	Macedonia, FYR	4.89
68	Moldova	4.85
69	El Salvador	4.85
70	Azerbaijan	4.84
71	Lebanon	4.83
72	Poland	4.82
73	Kazakhstan	4.79
74	Indonesia	4.77
75	Senegal	4.76
76	Gambia, The	4.74
77	Mauritius	4.74
78	Pakistan	4.73
79	Kuwait	4.70
80	Costa Rica	4.70
81	Philippines	4.69
82	Peru	4.68
83	Greece	4.67
84	Egypt	4.62
85	Honduras	4.62
86	Colombia	4.61
87	Sri Lanka	4.61
88	Italy	4.60
89	Georgia	4.60
90	South Africa	4.57
91	Argentina	4.55
92	Kyrgyz Republic	4.53
93	India	4.51
94	Mexico	4.51
95	Morocco	4.47
96	Namibia	4.46
97	Libya	4.41
98	Cape Verde	4.39
99	Serbia	4.38
100	Venezuela	4.29
101	Albania	4.29
102	Tajikistan	4.18
103	Guyana	4.10
104	Armenia	4.09
105	Cambodia	4.04
106	Botswana	4.03
107	Kenya	4.03
108	Nigeria	3.99
109	Malawi	3.96
110	Ecuador	3.93
111	Iran, Islamic Rep.	3.80
112	Bangladesh	3.80
113	Bolivia	3.76
114	Benin	3.75
115	Paraguay	3.75
116	Zambia	3.75
117	Nicaragua	3.73
118	Côte d'Ivoire	3.72
119	Mozambique	3.70
120	Tanzania	3.67
121	Ghana	3.63
122	Algeria	3.62
123	Mauritania	3.60
124	Uganda	3.51
125	Nepal	3.46
126	Madagascar	3.43
127	Burkina Faso	3.43
128	Swaziland	3.41
129	Angola	3.36
130	Syria	3.33
131	Zimbabwe	3.28
132	Cameroon	3.26
133	Mali	3.23
134	Lesotho	3.20
135	Ethiopia	3.00
136	Timor-Leste	2.77
137	Chad	2.58
138	Burundi	2.45



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

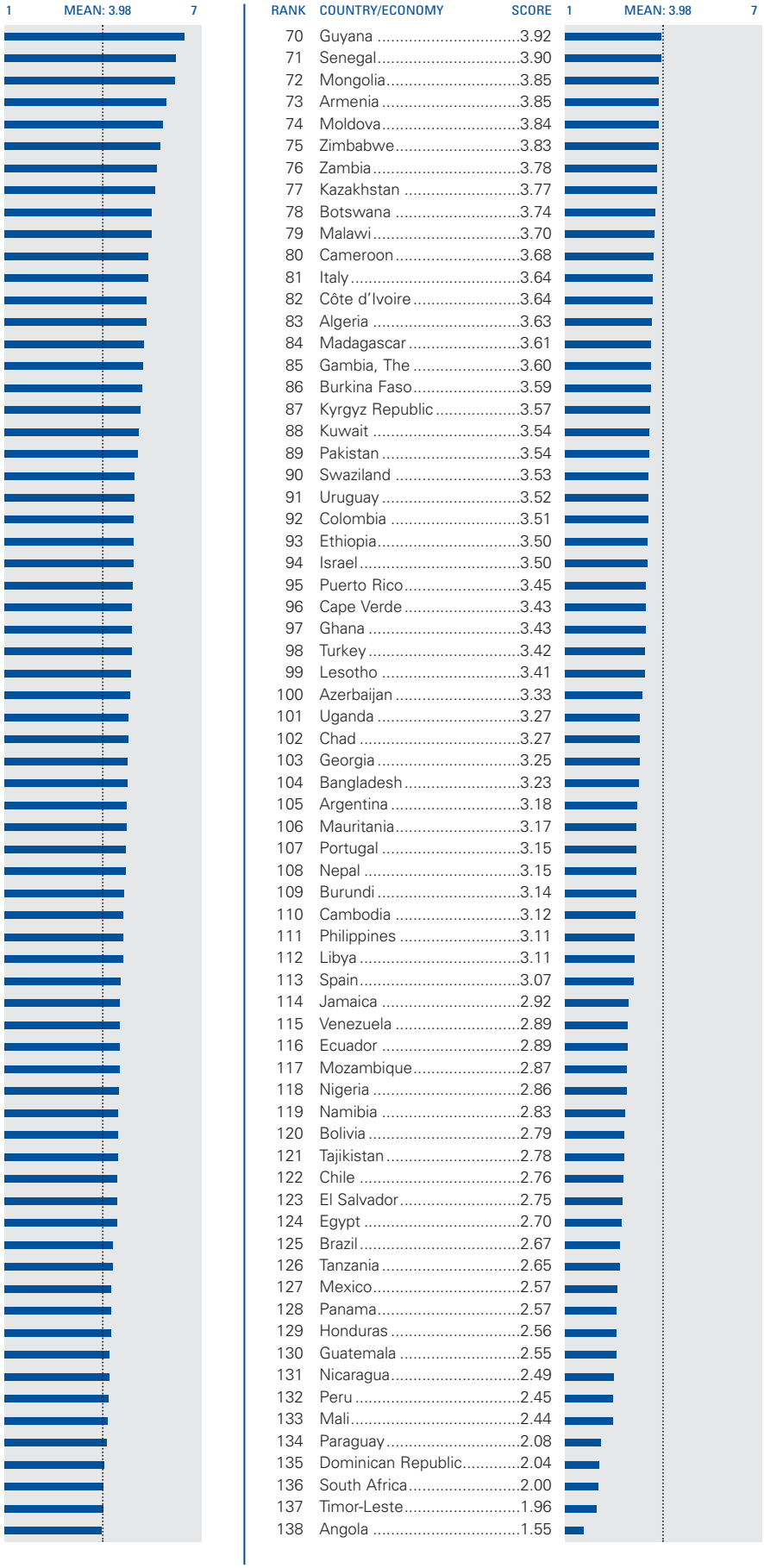
4th pillar
Individual readiness

4.01 Quality of math and science education

How would you assess the quality of math and science education in your country's schools? [1 = poor; 7 = excellent—among the best in the world] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.46
2	Belgium	6.18
3	Finland	6.16
4	Qatar	5.89
5	Switzerland	5.78
6	Taiwan, China	5.71
7	Lebanon	5.61
8	Tunisia	5.57
9	New Zealand	5.45
10	Canada	5.44
11	France	5.36
12	Hong Kong SAR	5.35
13	Barbados	5.29
14	Iceland	5.29
15	Netherlands	5.22
16	Cyprus	5.20
17	Slovenia	5.16
18	Korea, Rep.	5.12
19	Denmark	5.05
20	Sweden	5.04
21	Estonia	4.95
22	Croatia	4.94
23	Malta	4.91
24	Australia	4.91
25	Czech Republic	4.90
26	United Arab Emirates	4.89
27	Brunei Darussalam	4.87
28	Japan	4.86
29	Lithuania	4.85
30	Hungary	4.82
31	Malaysia	4.79
32	Trinidad and Tobago	4.76
33	China	4.74
34	Ireland	4.73
35	Montenegro	4.73
36	Bosnia and Herzegovina	4.70
37	Austria	4.69
38	India	4.67
39	Germany	4.66
40	Poland	4.61
41	Iran, Islamic Rep.	4.61
42	Ukraine	4.59
43	Romania	4.58
44	Bahrain	4.52
45	Luxembourg	4.49
46	Indonesia	4.49
47	Sri Lanka	4.49
48	Serbia	4.48
49	Saudi Arabia	4.47
50	Costa Rica	4.45
51	Vietnam	4.45
52	United States	4.43
53	Jordan	4.42
54	Russian Federation	4.42
55	United Kingdom	4.41
56	Greece	4.27
57	Thailand	4.27
58	Oman	4.24
59	Latvia	4.22
60	Benin	4.22
61	Macedonia, FYR	4.19
62	Albania	4.17
63	Kenya	4.15
64	Norway	4.11
65	Slovak Republic	4.11
66	Morocco	4.01
67	Mauritius	3.99
68	Bulgaria	3.99
69	Syria	3.95

RANK	COUNTRY/ECONOMY	SCORE
70	Guyana	3.92
71	Senegal	3.90
72	Mongolia	3.85
73	Armenia	3.85
74	Moldova	3.84
75	Zimbabwe	3.83
76	Zambia	3.78
77	Kazakhstan	3.77
78	Botswana	3.74
79	Malawi	3.70
80	Cameroon	3.68
81	Italy	3.64
82	Côte d'Ivoire	3.64
83	Algeria	3.63
84	Madagascar	3.61
85	Gambia, The	3.60
86	Burkina Faso	3.59
87	Kyrgyz Republic	3.57
88	Kuwait	3.54
89	Pakistan	3.54
90	Swaziland	3.53
91	Uruguay	3.52
92	Colombia	3.51
93	Ethiopia	3.50
94	Israel	3.50
95	Puerto Rico	3.45
96	Cape Verde	3.43
97	Ghana	3.43
98	Turkey	3.42
99	Lesotho	3.41
100	Azerbaijan	3.33
101	Uganda	3.27
102	Chad	3.27
103	Georgia	3.25
104	Bangladesh	3.23
105	Argentina	3.18
106	Mauritania	3.17
107	Portugal	3.15
108	Nepal	3.15
109	Burundi	3.14
110	Cambodia	3.12
111	Philippines	3.11
112	Libya	3.11
113	Spain	3.07
114	Jamaica	2.92
115	Venezuela	2.89
116	Ecuador	2.89
117	Mozambique	2.87
118	Nigeria	2.86
119	Namibia	2.83
120	Bolivia	2.79
121	Tajikistan	2.78
122	Chile	2.76
123	El Salvador	2.75
124	Egypt	2.70
125	Brazil	2.67
126	Tanzania	2.65
127	Mexico	2.57
128	Panama	2.57
129	Honduras	2.56
130	Guatemala	2.55
131	Nicaragua	2.49
132	Peru	2.45
133	Mali	2.44
134	Paraguay	2.08
135	Dominican Republic	2.04
136	South Africa	2.00
137	Timor-Leste	1.96
138	Angola	1.55

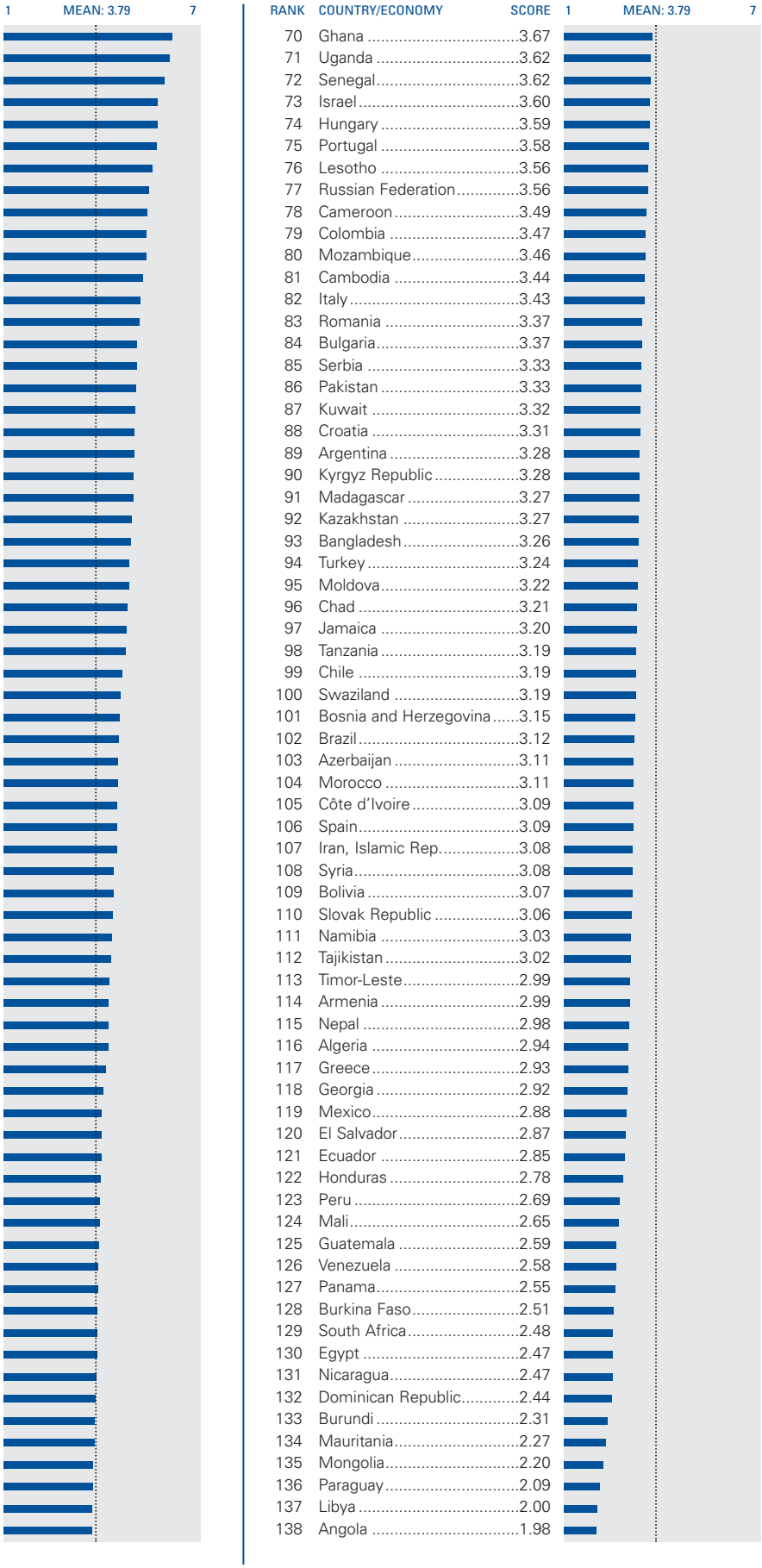


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

4.02 Quality of the educational system

How well does the educational system in your country meet the needs of a competitive economy? [1 = not well at all; 7 = very well] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.11
2	Switzerland	6.02
3	Iceland	5.86
4	Qatar	5.67
5	Canada	5.65
6	Finland	5.63
7	Belgium	5.50
8	Sweden	5.41
9	New Zealand	5.36
10	Denmark	5.32
11	Ireland	5.31
12	Australia	5.21
13	Cyprus	5.13
14	Netherlands	5.11
15	Barbados	5.04
16	Lebanon	5.04
17	Taiwan, China	5.02
18	Germany	4.98
19	Norway	4.95
20	Tunisia	4.95
21	Malta	4.94
22	Costa Rica	4.93
23	Malaysia	4.89
24	Austria	4.86
25	Hong Kong SAR	4.81
26	United States	4.80
27	United Arab Emirates	4.74
28	United Kingdom	4.72
29	France	4.68
30	Trinidad and Tobago	4.58
31	Brunei Darussalam	4.54
32	Kenya	4.52
33	Gambia, The	4.50
34	Czech Republic	4.47
35	Japan	4.46
36	Luxembourg	4.44
37	Montenegro	4.44
38	Bahrain	4.44
39	India	4.34
40	Indonesia	4.33
41	Saudi Arabia	4.30
42	Estonia	4.29
43	Oman	4.24
44	Sri Lanka	4.20
45	Benin	4.18
46	Zimbabwe	4.18
47	Slovenia	4.17
48	Botswana	4.09
49	Malawi	4.03
50	Mauritius	3.98
51	Puerto Rico	3.96
52	Zambia	3.96
53	China	3.95
54	Albania	3.91
55	Jordan	3.90
56	Ukraine	3.88
57	Korea, Rep.	3.86
58	Macedonia, FYR	3.85
59	Ethiopia	3.84
60	Vietnam	3.83
61	Poland	3.83
62	Nigeria	3.81
63	Latvia	3.78
64	Cape Verde	3.77
65	Thailand	3.75
66	Uruguay	3.71
67	Guyana	3.71
68	Philippines	3.69
69	Lithuania	3.68
70	Ghana	3.67
71	Uganda	3.62
72	Senegal	3.62
73	Israel	3.60
74	Hungary	3.59
75	Portugal	3.58
76	Lesotho	3.56
77	Russian Federation	3.56
78	Cameroon	3.49
79	Colombia	3.47
80	Mozambique	3.46
81	Cambodia	3.44
82	Italy	3.43
83	Romania	3.37
84	Bulgaria	3.37
85	Serbia	3.33
86	Pakistan	3.33
87	Kuwait	3.32
88	Croatia	3.31
89	Argentina	3.28
90	Kyrgyz Republic	3.28
91	Madagascar	3.27
92	Kazakhstan	3.27
93	Bangladesh	3.26
94	Turkey	3.24
95	Moldova	3.22
96	Chad	3.21
97	Jamaica	3.20
98	Tanzania	3.19
99	Chile	3.19
100	Swaziland	3.19
101	Bosnia and Herzegovina	3.15
102	Brazil	3.12
103	Azerbaijan	3.11
104	Morocco	3.11
105	Côte d'Ivoire	3.09
106	Spain	3.09
107	Iran, Islamic Rep.	3.08
108	Syria	3.08
109	Bolivia	3.07
110	Slovak Republic	3.06
111	Namibia	3.03
112	Tajikistan	3.02
113	Timor-Leste	2.99
114	Armenia	2.99
115	Nepal	2.98
116	Algeria	2.94
117	Greece	2.93
118	Georgia	2.92
119	Mexico	2.88
120	El Salvador	2.87
121	Ecuador	2.85
122	Honduras	2.78
123	Peru	2.69
124	Mali	2.65
125	Guatemala	2.59
126	Venezuela	2.58
127	Panama	2.55
128	Burkina Faso	2.51
129	South Africa	2.48
130	Egypt	2.47
131	Nicaragua	2.47
132	Dominican Republic	2.44
133	Burundi	2.31
134	Mauritania	2.27
135	Mongolia	2.20
136	Paraguay	2.09
137	Libya	2.00
138	Angola	1.98



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

4.03 Adult literacy rate

Adult literacy rate (%) | 2008

RANK	COUNTRY/ECONOMY	SCORE
1	Estonia	99.8
1	Latvia	99.8
3	Georgia	99.7
3	Kazakhstan	99.7
3	Lithuania	99.7
3	Slovenia	99.7
3	Tajikistan	99.7
3	Ukraine	99.7
9	Azerbaijan	99.5
10	Armenia	99.5
10	Poland	99.5
10	Russian Federation	99.5
13	Kyrgyz Republic	99.3
14	Albania*	99.0
14	Australia*	99.0
14	Austria*	99.0
14	Barbados*	99.0
14	Belgium*	99.0
14	Canada*	99.0
14	Czech Republic*	99.0
14	Denmark*	99.0
14	Finland*	99.0
14	France*	99.0
14	Germany*	99.0
14	Hong Kong SAR*	99.0
14	Hungary*	99.0
14	Iceland*	99.0
14	Ireland*	99.0
14	Israel*	99.0
14	Japan*	99.0
14	Korea, Rep.*	99.0
14	Luxembourg*	99.0
14	Netherlands*	99.0
14	New Zealand*	99.0
14	Norway*	99.0
14	Slovak Republic*	99.0
14	Sweden*	99.0
14	Switzerland*	99.0
14	United Kingdom*	99.0
14	United States*	99.0
41	Italy	98.8
42	Croatia	98.7
42	Trinidad and Tobago	98.7
44	Chile	98.6
45	Bulgaria	98.3
45	Moldova	98.3
47	Uruguay	98.2
48	Cyprus	97.8
49	Taiwan, China	97.8
50	Argentina	97.7
50	Montenegro[4]	97.7
52	Spain	97.6
53	Bosnia and Herzegovina	97.6
53	Romania	97.6
55	Mongolia	97.3
56	Greece	97.0
56	Macedonia, FYR	97.0
58	Serbia[2]	96.6
59	Costa Rica	96.0
60	Venezuela[4]	95.2
61	Brunei Darussalam	95.0
62	Portugal	94.6
63	Paraguay[4]	94.6
64	Singapore	94.5
65	Kuwait[4]	94.5
66	China	93.7
67	Philippines	93.6
68	Thailand[2]	93.5
69	Panama	93.5
70	Colombia	93.4
71	Qatar[4]	93.1
72	Mexico	92.9
73	Vietnam	92.5
74	Malta[2]	92.4
75	Jordan[4]	92.2
76	Malaysia	92.1
77	Indonesia[3]	92.0
78	Zimbabwe	91.4
79	Bahrain	90.8
80	Bolivia[4]	90.7
81	Sri Lanka	90.6
82	United Arab Emirates[2]	90.0
83	Brazil[4]	90.0
84	Lebanon[4]	89.6
85	Peru[4]	89.6
86	Lesotho	89.5
87	South Africa	89.0
88	Turkey[4]	88.7
89	Libya	88.4
90	Dominican Republic[4]	88.2
91	Namibia	88.2
92	Mauritius	87.5
93	Oman	86.7
94	Kenya	86.5
94	Swaziland	86.5
96	Jamaica	85.9
97	Saudi Arabia	85.5
98	Ecuador[4]	84.2
99	Cape Verde	84.1
100	El Salvador	84.0
101	Syria	83.6
102	Honduras[4]	83.6
103	Botswana	83.3
104	Iran, Islamic Rep.[3]	82.3
105	Nicaragua[2]	78.0
106	Tunisia	78.0
107	Cambodia	77.6
108	Cameroon	75.9
109	Uganda	74.6
110	Egypt	74.0
111	Guatemala	73.8
112	Malawi	72.8
113	Algeria[3]	72.6
114	Tanzania	72.6
115	Zambia	70.7
116	Madagascar	70.7
117	Angola	69.6
118	Burundi	65.9
119	Ghana	65.8
120	India[3]	62.8
121	Nigeria	60.1
122	Nepal	57.9
123	Mauritania	56.8
124	Morocco	56.4
125	Bangladesh	55.0
126	Côte d'Ivoire	54.6
127	Mozambique	54.0
128	Pakistan	53.7
129	Gambia, The	45.3
130	Timor-Leste[1]	42.0
131	Senegal[3]	41.9
132	Benin	40.8
133	Ethiopia	35.9
134	Chad	32.7
135	Burkina Faso[4]	28.7
136	Mali[3]	26.2
n/a	Guyana	n/a
n/a	Puerto Rico	n/a

SOURCES: World Bank, *Ed Stats Database* (accessed in January 2011); national sources

NOTE: * indicates assumed value. See Technical Notes and Sources for more information

[1] 2003 [2] 2005 [3] 2006 [4] 2007

4.04 Residential telephone installation fee

One-time residential telephone installation fee (PPP $) | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Hong Kong SAR[4]	0.00
1	Korea, Rep.	0.00
1	Nigeria	0.00
1	Romania	0.00
5	Nepal	0.31
6	Guyana[4]	4.96
7	Turkey	8.16
8	Jamaica[4]	12.88
9	Zambia	14.38
10	Tajikistan[1]	16.22
11	Egypt	16.70
12	India	17.90
13	Iceland	23.19
14	Malawi[4]	23.93
15	Chile	26.49
16	Switzerland	28.02
17	Malaysia	28.43
18	Burundi[2]	28.83
19	Pakistan	29.33
20	Oman[4]	30.36
21	Cape Verde	30.71
22	Tunisia	32.37
23	Côte d'Ivoire	33.05
24	New Zealand	33.34
25	Montenegro	33.39
26	Bulgaria	35.40
27	Senegal	36.71
28	Mozambique	36.90
29	Venezuela	38.18
30	Trinidad and Tobago	38.70
31	United States[4]	39.00
32	Mauritania	40.40
33	Tanzania	40.42
34	Australia	42.70
35	Czech Republic	43.33
36	Lebanon	47.44
37	Israel	47.61
38	Greece	49.19
39	United Arab Emirates[4]	49.38
40	Puerto Rico[1]	50.00
41	Swaziland	50.39
42	Dominican Republic	50.76
43	Singapore	51.03
44	Namibia	51.50
45	Kyrgyz Republic	54.20
46	Panama	54.89
47	Ethiopia	55.80
48	Netherlands	56.12
49	Honduras[3]	56.48
50	Uruguay	59.18
51	Libya[2]	59.57
52	Colombia[4]	59.68
53	Kenya	61.61
54	Armenia	61.78
55	France	62.63
56	Costa Rica	63.54
57	Luxembourg	63.68
58	Brunei Darussalam	64.92
59	Ghana	65.49
60	Ukraine	65.81
61	Bahrain[4]	65.84
62	Mauritius	68.62
63	Madagascar	68.67
64	Timor-Leste[3]	69.54
65	Ecuador	70.54
66	Syria[2]	70.57
67	Qatar	71.68
68	Germany	74.25
69	Algeria[4]	74.73
70	Indonesia[1]	74.98
71	Jordan	75.08
72	Lesotho	75.35
73	El Salvador[4]	75.56
74	Slovak Republic	75.75
75	Belgium	76.08
76	Sweden	76.57
77	Argentina	76.79
78	Botswana	77.53
79	Brazil	77.96
80	Barbados[4]	79.22
81	Macedonia, FYR	79.52
82	Vietnam[2]	81.70
83	Canada	83.00
84	Cameroon	84.34
85	Moldova	84.87
86	Philippines	85.23
87	Gambia, The[4]	86.62
88	Angola	87.95
89	Malta	94.11
90	Latvia	94.11
91	Paraguay	96.42
92	South Africa	98.04
93	Estonia	101.69
94	Mongolia[2]	104.32
95	Finland	105.58
96	Bolivia	107.56
97	Norway	110.83
98	Denmark	116.35
99	Morocco	119.98
100	Italy	121.26
101	Burkina Faso	121.80
102	Kuwait[4]	122.30
103	Bosnia and Herzegovina	123.92
104	Saudi Arabia	128.91
105	Taiwan, China	129.17
106	Portugal	134.29
107	Ireland	136.94
108	Iran, Islamic Rep.	136.96
109	Cyprus	136.98
110	Spain	137.84
111	Guatemala	138.67
112	Cambodia	140.24
113	Mali	140.52
114	Slovenia	140.66
115	Mexico	147.21
116	Serbia	147.65
117	Uganda	149.74
118	Lithuania	151.27
119	Albania	162.05
120	Croatia	162.06
121	Poland[2]	162.63
122	Nicaragua	167.43
123	Kazakhstan[3]	188.72
124	Austria	195.30
125	Azerbaijan	196.02
126	United Kingdom	198.04
127	Thailand	200.84
128	Georgia[4]	202.62
129	Bangladesh	218.82
130	Sri Lanka	244.77
131	Chad	254.15
132	Hungary	266.86
133	Peru	273.61
134	Japan	337.24
135	Russian Federation	398.97
136	Benin	414.29
n/a	China	n/a
n/a	Zimbabwe	n/a

SOURCES: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

[1] 2005 [2] 2006 [3] 2007 [4] 2008

4.05 Residential monthly telephone subscription

Monthly subscription for residential telephone service (PPP $) | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Nigeria	0.00
2	Iran, Islamic Rep.	0.09
3	Burundi[1]	1.21
4	Mongolia[1]	1.33
5	Tajikistan	1.40
6	Ethiopia	1.84
7	Syria[1]	1.88
8	Libya[1]	1.99
9	Malawi[3]	1.99
10	Ecuador	2.05
11	China	2.67
12	Kazakhstan	2.78
13	Bangladesh	2.99
14	Kyrgyz Republic	3.41
15	Cape Verde	3.69
16	Gambia, The[3]	3.74
17	Bahrain[3]	3.82
18	Taiwan, China	3.88
19	Moldova	4.07
20	Ghana	4.09
21	United Arab Emirates[3]	4.11
22	Algeria	4.20
23	Tunisia	4.32
24	Vietnam[3]	4.40
25	Georgia	4.68
26	Serbia	4.87
27	Azerbaijan	4.90
28	Guyana[3]	4.96
29	Mauritius	5.37
30	Egypt	5.42
31	Swaziland	5.56
32	Armenia	5.66
33	Pakistan	5.70
34	Zambia	5.75
35	Indonesia[3]	5.99
36	Thailand	6.00
37	Costa Rica	6.35
38	Korea, Rep.	6.48
39	Ukraine	6.49
40	Venezuela	6.63
41	Argentina	6.77
42	Sri Lanka	6.94
43	Nepal	6.98
44	India	7.16
45	Malaysia	7.39
46	Albania	8.29
47	Paraguay	8.48
48	Kuwait[3]	8.74
49	Colombia	8.83
50	Finland	8.91
51	Puerto Rico	8.95
52	Nicaragua	8.96
53	Latvia	9.28
54	Russian Federation	9.29
55	Singapore	9.36
56	Brazil	9.58
57	Mali	9.65
58	Guatemala	9.94
59	Hong Kong SAR[3]	10.08
60	Tanzania	10.10
61	Malta	10.25
62	Mauritania	10.50
63	Uruguay	10.95
64	Lesotho	11.19
65	Namibia	11.43
66	Jordan	11.49
67	Benin	11.59
68	Qatar	11.83
69	Estonia	12.01
70	Burkina Faso	12.18
71	Uganda	12.48
72	Jamaica	12.51
73	Bosnia and Herzegovina	12.57
74	Lebanon	12.65
75	Cameroon	12.65
76	United States	12.78
77	Saudi Arabia	12.89
78	Iceland	13.15
79	Denmark	13.23
80	Kenya	13.39
81	Lithuania	13.92
82	Madagascar	13.97
83	Chad	14.36
84	Israel	14.54
85	Honduras[2]	14.81
86	Australia	15.16
87	Japan	15.58
88	Chile	15.90
89	Turkey	16.13
90	Sweden	16.45
91	Switzerland	16.46
92	Montenegro	16.69
93	Canada	16.72
94	Brunei Darussalam	16.88
95	Panama	17.38
96	Mozambique	17.41
97	Slovenia	17.56
98	Angola	17.59
99	El Salvador	17.59
100	Dominican Republic	17.77
101	Norway	17.80
102	France	18.22
103	Austria	18.69
104	Slovak Republic	18.89
105	Croatia	19.45
106	Cambodia	19.63
107	Netherlands	20.06
108	United Kingdom	20.21
109	Italy	20.31
110	Bulgaria	20.36
111	Luxembourg	20.38
112	Mexico	20.39
113	Greece	20.80
114	Belgium	21.21
115	Romania	21.42
116	Senegal	21.66
117	Cyprus	21.85
118	Spain	23.06
119	Côte d'Ivoire	23.40
120	Portugal	23.66
121	Morocco	24.00
122	Germany	24.71
123	Botswana	25.28
124	Macedonia, FYR	25.59
125	Trinidad and Tobago	25.80
126	Peru	26.23
127	Poland[3]	26.46
128	Hungary	26.87
129	South Africa	27.44
130	Timor-Leste[2]	27.83
131	Ireland	28.60
132	New Zealand	28.69
133	Czech Republic	29.44
134	Oman[3]	30.36
135	Barbados	31.13
136	Philippines	32.15
137	Bolivia	53.78
n/a	Zimbabwe	n/a

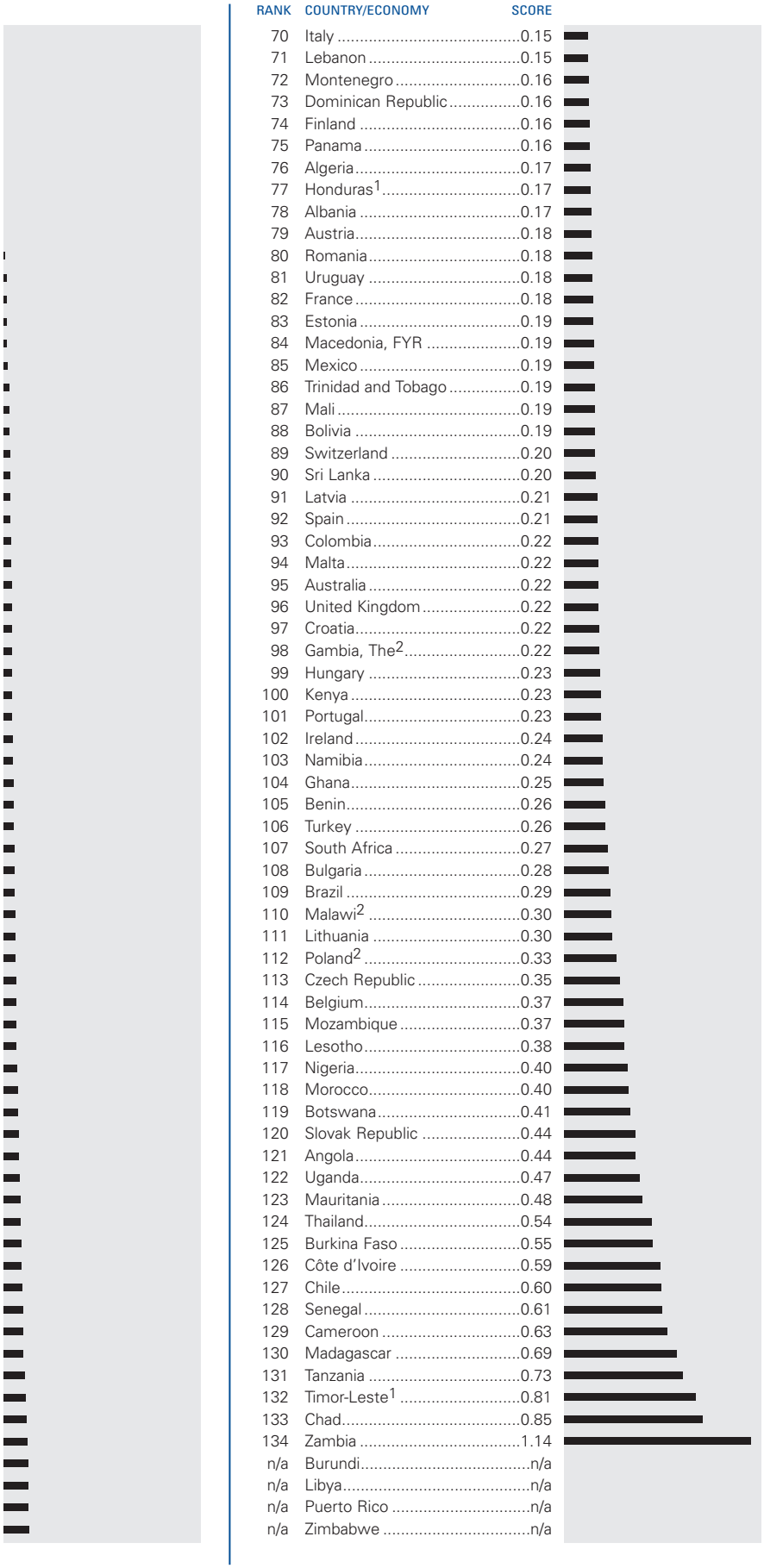
SOURCES: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

[1] 2006 [2] 2007 [3] 2008

4.06 Fixed telephone tariffs

Fixed telephone tariffs for a 3-minute local call during peak hours (PPP $) | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Azerbaijan	0.00
1	Barbados	0.00
1	Canada	0.00
1	Hong Kong SAR[2]	0.00
1	Kuwait[2]	0.00
1	Kyrgyz Republic	0.00
1	New Zealand	0.00
1	Philippines	0.00
1	Qatar	0.00
1	United States	0.00
11	Guyana[2]	0.01
12	Ecuador	0.02
13	Iran, Islamic Rep.	0.02
14	Kazakhstan	0.02
15	Syria	0.02
16	Mongolia	0.02
17	Bangladesh	0.03
18	Argentina	0.04
19	Serbia	0.04
20	Costa Rica	0.04
21	Peru	0.04
22	Tajikistan	0.04
23	United Arab Emirates[2]	0.04
24	Indonesia	0.04
25	Ethiopia	0.05
26	Jamaica	0.05
27	China	0.05
28	Tunisia	0.05
29	Korea, Rep.	0.05
30	Singapore	0.05
31	Moldova	0.05
32	Norway	0.05
33	Nepal	0.05
34	Ukraine	0.05
35	Vietnam[2]	0.06
36	India	0.06
37	Russian Federation	0.06
38	Egypt	0.06
39	Saudi Arabia	0.06
40	Bahrain	0.07
41	Cyprus	0.07
42	Malaysia	0.07
43	Georgia	0.07
44	Taiwan, China	0.08
45	Armenia	0.08
46	Japan	0.08
47	Pakistan	0.08
48	Cape Verde	0.08
49	Cambodia	0.08
50	Israel	0.08
51	Oman[2]	0.09
52	Denmark	0.09
53	Iceland	0.10
54	Luxembourg	0.10
55	Venezuela	0.10
56	Jordan	0.10
57	Nicaragua	0.11
58	Germany	0.11
59	Brunei Darussalam	0.12
60	Netherlands	0.12
61	Bosnia and Herzegovina	0.12
62	Greece	0.13
63	Swaziland	0.13
64	Mauritius	0.14
65	Slovenia	0.14
66	Sweden	0.15
67	Guatemala	0.15
68	El Salvador	0.15
69	Paraguay	0.15
70	Italy	0.15
71	Lebanon	0.15
72	Montenegro	0.16
73	Dominican Republic	0.16
74	Finland	0.16
75	Panama	0.16
76	Algeria	0.17
77	Honduras[1]	0.17
78	Albania	0.17
79	Austria	0.18
80	Romania	0.18
81	Uruguay	0.18
82	France	0.18
83	Estonia	0.19
84	Macedonia, FYR	0.19
85	Mexico	0.19
86	Trinidad and Tobago	0.19
87	Mali	0.19
88	Bolivia	0.19
89	Switzerland	0.20
90	Sri Lanka	0.20
91	Latvia	0.21
92	Spain	0.21
93	Colombia	0.22
94	Malta	0.22
95	Australia	0.22
96	United Kingdom	0.22
97	Croatia	0.22
98	Gambia, The[2]	0.22
99	Hungary	0.23
100	Kenya	0.23
101	Portugal	0.23
102	Ireland	0.24
103	Namibia	0.24
104	Ghana	0.25
105	Benin	0.26
106	Turkey	0.26
107	South Africa	0.27
108	Bulgaria	0.28
109	Brazil	0.29
110	Malawi[2]	0.30
111	Lithuania	0.30
112	Poland[2]	0.33
113	Czech Republic	0.35
114	Belgium	0.37
115	Mozambique	0.37
116	Lesotho	0.38
117	Nigeria	0.40
118	Morocco	0.40
119	Botswana	0.41
120	Slovak Republic	0.44
121	Angola	0.44
122	Uganda	0.47
123	Mauritania	0.48
124	Thailand	0.54
125	Burkina Faso	0.55
126	Côte d'Ivoire	0.59
127	Chile	0.60
128	Senegal	0.61
129	Cameroon	0.63
130	Madagascar	0.69
131	Tanzania	0.73
132	Timor-Leste[1]	0.81
133	Chad	0.85
134	Zambia	1.14
n/a	Burundi	n/a
n/a	Libya	n/a
n/a	Puerto Rico	n/a
n/a	Zimbabwe	n/a



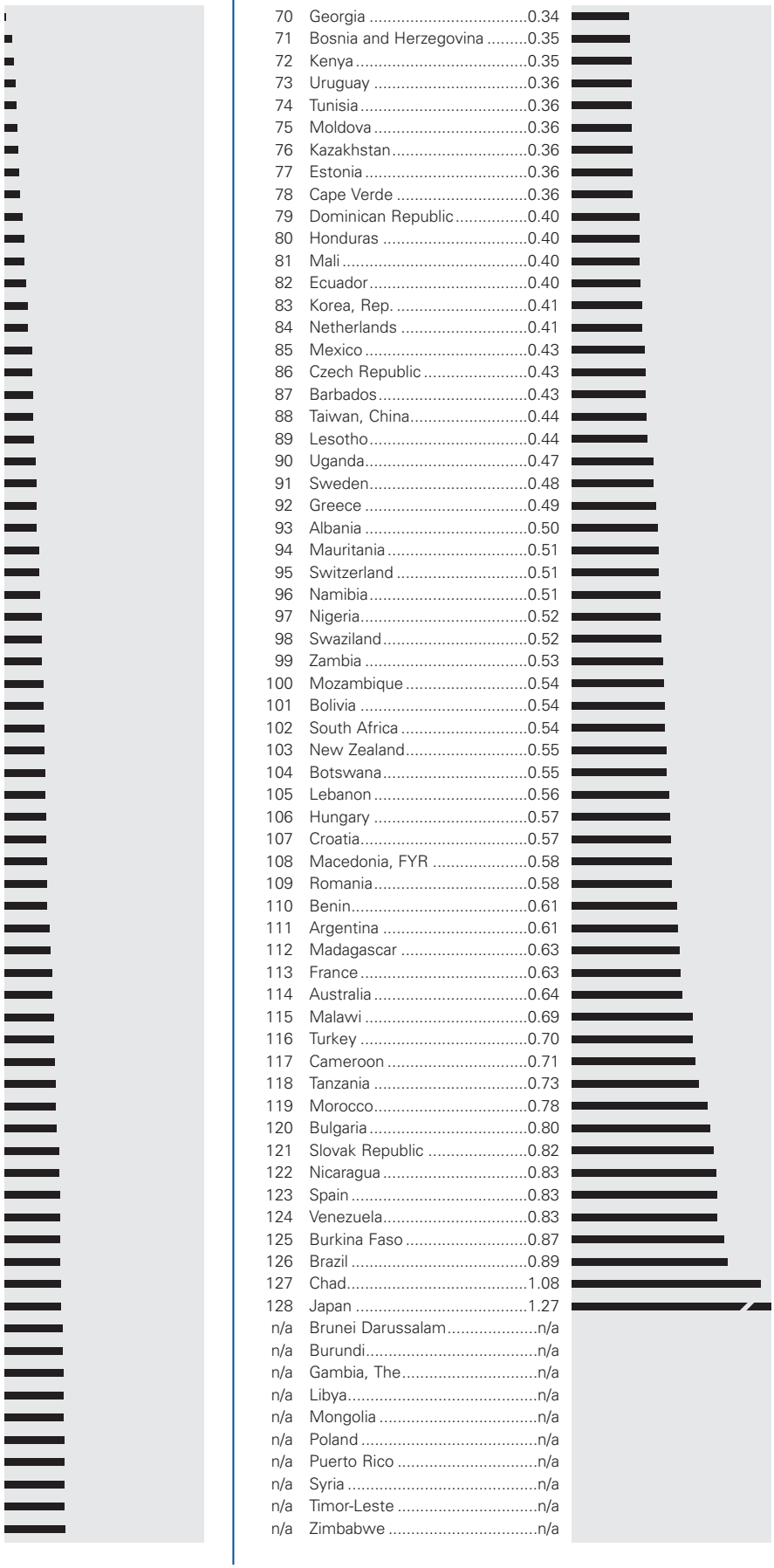
SOURCES: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

[1] 2007 [2] 2008

4.07 Mobile cellular tariffs

Average per-minute cost of different types of mobile cellular calls (PPP $) | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Hong Kong SAR[1]	0.01
2	Sri Lanka	0.04
3	Pakistan	0.05
4	India	0.06
5	United Arab Emirates[1]	0.07
6	Bangladesh	0.07
7	Nepal	0.07
8	Austria	0.08
9	Denmark	0.08
10	Norway	0.10
11	Cyprus	0.11
12	Thailand	0.11
13	Costa Rica	0.12
14	Indonesia	0.13
15	Bahrain[1]	0.13
16	Oman[1]	0.15
17	Singapore	0.15
18	Tajikistan	0.16
19	China	0.16
20	Iceland	0.16
21	Finland	0.17
22	Jordan	0.18
23	Kyrgyz Republic	0.18
24	Egypt	0.18
25	Germany	0.19
26	Ethiopia	0.19
27	Qatar	0.20
28	Jamaica	0.21
29	Mauritius	0.21
30	Latvia	0.21
31	Malaysia	0.22
32	Panama	0.22
33	Serbia	0.22
34	Algeria	0.22
35	Kuwait	0.22
36	Azerbaijan	0.23
37	Armenia	0.23
38	Luxembourg	0.23
39	Saudi Arabia	0.24
40	Iran, Islamic Rep.	0.24
41	Ghana	0.24
42	United States	0.25
43	Ukraine	0.26
44	Israel	0.27
45	Russian Federation	0.27
46	Malta	0.27
47	Italy	0.28
48	El Salvador	0.28
49	Slovenia	0.28
50	Montenegro	0.29
51	Lithuania	0.29
52	Portugal	0.30
53	Chile	0.31
54	Philippines	0.31
55	Guatemala	0.31
56	Paraguay	0.31
57	Senegal	0.31
58	Vietnam	0.32
59	Guyana[1]	0.32
60	United Kingdom	0.32
61	Côte d'Ivoire	0.33
62	Colombia	0.33
63	Cambodia	0.33
64	Peru	0.33
65	Belgium	0.33
66	Canada	0.34
67	Trinidad and Tobago	0.34
68	Ireland	0.34
69	Angola	0.34
70	Georgia	0.34
71	Bosnia and Herzegovina	0.35
72	Kenya	0.35
73	Uruguay	0.36
74	Tunisia	0.36
75	Moldova	0.36
76	Kazakhstan	0.36
77	Estonia	0.36
78	Cape Verde	0.36
79	Dominican Republic	0.40
80	Honduras	0.40
81	Mali	0.40
82	Ecuador	0.40
83	Korea, Rep.	0.41
84	Netherlands	0.41
85	Mexico	0.43
86	Czech Republic	0.43
87	Barbados	0.43
88	Taiwan, China	0.44
89	Lesotho	0.44
90	Uganda	0.47
91	Sweden	0.48
92	Greece	0.49
93	Albania	0.50
94	Mauritania	0.51
95	Switzerland	0.51
96	Namibia	0.51
97	Nigeria	0.52
98	Swaziland	0.52
99	Zambia	0.53
100	Mozambique	0.54
101	Bolivia	0.54
102	South Africa	0.54
103	New Zealand	0.55
104	Botswana	0.55
105	Lebanon	0.56
106	Hungary	0.57
107	Croatia	0.57
108	Macedonia, FYR	0.58
109	Romania	0.58
110	Benin	0.61
111	Argentina	0.61
112	Madagascar	0.63
113	France	0.63
114	Australia	0.64
115	Malawi	0.69
116	Turkey	0.70
117	Cameroon	0.71
118	Tanzania	0.73
119	Morocco	0.78
120	Bulgaria	0.80
121	Slovak Republic	0.82
122	Nicaragua	0.83
123	Spain	0.83
124	Venezuela	0.83
125	Burkina Faso	0.87
126	Brazil	0.89
127	Chad	1.08
128	Japan	1.27
n/a	Brunei Darussalam	n/a
n/a	Burundi	n/a
n/a	Gambia, The	n/a
n/a	Libya	n/a
n/a	Mongolia	n/a
n/a	Poland	n/a
n/a	Puerto Rico	n/a
n/a	Syria	n/a
n/a	Timor-Leste	n/a
n/a	Zimbabwe	n/a



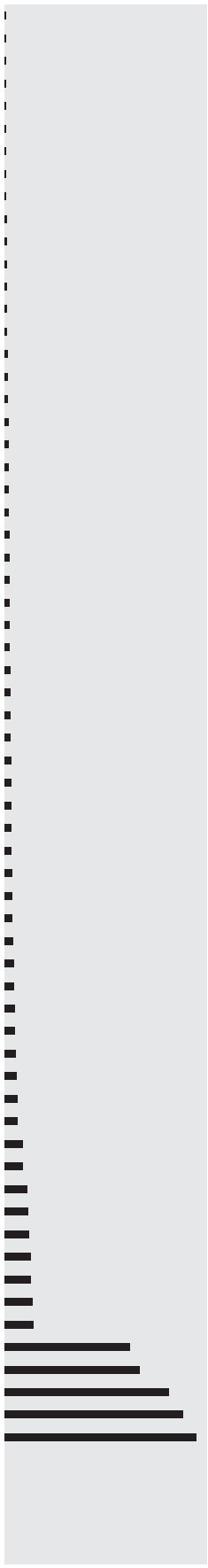
SOURCES: Authors' calculations; International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

[1] 2008

4.08 Fixed broadband Internet tariffs

Monthly subscription charge for fixed (wired) broadband Internet service (PPP $) | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Israel	6.72
2	Sri Lanka	10.05
3	Costa Rica	12.16
4	Romania	12.82
5	Moldova	13.58
6	India	14.91
7	Taiwan, China	15.71
8	Denmark	18.25
9	New Zealand	18.54
10	Mongolia	18.71
11	Ukraine	19.74
12	United States	19.95
13	Egypt	20.32
14	Trinidad and Tobago	20.38
15	Uruguay	21.15
16	Cyprus	21.33
17	Australia	21.68
18	Lithuania	21.78
19	Kazakhstan	21.95
20	Switzerland	22.16
21	Hong Kong SAR[1]	22.17
22	Singapore	22.62
23	Canada	22.64
24	Belgium	23.06
25	Greece	23.25
26	Slovenia	23.71
27	Malta	23.73
28	United Kingdom	24.25
29	Tunisia	24.28
30	Mexico	24.58
31	Italy	25.14
32	Morocco	25.80
33	Croatia	26.30
34	Kuwait	26.43
35	Russian Federation	27.45
36	Pakistan	28.16
37	Ireland	28.18
38	Chad	28.24
39	Sweden	28.25
40	Spain	28.31
41	France	28.35
42	Mauritius	28.88
43	Finland	29.10
44	Austria	29.12
45	Turkey	29.16
46	Japan	29.45
47	Netherlands	29.50
48	Bulgaria	29.50
49	Jordan	30.35
50	Oman[1]	30.36
51	Algeria	30.76
52	Panama	31.02
53	Portugal	31.14
54	Jamaica	31.48
55	Latvia	31.94
56	Macedonia, FYR	32.01
57	Brazil	32.08
58	Luxembourg	32.12
59	Poland[1]	32.52
60	Bahrain[1]	32.92
61	Bosnia and Herzegovina	33.31
62	Norway	33.47
63	Iceland	33.50
64	China[1]	33.87
65	Indonesia	34.45
66	Czech Republic	34.66
67	Korea, Rep.	34.95
68	Serbia	35.67
69	Lebanon	35.90
70	Estonia	36.29
71	Germany	37.09
72	Malaysia	37.53
73	Thailand	37.83
74	Slovak Republic	37.84
75	El Salvador	37.99
76	Cape Verde	39.68
77	Paraguay	40.81
78	United Arab Emirates[1]	40.87
79	South Africa	41.68
80	Hungary	42.51
81	Saudi Arabia	42.97
82	Philippines	43.45
83	Vietnam	45.28
84	Albania	46.28
85	Dominican Republic	48.22
86	Colombia	54.01
87	Barbados	54.46
88	Montenegro	55.62
89	Nepal	57.59
90	Tanzania	60.62
91	Namibia	61.30
92	Argentina	61.38
93	Armenia	61.78
94	Venezuela	62.46
95	Guatemala	63.57
96	Senegal	66.08
97	Côte d'Ivoire	66.11
98	Libya	67.83
99	Zambia	68.75
100	Chile	68.88
101	Peru	69.38
102	Qatar	71.68
103	Kyrgyz Republic	75.63
104	Iran, Islamic Rep.	77.26
105	Ecuador	78.62
106	Kenya	80.34
107	Georgia	81.84
108	Lesotho	82.79
109	Nicaragua	84.72
110	Bolivia	87.84
111	Mali	90.89
112	Azerbaijan	95.56
113	Guyana[1]	99.05
114	Ghana	104.78
115	Uganda	106.07
116	Syria[1]	114.28
117	Mauritania	121.20
118	Botswana	124.72
119	Bangladesh	128.83
120	Mozambique	167.02
121	Cameroon	168.68
122	Burkina Faso	200.63
123	Nigeria	208.21
124	Brunei Darussalam	218.11
125	Benin	227.97
126	Madagascar	228.12
127	Angola	239.22
128	Cambodia	250.62
129	Gambia, The[1]	996.10
130	Tajikistan	1,065.06
131	Malawi	1,293.49
132	Ethiopia	1,405.70
133	Swaziland	1,501.76
n/a	Burundi	n/a
n/a	Honduras	n/a
n/a	Puerto Rico	n/a
n/a	Timor-Leste	n/a
n/a	Zimbabwe	n/a



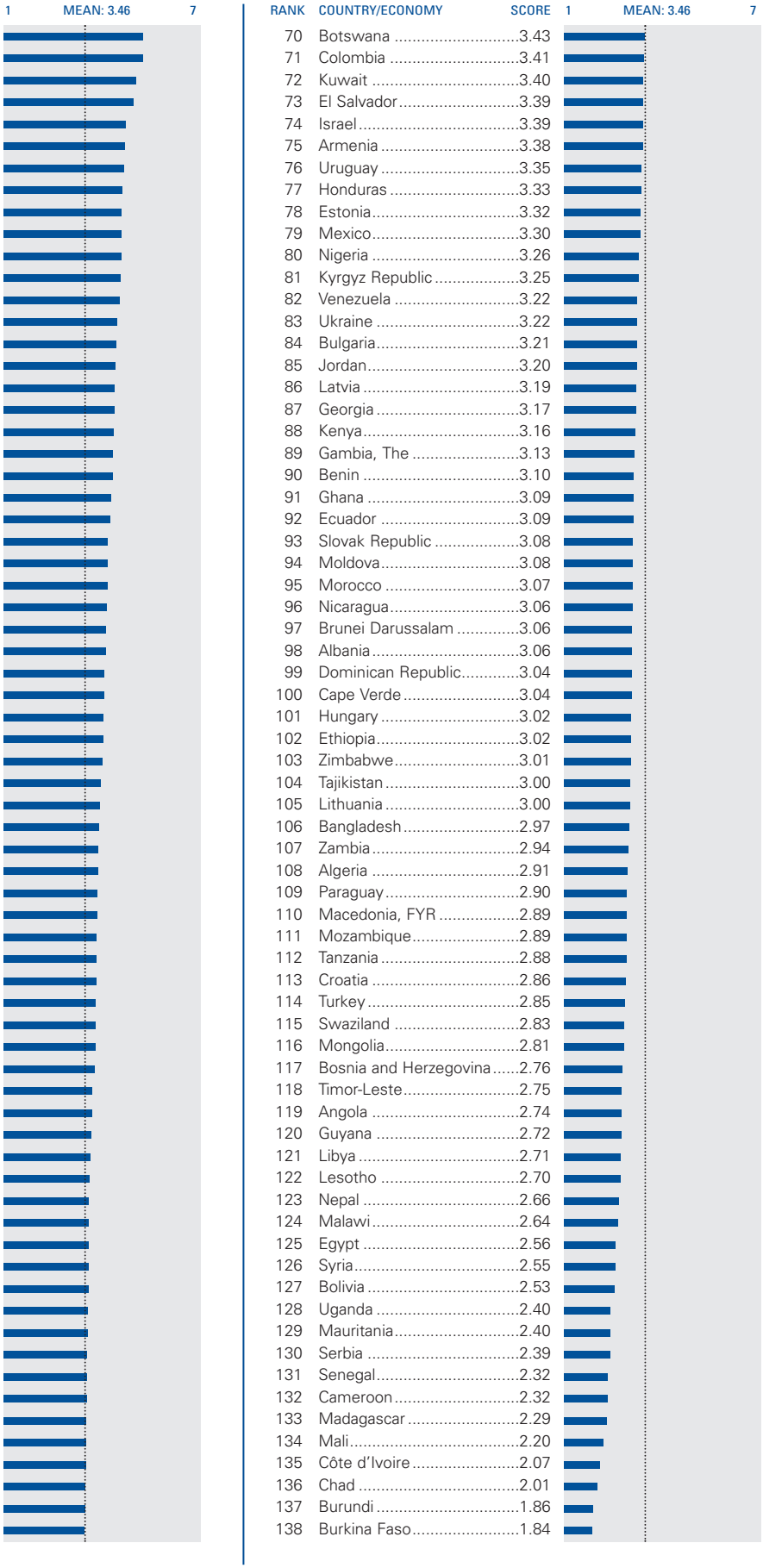
SOURCES: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (December 2010 edition); national sources

[1] 2008

4.09 Buyer sophistication

In your country, how do buyers make purchasing decisions? [1 = based solely on the lowest price; 7 = based on a sophisticated analysis of performance attributes] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Japan	5.22
2	Switzerland	5.21
3	Sweden	5.01
4	Luxembourg	4.93
5	Taiwan, China	4.69
6	Canada	4.67
7	China	4.64
8	United Kingdom	4.59
9	Netherlands	4.58
10	Singapore	4.56
11	Korea, Rep.	4.56
12	Norway	4.54
13	United States	4.51
14	Hong Kong SAR	4.43
15	Belgium	4.41
16	Australia	4.39
17	Finland	4.37
18	Germany	4.36
19	Cyprus	4.34
20	Saudi Arabia	4.32
21	Denmark	4.30
22	United Arab Emirates	4.25
23	Ireland	4.22
24	Malaysia	4.15
25	Austria	4.14
26	France	4.14
27	Chile	4.12
28	Lebanon	4.11
29	South Africa	4.09
30	Puerto Rico	4.04
31	New Zealand	4.03
32	Sri Lanka	4.02
33	Bahrain	4.02
34	Italy	3.99
35	Indonesia	3.94
36	Czech Republic	3.91
37	Barbados	3.89
38	Iceland	3.85
39	Qatar	3.85
40	Tunisia	3.83
41	Azerbaijan	3.83
42	Oman	3.82
43	India	3.82
44	Costa Rica	3.80
45	Vietnam	3.79
46	Thailand	3.78
47	Spain	3.78
48	Panama	3.77
49	Kazakhstan	3.69
50	Russian Federation	3.68
51	Poland	3.64
52	Brazil	3.63
53	Cambodia	3.60
54	Trinidad and Tobago	3.58
55	Romania	3.57
56	Portugal	3.57
57	Montenegro	3.57
58	Greece	3.56
59	Malta	3.55
60	Philippines	3.55
61	Namibia	3.52
62	Pakistan	3.52
63	Slovenia	3.51
64	Iran, Islamic Rep.	3.50
65	Peru	3.50
66	Argentina	3.50
67	Guatemala	3.48
68	Mauritius	3.47
69	Jamaica	3.44
70	Botswana	3.43
71	Colombia	3.41
72	Kuwait	3.40
73	El Salvador	3.39
74	Israel	3.39
75	Armenia	3.38
76	Uruguay	3.35
77	Honduras	3.33
78	Estonia	3.32
79	Mexico	3.30
80	Nigeria	3.26
81	Kyrgyz Republic	3.25
82	Venezuela	3.22
83	Ukraine	3.22
84	Bulgaria	3.21
85	Jordan	3.20
86	Latvia	3.19
87	Georgia	3.17
88	Kenya	3.16
89	Gambia, The	3.13
90	Benin	3.10
91	Ghana	3.09
92	Ecuador	3.09
93	Slovak Republic	3.08
94	Moldova	3.08
95	Morocco	3.07
96	Nicaragua	3.06
97	Brunei Darussalam	3.06
98	Albania	3.06
99	Dominican Republic	3.04
100	Cape Verde	3.04
101	Hungary	3.02
102	Ethiopia	3.02
103	Zimbabwe	3.01
104	Tajikistan	3.00
105	Lithuania	3.00
106	Bangladesh	2.97
107	Zambia	2.94
108	Algeria	2.91
109	Paraguay	2.90
110	Macedonia, FYR	2.89
111	Mozambique	2.89
112	Tanzania	2.88
113	Croatia	2.86
114	Turkey	2.85
115	Swaziland	2.83
116	Mongolia	2.81
117	Bosnia and Herzegovina	2.76
118	Timor-Leste	2.75
119	Angola	2.74
120	Guyana	2.72
121	Libya	2.71
122	Lesotho	2.70
123	Nepal	2.66
124	Malawi	2.64
125	Egypt	2.56
126	Syria	2.55
127	Bolivia	2.53
128	Uganda	2.40
129	Mauritania	2.40
130	Serbia	2.39
131	Senegal	2.32
132	Cameroon	2.32
133	Madagascar	2.29
134	Mali	2.20
135	Côte d'Ivoire	2.07
136	Chad	2.01
137	Burundi	1.86
138	Burkina Faso	1.84



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

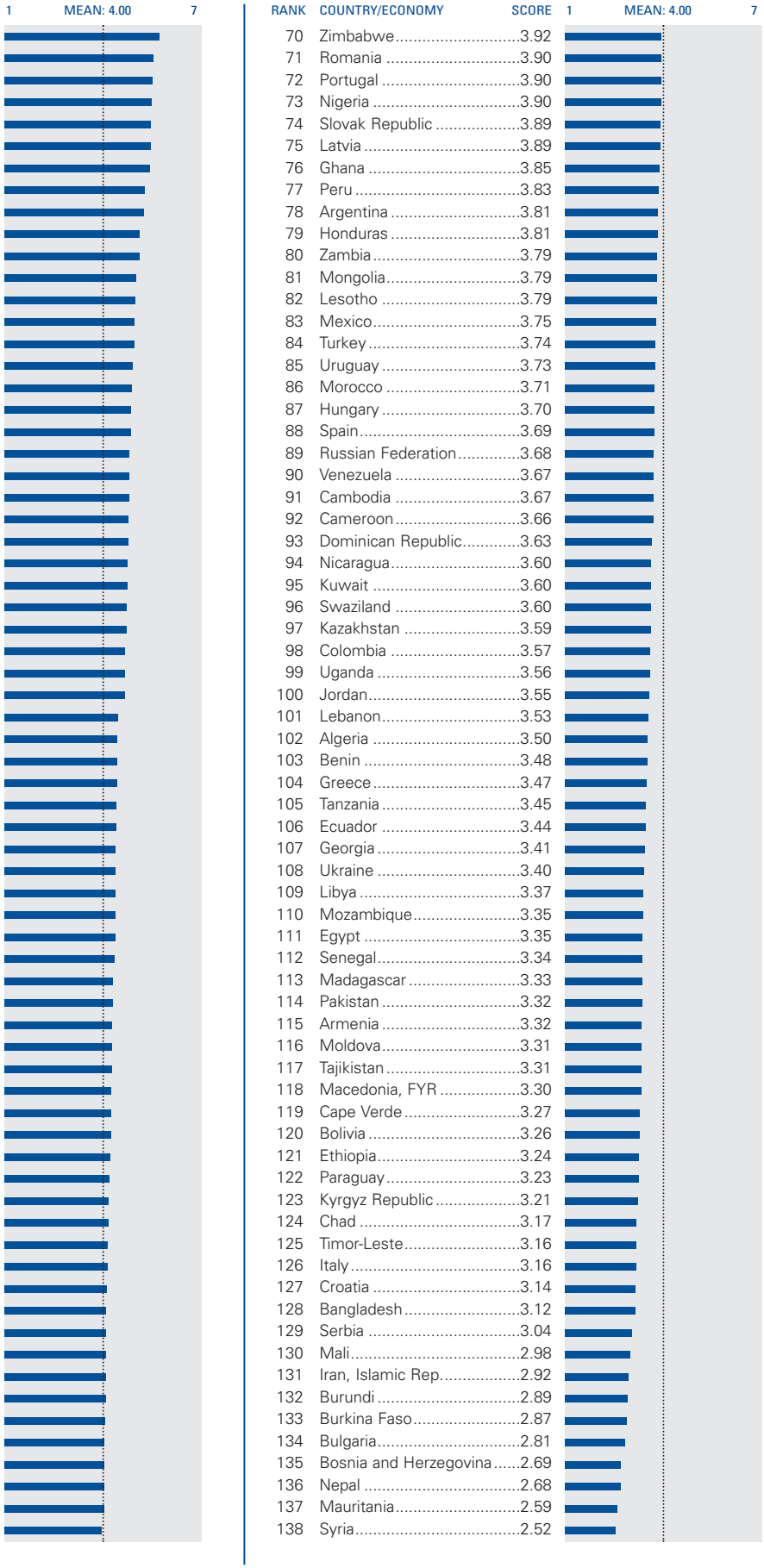
5th pillar

Business readiness

5.01 Extent of staff training

To what extent do companies in your country invest in training and employee development? [1 = hardly at all; 7 = to a great extent] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	5.70
2	Switzerland	5.51
3	Norway	5.47
4	Singapore	5.45
5	Luxembourg	5.43
6	Japan	5.42
7	Denmark	5.40
8	Germany	5.24
9	Finland	5.23
10	United States	5.09
11	Netherlands	5.09
12	Canada	4.98
13	Malaysia	4.97
14	Austria	4.93
15	Belgium	4.92
16	Bahrain	4.88
17	Puerto Rico	4.86
18	Tunisia	4.83
19	Qatar	4.82
20	Australia	4.77
21	New Zealand	4.77
22	Costa Rica	4.77
23	Ireland	4.75
24	Iceland	4.74
25	Israel	4.72
26	South Africa	4.72
27	Hong Kong SAR	4.71
28	United Kingdom	4.70
29	United Arab Emirates	4.66
30	France	4.65
31	Taiwan, China	4.65
32	Gambia, The	4.43
33	Chile	4.41
34	Saudi Arabia	4.41
35	Cyprus	4.40
36	Indonesia	4.39
37	Sri Lanka	4.39
38	Angola	4.37
39	Czech Republic	4.37
40	Mauritius	4.36
41	Korea, Rep.	4.36
42	Barbados	4.35
43	Côte d'Ivoire	4.34
44	Oman	4.29
45	Philippines	4.28
46	Malta	4.26
47	Estonia	4.25
48	Jamaica	4.25
49	Panama	4.24
50	Trinidad and Tobago	4.22
51	Poland	4.22
52	Brazil	4.19
53	Botswana	4.18
54	Albania	4.16
55	Guatemala	4.15
56	China	4.12
57	Vietnam	4.11
58	India	4.10
59	Brunei Darussalam	4.08
60	Guyana	4.08
61	Thailand	4.07
62	El Salvador	4.06
63	Lithuania	4.06
64	Slovenia	4.05
65	Namibia	4.03
66	Malawi	4.02
67	Azerbaijan	4.02
68	Montenegro	4.01
69	Kenya	3.94
70	Zimbabwe	3.92
71	Romania	3.90
72	Portugal	3.90
73	Nigeria	3.90
74	Slovak Republic	3.89
75	Latvia	3.89
76	Ghana	3.85
77	Peru	3.83
78	Argentina	3.81
79	Honduras	3.81
80	Zambia	3.79
81	Mongolia	3.79
82	Lesotho	3.79
83	Mexico	3.75
84	Turkey	3.74
85	Uruguay	3.73
86	Morocco	3.71
87	Hungary	3.70
88	Spain	3.69
89	Russian Federation	3.68
90	Venezuela	3.67
91	Cambodia	3.67
92	Cameroon	3.66
93	Dominican Republic	3.63
94	Nicaragua	3.60
95	Kuwait	3.60
96	Swaziland	3.60
97	Kazakhstan	3.59
98	Colombia	3.57
99	Uganda	3.56
100	Jordan	3.55
101	Lebanon	3.53
102	Algeria	3.50
103	Benin	3.48
104	Greece	3.47
105	Tanzania	3.45
106	Ecuador	3.44
107	Georgia	3.41
108	Ukraine	3.40
109	Libya	3.37
110	Mozambique	3.35
111	Egypt	3.35
112	Senegal	3.34
113	Madagascar	3.33
114	Pakistan	3.32
115	Armenia	3.32
116	Moldova	3.31
117	Tajikistan	3.31
118	Macedonia, FYR	3.30
119	Cape Verde	3.27
120	Bolivia	3.26
121	Ethiopia	3.24
122	Paraguay	3.23
123	Kyrgyz Republic	3.21
124	Chad	3.17
125	Timor-Leste	3.16
126	Italy	3.16
127	Croatia	3.14
128	Bangladesh	3.12
129	Serbia	3.04
130	Mali	2.98
131	Iran, Islamic Rep.	2.92
132	Burundi	2.89
133	Burkina Faso	2.87
134	Bulgaria	2.81
135	Bosnia and Herzegovina	2.69
136	Nepal	2.68
137	Mauritania	2.59
138	Syria	2.52

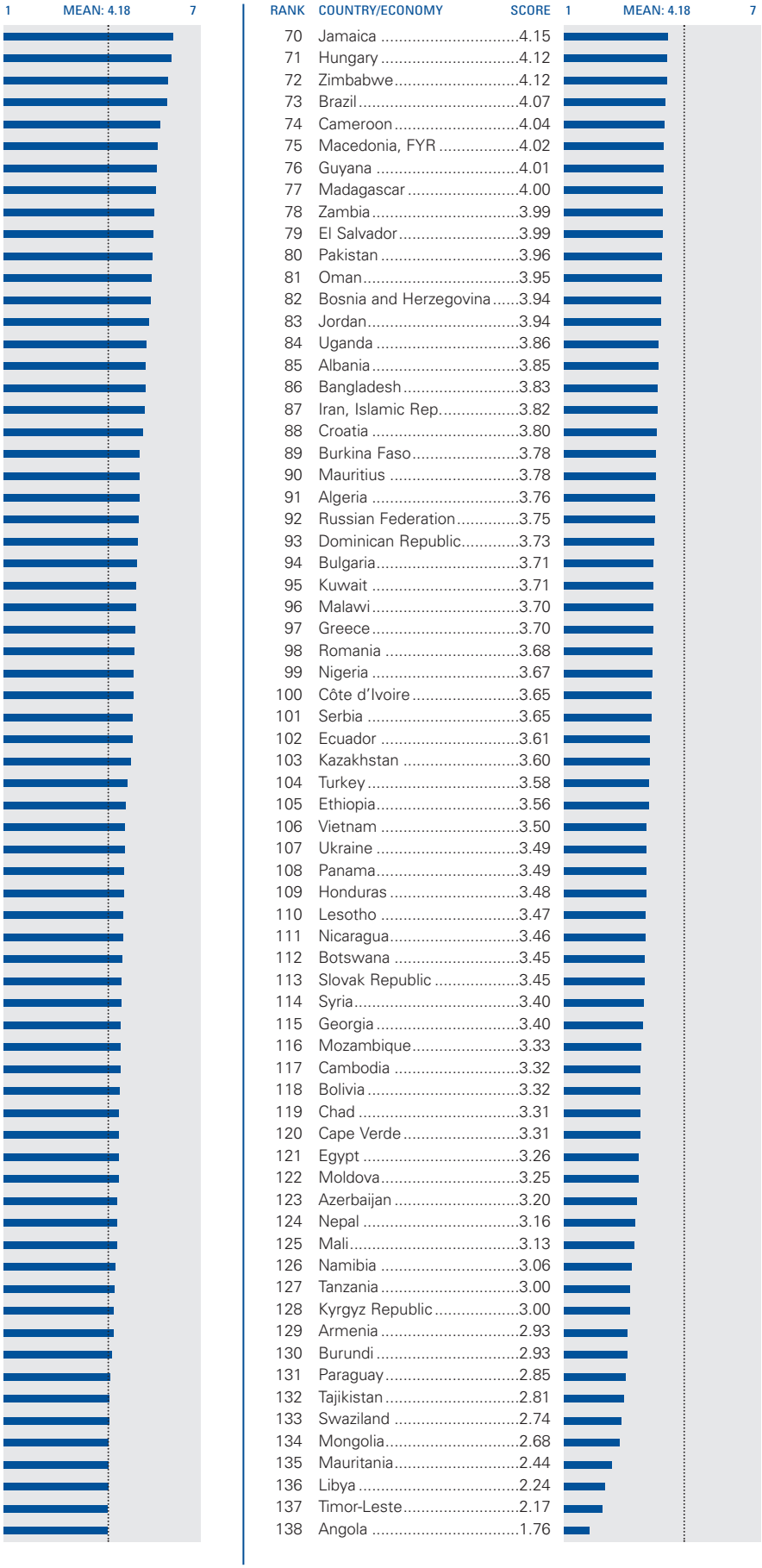


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

5.02 Quality of management schools

How would you assess the quality of management or business schools in your country? [1 = poor; 7 = excellent—among the best in the world] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Qatar	6.14
2	Switzerland	6.07
3	Canada	5.97
4	Belgium	5.96
5	France	5.74
6	Singapore	5.65
7	Sweden	5.63
8	Spain	5.62
9	Iceland	5.57
10	United Kingdom	5.54
11	United States	5.52
12	Netherlands	5.49
13	Costa Rica	5.45
14	Denmark	5.41
15	Chile	5.34
16	Argentina	5.29
17	Australia	5.29
18	Finland	5.28
19	Norway	5.23
20	Lebanon	5.12
21	South Africa	5.12
22	Tunisia	5.11
23	India	5.08
24	Hong Kong SAR	5.07
25	New Zealand	5.04
26	Ireland	5.02
27	Taiwan, China	5.00
28	United Arab Emirates	4.97
29	Barbados	4.96
30	Cyprus	4.93
31	Germany	4.93
32	Portugal	4.91
33	Austria	4.91
34	Trinidad and Tobago	4.86
35	Malaysia	4.75
36	Malta	4.69
37	Sri Lanka	4.68
38	Italy	4.68
39	Uruguay	4.66
40	Senegal	4.64
41	Estonia	4.63
42	Peru	4.61
43	Guatemala	4.59
44	Slovenia	4.57
45	Bahrain	4.56
46	Israel	4.55
47	Korea, Rep.	4.53
48	Montenegro	4.53
49	Morocco	4.52
50	Benin	4.49
51	Kenya	4.49
52	Mexico	4.48
53	Gambia, The	4.48
54	Puerto Rico	4.43
55	Indonesia	4.43
56	Czech Republic	4.43
57	Venezuela	4.39
58	Thailand	4.35
59	Colombia	4.34
60	Saudi Arabia	4.33
61	Philippines	4.29
62	Poland	4.23
63	China	4.20
64	Ghana	4.19
65	Japan	4.17
66	Luxembourg	4.17
67	Latvia	4.17
68	Lithuania	4.16
69	Brunei Darussalam	4.15
70	Jamaica	4.15
71	Hungary	4.12
72	Zimbabwe	4.12
73	Brazil	4.07
74	Cameroon	4.04
75	Macedonia, FYR	4.02
76	Guyana	4.01
77	Madagascar	4.00
78	Zambia	3.99
79	El Salvador	3.99
80	Pakistan	3.96
81	Oman	3.95
82	Bosnia and Herzegovina	3.94
83	Jordan	3.94
84	Uganda	3.86
85	Albania	3.85
86	Bangladesh	3.83
87	Iran, Islamic Rep.	3.82
88	Croatia	3.80
89	Burkina Faso	3.78
90	Mauritius	3.78
91	Algeria	3.76
92	Russian Federation	3.75
93	Dominican Republic	3.73
94	Bulgaria	3.71
95	Kuwait	3.71
96	Malawi	3.70
97	Greece	3.70
98	Romania	3.68
99	Nigeria	3.67
100	Côte d'Ivoire	3.65
101	Serbia	3.65
102	Ecuador	3.61
103	Kazakhstan	3.60
104	Turkey	3.58
105	Ethiopia	3.56
106	Vietnam	3.50
107	Ukraine	3.49
108	Panama	3.49
109	Honduras	3.48
110	Lesotho	3.47
111	Nicaragua	3.46
112	Botswana	3.45
113	Slovak Republic	3.45
114	Syria	3.40
115	Georgia	3.40
116	Mozambique	3.33
117	Cambodia	3.32
118	Bolivia	3.32
119	Chad	3.31
120	Cape Verde	3.31
121	Egypt	3.26
122	Moldova	3.25
123	Azerbaijan	3.20
124	Nepal	3.16
125	Mali	3.13
126	Namibia	3.06
127	Tanzania	3.00
128	Kyrgyz Republic	3.00
129	Armenia	2.93
130	Burundi	2.93
131	Paraguay	2.85
132	Tajikistan	2.81
133	Swaziland	2.74
134	Mongolia	2.68
135	Mauritania	2.44
136	Libya	2.24
137	Timor-Leste	2.17
138	Angola	1.76

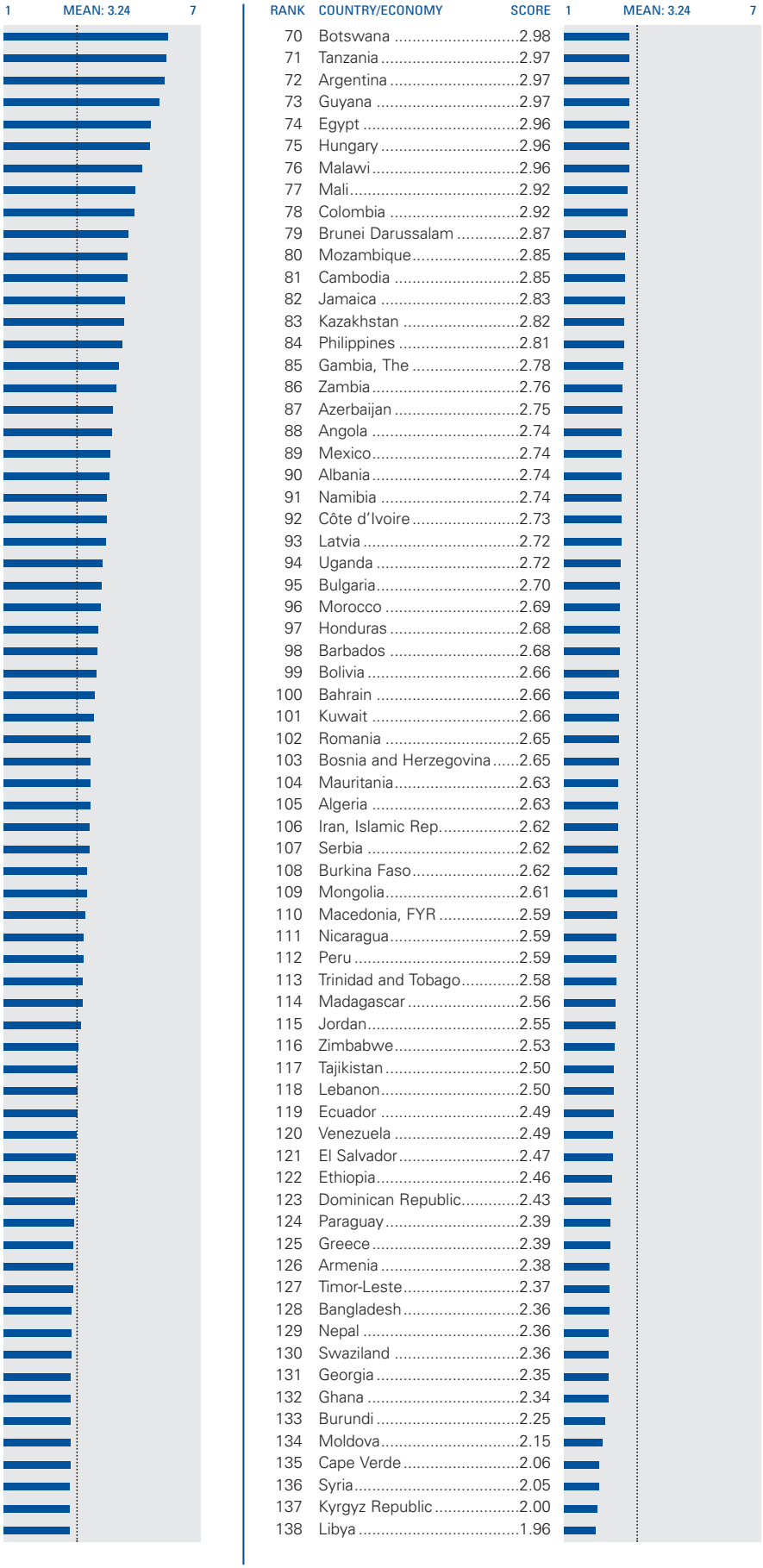


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

5.03 Company spending on R&D

To what extent do companies in your country spend on research and development (R&D)? [1 = do not spend on R&D; 7 = spend heavily on R&D] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	5.98
2	Switzerland	5.93
3	Japan	5.87
4	Germany	5.72
5	Finland	5.45
6	United States	5.43
7	Denmark	5.20
8	Singapore	4.99
9	Taiwan, China	4.96
10	Luxembourg	4.79
11	Israel	4.75
12	Korea, Rep.	4.75
13	France	4.66
14	United Kingdom	4.64
15	Netherlands	4.59
16	Malaysia	4.49
17	Norway	4.40
18	Austria	4.32
19	Belgium	4.29
20	Canada	4.23
21	Ireland	4.19
22	China	4.14
23	Australia	4.12
24	Saudi Arabia	4.09
25	Czech Republic	4.00
26	Indonesia	3.98
27	Iceland	3.94
28	United Arab Emirates	3.86
29	Brazil	3.83
30	Sri Lanka	3.82
31	Costa Rica	3.76
32	Slovenia	3.73
33	Vietnam	3.64
34	Kenya	3.63
35	Tunisia	3.63
36	Hong Kong SAR	3.62
37	India	3.59
38	New Zealand	3.59
39	Italy	3.52
40	South Africa	3.51
41	Qatar	3.46
42	Benin	3.41
43	Cyprus	3.41
44	Montenegro	3.40
45	Portugal	3.39
46	Estonia	3.34
47	Spain	3.25
48	Thailand	3.23
49	Senegal	3.22
50	Russian Federation	3.22
51	Oman	3.21
52	Chile	3.18
53	Nigeria	3.18
54	Puerto Rico	3.17
55	Malta	3.13
56	Uruguay	3.11
57	Lithuania	3.11
58	Panama	3.11
59	Lesotho	3.06
60	Croatia	3.05
61	Poland	3.05
62	Turkey	3.04
63	Cameroon	3.04
64	Mauritius	3.03
65	Guatemala	3.03
66	Chad	3.03
67	Pakistan	3.00
68	Slovak Republic	3.00
69	Ukraine	3.00
70	Botswana	2.98
71	Tanzania	2.97
72	Argentina	2.97
73	Guyana	2.97
74	Egypt	2.96
75	Hungary	2.96
76	Malawi	2.96
77	Mali	2.92
78	Colombia	2.92
79	Brunei Darussalam	2.87
80	Mozambique	2.85
81	Cambodia	2.85
82	Jamaica	2.83
83	Kazakhstan	2.82
84	Philippines	2.81
85	Gambia, The	2.78
86	Zambia	2.76
87	Azerbaijan	2.75
88	Angola	2.74
89	Mexico	2.74
90	Albania	2.74
91	Namibia	2.74
92	Côte d'Ivoire	2.73
93	Latvia	2.72
94	Uganda	2.72
95	Bulgaria	2.70
96	Morocco	2.69
97	Honduras	2.68
98	Barbados	2.68
99	Bolivia	2.66
100	Bahrain	2.66
101	Kuwait	2.66
102	Romania	2.65
103	Bosnia and Herzegovina	2.65
104	Mauritania	2.63
105	Algeria	2.63
106	Iran, Islamic Rep.	2.62
107	Serbia	2.62
108	Burkina Faso	2.62
109	Mongolia	2.61
110	Macedonia, FYR	2.59
111	Nicaragua	2.59
112	Peru	2.59
113	Trinidad and Tobago	2.58
114	Madagascar	2.56
115	Jordan	2.55
116	Zimbabwe	2.53
117	Tajikistan	2.50
118	Lebanon	2.50
119	Ecuador	2.49
120	Venezuela	2.49
121	El Salvador	2.47
122	Ethiopia	2.46
123	Dominican Republic	2.43
124	Paraguay	2.39
125	Greece	2.39
126	Armenia	2.38
127	Timor-Leste	2.37
128	Bangladesh	2.36
129	Nepal	2.36
130	Swaziland	2.36
131	Georgia	2.35
132	Ghana	2.34
133	Burundi	2.25
134	Moldova	2.15
135	Cape Verde	2.06
136	Syria	2.05
137	Kyrgyz Republic	2.00
138	Libya	1.96

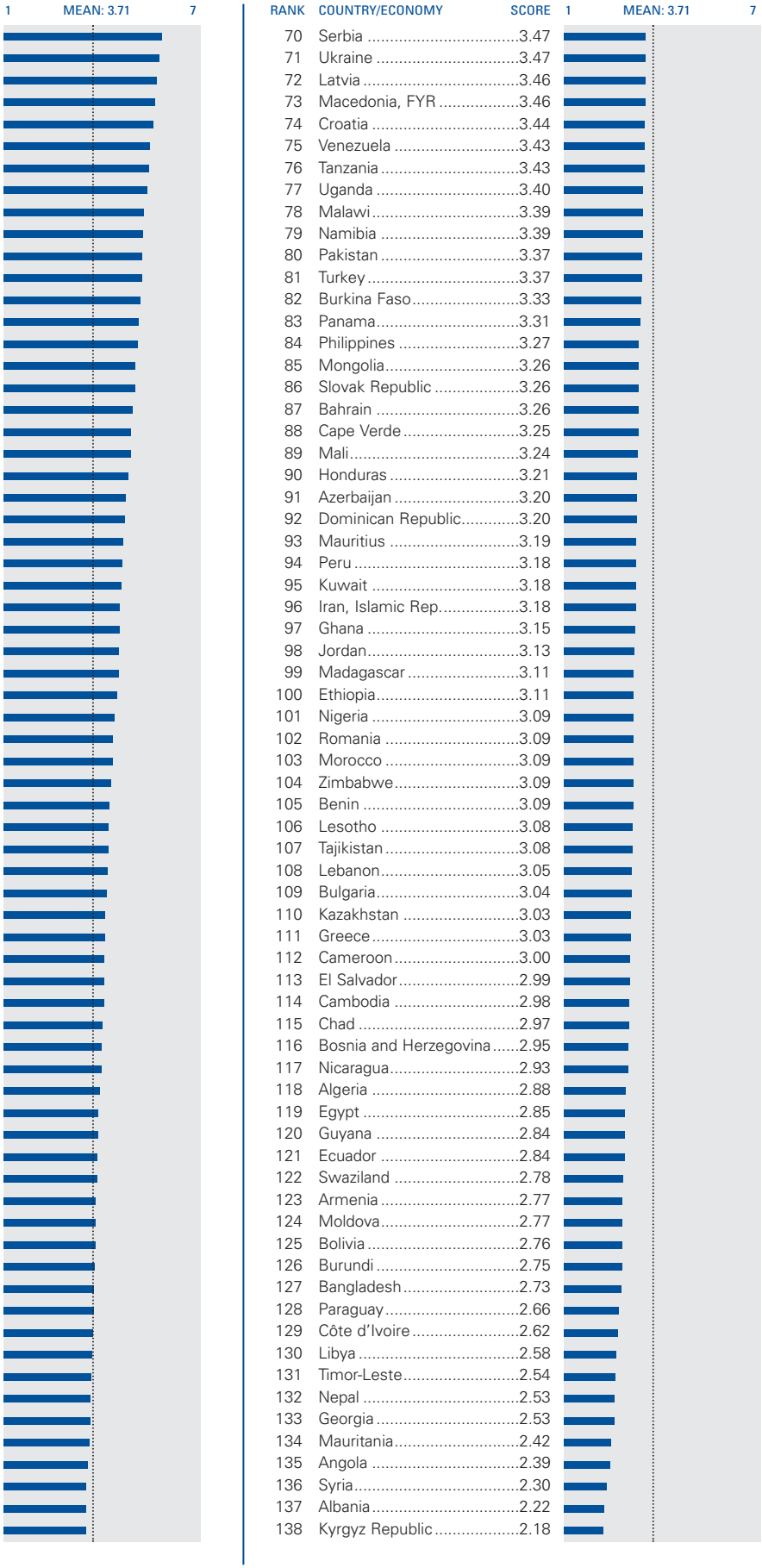


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

5.04 University-industry collaboration in R&D

To what extent do business and universities collaborate on research and development (R&D) in your country? [1 = do not collaborate at all; 7 = collaborate extensively] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	United States	5.79
2	Switzerland	5.71
3	Finland	5.64
4	United Kingdom	5.59
5	Sweden	5.54
6	Singapore	5.44
7	Canada	5.40
8	Denmark	5.34
9	Germany	5.24
10	Belgium	5.23
11	Netherlands	5.19
12	Taiwan, China	5.18
13	Australia	5.13
14	Israel	5.08
15	Luxembourg	5.06
16	Iceland	4.97
17	Ireland	4.97
18	Austria	4.92
19	Japan	4.86
20	Norway	4.85
21	New Zealand	4.78
22	Malaysia	4.70
23	Korea, Rep.	4.68
24	South Africa	4.60
25	China	4.59
26	Hong Kong SAR	4.57
27	Qatar	4.52
28	Costa Rica	4.51
29	Czech Republic	4.50
30	Portugal	4.48
31	Puerto Rico	4.43
32	Hungary	4.35
33	Saudi Arabia	4.31
34	Brazil	4.29
35	Lithuania	4.25
36	Estonia	4.19
37	Slovenia	4.17
38	Indonesia	4.16
39	Chile	4.16
40	Barbados	4.11
41	Tunisia	4.08
42	Thailand	4.07
43	United Arab Emirates	4.05
44	France	4.04
45	Cyprus	4.03
46	Spain	3.98
47	Colombia	3.97
48	Mozambique	3.97
49	Sri Lanka	3.91
50	Oman	3.87
51	Senegal	3.86
52	Montenegro	3.83
53	Argentina	3.82
54	Guatemala	3.79
55	Kenya	3.79
56	Malta	3.77
57	Uruguay	3.75
58	India	3.74
59	Mexico	3.72
60	Brunei Darussalam	3.70
61	Russian Federation	3.67
62	Vietnam	3.66
63	Gambia, The	3.64
64	Poland	3.63
65	Jamaica	3.59
66	Zambia	3.55
67	Trinidad and Tobago	3.50
68	Botswana	3.49
69	Italy	3.48
70	Serbia	3.47
71	Ukraine	3.47
72	Latvia	3.46
73	Macedonia, FYR	3.46
74	Croatia	3.44
75	Venezuela	3.43
76	Tanzania	3.43
77	Uganda	3.40
78	Malawi	3.39
79	Namibia	3.39
80	Pakistan	3.37
81	Turkey	3.37
82	Burkina Faso	3.33
83	Panama	3.31
84	Philippines	3.27
85	Mongolia	3.26
86	Slovak Republic	3.26
87	Bahrain	3.26
88	Cape Verde	3.25
89	Mali	3.24
90	Honduras	3.21
91	Azerbaijan	3.20
92	Dominican Republic	3.20
93	Mauritius	3.19
94	Peru	3.18
95	Kuwait	3.18
96	Iran, Islamic Rep.	3.18
97	Ghana	3.15
98	Jordan	3.13
99	Madagascar	3.11
100	Ethiopia	3.11
101	Nigeria	3.09
102	Romania	3.09
103	Morocco	3.09
104	Zimbabwe	3.09
105	Benin	3.09
106	Lesotho	3.08
107	Tajikistan	3.08
108	Lebanon	3.05
109	Bulgaria	3.04
110	Kazakhstan	3.03
111	Greece	3.03
112	Cameroon	3.00
113	El Salvador	2.99
114	Cambodia	2.98
115	Chad	2.97
116	Bosnia and Herzegovina	2.95
117	Nicaragua	2.93
118	Algeria	2.88
119	Egypt	2.85
120	Guyana	2.84
121	Ecuador	2.84
122	Swaziland	2.78
123	Armenia	2.77
124	Moldova	2.77
125	Bolivia	2.76
126	Burundi	2.75
127	Bangladesh	2.73
128	Paraguay	2.66
129	Côte d'Ivoire	2.62
130	Libya	2.58
131	Timor-Leste	2.54
132	Nepal	2.53
133	Georgia	2.53
134	Mauritania	2.42
135	Angola	2.39
136	Syria	2.30
137	Albania	2.22
138	Kyrgyz Republic	2.18



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

5.05 Business telephone installation fee

One-time business telephone installation fee (PPP $) | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Hong Kong SAR[4]	0.00
1	Romania	0.00
3	Nepal	0.31
4	Turkey	8.16
5	India	17.90
6	Iceland	23.19
7	Jamaica[2]	23.56
8	Malaysia	28.43
9	Pakistan	29.33
10	Switzerland	29.85
11	Oman[4]	30.36
12	Malawi[1]	30.41
13	Guyana[3]	30.70
14	Cape Verde	31.38
15	Côte d'Ivoire	33.05
16	Montenegro	33.39
17	New Zealand	34.05
18	Mozambique	36.90
19	Senegal[3]	38.32
20	Mauritania	40.40
21	Tanzania	40.42
22	Australia	42.70
23	Zambia	43.15
24	Czech Republic	43.33
25	Lebanon	47.44
26	Venezuela	48.05
27	Greece	49.19
28	United Arab Emirates[4]	49.38
29	Singapore	51.03
30	Namibia	51.50
31	Trinidad and Tobago	51.60
32	Ethiopia	55.80
33	Uruguay	59.18
34	Chile[1]	60.20
35	France	62.63
36	Colombia[3]	63.25
37	Costa Rica	63.54
38	Luxembourg	63.68
39	Brunei Darussalam	64.92
40	Ghana	65.49
41	Tajikistan[1]	67.62
42	Israel[2]	67.98
43	Madagascar	68.67
44	Timor-Leste[3]	69.54
45	Syria[2]	70.57
46	Qatar	71.68
47	Bahrain[3]	71.92
48	United States[2]	72.26
49	Armenia	74.13
50	Germany	74.25
51	Algeria[4]	74.73
52	Korea, Rep.	74.75
53	Slovak Republic	75.75
54	Belgium	76.08
55	Brazil[3]	76.09
56	Dominican Republic	76.14
57	Barbados[3]	76.68
58	Argentina	76.79
59	Sweden	77.14
60	Panama[3]	77.61
61	Macedonia, FYR	79.52
62	Tunisia	80.92
63	Lesotho[3]	80.98
64	Vietnam[2]	81.70
65	Swaziland	84.21
66	Moldova	84.87
67	Angola	87.95
68	Gambia, The[3]	90.07
69	Paraguay	96.42
70	Kenya[4]	97.36
71	South Africa	98.04
72	Spain	98.19
73	Taiwan, China	99.85
74	El Salvador[4]	100.11
75	Estonia	101.69
76	Finland	105.58
77	Denmark[1]	110.59
78	Norway	110.83
79	Honduras[3]	113.53
80	Botswana	113.76
81	Indonesia[1]	114.38
82	Puerto Rico[1]	120.00
83	Italy	121.26
84	Burkina Faso	121.80
85	Mongolia[2]	122.73
86	Bulgaria	123.91
87	Bosnia and Herzegovina	123.92
88	Nigeria[3]	126.64
89	Saudi Arabia	128.91
90	Ecuador	132.41
91	Portugal	134.28
92	Cyprus	136.98
93	Mauritius	137.23
94	Cambodia	140.24
95	Mali	140.52
96	Slovenia	140.66
97	Bolivia	143.42
98	Ireland	146.59
99	Mexico	147.21
100	Uganda	149.74
101	Jordan	150.19
102	Lithuania	151.27
103	Kyrgyz Republic	153.43
104	Philippines[3]	157.84
105	Malta	159.50
106	Albania	162.05
107	Croatia	162.06
108	Poland[2]	162.63
109	United Kingdom	171.97
110	Burundi[2]	172.96
111	Latvia[2]	184.31
112	Guatemala[2]	187.19
113	Austria	195.30
114	Thailand[1]	210.28
115	Cameroon	210.85
116	Libya[2]	214.45
117	Georgia[3]	217.68
118	Bangladesh	218.82
119	Egypt	225.73
120	Morocco	239.95
121	Sri Lanka	244.77
122	Chad	254.15
123	Ukraine	263.21
124	Peru	273.61
125	Hungary	284.64
126	Azerbaijan	294.03
127	Serbia	295.29
128	Kuwait[2]	306.54
129	Kazakhstan[3]	315.09
130	Japan	337.24
131	Iran, Islamic Rep.[2]	344.19
132	Nicaragua	348.82
133	Russian Federation	594.34
134	Benin	754.27
n/a	Canada	n/a
n/a	China	n/a
n/a	Netherlands	n/a
n/a	Zimbabwe	n/a

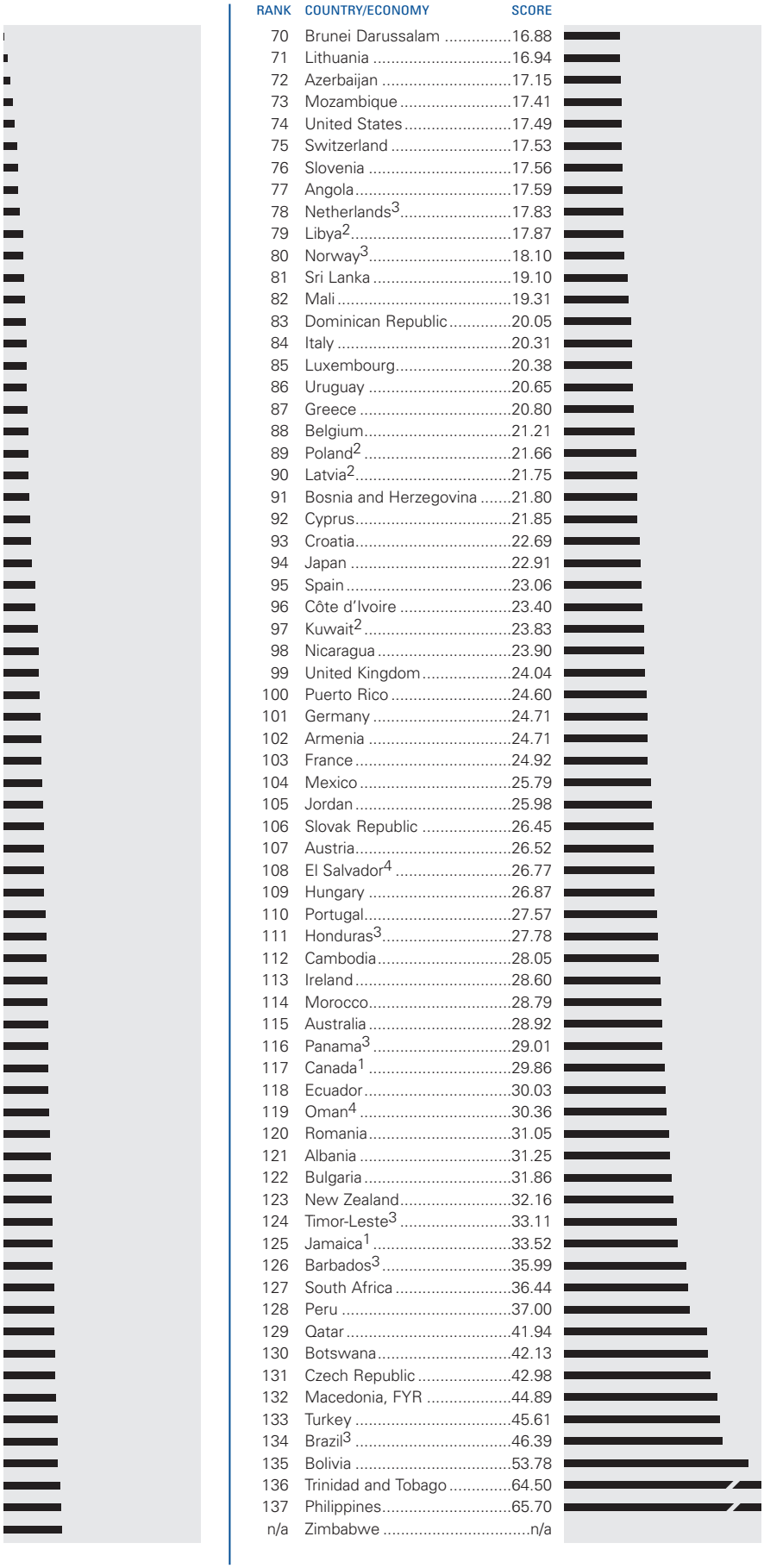
SOURCES: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

[1] 2005 [2] 2006 [3] 2007 [4] 2008

5.06 Business monthly telephone subscription

Monthly subscription for business telephone service (PPP $) | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Iran, Islamic Rep.[2]	0.11
2	Burundi[2]	1.21
3	Syria[2]	1.88
4	Malawi[1]	2.53
5	Bangladesh	2.99
6	Ethiopia	3.92
7	Ghana	4.09
8	Algeria	4.20
9	Gambia, The[3]	4.53
10	China[3]	5.50
11	Vietnam[2]	5.51
12	Serbia	5.76
13	Kyrgyz Republic	6.05
14	Thailand[1]	6.28
15	Korea, Rep.	6.48
16	Ukraine	6.49
17	Cape Verde	6.65
18	Pakistan	6.81
19	Nepal	6.98
20	Moldova	7.13
21	India	7.16
22	Georgia[3]	7.26
23	Costa Rica	7.57
24	Tajikistan[1]	7.85
25	Bahrain[2]	8.12
26	Colombia[3]	8.90
27	Finland	8.91
28	Nigeria[3]	9.85
29	Swaziland	10.05
30	Tanzania	10.10
31	Malta	10.25
32	Mauritania	10.50
33	Hong Kong SAR[4]	10.63
34	Egypt	10.84
35	Guatemala[2]	10.95
36	Mongolia[2]	11.25
37	Malaysia	11.37
38	Zambia	11.51
39	Israel[2]	11.51
40	Benin	11.59
41	Paraguay	11.88
42	Burkina Faso	12.18
43	Senegal[2]	12.33
44	Kazakhstan[3]	12.47
45	Uganda	12.48
46	Lebanon	12.65
47	Cameroon	12.65
48	Namibia	12.71
49	Taiwan, China	12.81
50	Saudi Arabia	12.89
51	Argentina	13.23
52	Mauritius	13.43
53	Singapore	13.61
54	United Arab Emirates[4]	13.72
55	Denmark[1]	13.85
56	Chile[1]	13.93
57	Madagascar	13.97
58	Kenya[4]	14.34
59	Chad	14.36
60	Lesotho[3]	14.43
61	Indonesia[1]	14.64
62	Estonia	14.81
63	Sweden	14.97
64	Venezuela	15.34
65	Guyana[3]	15.35
66	Iceland	15.55
67	Tunisia	16.18
68	Russian Federation[1]	16.49
69	Montenegro	16.69
70	Brunei Darussalam	16.88
71	Lithuania	16.94
72	Azerbaijan	17.15
73	Mozambique	17.41
74	United States	17.49
75	Switzerland	17.53
76	Slovenia	17.56
77	Angola	17.59
78	Netherlands[3]	17.83
79	Libya[2]	17.87
80	Norway[3]	18.10
81	Sri Lanka	19.10
82	Mali	19.31
83	Dominican Republic	20.05
84	Italy	20.31
85	Luxembourg	20.38
86	Uruguay	20.65
87	Greece	20.80
88	Belgium	21.21
89	Poland[2]	21.66
90	Latvia[2]	21.75
91	Bosnia and Herzegovina	21.80
92	Cyprus	21.85
93	Croatia	22.69
94	Japan	22.91
95	Spain	23.06
96	Côte d'Ivoire	23.40
97	Kuwait[2]	23.83
98	Nicaragua	23.90
99	United Kingdom	24.04
100	Puerto Rico	24.60
101	Germany	24.71
102	Armenia	24.71
103	France	24.92
104	Mexico	25.79
105	Jordan	25.98
106	Slovak Republic	26.45
107	Austria	26.52
108	El Salvador[4]	26.77
109	Hungary	26.87
110	Portugal	27.57
111	Honduras[3]	27.78
112	Cambodia	28.05
113	Ireland	28.60
114	Morocco	28.79
115	Australia	28.92
116	Panama[3]	29.01
117	Canada[1]	29.86
118	Ecuador	30.03
119	Oman[4]	30.36
120	Romania	31.05
121	Albania	31.25
122	Bulgaria	31.86
123	New Zealand	32.16
124	Timor-Leste[3]	33.11
125	Jamaica[1]	33.52
126	Barbados[3]	35.99
127	South Africa	36.44
128	Peru	37.00
129	Qatar	41.94
130	Botswana	42.13
131	Czech Republic	42.98
132	Macedonia, FYR	44.89
133	Turkey	45.61
134	Brazil[3]	46.39
135	Bolivia	53.78
136	Trinidad and Tobago	64.50
137	Philippines	65.70
n/a	Zimbabwe	n/a



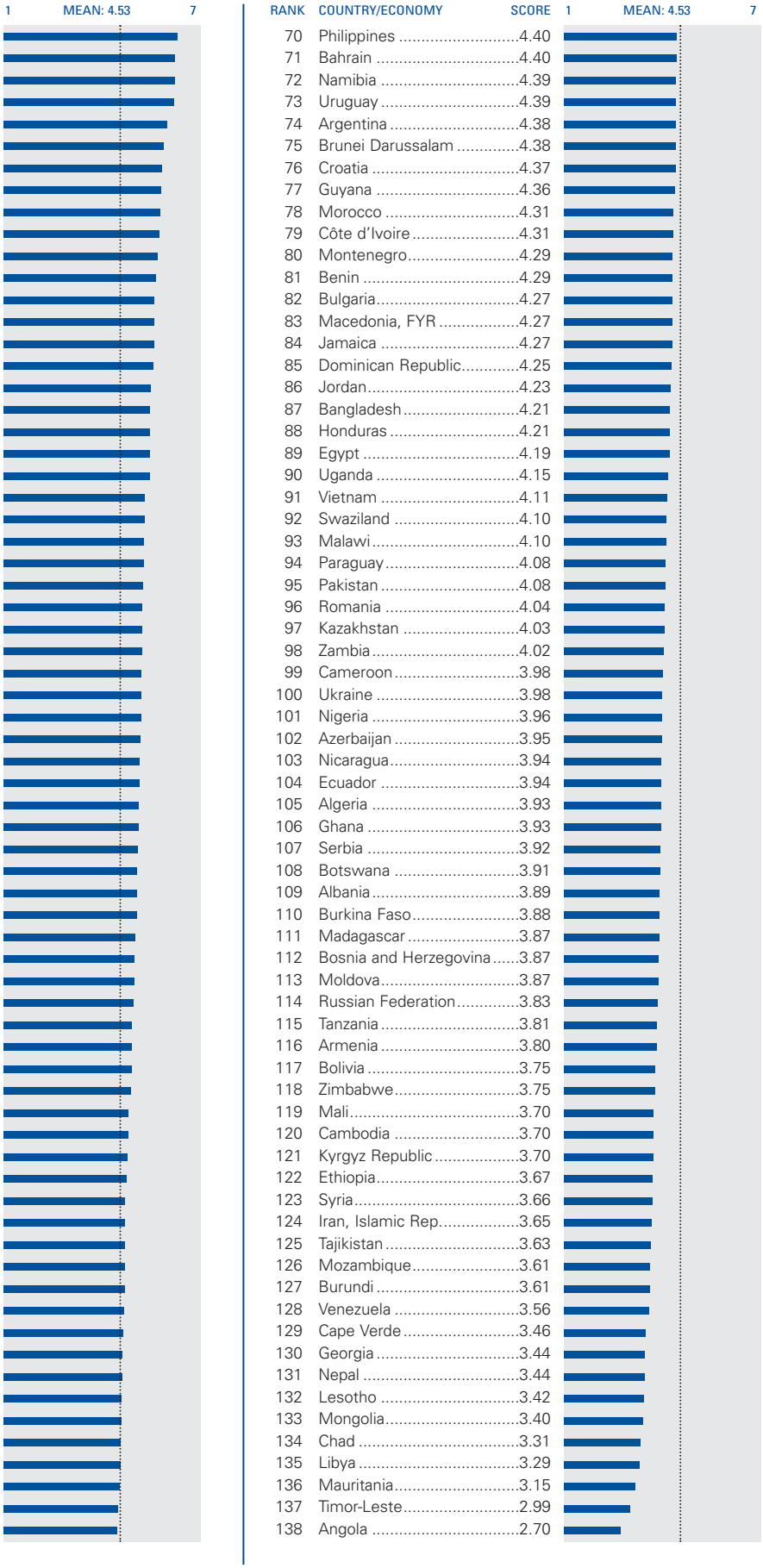
SOURCES: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

[1] 2005 [2] 2006 [3] 2007 [4] 2008

5.07 Local supplier quality

How would you assess the quality of local suppliers in your country? [1 = very poor; 7 = very good] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Austria	6.26
2	Switzerland	6.20
3	Germany	6.19
4	Japan	6.16
5	Sweden	5.95
6	Belgium	5.85
7	Canada	5.79
8	Netherlands	5.76
9	Qatar	5.74
10	France	5.71
11	Taiwan, China	5.66
12	Norway	5.62
13	Denmark	5.57
14	United States	5.56
15	New Zealand	5.55
16	Australia	5.55
17	Czech Republic	5.45
18	Puerto Rico	5.43
19	Finland	5.42
20	Hong Kong SAR	5.42
21	Israel	5.42
22	South Africa	5.29
23	Ireland	5.26
24	Saudi Arabia	5.25
25	Iceland	5.25
26	Spain	5.22
27	Chile	5.20
28	Costa Rica	5.19
29	Brazil	5.18
30	United Kingdom	5.17
31	Luxembourg	5.17
32	Slovenia	5.17
33	Korea, Rep.	5.15
34	Cyprus	5.12
35	Italy	5.11
36	Estonia	5.09
37	Malaysia	5.08
38	United Arab Emirates	5.06
39	Singapore	5.05
40	Guatemala	5.05
41	Poland	5.03
42	Colombia	4.99
43	Thailand	4.97
44	Lithuania	4.95
45	Tunisia	4.94
46	Panama	4.89
47	Slovak Republic	4.89
48	Sri Lanka	4.88
49	El Salvador	4.86
50	Oman	4.78
51	Portugal	4.77
52	Lebanon	4.75
53	Latvia	4.72
54	China	4.68
55	Mexico	4.68
56	Barbados	4.68
57	Malta	4.68
58	Gambia, The	4.68
59	Turkey	4.64
60	India	4.62
61	Indonesia	4.61
62	Hungary	4.58
63	Trinidad and Tobago	4.58
64	Peru	4.56
65	Kuwait	4.54
66	Mauritius	4.53
67	Senegal	4.51
68	Greece	4.47
69	Kenya	4.45
70	Philippines	4.40
71	Bahrain	4.40
72	Namibia	4.39
73	Uruguay	4.39
74	Argentina	4.38
75	Brunei Darussalam	4.38
76	Croatia	4.37
77	Guyana	4.36
78	Morocco	4.31
79	Côte d'Ivoire	4.31
80	Montenegro	4.29
81	Benin	4.29
82	Bulgaria	4.27
83	Macedonia, FYR	4.27
84	Jamaica	4.27
85	Dominican Republic	4.25
86	Jordan	4.23
87	Bangladesh	4.21
88	Honduras	4.21
89	Egypt	4.19
90	Uganda	4.15
91	Vietnam	4.11
92	Swaziland	4.10
93	Malawi	4.10
94	Paraguay	4.08
95	Pakistan	4.08
96	Romania	4.04
97	Kazakhstan	4.03
98	Zambia	4.02
99	Cameroon	3.98
100	Ukraine	3.98
101	Nigeria	3.96
102	Azerbaijan	3.95
103	Nicaragua	3.94
104	Ecuador	3.94
105	Algeria	3.93
106	Ghana	3.93
107	Serbia	3.92
108	Botswana	3.91
109	Albania	3.89
110	Burkina Faso	3.88
111	Madagascar	3.87
112	Bosnia and Herzegovina	3.87
113	Moldova	3.87
114	Russian Federation	3.83
115	Tanzania	3.81
116	Armenia	3.80
117	Bolivia	3.75
118	Zimbabwe	3.75
119	Mali	3.70
120	Cambodia	3.70
121	Kyrgyz Republic	3.70
122	Ethiopia	3.67
123	Syria	3.66
124	Iran, Islamic Rep.	3.65
125	Tajikistan	3.63
126	Mozambique	3.61
127	Burundi	3.61
128	Venezuela	3.56
129	Cape Verde	3.46
130	Georgia	3.44
131	Nepal	3.44
132	Lesotho	3.42
133	Mongolia	3.40
134	Chad	3.31
135	Libya	3.29
136	Mauritania	3.15
137	Timor-Leste	2.99
138	Angola	2.70



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

5.08 Computer, communications, and other services imports

Computer, communications, and other services as a percentage of total commercial services imports | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Ireland	75.5
2	Angola	72.2
3	Kazakhstan	63.5
4	Finland	62.4
5	Azerbaijan	61.7
6	Sweden	56.2
7	Hungary	55.9
8	Lebanon	54.9
9	Czech Republic	53.9
10	Malta	53.5
11	Spain	52.5
12	Netherlands	51.4
13	Romania	50.9
14	Croatia	50.6
15	Italy	50.3
16	Japan	49.7
17	Brazil	49.4
18	Korea, Rep.	49.1
19	Israel	48.3
20	Swaziland	47.7
21	Belgium	46.5
22	Switzerland	45.8
23	Cameroon	45.2
24	Macedonia, FYR	45.0
25	Russian Federation	44.8
26	Slovenia	44.7
27	Germany	43.4
28	United Kingdom	42.9
29	Singapore	42.3
30	Mozambique	42.1
31	Poland	41.5
32	Estonia	41.4
33	Namibia	40.9
34	France	40.8
35	Serbia	40.4
36	Guyana[4]	40.2
37	Portugal	40.0
38	Mauritius	39.9
39	Malaysia	38.3
40	Tajikistan	38.2
41	Thailand	37.9
42	Austria	37.7
43	Slovak Republic	37.4
44	Iceland	36.9
45	Norway	36.6
46	Taiwan, China[4]	36.4
47	Gambia, The	36.0
48	Oman	35.9
49	China	35.3
50	Bulgaria	34.9
51	Denmark[2]	34.8
52	Canada	34.7
53	Madagascar[3]	34.7
54	United States	34.6
55	India	34.6
56	Nigeria	34.4
57	Latvia	34.3
58	Jamaica	34.1
59	New Zealand	33.8
60	Botswana	33.8
61	Venezuela	33.4
62	Argentina	32.7
63	Colombia	32.4
64	Indonesia	32.2
65	Morocco	30.4
66	Pakistan	29.6
67	Luxembourg	28.9
68	Costa Rica	28.7
69	Peru	27.9
70	Barbados	27.8
71	Ghana	27.7
72	Saudi Arabia	27.6
73	Côte d'Ivoire	27.2
74	Australia[4]	26.7
75	Cambodia	26.5
76	Kenya	26.3
77	South Africa	26.1
78	Zambia	26.0
79	Bosnia and Herzegovina	25.3
80	Ukraine	25.0
81	Honduras	24.9
82	Egypt	24.1
83	Greece	23.8
84	Moldova	23.7
85	Hong Kong SAR[4]	23.7
86	Philippines	23.2
87	Tunisia	22.6
88	Brunei Darussalam	22.4
89	Trinidad and Tobago[4]	22.1
90	Ethiopia	21.8
91	Uruguay	21.4
92	Senegal[4]	21.0
93	Mongolia	20.8
94	Chile	20.4
95	Benin[4]	20.4
96	Lithuania	19.9
97	Bolivia	19.3
98	Kyrgyz Republic	19.2
99	Turkey	18.5
100	Cyprus	18.5
101	Ecuador	18.5
102	Mali[4]	17.9
103	Uganda	15.8
104	Sri Lanka	15.2
105	Tanzania	14.8
106	Malawi[1]	14.7
107	El Salvador	13.1
108	Dominican Republic	13.0
109	Burkina Faso[4]	12.9
110	Nicaragua	12.8
111	Nepal	12.4
112	Georgia	12.3
113	Bahrain	11.5
114	Panama	11.4
115	Jordan	10.4
116	Guatemala	9.8
117	Albania	8.9
118	Cape Verde	8.5
119	Armenia	8.3
120	Bangladesh	7.6
121	Syria[4]	7.4
122	Burundi	5.8
123	Lesotho	5.7
124	Paraguay	2.5
125	Kuwait	2.1
126	Libya	1.7
127	Mexico	1.6
n/a	Algeria	n/a
n/a	Chad	n/a
n/a	Iran, Islamic Rep.	n/a
n/a	Mauritania	n/a
n/a	Montenegro	n/a
n/a	Puerto Rico	n/a
n/a	Qatar	n/a
n/a	Timor-Leste	n/a
n/a	United Arab Emirates	n/a
n/a	Vietnam	n/a
n/a	Zimbabwe	n/a

SOURCE: The World Bank, *World Development Indicators Online* (accessed in January 2011)

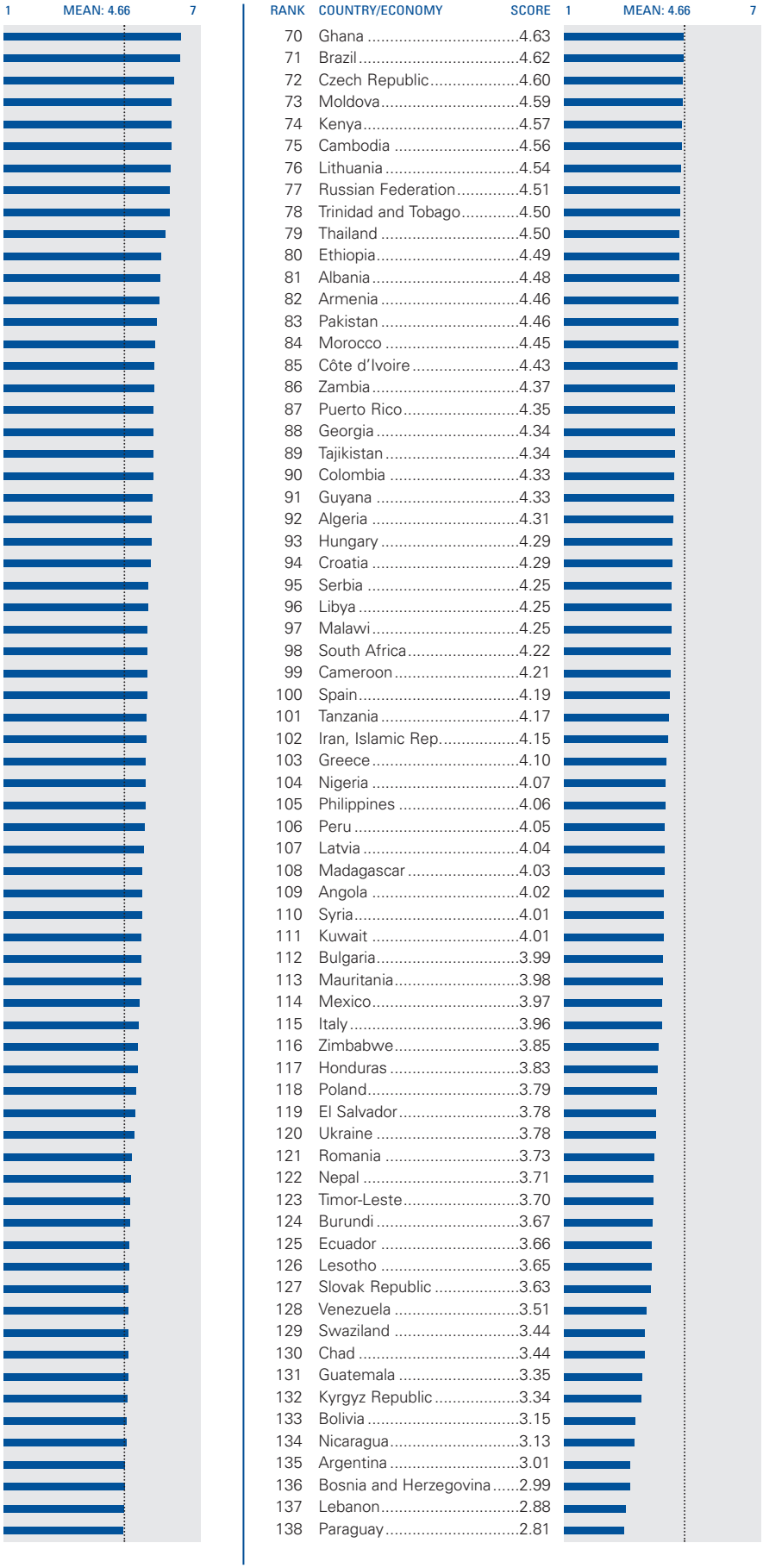
[1] 2002 [2] 2004 [3] 2005 [4] 2008

6th pillar
Government readiness

6.01 Government prioritization of ICT

How much priority does the government in your country place on information and communication technologies? [1 = weak priority; 7 = high priority] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.38
2	Qatar	6.35
3	Malta	6.17
4	Tunisia	6.09
5	Finland	6.09
6	United Arab Emirates	6.08
7	Sweden	6.07
8	Portugal	6.04
9	Taiwan, China	6.03
10	Luxembourg	5.90
11	Bahrain	5.78
12	Malaysia	5.76
13	New Zealand	5.71
14	Estonia	5.65
15	China	5.58
16	Switzerland	5.57
17	Korea, Rep.	5.56
18	Vietnam	5.54
19	Saudi Arabia	5.54
20	United States	5.54
21	Gambia, The	5.53
22	Oman	5.51
23	Denmark	5.49
24	Germany	5.47
25	Mauritius	5.45
26	Hong Kong SAR	5.39
27	Norway	5.37
28	Cape Verde	5.36
29	Iceland	5.36
30	Barbados	5.35
31	Canada	5.35
32	United Kingdom	5.34
33	Senegal	5.33
34	Brunei Darussalam	5.31
35	India	5.31
36	Azerbaijan	5.29
37	Australia	5.28
38	Macedonia, FYR	5.24
39	Jordan	5.20
40	Austria	5.20
41	Japan	5.18
42	France	5.17
43	Sri Lanka	5.17
44	Mozambique	5.16
45	Uruguay	5.11
46	Netherlands	5.09
47	Israel	5.08
48	Burkina Faso	5.07
49	Egypt	5.00
50	Dominican Republic	4.98
51	Chile	4.96
52	Namibia	4.88
53	Turkey	4.86
54	Slovenia	4.83
55	Mali	4.83
56	Bangladesh	4.80
57	Kazakhstan	4.80
58	Mongolia	4.78
59	Jamaica	4.78
60	Panama	4.77
61	Belgium	4.77
62	Benin	4.77
63	Costa Rica	4.76
64	Ireland	4.73
65	Uganda	4.72
66	Cyprus	4.68
67	Montenegro	4.68
68	Indonesia	4.66
69	Botswana	4.63
70	Ghana	4.63
71	Brazil	4.62
72	Czech Republic	4.60
73	Moldova	4.59
74	Kenya	4.57
75	Cambodia	4.56
76	Lithuania	4.54
77	Russian Federation	4.51
78	Trinidad and Tobago	4.50
79	Thailand	4.50
80	Ethiopia	4.49
81	Albania	4.48
82	Armenia	4.46
83	Pakistan	4.46
84	Morocco	4.45
85	Côte d'Ivoire	4.43
86	Zambia	4.37
87	Puerto Rico	4.35
88	Georgia	4.34
89	Tajikistan	4.34
90	Colombia	4.33
91	Guyana	4.33
92	Algeria	4.31
93	Hungary	4.29
94	Croatia	4.29
95	Serbia	4.25
96	Libya	4.25
97	Malawi	4.25
98	South Africa	4.22
99	Cameroon	4.21
100	Spain	4.19
101	Tanzania	4.17
102	Iran, Islamic Rep.	4.15
103	Greece	4.10
104	Nigeria	4.07
105	Philippines	4.06
106	Peru	4.05
107	Latvia	4.04
108	Madagascar	4.03
109	Angola	4.02
110	Syria	4.01
111	Kuwait	4.01
112	Bulgaria	3.99
113	Mauritania	3.98
114	Mexico	3.97
115	Italy	3.96
116	Zimbabwe	3.85
117	Honduras	3.83
118	Poland	3.79
119	El Salvador	3.78
120	Ukraine	3.78
121	Romania	3.73
122	Nepal	3.71
123	Timor-Leste	3.70
124	Burundi	3.67
125	Ecuador	3.66
126	Lesotho	3.65
127	Slovak Republic	3.63
128	Venezuela	3.51
129	Swaziland	3.44
130	Chad	3.44
131	Guatemala	3.35
132	Kyrgyz Republic	3.34
133	Bolivia	3.15
134	Nicaragua	3.13
135	Argentina	3.01
136	Bosnia and Herzegovina	2.99
137	Lebanon	2.88
138	Paraguay	2.81

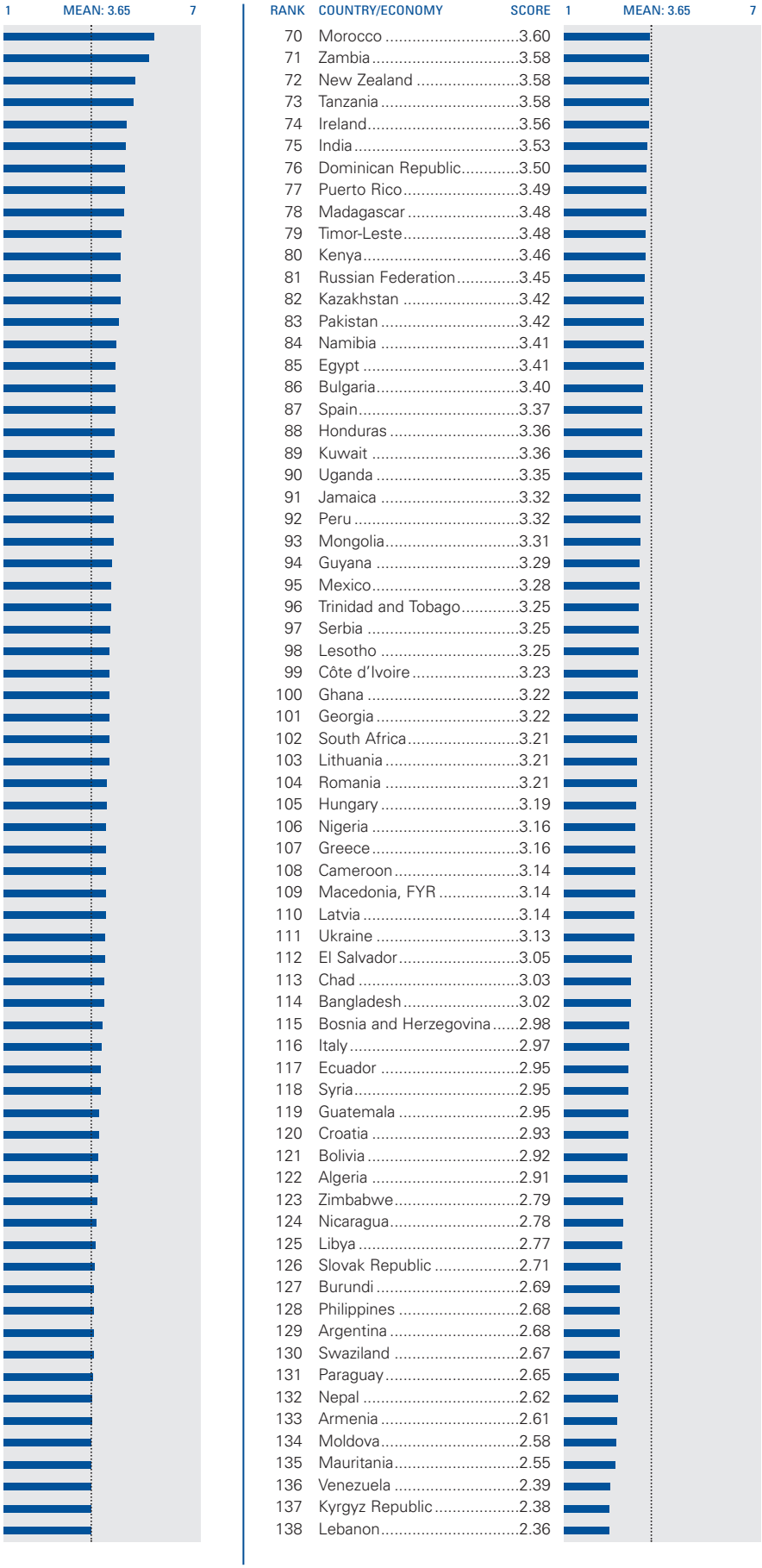


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

6.02 Government procurement of advanced technology products

Do government procurement decisions foster technology innovation in your country? [1 = no, not at all; 7 = yes, extremely effectively] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Qatar	5.55
2	Singapore	5.40
3	United Arab Emirates	4.98
4	Luxembourg	4.94
5	United States	4.72
6	Finland	4.71
7	Taiwan, China	4.67
8	Malaysia	4.66
9	Denmark	4.64
10	Saudi Arabia	4.56
11	Oman	4.55
12	China	4.54
13	Sweden	4.53
14	Tunisia	4.50
15	Switzerland	4.41
16	Portugal	4.39
17	Vietnam	4.39
18	Malta	4.39
19	Israel	4.36
20	Benin	4.35
21	Bahrain	4.33
22	Gambia, The	4.32
23	Netherlands	4.32
24	Iceland	4.32
25	Canada	4.27
26	Hong Kong SAR	4.25
27	Montenegro	4.24
28	Cyprus	4.22
29	Indonesia	4.21
30	Czech Republic	4.21
31	Germany	4.21
32	Brunei Darussalam	4.20
33	Norway	4.19
34	Angola	4.19
35	Azerbaijan	4.12
36	Australia	4.11
37	Austria	4.10
38	Korea, Rep.	4.10
39	Sri Lanka	4.10
40	Japan	4.10
41	Mozambique	4.09
42	Estonia	4.07
43	Chile	4.06
44	Senegal	4.05
45	Cape Verde	4.04
46	Belgium	4.00
47	France	3.96
48	Barbados	3.93
49	Brazil	3.93
50	Colombia	3.90
51	Botswana	3.88
52	United Kingdom	3.85
53	Ethiopia	3.85
54	Costa Rica	3.84
55	Panama	3.80
56	Jordan	3.78
57	Mali	3.76
58	Thailand	3.74
59	Iran, Islamic Rep.	3.72
60	Poland	3.72
61	Turkey	3.72
62	Albania	3.71
63	Slovenia	3.68
64	Cambodia	3.68
65	Tajikistan	3.66
66	Mauritius	3.66
67	Malawi	3.66
68	Uruguay	3.65
69	Burkina Faso	3.64
70	Morocco	3.60
71	Zambia	3.58
72	New Zealand	3.58
73	Tanzania	3.58
74	Ireland	3.56
75	India	3.53
76	Dominican Republic	3.50
77	Puerto Rico	3.49
78	Madagascar	3.48
79	Timor-Leste	3.48
80	Kenya	3.46
81	Russian Federation	3.45
82	Kazakhstan	3.42
83	Pakistan	3.42
84	Namibia	3.41
85	Egypt	3.41
86	Bulgaria	3.40
87	Spain	3.37
88	Honduras	3.36
89	Kuwait	3.36
90	Uganda	3.35
91	Jamaica	3.32
92	Peru	3.32
93	Mongolia	3.31
94	Guyana	3.29
95	Mexico	3.28
96	Trinidad and Tobago	3.25
97	Serbia	3.25
98	Lesotho	3.25
99	Côte d'Ivoire	3.23
100	Ghana	3.22
101	Georgia	3.22
102	South Africa	3.21
103	Lithuania	3.21
104	Romania	3.21
105	Hungary	3.19
106	Nigeria	3.16
107	Greece	3.16
108	Cameroon	3.14
109	Macedonia, FYR	3.14
110	Latvia	3.14
111	Ukraine	3.13
112	El Salvador	3.05
113	Chad	3.03
114	Bangladesh	3.02
115	Bosnia and Herzegovina	2.98
116	Italy	2.97
117	Ecuador	2.95
118	Syria	2.95
119	Guatemala	2.95
120	Croatia	2.93
121	Bolivia	2.92
122	Algeria	2.91
123	Zimbabwe	2.79
124	Nicaragua	2.78
125	Libya	2.77
126	Slovak Republic	2.71
127	Burundi	2.69
128	Philippines	2.68
129	Argentina	2.68
130	Swaziland	2.67
131	Paraguay	2.65
132	Nepal	2.62
133	Armenia	2.61
134	Moldova	2.58
135	Mauritania	2.55
136	Venezuela	2.39
137	Kyrgyz Republic	2.38
138	Lebanon	2.36

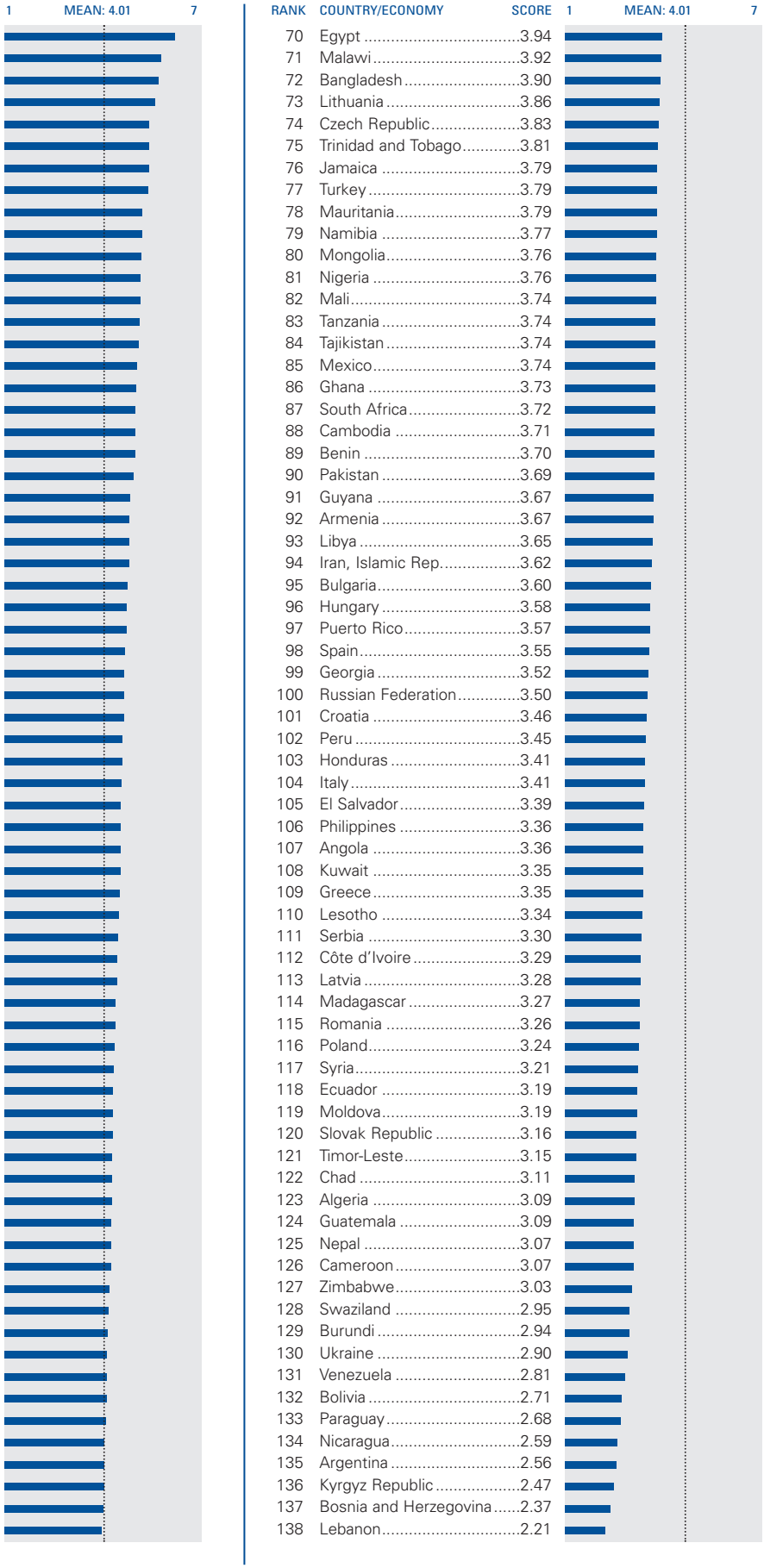


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

6.03 Importance of ICT to government vision of the future

To what extent does the government have a clear implementation plan for utilizing information and communication technologies to improve your country's overall competitiveness? [1 = no plan; 7 = clear plan] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.16
2	Qatar	5.73
3	United Arab Emirates	5.66
4	Malta	5.55
5	Portugal	5.39
6	Taiwan, China	5.39
7	Tunisia	5.38
8	Sweden	5.36
9	Saudi Arabia	5.17
10	Oman	5.17
11	Malaysia	5.13
12	Luxembourg	5.12
13	Hong Kong SAR	5.12
14	Bahrain	5.09
15	China	5.06
16	Denmark	5.01
17	Australia	4.98
18	New Zealand	4.96
19	Estonia	4.96
20	Korea, Rep.	4.95
21	Finland	4.91
22	United States	4.79
23	Gambia, The	4.78
24	Norway	4.78
25	Iceland	4.78
26	Vietnam	4.72
27	Cape Verde	4.71
28	Canada	4.71
29	Chile	4.64
30	France	4.62
31	Brunei Darussalam	4.62
32	India	4.61
33	Austria	4.58
34	Germany	4.58
35	Montenegro	4.54
36	Jordan	4.52
37	Sri Lanka	4.52
38	United Kingdom	4.51
39	Switzerland	4.51
40	Japan	4.48
41	Senegal	4.47
42	Azerbaijan	4.44
43	Netherlands	4.42
44	Burkina Faso	4.40
45	Uruguay	4.37
46	Panama	4.35
47	Mauritius	4.34
48	Costa Rica	4.32
49	Uganda	4.29
50	Kenya	4.28
51	Cyprus	4.27
52	Botswana	4.26
53	Barbados	4.25
54	Dominican Republic	4.25
55	Colombia	4.23
56	Macedonia, FYR	4.23
57	Mozambique	4.21
58	Brazil	4.18
59	Kazakhstan	4.14
60	Morocco	4.11
61	Israel	4.11
62	Indonesia	4.09
63	Ireland	4.09
64	Zambia	4.06
65	Slovenia	4.03
66	Ethiopia	4.02
67	Albania	4.01
68	Thailand	3.98
69	Belgium	3.94
70	Egypt	3.94
71	Malawi	3.92
72	Bangladesh	3.90
73	Lithuania	3.86
74	Czech Republic	3.83
75	Trinidad and Tobago	3.81
76	Jamaica	3.79
77	Turkey	3.79
78	Mauritania	3.79
79	Namibia	3.77
80	Mongolia	3.76
81	Nigeria	3.76
82	Mali	3.74
83	Tanzania	3.74
84	Tajikistan	3.74
85	Mexico	3.74
86	Ghana	3.73
87	South Africa	3.72
88	Cambodia	3.71
89	Benin	3.70
90	Pakistan	3.69
91	Guyana	3.67
92	Armenia	3.67
93	Libya	3.65
94	Iran, Islamic Rep.	3.62
95	Bulgaria	3.60
96	Hungary	3.58
97	Puerto Rico	3.57
98	Spain	3.55
99	Georgia	3.52
100	Russian Federation	3.50
101	Croatia	3.46
102	Peru	3.45
103	Honduras	3.41
104	Italy	3.41
105	El Salvador	3.39
106	Philippines	3.36
107	Angola	3.36
108	Kuwait	3.35
109	Greece	3.35
110	Lesotho	3.34
111	Serbia	3.30
112	Côte d'Ivoire	3.29
113	Latvia	3.28
114	Madagascar	3.27
115	Romania	3.26
116	Poland	3.24
117	Syria	3.21
118	Ecuador	3.19
119	Moldova	3.19
120	Slovak Republic	3.16
121	Timor-Leste	3.15
122	Chad	3.11
123	Algeria	3.09
124	Guatemala	3.09
125	Nepal	3.07
126	Cameroon	3.07
127	Zimbabwe	3.03
128	Swaziland	2.95
129	Burundi	2.94
130	Ukraine	2.90
131	Venezuela	2.81
132	Bolivia	2.71
133	Paraguay	2.68
134	Nicaragua	2.59
135	Argentina	2.56
136	Kyrgyz Republic	2.47
137	Bosnia and Herzegovina	2.37
138	Lebanon	2.21



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

7th pillar
Individual usage

7.01 Mobile telephone subscriptions

Mobile telephone subscriptions (post-paid and pre-paid) per 100 population | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	United Arab Emirates	232.1
2	Montenegro	207.3
3	Estonia	203.0
4	Hong Kong SAR	179.4
5	Bahrain	177.1
6	Qatar	175.4
7	Saudi Arabia	174.4
8	Panama	164.4
9	Russian Federation	163.6
10	Lithuania	151.0
11	Portugal	148.8
12	Luxembourg	148.1
13	Italy	147.0
14	Singapore	145.2
15	Finland	144.6
16	Bulgaria	140.2
17	Oman	139.5
18	Trinidad and Tobago	137.9
19	Czech Republic	137.5
20	Austria	136.7
21	Croatia	136.7
22	Albania	131.9
23	Barbados	131.7
24	United Kingdom	130.6
25	Argentina	130.3
26	Kuwait	129.9
27	Germany	127.8
28	Netherlands	127.7
29	Sweden	125.9
30	Israel	125.8
31	Denmark	125.0
32	Guatemala	123.4
33	El Salvador	122.8
34	Uruguay	122.3
35	Switzerland	122.3
36	Cyprus	122.0
37	Ukraine	121.1
38	Romania	119.4
39	Greece	119.1
40	Hungary	118.0
41	Poland	117.7
42	Belgium	117.5
43	Taiwan, China	116.7
44	Spain	113.8
45	Australia	113.8
46	Honduras	112.4
47	Vietnam	111.5
48	Norway	111.4
49	New Zealand	110.2
50	Malaysia	109.7
51	Jamaica	108.7
52	Kazakhstan	107.9
53	Ireland	107.9
54	Latvia	105.4
55	Iceland	105.3
56	Slovenia	104.0
57	Brunei Darussalam	103.3
58	Malta	103.3
59	Slovak Republic	101.7
60	Korea, Rep.	100.7
61	Serbia	100.6
62	Philippines	100.3
63	Ecuador	100.1
64	Venezuela	98.4
65	Thailand	97.3
66	Chile	96.9
67	Botswana	96.1
68	France	95.5
69	Tunisia	95.4
70	Jordan	95.2
71	Macedonia, FYR	95.1
72	Algeria	93.8
73	South Africa	92.7
74	Colombia	92.3
75	Japan	91.5
76	United States	90.8
77	Brazil	89.8
78	Paraguay	88.5
79	Azerbaijan	87.8
80	Bosnia and Herzegovina	86.5
81	Dominican Republic	85.5
82	Armenia	85.0
83	Peru	84.7
84	Mauritius	84.4
85	Mongolia	84.2
86	Gambia, The	84.0
87	Turkey	83.9
88	Kyrgyz Republic	81.8
89	Morocco	79.1
90	Libya	77.9
91	Moldova	77.3
92	Mexico	76.2
93	Guyana	74.4
94	Bolivia	72.5
95	Canada	70.9
96	Iran, Islamic Rep.	70.8
97	Tajikistan	70.5
98	Sri Lanka	69.6
99	Indonesia	69.2
100	Puerto Rico	68.1
101	Egypt	66.7
102	Georgia	66.6
103	Mauritania	66.3
104	Ghana	63.4
105	Côte d'Ivoire	62.6
106	Cape Verde	57.5
107	Lebanon	56.6
108	Benin	56.3
109	Namibia	56.1
110	Nicaragua	55.8
111	China	55.5
112	Swaziland	55.4
113	Senegal	55.1
114	Pakistan	52.2
115	Kenya	48.7
116	Nigeria	48.2
117	Syria	45.6
118	Angola	43.8
119	India	43.8
120	Costa Rica	42.6
121	Cambodia	42.3
122	Cameroon	41.0
123	Tanzania	39.9
124	Mali	34.2
125	Zambia	34.1
126	Bangladesh	32.3
127	Madagascar	32.0
128	Lesotho	32.0
129	Timor-Leste	29.1
130	Uganda	28.7
131	Mozambique	26.1
132	Burkina Faso	24.3
133	Zimbabwe	23.9
134	Chad	20.4
135	Nepal	19.1
136	Malawi	15.7
137	Burundi	10.1
138	Ethiopia	4.9

SOURCE: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

7.02 Cellular subscriptions with data access

Percentage of cellular subscriptions with data access at broadband speed | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Finland	100.0
1	Sweden	100.0
3	Bulgaria	95.2
4	Japan	93.8
5	Korea, Rep.	83.0
6	Saudi Arabia	67.4
7	New Zealand	58.3
8	Luxembourg	56.7
9	Taiwan, China	52.7
10	Australia	50.7
11	Israel	49.7
12	Singapore	49.7
13	Cyprus	46.9
14	Brunei Darussalam	46.7
15	Spain	45.2
16	United States	42.9
17	Slovak Republic	40.7
18	Austria	39.3
19	Libya	38.2
20	Portugal	37.6
21	Ireland	36.8
22	Italy	35.9
23	Hong Kong SAR	35.1
24	Oman	30.9
25	Switzerland	30.3
26	Greece	29.5
27	Denmark	29.2
28	United Kingdom	29.1
29	Azerbaijan	28.5
30	Slovenia	27.5
31	France[2]	25.2
32	Germany	24.8
33	Kuwait	24.5
34	Malaysia	24.4
35	United Arab Emirates	23.8
36	Croatia	23.6
37	Poland	22.1
38	Romania	22.0
39	Trinidad and Tobago	20.9
40	Russian Federation	20.1
41	Georgia	19.6
42	Hungary	19.4
43	Norway[2]	19.1
44	Nigeria	18.6
45	Malta	18.1
46	Netherlands	16.8
47	Qatar	15.5
48	Puerto Rico	15.5
49	Macedonia, FYR	15.2
50	Bahrain[2]	13.6
51	Egypt	12.7
52	Venezuela	12.4
53	South Africa	11.4
54	Turkey	11.3
55	Syria	11.0
56	Kenya	10.2
57	Philippines	10.2
58	Czech Republic[2]	9.8
59	Mauritius	9.5
60	Indonesia	9.3
61	Estonia	9.2
62	Serbia	8.7
63	Latvia	8.3
64	Sri Lanka	8.1
65	Cambodia	7.3
66	Belgium	7.2
67	Montenegro	7.1
68	Canada[2]	6.9
69	Mexico	6.6
70	Morocco	6.5
71	Angola	6.3
72	Iceland	5.8
73	Brazil	5.0
74	Mauritania	4.9
75	Argentina	4.4
76	Costa Rica	4.1
77	Uganda	3.8
78	Tanzania	3.4
79	Lithuania	3.2
80	Ukraine	3.1
81	Botswana	3.1
82	Moldova	2.9
83	Peru	2.8
84	Chile[2]	2.8
85	Nicaragua	2.7
86	Namibia	2.6
87	Uruguay	2.6
88	Tajikistan	2.6
89	Mongolia	2.4
90	Ethiopia	2.1
91	Thailand	2.1
92	Bosnia and Herzegovina	1.9
93	Cape Verde[2]	1.8
94	Guatemala	1.7
95	China	1.6
96	Jamaica	1.6
97	Ecuador	1.6
98	Mozambique	1.5
99	Armenia	1.4
100	Cameroon	1.2
101	Dominican Republic	1.2
102	Paraguay	1.0
103	Kyrgyz Republic	0.5
104	Ghana	0.4
105	Gambia, The	0.3
106	Bolivia	0.2
107	Zambia	0.1
108	Vietnam	0.1
109	Nepal[2]	0.0
110	Albania	0.0
110	Algeria	0.0
110	Bangladesh	0.0
110	Barbados[1]	0.0
110	Benin	0.0
110	Burkina Faso	0.0
110	Burundi	0.0
110	Chad	0.0
110	Colombia	0.0
110	Côte d'Ivoire	0.0
110	El Salvador[2]	0.0
110	Honduras[2]	0.0
110	Iran, Islamic Rep. [2]	0.0
110	Jordan	0.0
110	Kazakhstan[2]	0.0
110	Lebanon	0.0
110	Lesotho	0.0
110	Madagascar	0.0
110	Malawi	0.0
110	Mali	0.0
110	Pakistan[2]	0.0
110	Panama[2]	0.0
110	Senegal	0.0
110	Swaziland	0.0
110	Timor-Leste	0.0
110	Tunisia	0.0
110	Zimbabwe	0.0
n/a	Guyana	n/a
n/a	India	n/a

SOURCES: Authors' calculations; International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

[1] 2007 [2] 2008

7.03 Households with a personal computer

Percentage of households equipped with a personal computer | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	92.5
2	Netherlands	90.8
3	Luxembourg	87.9
4	Norway	87.6
5	Sweden	87.5
6	Bahrain[2]	87.0
7	Denmark	86.2
8	Germany	84.1
9	Singapore	83.2
10	Canada	82.5
11	Japan	81.8
12	Korea, Rep.	81.4
13	United Kingdom	81.2
14	Switzerland[2]	80.6
15	New Zealand	80.3
16	Finland	80.1
17	Australia	78.1
18	Hong Kong SAR	75.8
19	Austria	74.5
20	Israel	74.5
21	United Arab Emirates[2]	74.0
22	Ireland	72.8
23	Brunei Darussalam[2]	72.6
24	United States[2]	72.5
25	Slovenia	71.2
26	Belgium	71.2
27	Qatar[2]	71.0
28	Taiwan, China[2]	69.4
29	France	69.2
30	Malta	67.4
31	Spain	66.3
32	Poland	66.1
33	Estonia	65.1
34	Slovak Republic	64.0
35	Hungary	63.0
36	Italy	61.3
37	Cyprus	61.2
38	Latvia	60.1
39	Czech Republic	59.6
40	Lithuania	57.3
41	Portugal	56.0
42	Croatia	54.7
43	Macedonia, FYR	54.1
44	Puerto Rico[3]	50.3
45	Trinidad and Tobago[2]	50.0
46	Russian Federation	50.0
47	Saudi Arabia[2]	47.8
48	Uruguay	47.6
49	Greece	47.3
50	Serbia	46.8
51	Romania	45.7
52	Jordan	43.0
53	Chile[2]	40.0
54	Barbados[1]	39.6
55	Oman[2]	39.2
56	Malaysia[2]	38.7
57	Syria[2]	38.5
58	Costa Rica	38.0
59	Argentina[2]	37.6
60	Turkey	37.4
61	Kuwait[2]	35.2
62	Moldova	33.0
63	Brazil	32.3
64	Morocco	32.0
65	China[2]	31.8
66	Bulgaria	31.7
67	Iran, Islamic Rep.	30.2
68	Mauritius[2]	30.0
69	Bosnia and Herzegovina[2]	28.3
70	Egypt	28.0
70	Montenegro	28.0
72	Lebanon[2]	27.6
73	Mexico	26.8
74	Ecuador	23.4
75	Colombia	22.6
76	Ukraine[2]	21.2
77	Thailand	20.3
78	Jamaica[2]	19.3
79	Kazakhstan[2]	18.4
80	Azerbaijan	18.2
81	Peru[2]	18.0
82	Panama[2]	18.0
83	South Africa	17.0
84	Venezuela[2]	15.3
85	Guatemala[2]	14.9
86	Bolivia[2]	14.7
87	Philippines	14.4
88	Dominican Republic[2]	14.2
89	Mongolia[2]	14.0
90	Paraguay[2]	13.9
91	Cape Verde[2]	13.6
92	Swaziland[2]	13.5
93	Tunisia[2]	13.1
94	Namibia[2]	12.7
95	Georgia	12.6
96	El Salvador	12.5
97	Nigeria[2]	12.0
98	Albania[2]	12.0
99	Senegal	11.5
100	Honduras[2]	11.1
101	Armenia	10.2
102	Vietnam[2]	10.2
103	Pakistan[2]	9.8
104	Algeria[2]	9.5
105	Sri Lanka[2]	9.5
106	Indonesia[2]	8.3
107	Malawi[2]	7.6
108	Libya[2]	7.0
109	Nicaragua	6.8
110	Ghana[2]	6.4
111	Kenya[2]	6.3
112	Guyana[2]	5.9
113	Angola[2]	5.6
114	Botswana[2]	4.9
115	Cameroon[2]	4.5
116	Gambia, The[2]	4.5
116	Lesotho[2]	4.5
118	India[2]	4.4
119	Mozambique[2]	4.0
119	Zimbabwe[2]	4.0
121	Cambodia[2]	3.7
122	Nepal[2]	3.1
123	Chad[2]	2.8
124	Kyrgyz Republic[2]	2.5
124	Madagascar[2]	2.5
124	Mauritania[2]	2.5
127	Tanzania[2]	2.5
128	Mali[2]	2.4
129	Bangladesh[2]	2.2
130	Benin[2]	2.1
131	Zambia[2]	2.1
132	Tajikistan[2]	2.0
133	Burkina Faso[2]	1.8
134	Uganda[2]	1.6
135	Côte d'Ivoire[2]	1.4
136	Ethiopia[2]	0.5
n/a	Burundi	n/a
n/a	Timor-Leste	n/a

SOURCES: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

[1] 2004 [2] 2008 [3] 2010

7.04 Broadband Internet subscribers

Broadband Internet subscribers per 100 population | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Denmark	37.9
2	Netherlands	35.6
3	Switzerland	35.5
4	Norway	34.0
5	Korea, Rep.	33.8
6	Iceland	33.2
7	Luxembourg	32.8
8	Sweden	31.8
9	France	31.6
10	Canada	30.6
11	Germany	30.4
12	United Kingdom	29.6
13	Belgium	29.4
14	Hong Kong SAR	29.2
15	Finland	28.8
16	Malta	25.9
17	Israel	25.8
18	United States	25.8
19	Japan	24.9
20	Singapore	24.7
21	Australia	24.4
22	Slovenia	23.7
23	New Zealand	23.0
24	Estonia	22.5
25	Barbados	22.4
26	Austria	22.1
27	Ireland	21.6
28	Spain	21.6
29	Taiwan, China	21.4
30	Italy	20.5
31	Cyprus	20.2
32	Lithuania	19.3
33	Hungary	18.8
34	Latvia	18.6
35	Portugal	17.4
36	Greece	17.2
37	Croatia	15.5
38	United Arab Emirates	15.0
39	Slovak Republic	14.3
40	Czech Republic	13.2
41	Romania	13.2
42	Poland	12.9
43	Bulgaria	12.9
44	Puerto Rico[1]	10.8
45	Macedonia, FYR	10.7
46	Argentina	10.6
47	Qatar	10.3
48	Bahrain	9.6
49	Chile	9.6
50	Trinidad and Tobago	9.4
51	Russian Federation	9.2
52	Uruguay	9.0
53	Mexico	8.8
54	Turkey	8.5
55	Montenegro	8.5
56	China	7.7
57	Mauritius	7.1
58	Bosnia and Herzegovina	6.3
59	Malaysia	6.1
60	Serbia	6.0
61	Brazil	5.9
62	Panama	5.8
63	Lebanon	5.3
64	Saudi Arabia	5.2
65	Moldova	5.2
66	Brunei Darussalam	5.0
67	Venezuela	4.7
68	Colombia	4.4
69	Ukraine	4.2
70	Jamaica	4.1
71	Dominican Republic	3.9
72	Costa Rica	3.9
73	Kazakhstan	3.7
74	Vietnam	3.6
75	Tunisia	3.6
76	Georgia	3.5
77	Jordan	3.2
78	Albania	2.9
79	Bolivia	2.9
80	Peru	2.8
81	El Salvador	2.4
82	Algeria	2.3
83	Paraguay	2.2
84	Cape Verde	2.2
85	Philippines	1.9
86	Ecuador	1.8
87	Kuwait	1.5
88	Morocco	1.5
89	Thailand	1.5
90	Oman	1.4
91	Mongolia	1.4
92	Egypt	1.3
93	Azerbaijan	1.1
94	South Africa	1.0
95	Guyana	0.9
96	Sri Lanka	0.8
97	Nicaragua	0.8
98	Guatemala	0.8
99	Indonesia	0.7
100	India	0.6
101	Iran, Islamic Rep.	0.5
102	Botswana	0.5
103	Senegal	0.5
104	Kyrgyz Republic	0.3
105	Mauritania	0.3
106	Zimbabwe	0.2
107	Cambodia	0.2
108	Armenia	0.2
109	Pakistan	0.2
110	Syria	0.2
111	Libya	0.2
112	Swaziland	0.1
113	Ghana	0.1
114	Angola	0.1
115	Burkina Faso	0.1
116	Zambia	0.1
117	Mozambique	0.1
118	Tajikistan[1]	0.1
119	Nepal	0.1
120	Nigeria	0.1
121	Côte d'Ivoire	0.0
122	Benin	0.0
123	Bangladesh	0.0
124	Malawi	0.0
125	Madagascar	0.0
126	Kenya	0.0
127	Namibia	0.0
128	Lesotho	0.0
129	Uganda	0.0
130	Gambia, The	0.0
131	Mali	0.0
132	Tanzania[1]	0.0
133	Timor-Leste	0.0
134	Cameroon	0.0
135	Ethiopia	0.0
136	Burundi	0.0
137	Chad	0.0
138	Honduras[1]	0.0

SOURCE: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

[1] 2008

7.05 Internet users

Internet users per 100 population | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	93.5
2	Norway	92.1
3	Sweden	90.8
4	Netherlands	89.6
5	Luxembourg	87.3
6	Denmark	86.8
7	United Kingdom	83.6
8	Finland	82.5
9	Korea, Rep.	81.5
10	Switzerland	81.3
11	Canada	80.3
12	New Zealand	79.7
13	Germany	79.3
14	Brunei Darussalam	78.8
15	Japan	78.0
15	United States	78.0
17	Belgium	76.2
18	Slovak Republic	75.2
19	United Arab Emirates	75.0
20	Australia	74.3
21	Austria	73.5
22	Estonia	72.5
23	France	71.6
24	Taiwan, China	69.9
25	Hong Kong SAR	69.4
26	Singapore	68.3
27	Ireland	67.4
28	Latvia	66.8
29	Czech Republic	64.4
30	Slovenia	64.3
31	Israel	63.1
32	Spain	62.6
33	Hungary	61.8
34	Lithuania	59.8
35	Poland	59.0
36	Malta	58.9
37	Jamaica	58.2
38	Barbados[1]	56.1
39	Malaysia	55.9
40	Bahrain	53.0
41	Macedonia, FYR	51.8
42	Oman	51.5
43	Croatia	50.6
44	Cyprus	49.8
45	Colombia	49.4
46	Italy	48.8
47	Portugal	48.3
48	Bulgaria	45.0
49	Montenegro	44.9
50	Greece	44.5
51	Trinidad and Tobago	44.3
52	Uruguay	41.8
53	Serbia	41.7
54	Chile	41.3
54	Morocco	41.3
56	Albania	41.2
57	Kyrgyz Republic	40.0
58	Qatar	40.0
59	Brazil	39.2
60	Saudi Arabia	38.0
61	Bosnia and Herzegovina	37.7
62	Moldova	37.0
63	Kuwait	36.9
64	Romania	36.6
65	Turkey	36.4
66	Tunisia	34.1
67	Argentina	34.0
68	Kazakhstan	33.9
69	Costa Rica	32.4
70	Peru	31.4
71	Venezuela	31.2
72	Georgia	30.5
73	Cape Verde	29.7
74	Russian Federation	29.0
75	China	28.9
76	Nigeria	28.4
77	Mexico	28.3
78	Panama	27.8
79	Azerbaijan	27.4
80	Dominican Republic	26.8
81	Vietnam	26.6
82	Jordan	26.0
83	Thailand	25.8
84	Puerto Rico	25.1
85	Guyana	24.9
86	Ecuador	24.6
87	Egypt	24.3
88	Lebanon	23.7
89	Mauritius	22.5
90	Syria	20.4
91	Paraguay	17.4
92	Ukraine	17.0
93	Guatemala	16.3
94	Senegal	14.5
95	Algeria	13.5
96	Mongolia[2]	12.5
97	El Salvador	12.1
98	Zimbabwe	11.4
99	Pakistan	11.3
100	Bolivia	11.2
101	Iran, Islamic Rep.	11.1
102	Tajikistan	10.1
103	Kenya	10.0
104	Honduras	9.8
105	Uganda	9.8
106	Philippines	9.0
107	South Africa	8.8
108	Sri Lanka	8.8
109	Indonesia	8.7
110	Gambia, The	7.6
111	Swaziland	7.6
112	Armenia	6.8
113	Zambia	6.3
114	Botswana	6.2
115	Namibia	5.9
116	Libya	5.5
117	Ghana	5.4
118	India	5.1
119	Malawi	4.7
120	Côte d'Ivoire	4.6
121	Cameroon	3.8
122	Lesotho	3.7
123	Nicaragua	3.5
124	Angola	3.3
125	Mozambique	2.7
126	Mauritania	2.3
127	Benin	2.2
128	Nepal	2.0
129	Mali	1.9
130	Burundi	1.9
131	Madagascar	1.6
132	Tanzania	1.6
133	Chad	1.5
134	Burkina Faso	1.1
135	Ethiopia	0.5
136	Cambodia	0.5
137	Bangladesh	0.4
138	Timor-Leste	0.2

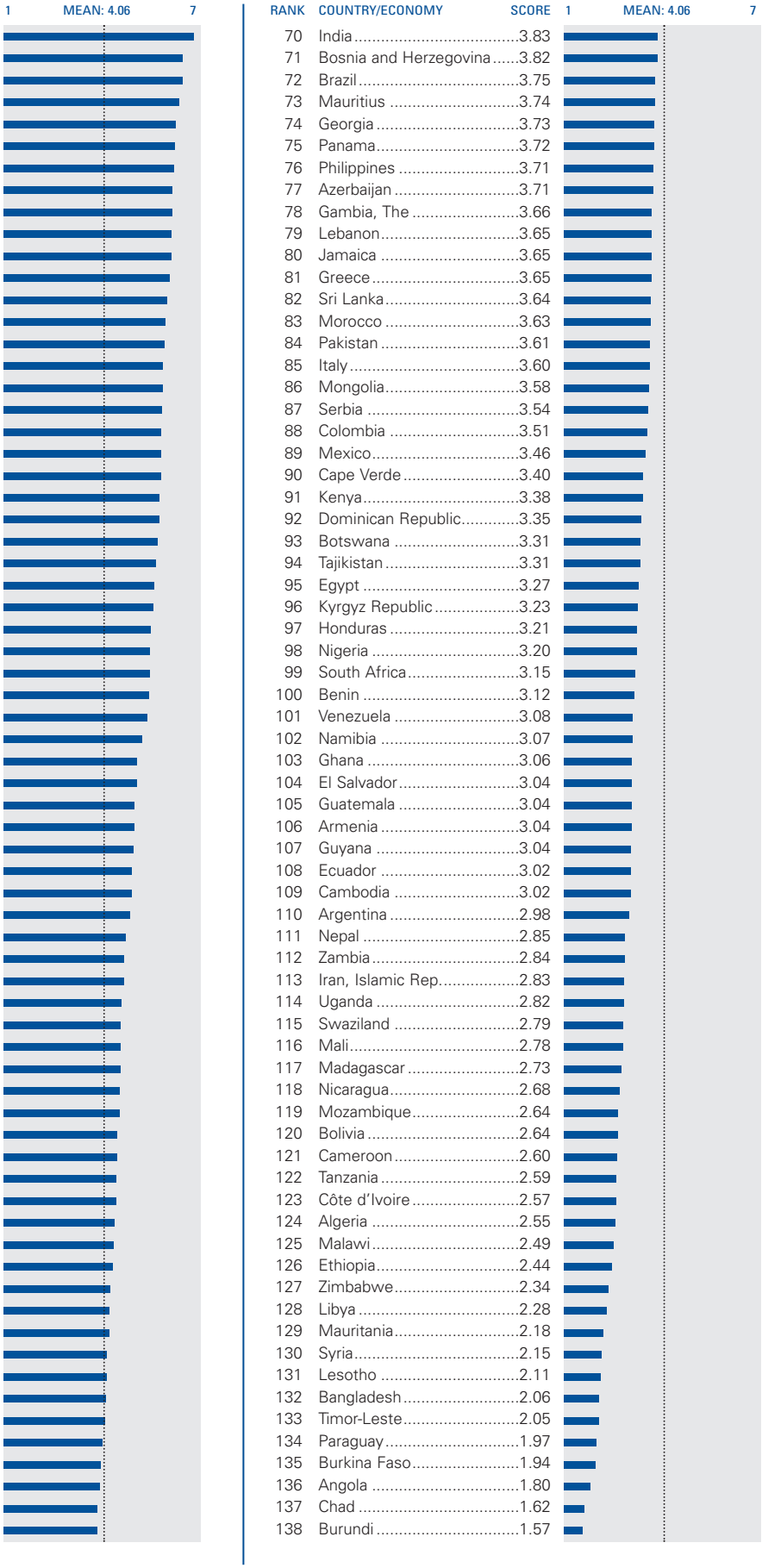
SOURCE: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

[1] 2005 [2] 2008

7.06 Internet access in schools

How would you rate the level of access to the Internet in schools in your country? [1 = very limited; 7 = extensive] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	6.76
2	Estonia	6.42
3	Sweden	6.41
4	Qatar	6.32
5	Singapore	6.21
6	Netherlands	6.18
7	Switzerland	6.15
8	Taiwan, China	6.11
9	Hong Kong SAR	6.10
10	Denmark	6.09
11	Finland	6.07
12	Korea, Rep.	6.04
13	Canada	5.95
14	United States	5.89
15	Norway	5.88
16	Austria	5.82
17	Malta	5.81
18	United Kingdom	5.81
19	Luxembourg	5.76
20	Belgium	5.76
21	New Zealand	5.75
22	China	5.72
23	Slovenia	5.71
24	Czech Republic	5.66
25	Portugal	5.61
26	Uruguay	5.55
27	Lithuania	5.52
28	Australia	5.46
29	United Arab Emirates	5.42
30	Latvia	5.42
31	Hungary	5.40
32	Bahrain	5.34
33	Israel	5.19
34	Barbados	5.04
35	Slovak Republic	5.03
36	Malaysia	4.96
37	Cyprus	4.95
38	Brunei Darussalam	4.92
39	Germany	4.87
40	Japan	4.87
41	France	4.83
42	Chile	4.70
43	Thailand	4.65
44	Croatia	4.65
45	Bulgaria	4.57
46	Oman	4.55
47	Tunisia	4.55
48	Poland	4.54
49	Vietnam	4.53
50	Indonesia	4.51
51	Jordan	4.43
52	Saudi Arabia	4.43
53	Spain	4.42
54	Macedonia, FYR	4.41
55	Romania	4.35
56	Montenegro	4.32
57	Turkey	4.30
58	Ireland	4.23
59	Puerto Rico	4.21
60	Senegal	4.20
61	Moldova	4.12
62	Russian Federation	4.12
63	Kazakhstan	4.09
64	Costa Rica	4.07
65	Trinidad and Tobago	4.00
66	Peru	3.94
67	Kuwait	3.92
68	Ukraine	3.84
69	Albania	3.83
70	India	3.83
71	Bosnia and Herzegovina	3.82
72	Brazil	3.75
73	Mauritius	3.74
74	Georgia	3.73
75	Panama	3.72
76	Philippines	3.71
77	Azerbaijan	3.71
78	Gambia, The	3.66
79	Lebanon	3.65
80	Jamaica	3.65
81	Greece	3.65
82	Sri Lanka	3.64
83	Morocco	3.63
84	Pakistan	3.61
85	Italy	3.60
86	Mongolia	3.58
87	Serbia	3.54
88	Colombia	3.51
89	Mexico	3.46
90	Cape Verde	3.40
91	Kenya	3.38
92	Dominican Republic	3.35
93	Botswana	3.31
94	Tajikistan	3.31
95	Egypt	3.27
96	Kyrgyz Republic	3.23
97	Honduras	3.21
98	Nigeria	3.20
99	South Africa	3.15
100	Benin	3.12
101	Venezuela	3.08
102	Namibia	3.07
103	Ghana	3.06
104	El Salvador	3.04
105	Guatemala	3.04
106	Armenia	3.04
107	Guyana	3.04
108	Ecuador	3.02
109	Cambodia	3.02
110	Argentina	2.98
111	Nepal	2.85
112	Zambia	2.84
113	Iran, Islamic Rep.	2.83
114	Uganda	2.82
115	Swaziland	2.79
116	Mali	2.78
117	Madagascar	2.73
118	Nicaragua	2.68
119	Mozambique	2.64
120	Bolivia	2.64
121	Cameroon	2.60
122	Tanzania	2.59
123	Côte d'Ivoire	2.57
124	Algeria	2.55
125	Malawi	2.49
126	Ethiopia	2.44
127	Zimbabwe	2.34
128	Libya	2.28
129	Mauritania	2.18
130	Syria	2.15
131	Lesotho	2.11
132	Bangladesh	2.06
133	Timor-Leste	2.05
134	Paraguay	1.97
135	Burkina Faso	1.94
136	Angola	1.80
137	Chad	1.62
138	Burundi	1.57

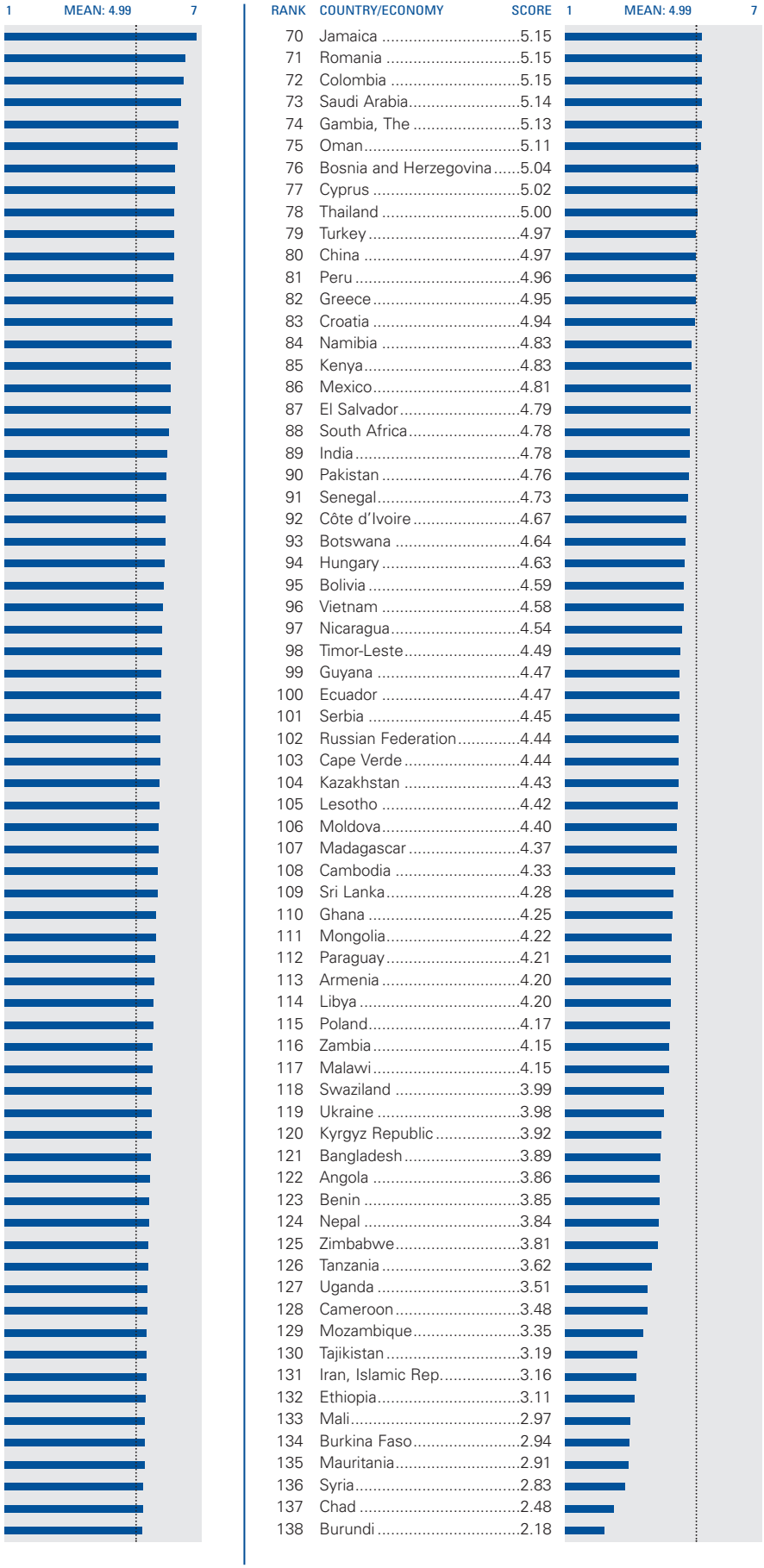


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

7.07 Use of virtual social networks

How widely used are virtual social networks (Facebook, Twitter, LinkedIn, etc.) for professional and personal communication in your country? [1 = not at all; 7 = widely] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	6.80
2	Sweden	6.48
3	United Kingdom	6.42
4	Norway	6.34
5	Denmark	6.25
6	Canada	6.24
7	Finland	6.16
8	Switzerland	6.15
9	Australia	6.14
10	Austria	6.13
11	Qatar	6.12
12	United States	6.11
13	Hong Kong SAR	6.11
14	Luxembourg	6.07
15	Netherlands	6.06
16	Singapore	6.03
17	Tunisia	6.02
18	New Zealand	6.02
19	Puerto Rico	5.96
20	Lebanon	5.92
21	Taiwan, China	5.90
22	United Arab Emirates	5.89
23	Germany	5.88
24	Uruguay	5.87
25	Bahrain	5.85
26	Chile	5.83
27	Belgium	5.81
28	Malta	5.76
29	Malaysia	5.76
30	Morocco	5.74
31	Estonia	5.73
32	Panama	5.72
33	Indonesia	5.72
34	Albania	5.72
35	Trinidad and Tobago	5.69
36	Portugal	5.68
37	France	5.67
38	Israel	5.66
39	Korea, Rep.	5.64
40	Dominican Republic	5.64
41	Montenegro	5.59
42	Slovak Republic	5.59
43	Macedonia, FYR	5.56
44	Azerbaijan	5.54
45	Lithuania	5.51
46	Philippines	5.50
47	Barbados	5.48
48	Ireland	5.47
49	Costa Rica	5.47
50	Brunei Darussalam	5.45
51	Italy	5.44
52	Guatemala	5.43
53	Czech Republic	5.40
54	Bulgaria	5.37
55	Venezuela	5.37
56	Kuwait	5.35
57	Jordan	5.35
58	Honduras	5.33
59	Algeria	5.32
60	Georgia	5.30
61	Mauritius	5.30
62	Spain	5.28
63	Brazil	5.28
64	Slovenia	5.24
65	Egypt	5.24
66	Latvia	5.24
67	Japan	5.20
68	Nigeria	5.19
69	Argentina	5.17
70	Jamaica	5.15
71	Romania	5.15
72	Colombia	5.15
73	Saudi Arabia	5.14
74	Gambia, The	5.13
75	Oman	5.11
76	Bosnia and Herzegovina	5.04
77	Cyprus	5.02
78	Thailand	5.00
79	Turkey	4.97
80	China	4.97
81	Peru	4.96
82	Greece	4.95
83	Croatia	4.94
84	Namibia	4.83
85	Kenya	4.83
86	Mexico	4.81
87	El Salvador	4.79
88	South Africa	4.78
89	India	4.78
90	Pakistan	4.76
91	Senegal	4.73
92	Côte d'Ivoire	4.67
93	Botswana	4.64
94	Hungary	4.63
95	Bolivia	4.59
96	Vietnam	4.58
97	Nicaragua	4.54
98	Timor-Leste	4.49
99	Guyana	4.47
100	Ecuador	4.47
101	Serbia	4.45
102	Russian Federation	4.44
103	Cape Verde	4.44
104	Kazakhstan	4.43
105	Lesotho	4.42
106	Moldova	4.40
107	Madagascar	4.37
108	Cambodia	4.33
109	Sri Lanka	4.28
110	Ghana	4.25
111	Mongolia	4.22
112	Paraguay	4.21
113	Armenia	4.20
114	Libya	4.20
115	Poland	4.17
116	Zambia	4.15
117	Malawi	4.15
118	Swaziland	3.99
119	Ukraine	3.98
120	Kyrgyz Republic	3.92
121	Bangladesh	3.89
122	Angola	3.86
123	Benin	3.85
124	Nepal	3.84
125	Zimbabwe	3.81
126	Tanzania	3.62
127	Uganda	3.51
128	Cameroon	3.48
129	Mozambique	3.35
130	Tajikistan	3.19
131	Iran, Islamic Rep.	3.16
132	Ethiopia	3.11
133	Mali	2.97
134	Burkina Faso	2.94
135	Mauritania	2.91
136	Syria	2.83
137	Chad	2.48
138	Burundi	2.18

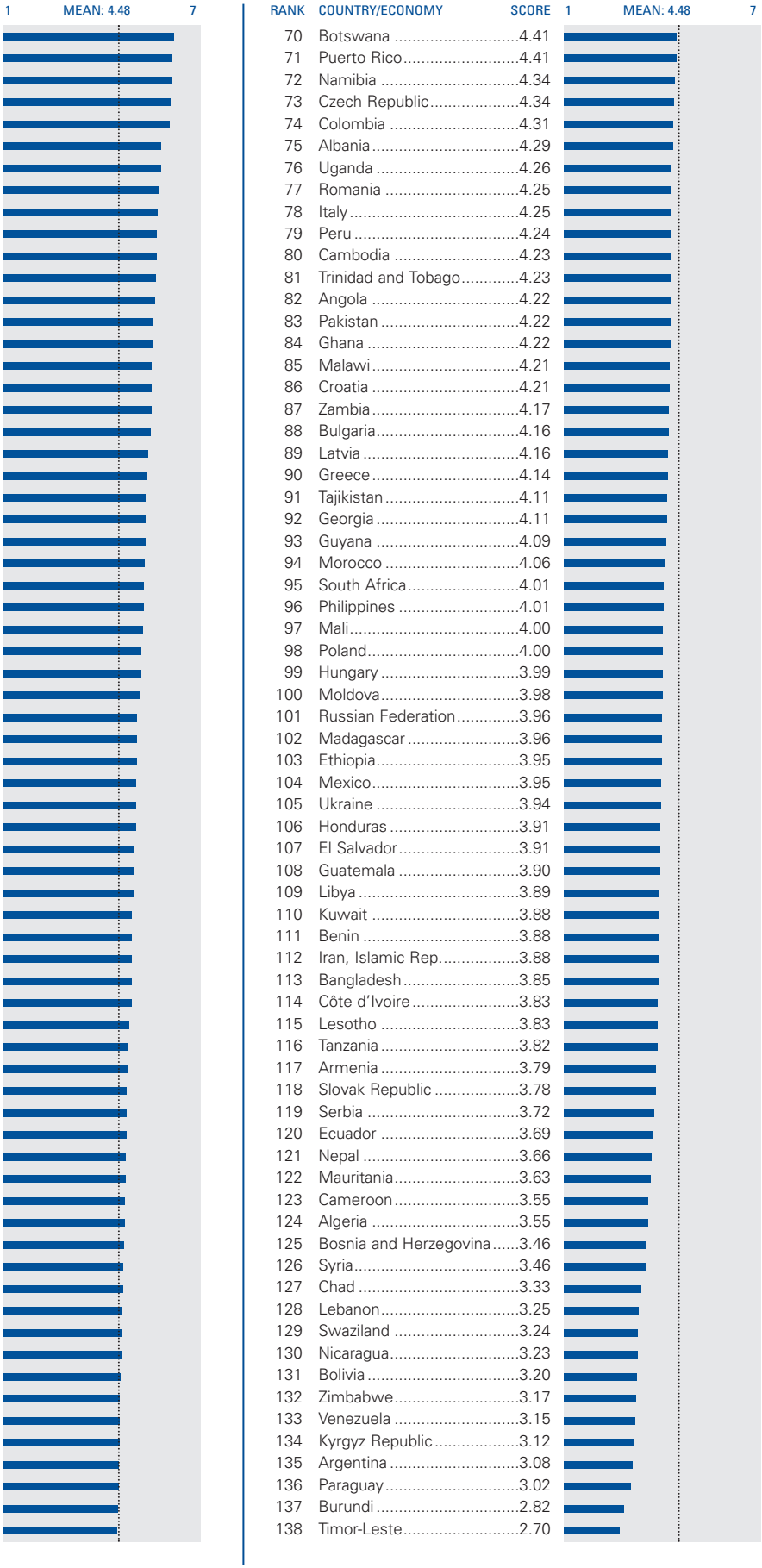


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

7.08 Impact of ICT on access to basic services

To what extent are information and communications technologies improving access for all citizens to basic services (health, education, financial services, etc.) in your country? [1 = do not improve access at all, 7 = improve access significantly] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	6.15
2	Singapore	6.11
3	Qatar	6.11
4	Taiwan, China	6.06
5	United Arab Emirates	6.03
6	Luxembourg	5.76
7	Iceland	5.76
8	Korea, Rep.	5.73
9	Malta	5.67
10	Portugal	5.64
11	Bahrain	5.63
12	Hong Kong SAR	5.60
13	Tunisia	5.60
14	Denmark	5.53
15	Malaysia	5.50
16	Norway	5.49
17	Oman	5.48
18	Estonia	5.48
19	Switzerland	5.44
20	Saudi Arabia	5.38
21	China	5.36
22	United States	5.30
23	Canada	5.29
24	Germany	5.28
25	Finland	5.28
26	France	5.24
27	Austria	5.24
28	Netherlands	5.21
29	Barbados	5.18
30	Gambia, The	5.17
31	Uruguay	5.12
32	Israel	5.04
33	Chile	5.04
34	Australia	5.03
35	Brunei Darussalam	5.02
36	Belgium	5.00
37	New Zealand	5.00
38	Jordan	4.96
39	United Kingdom	4.95
40	Cape Verde	4.94
41	Egypt	4.89
42	India	4.88
43	Lithuania	4.88
44	Slovenia	4.87
45	Japan	4.87
46	Vietnam	4.79
47	Jamaica	4.78
48	Sri Lanka	4.76
49	Brazil	4.73
50	Macedonia, FYR	4.71
51	Thailand	4.71
52	Cyprus	4.71
53	Mauritius	4.70
54	Kenya	4.68
55	Turkey	4.67
56	Mozambique	4.65
57	Senegal	4.63
58	Ireland	4.61
59	Nigeria	4.60
60	Spain	4.58
61	Mongolia	4.56
62	Kazakhstan	4.54
63	Panama	4.52
64	Azerbaijan	4.51
65	Burkina Faso	4.50
66	Dominican Republic	4.49
67	Costa Rica	4.48
68	Indonesia	4.46
69	Montenegro	4.44
70	Botswana	4.41
71	Puerto Rico	4.41
72	Namibia	4.34
73	Czech Republic	4.34
74	Colombia	4.31
75	Albania	4.29
76	Uganda	4.26
77	Romania	4.25
78	Italy	4.25
79	Peru	4.24
80	Cambodia	4.23
81	Trinidad and Tobago	4.23
82	Angola	4.22
83	Pakistan	4.22
84	Ghana	4.22
85	Malawi	4.21
86	Croatia	4.21
87	Zambia	4.17
88	Bulgaria	4.16
89	Latvia	4.16
90	Greece	4.14
91	Tajikistan	4.11
92	Georgia	4.11
93	Guyana	4.09
94	Morocco	4.06
95	South Africa	4.01
96	Philippines	4.01
97	Mali	4.00
98	Poland	4.00
99	Hungary	3.99
100	Moldova	3.98
101	Russian Federation	3.96
102	Madagascar	3.96
103	Ethiopia	3.95
104	Mexico	3.95
105	Ukraine	3.94
106	Honduras	3.91
107	El Salvador	3.91
108	Guatemala	3.90
109	Libya	3.89
110	Kuwait	3.88
111	Benin	3.88
112	Iran, Islamic Rep.	3.88
113	Bangladesh	3.85
114	Côte d'Ivoire	3.83
115	Lesotho	3.83
116	Tanzania	3.82
117	Armenia	3.79
118	Slovak Republic	3.78
119	Serbia	3.72
120	Ecuador	3.69
121	Nepal	3.66
122	Mauritania	3.63
123	Cameroon	3.55
124	Algeria	3.55
125	Bosnia and Herzegovina	3.46
126	Syria	3.46
127	Chad	3.33
128	Lebanon	3.25
129	Swaziland	3.24
130	Nicaragua	3.23
131	Bolivia	3.20
132	Zimbabwe	3.17
133	Venezuela	3.15
134	Kyrgyz Republic	3.12
135	Argentina	3.08
136	Paraguay	3.02
137	Burundi	2.82
138	Timor-Leste	2.70



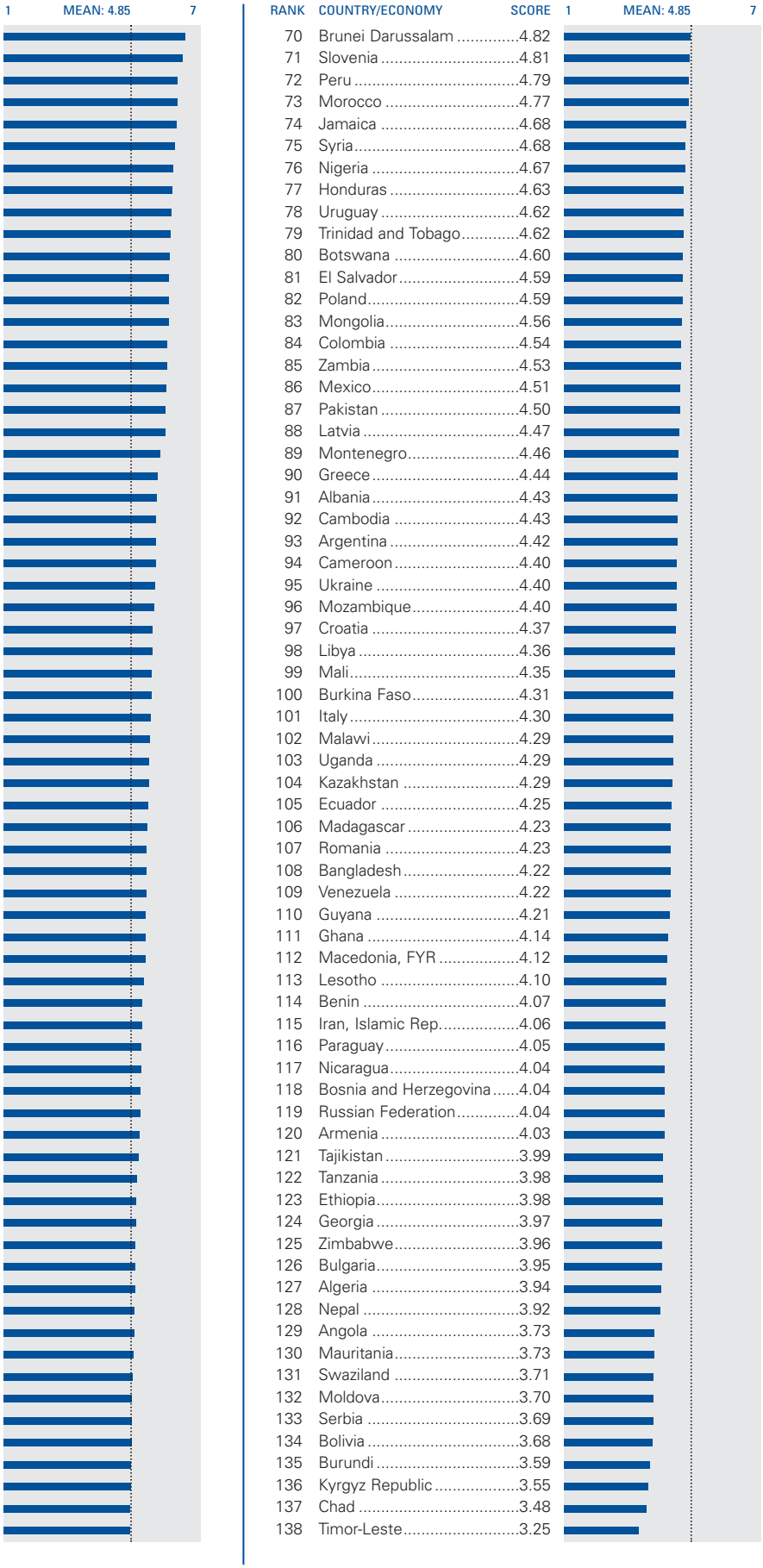
SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

8th pillar
Business usage

8.01 Firm-level technology absorption

To what extent do businesses in your country absorb new technology? [1 = not at all; 7 = aggressively absorb] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Iceland	6.49
2	Sweden	6.43
3	Japan	6.25
4	Switzerland	6.25
5	United Arab Emirates	6.23
6	Norway	6.20
7	Israel	6.13
8	Qatar	6.11
9	Korea, Rep.	6.07
10	Taiwan, China	6.07
11	United States	6.02
12	Finland	6.01
13	Denmark	6.00
14	Germany	6.00
15	Singapore	5.96
16	Austria	5.95
17	New Zealand	5.91
18	Hong Kong SAR	5.90
19	Australia	5.90
20	Luxembourg	5.73
21	United Kingdom	5.67
22	Canada	5.63
23	France	5.62
24	Puerto Rico	5.62
25	Netherlands	5.61
26	Saudi Arabia	5.59
27	Portugal	5.56
28	Belgium	5.51
29	Jordan	5.51
30	Malaysia	5.49
31	Malta	5.48
32	Ireland	5.45
33	Tunisia	5.42
34	Barbados	5.41
35	South Africa	5.41
36	Czech Republic	5.37
37	Chile	5.35
38	Kuwait	5.33
39	India	5.32
40	Senegal	5.31
41	Panama	5.31
42	Estonia	5.31
43	Cyprus	5.30
44	Guatemala	5.24
45	Namibia	5.20
46	Brazil	5.18
47	Sri Lanka	5.16
48	Bahrain	5.16
49	Spain	5.15
50	Costa Rica	5.14
51	Turkey	5.12
52	Oman	5.10
53	Mauritius	5.05
54	Slovak Republic	5.01
55	Lithuania	5.01
56	Dominican Republic	5.00
57	Egypt	4.99
58	Philippines	4.98
59	Vietnam	4.96
60	China	4.95
61	Azerbaijan	4.93
62	Cape Verde	4.91
63	Côte d'Ivoire	4.89
64	Indonesia	4.88
65	Thailand	4.88
66	Kenya	4.85
67	Lebanon	4.84
68	Gambia, The	4.83
69	Hungary	4.82
70	Brunei Darussalam	4.82
71	Slovenia	4.81
72	Peru	4.79
73	Morocco	4.77
74	Jamaica	4.68
75	Syria	4.68
76	Nigeria	4.67
77	Honduras	4.63
78	Uruguay	4.62
79	Trinidad and Tobago	4.62
80	Botswana	4.60
81	El Salvador	4.59
82	Poland	4.59
83	Mongolia	4.56
84	Colombia	4.54
85	Zambia	4.53
86	Mexico	4.51
87	Pakistan	4.50
88	Latvia	4.47
89	Montenegro	4.46
90	Greece	4.44
91	Albania	4.43
92	Cambodia	4.43
93	Argentina	4.42
94	Cameroon	4.40
95	Ukraine	4.40
96	Mozambique	4.40
97	Croatia	4.37
98	Libya	4.36
99	Mali	4.35
100	Burkina Faso	4.31
101	Italy	4.30
102	Malawi	4.29
103	Uganda	4.29
104	Kazakhstan	4.29
105	Ecuador	4.25
106	Madagascar	4.23
107	Romania	4.23
108	Bangladesh	4.22
109	Venezuela	4.22
110	Guyana	4.21
111	Ghana	4.14
112	Macedonia, FYR	4.12
113	Lesotho	4.10
114	Benin	4.07
115	Iran, Islamic Rep.	4.06
116	Paraguay	4.05
117	Nicaragua	4.04
118	Bosnia and Herzegovina	4.04
119	Russian Federation	4.04
120	Armenia	4.03
121	Tajikistan	3.99
122	Tanzania	3.98
123	Ethiopia	3.98
124	Georgia	3.97
125	Zimbabwe	3.96
126	Bulgaria	3.95
127	Algeria	3.94
128	Nepal	3.92
129	Angola	3.73
130	Mauritania	3.73
131	Swaziland	3.71
132	Moldova	3.70
133	Serbia	3.69
134	Bolivia	3.68
135	Burundi	3.59
136	Kyrgyz Republic	3.55
137	Chad	3.48
138	Timor-Leste	3.25

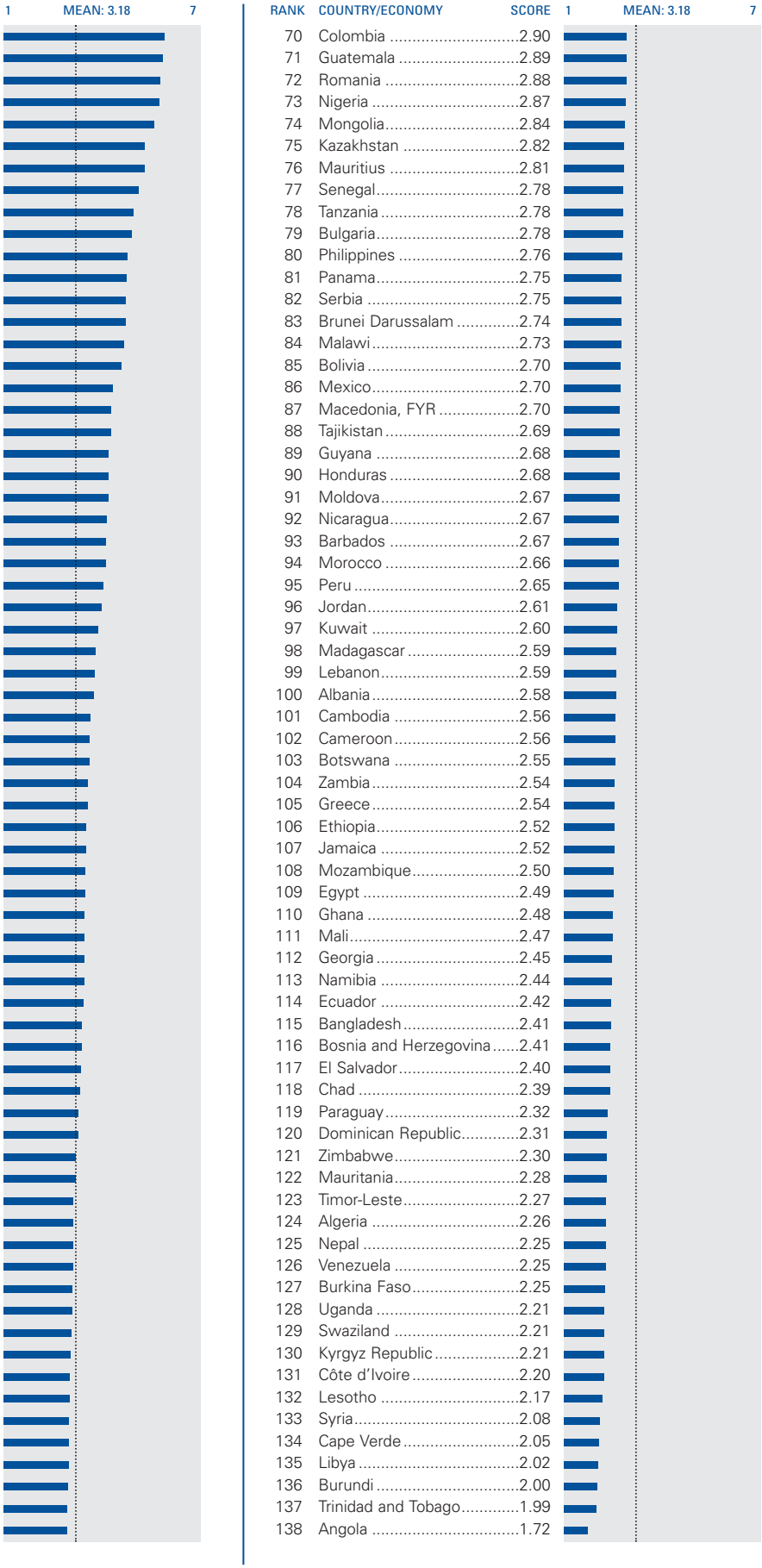


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

8.02 Capacity for innovation

In your country, how do companies obtain technology? [1 = exclusively from licensing or imitating foreign companies; 7 = by conducting formal research and pioneering their own new products and processes] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Germany	5.88
2	Japan	5.82
3	Sweden	5.73
4	Switzerland	5.70
5	Finland	5.57
6	United States	5.28
7	Israel	5.26
8	France	5.09
9	Denmark	4.94
10	Netherlands	4.88
11	Austria	4.74
12	Belgium	4.72
13	Norway	4.70
14	Taiwan, China	4.69
15	United Kingdom	4.65
16	Luxembourg	4.57
17	Singapore	4.30
18	Korea, Rep.	4.26
19	Canada	4.25
20	Iceland	4.18
21	China	4.17
22	Slovenia	4.17
23	Australia	4.12
24	Czech Republic	4.11
25	Malaysia	4.09
26	Saudi Arabia	4.01
27	Italy	3.97
28	New Zealand	3.86
29	Brazil	3.78
30	Indonesia	3.75
31	Ireland	3.74
32	Vietnam	3.63
33	India	3.61
34	Estonia	3.61
35	United Arab Emirates	3.55
36	Tunisia	3.54
37	Ukraine	3.50
38	Russian Federation	3.49
39	Portugal	3.48
40	Azerbaijan	3.48
41	Sri Lanka	3.45
42	Spain	3.45
43	Cyprus	3.44
44	Costa Rica	3.44
45	Qatar	3.40
46	Hungary	3.37
47	South Africa	3.36
48	Lithuania	3.34
49	Hong Kong SAR	3.30
50	Poland	3.26
51	Montenegro	3.25
52	Kenya	3.19
53	Puerto Rico	3.17
54	Malta	3.11
55	Turkey	3.11
56	Thailand	3.10
57	Latvia	3.10
58	Pakistan	3.08
59	Chile	3.08
60	Benin	3.06
61	Oman	3.02
62	Argentina	3.01
63	Gambia, The	2.99
64	Uruguay	2.97
65	Armenia	2.97
66	Croatia	2.96
67	Bahrain	2.95
68	Iran, Islamic Rep.	2.93
69	Slovak Republic	2.93
70	Colombia	2.90
71	Guatemala	2.89
72	Romania	2.88
73	Nigeria	2.87
74	Mongolia	2.84
75	Kazakhstan	2.82
76	Mauritius	2.81
77	Senegal	2.78
78	Tanzania	2.78
79	Bulgaria	2.78
80	Philippines	2.76
81	Panama	2.75
82	Serbia	2.75
83	Brunei Darussalam	2.74
84	Malawi	2.73
85	Bolivia	2.70
86	Mexico	2.70
87	Macedonia, FYR	2.70
88	Tajikistan	2.69
89	Guyana	2.68
90	Honduras	2.68
91	Moldova	2.67
92	Nicaragua	2.67
93	Barbados	2.67
94	Morocco	2.66
95	Peru	2.65
96	Jordan	2.61
97	Kuwait	2.60
98	Madagascar	2.59
99	Lebanon	2.59
100	Albania	2.58
101	Cambodia	2.56
102	Cameroon	2.56
103	Botswana	2.55
104	Zambia	2.54
105	Greece	2.54
106	Ethiopia	2.52
107	Jamaica	2.52
108	Mozambique	2.50
109	Egypt	2.49
110	Ghana	2.48
111	Mali	2.47
112	Georgia	2.45
113	Namibia	2.44
114	Ecuador	2.42
115	Bangladesh	2.41
116	Bosnia and Herzegovina	2.41
117	El Salvador	2.40
118	Chad	2.39
119	Paraguay	2.32
120	Dominican Republic	2.31
121	Zimbabwe	2.30
122	Mauritania	2.28
123	Timor-Leste	2.27
124	Algeria	2.26
125	Nepal	2.25
126	Venezuela	2.25
127	Burkina Faso	2.25
128	Uganda	2.21
129	Swaziland	2.21
130	Kyrgyz Republic	2.21
131	Côte d'Ivoire	2.20
132	Lesotho	2.17
133	Syria	2.08
134	Cape Verde	2.05
135	Libya	2.02
136	Burundi	2.00
137	Trinidad and Tobago	1.99
138	Angola	1.72

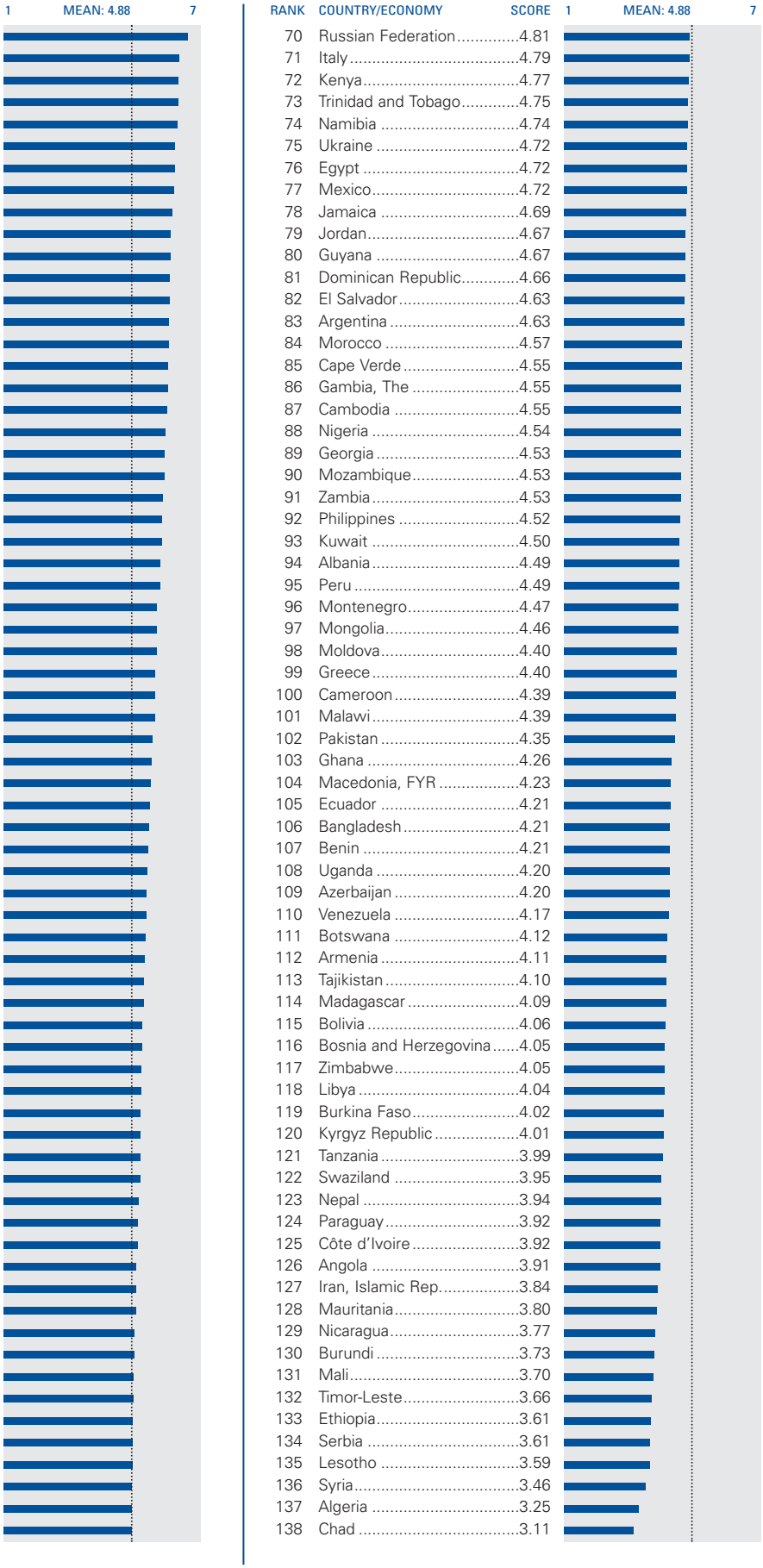


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

8.03 Extent of business Internet use

To what extent do companies within your country use the Internet for their business activities? (e.g., buying and selling goods, interacting with customers and suppliers) [1 = not at all; 7 = extensively] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	6.58
2	Estonia	6.31
3	Korea, Rep.	6.30
4	Iceland	6.29
5	Lithuania	6.25
6	United Kingdom	6.19
7	United States	6.18
8	Canada	6.16
9	Israel	6.12
10	Taiwan, China	6.05
11	Japan	6.05
12	Norway	6.04
13	Hong Kong SAR	6.03
14	New Zealand	6.00
15	Switzerland	5.99
16	Netherlands	5.98
17	Denmark	5.97
18	Singapore	5.96
19	Finland	5.89
20	Australia	5.89
21	France	5.88
22	Germany	5.81
23	Czech Republic	5.79
24	Austria	5.79
25	Brazil	5.74
26	Malta	5.73
27	Bahrain	5.65
28	Belgium	5.65
29	Portugal	5.63
30	Puerto Rico	5.60
31	Luxembourg	5.59
32	Ireland	5.59
33	United Arab Emirates	5.51
34	Chile	5.47
35	Malaysia	5.45
36	Slovenia	5.44
37	Latvia	5.40
38	Slovak Republic	5.39
39	Bulgaria	5.35
40	Guatemala	5.33
41	Qatar	5.32
42	Oman	5.29
43	Vietnam	5.29
44	Barbados	5.25
45	Senegal	5.25
46	Sri Lanka	5.20
47	Croatia	5.19
48	Costa Rica	5.18
49	Saudi Arabia	5.16
50	Poland	5.15
51	Cyprus	5.15
52	South Africa	5.14
53	China	5.14
54	India	5.08
55	Turkey	5.07
56	Thailand	5.07
57	Panama	5.02
58	Colombia	5.01
59	Brunei Darussalam	5.00
60	Kazakhstan	4.97
61	Indonesia	4.97
62	Honduras	4.95
63	Romania	4.94
64	Tunisia	4.92
65	Lebanon	4.91
66	Hungary	4.91
67	Spain	4.89
68	Mauritius	4.89
69	Uruguay	4.88
70	Russian Federation	4.81
71	Italy	4.79
72	Kenya	4.77
73	Trinidad and Tobago	4.75
74	Namibia	4.74
75	Ukraine	4.72
76	Egypt	4.72
77	Mexico	4.72
78	Jamaica	4.69
79	Jordan	4.67
80	Guyana	4.67
81	Dominican Republic	4.66
82	El Salvador	4.63
83	Argentina	4.63
84	Morocco	4.57
85	Cape Verde	4.55
86	Gambia, The	4.55
87	Cambodia	4.55
88	Nigeria	4.54
89	Georgia	4.53
90	Mozambique	4.53
91	Zambia	4.53
92	Philippines	4.52
93	Kuwait	4.50
94	Albania	4.49
95	Peru	4.49
96	Montenegro	4.47
97	Mongolia	4.46
98	Moldova	4.40
99	Greece	4.40
100	Cameroon	4.39
101	Malawi	4.39
102	Pakistan	4.35
103	Ghana	4.26
104	Macedonia, FYR	4.23
105	Ecuador	4.21
106	Bangladesh	4.21
107	Benin	4.21
108	Uganda	4.20
109	Azerbaijan	4.20
110	Venezuela	4.17
111	Botswana	4.12
112	Armenia	4.11
113	Tajikistan	4.10
114	Madagascar	4.09
115	Bolivia	4.06
116	Bosnia and Herzegovina	4.05
117	Zimbabwe	4.05
118	Libya	4.04
119	Burkina Faso	4.02
120	Kyrgyz Republic	4.01
121	Tanzania	3.99
122	Swaziland	3.95
123	Nepal	3.94
124	Paraguay	3.92
125	Côte d'Ivoire	3.92
126	Angola	3.91
127	Iran, Islamic Rep.	3.84
128	Mauritania	3.80
129	Nicaragua	3.77
130	Burundi	3.73
131	Mali	3.70
132	Timor-Leste	3.66
133	Ethiopia	3.61
134	Serbia	3.61
135	Lesotho	3.59
136	Syria	3.46
137	Algeria	3.25
138	Chad	3.11



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

8.04 National office patent applications

Number of patent applications filed by residents at the national patent office per million population | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Taiwan, China	3,392.1
2	Korea, Rep.	2,611.8
3	Japan	2,315.1
4	United States	732.6
5	Germany	584.5
6	New Zealand	360.3
7	Finland	338.3
8	Denmark	274.5
9	Austria	270.6
10	United Kingdom	258.5
11	Norway	258.1
12	Sweden	236.1
13	France	228.3
14	Switzerland	217.8
15	Ireland	204.0
16	Iceland	200.6
17	Israel	186.4
18	Slovenia	182.6
19	Russian Federation	180.5
20	China	172.1
21	Netherlands	155.8
22	Singapore	150.4
23	Canada	150.2
24	Italy	146.4
25	Luxembourg	120.5
26	Australia	119.1
27	Latvia	106.4
28	Kazakhstan	95.2
29	Spain	78.2
30	Poland	76.0
31	Hungary	75.5
32	Czech Republic	75.2
33	Belgium	62.0
34	Greece	61.9
35	Georgia	58.7
36	Estonia	56.7
37	Croatia	56.4
38	Ukraine	52.9
39	Romania	49.1
40	Serbia	43.6
41	Ecuador[5]	42.2
42	Mongolia[2]	38.6
43	Armenia	37.6
44	Moldova	37.2
45	Portugal[4]	35.8
46	Turkey	34.2
47	Slovak Republic	32.5
48	Bulgaria	31.9
49	Chile[4]	31.3
50	Malaysia[4]	29.8
51	Lithuania	27.2
52	South Africa	26.3
53	Kyrgyz Republic[4]	25.4
54	Azerbaijan[4]	25.3
55	Hong Kong SAR	21.3
56	Brazil[3]	20.8
57	Puerto Rico	20.7
58	Malta	19.3
59	Macedonia, FYR	19.1
60	Bosnia and Herzegovina[4]	15.7
61	Thailand[4]	11.8
62	Jordan	10.1
63	Sri Lanka[4]	9.9
64	Uruguay[4]	9.9
65	Jamaica[2]	7.8
66	Mexico	7.7
67	Cyprus	6.9
68	Egypt	5.9
69	Syria[2]	5.9
70	Morocco[4]	5.5
71	India[4]	5.3
72	Tunisia[2]	5.3
73	Saudi Arabia[3]	5.0
74	Montenegro[4]	4.8
75	Colombia[3]	2.7
76	Algeria[3]	2.4
77	Vietnam[1]	2.1
78	Philippines	1.9
79	Oman	1.8
80	Tajikistan	1.6
81	Mauritius[4]	1.6
82	Peru	1.3
83	Indonesia[2]	1.2
84	Pakistan[4]	1.0
85	Mozambique[3]	0.8
86	Guatemala	0.5
87	Bangladesh	0.3
88	Costa Rica	0.2
89	Uganda[3]	0.2
90	Ethiopia[3]	0.1
91	Madagascar	0.1
92	Brunei Darussalam	0.0
92	Nicaragua[5]	0.0
n/a	Albania	n/a
n/a	Angola	n/a
n/a	Argentina	n/a
n/a	Bahrain	n/a
n/a	Barbados	n/a
n/a	Benin	n/a
n/a	Bolivia	n/a
n/a	Botswana	n/a
n/a	Burkina Faso	n/a
n/a	Burundi	n/a
n/a	Cambodia	n/a
n/a	Cameroon	n/a
n/a	Cape Verde	n/a
n/a	Chad	n/a
n/a	Côte d'Ivoire	n/a
n/a	Dominican Republic	n/a
n/a	El Salvador	n/a
n/a	Gambia, The	n/a
n/a	Ghana	n/a
n/a	Guyana	n/a
n/a	Honduras	n/a
n/a	Iran, Islamic Rep.	n/a
n/a	Kenya	n/a
n/a	Kuwait	n/a
n/a	Lebanon	n/a
n/a	Lesotho	n/a
n/a	Libya	n/a
n/a	Malawi	n/a
n/a	Mali	n/a
n/a	Mauritania	n/a
n/a	Namibia	n/a
n/a	Nepal	n/a
n/a	Nigeria	n/a
n/a	Panama	n/a
n/a	Paraguay	n/a
n/a	Qatar	n/a
n/a	Senegal	n/a
n/a	Swaziland	n/a
n/a	Tanzania	n/a
n/a	Timor-Leste	n/a
n/a	Trinidad and Tobago	n/a
n/a	United Arab Emirates	n/a
n/a	Venezuela	n/a
n/a	Zambia	n/a
n/a	Zimbabwe	n/a

SOURCES: World Intellectual Property Organization (WIPO); national sources

[1] 2005 [2] 2006 [3] 2007 [4] 2008 [5] 2010

8.05 Patent Cooperation Treaty applications

Number of international patent applications filed through the Patent Cooperation Treaty per million population | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	Luxembourg	500.1
2	Switzerland	467.1
3	Finland	388.9
4	Sweden	338.8
5	Barbados	332.2
6	Japan	252.1
7	Netherlands	247.8
8	Germany	209.7
9	Denmark	206.2
10	Israel	199.0
11	Korea, Rep.	198.7
12	Iceland	166.1
13	United States	146.1
14	Norway	144.8
15	Austria	127.9
16	Singapore	127.7
17	France	114.9
18	Ireland	95.3
19	Belgium	93.5
20	Canada	80.2
21	Australia	79.4
22	United Kingdom	78.5
23	New Zealand	63.3
24	Slovenia	59.2
25	Malta	53.0
26	Cyprus	50.5
27	Italy	43.7
28	Spain	37.5
29	Estonia	32.8
30	Hungary	16.6
31	Czech Republic	12.9
32	Namibia	12.0
33	Latvia	11.5
34	Croatia	11.5
35	Portugal	11.0
36	Malaysia	11.0
37	China	9.3
38	Slovak Republic	8.3
39	Greece	7.7
40	United Arab Emirates	6.3
41	South Africa	5.6
42	Turkey	5.4
43	Qatar	5.0
44	Poland	4.7
45	Chile	4.5
46	Russian Federation	3.9
47	Bosnia and Herzegovina	3.7
48	Bulgaria	3.6
49	Saudi Arabia	3.1
50	Lithuania	3.0
51	Serbia	2.6
52	Brazil	2.3
53	Ukraine	2.1
54	Ecuador	1.9
55	Armenia	1.6
56	Mauritius	1.6
57	Uruguay	1.5
58	Panama	1.4
59	Oman	1.4
60	Mexico	1.3
61	Georgia	1.2
62	Kazakhstan	1.1
63	Colombia	1.1
64	Thailand	1.0
65	Macedonia, FYR	1.0
66	India	1.0
67	Lebanon	0.9
68	Tunisia	0.9
69	Costa Rica	0.7
70	Syria	0.6
71	Egypt	0.6
72	Morocco	0.5
73	Sri Lanka	0.4
74	Romania	0.4
75	Argentina	0.4
76	Albania	0.3
77	Dominican Republic	0.3
78	Moldova	0.3
79	Peru	0.2
80	Kyrgyz Republic	0.2
81	Nicaragua	0.2
82	Philippines	0.2
83	Libya	0.2
84	Guatemala	0.1
85	Azerbaijan	0.1
86	Kenya	0.1
87	Chad	0.1
88	Vietnam	0.1
89	Zambia	0.1
90	Iran, Islamic Rep.	0.1
91	Indonesia	0.1
92	Algeria	0.1
93	Angola	0.1
94	Cameroon	0.1
95	Côte d'Ivoire	0.0
96	Venezuela	0.0
97	Nigeria	0.0
98	Bangladesh	0.0
99	Pakistan	0.0
100	Bahrain	0.0
100	Benin	0.0
100	Bolivia	0.0
100	Botswana	0.0
100	Brunei Darussalam	0.0
100	Burkina Faso	0.0
100	Burundi	0.0
100	Cambodia	0.0
100	Cape Verde	0.0
100	El Salvador	0.0
100	Ethiopia	0.0
100	Gambia, The	0.0
100	Ghana	0.0
100	Guyana	0.0
100	Honduras	0.0
100	Jamaica	0.0
100	Jordan	0.0
100	Kuwait	0.0
100	Lesotho	0.0
100	Madagascar	0.0
100	Malawi	0.0
100	Mali	0.0
100	Mauritania	0.0
100	Mongolia	0.0
100	Montenegro	0.0
100	Mozambique	0.0
100	Nepal	0.0
100	Paraguay	0.0
100	Senegal	0.0
100	Swaziland	0.0
100	Tajikistan	0.0
100	Tanzania	0.0
100	Timor-Leste	0.0
100	Trinidad and Tobago	0.0
100	Uganda	0.0
100	Zimbabwe	0.0
n/a	Hong Kong SAR	n/a
n/a	Puerto Rico	n/a
n/a	Taiwan, China	n/a

SOURCE: World Intellectual Property Organization (WIPO)

8.06 High-tech exports

High-technology products as a percentage of total goods exports | 2009

RANK	COUNTRY/ECONOMY	SCORE
1	Philippines	58.1
2	Malta	44.5
3	Taiwan, China	42.2
4	Singapore	37.4
5	Malaysia	36.4
6	China	30.5
7	Korea, Rep.	30.5
8	Israel	23.6
9	Hungary	23.4
10	Switzerland	21.2
11	Thailand	20.2
12	Ireland	19.9
13	Costa Rica	19.5
14	Japan	19.2
15	France	17.9
16	United Kingdom	16.9
17	Mexico	16.8
18	Cyprus	16.4
19	United States	15.8
20	Czech Republic	14.5
21	Finland	14.2
22	Netherlands	14.1
23	Germany	13.3
24	Sweden	12.1
25	Denmark	11.9
26	Hong Kong SAR	11.4
27	Austria	9.8
28	Canada	9.2
29	Romania	8.7
30	Belgium	7.9
31	Luxembourg	7.7
32	Croatia	7.6
33	Estonia	6.8
34	Italy	6.7
35	Poland	6.4
36	Greece	6.3
37	Slovenia	6.0
38	India	5.9
39	Lithuania	5.9
40	Indonesia	5.9
41	Brazil	5.5
42	Slovak Republic[3]	5.5
43	Iceland	5.5
44	Latvia	5.3
45	Barbados	5.2
46	Tunisia	5.2
47	Senegal	5.2
48	El Salvador	4.8
49	Morocco	4.7
50	Spain	4.7
51	Lebanon	4.6
52	Bulgaria	4.6
53	Kazakhstan	4.2
54	Norway	4.1
55	Dominican Republic	4.1
56	Ukraine	3.7
57	Portugal	3.3
58	Vietnam[3]	3.0
59	South Africa	2.9
60	Argentina	2.7
61	Australia	2.5
62	Kenya	2.1
63	New Zealand	2.1
64	Bosnia and Herzegovina	2.0
65	Guatemala	2.0
66	Burundi	1.9
67	Côte d'Ivoire	1.8
68	Moldova	1.8
69	Macedonia, FYR	1.6
70	Turkey	1.5
71	Colombia	1.5
72	Armenia	1.4
73	Georgia[3]	1.4
74	Russian Federation	1.3
75	Pakistan	1.3
76	Uruguay	1.3
77	Mozambique	1.2
78	Paraguay	1.2
79	Mauritius	1.1
80	Madagascar	1.0
81	Jordan	1.0
82	Kyrgyz Republic	0.9
83	Albania	0.9
84	Sri Lanka	0.9
85	Tanzania	0.9
86	Bangladesh[2]	0.8
87	Botswana	0.7
88	Iran, Islamic Rep.[1]	0.6
89	Syria[3]	0.6
90	Nicaragua	0.5
91	Namibia[3]	0.5
92	Chile	0.5
93	Ethiopia	0.5
94	Gambia, The	0.5
95	Uganda[3]	0.4
96	Ecuador	0.4
97	Mongolia[2]	0.4
98	Egypt[3]	0.4
99	Jamaica	0.3
100	Zimbabwe	0.3
101	Peru	0.3
102	Malawi	0.3
103	Honduras	0.3
104	Nepal	0.3
105	Bolivia	0.3
106	Brunei Darussalam[1]	0.2
107	Ghana[3]	0.2
108	Mali[3]	0.2
109	Zambia	0.1
110	Venezuela	0.1
111	Cambodia[3]	0.1
112	Nigeria	0.1
113	Cameroon[1]	0.1
114	Burkina Faso	0.1
115	Swaziland[2]	0.0
116	Azerbaijan	0.0
117	Trinidad and Tobago	0.0
118	Benin[1]	0.0
119	Oman	0.0
120	United Arab Emirates	0.0
121	Saudi Arabia	0.0
122	Algeria	0.0
123	Guyana	0.0
124	Kuwait[3]	0.0
125	Bahrain[2]	0.0
126	Panama	0.0
127	Qatar[3]	0.0
128	Cape Verde[2]	0.0
n/a	Angola	n/a
n/a	Chad	n/a
n/a	Lesotho	n/a
n/a	Libya	n/a
n/a	Mauritania	n/a
n/a	Montenegro	n/a
n/a	Puerto Rico	n/a
n/a	Serbia	n/a
n/a	Tajikistan	n/a
n/a	Timor-Leste	n/a

SOURCES: Authors' calculation; United Nations COMTRADE database (accessed in December 2010)

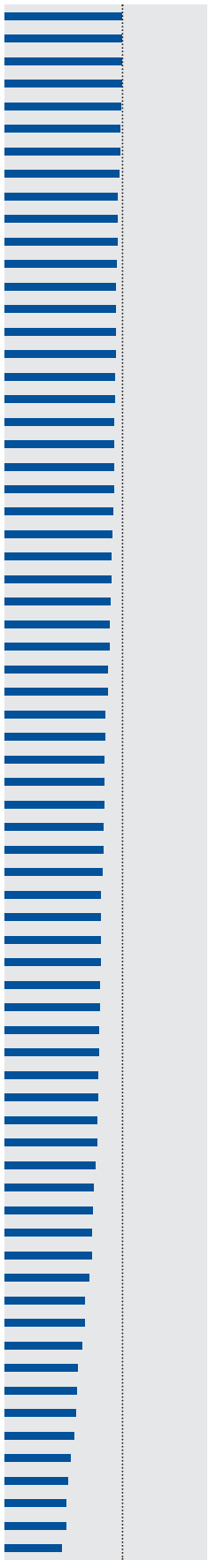
[1] 2006 [2] 2007 [3] 2008

8.07 Impact of ICT on new services and products

To what extent are information and communication technologies creating new business models, services, and products in your country?
[1 = not at all; 7 = significantly] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	6.33
2	Taiwan, China	5.98
3	Korea, Rep.	5.88
4	Singapore	5.83
5	France	5.83
6	United Kingdom	5.82
7	Norway	5.76
8	Iceland	5.74
9	Canada	5.69
10	United States	5.67
11	Switzerland	5.65
12	Germany	5.65
13	Estonia	5.56
14	United Arab Emirates	5.51
15	Tunisia	5.49
16	Netherlands	5.45
17	Portugal	5.43
18	Finland	5.43
19	Hong Kong SAR	5.41
20	Qatar	5.41
21	Austria	5.39
22	Israel	5.36
23	Malaysia	5.35
24	Brazil	5.29
25	Malta	5.27
26	Japan	5.26
27	Chile	5.25
28	Australia	5.21
29	Lithuania	5.19
30	Panama	5.18
31	Costa Rica	5.17
32	New Zealand	5.11
33	Saudi Arabia	5.10
34	Luxembourg	5.09
35	China	5.08
36	India	5.08
37	Denmark	5.05
38	Oman	5.03
39	Uruguay	5.02
40	Bahrain	5.00
41	Ireland	4.96
42	Belgium	4.96
43	Guatemala	4.94
44	Spain	4.91
45	Vietnam	4.91
46	Dominican Republic	4.88
47	Nigeria	4.86
48	Barbados	4.85
49	Colombia	4.80
50	Thailand	4.80
51	Turkey	4.78
52	Peru	4.77
53	Senegal	4.76
54	Puerto Rico	4.74
55	Kenya	4.73
56	Mauritius	4.71
57	Sri Lanka	4.71
58	Burkina Faso	4.68
59	Czech Republic	4.67
60	Cyprus	4.66
61	Jamaica	4.62
62	Slovenia	4.61
63	South Africa	4.55
64	Montenegro	4.55
65	Indonesia	4.55
66	Ghana	4.54
67	Albania	4.52
68	Honduras	4.51
69	Côte d'Ivoire	4.47

RANK	COUNTRY/ECONOMY	SCORE
70	Cape Verde	4.47
71	Gambia, The	4.46
72	Mexico	4.45
73	Egypt	4.45
74	Jordan	4.43
75	Uganda	4.42
76	Mongolia	4.40
77	Azerbaijan	4.38
78	Hungary	4.33
79	Macedonia, FYR	4.33
80	Philippines	4.32
81	Bulgaria	4.30
82	Cameroon	4.28
83	Pakistan	4.27
84	Brunei Darussalam	4.27
85	Malawi	4.27
86	Argentina	4.26
87	Zambia	4.24
88	Italy	4.23
89	Trinidad and Tobago	4.22
90	El Salvador	4.21
91	Cambodia	4.21
92	Poland	4.19
93	Benin	4.18
94	Romania	4.16
95	Slovak Republic	4.15
96	Ukraine	4.11
97	Greece	4.10
98	Latvia	4.10
99	Mozambique	4.04
100	Russian Federation	4.03
101	Croatia	3.97
102	Bangladesh	3.96
103	Guyana	3.94
104	Georgia	3.94
105	Ecuador	3.94
106	Kazakhstan	3.92
107	Iran, Islamic Rep.	3.90
108	Venezuela	3.87
109	Namibia	3.84
110	Botswana	3.84
111	Mali	3.84
112	Madagascar	3.82
113	Morocco	3.81
114	Lesotho	3.80
115	Lebanon	3.79
116	Bolivia	3.79
117	Kuwait	3.75
118	Tajikistan	3.75
119	Paraguay	3.73
120	Tanzania	3.72
121	Armenia	3.68
122	Bosnia and Herzegovina	3.63
123	Zimbabwe	3.59
124	Nepal	3.58
125	Moldova	3.56
126	Nicaragua	3.50
127	Ethiopia	3.36
128	Angola	3.36
129	Burundi	3.29
130	Serbia	3.15
131	Chad	3.14
132	Kyrgyz Republic	3.11
133	Libya	3.05
134	Timor-Leste	2.94
135	Algeria	2.88
136	Syria	2.80
137	Swaziland	2.80
138	Mauritania	2.69

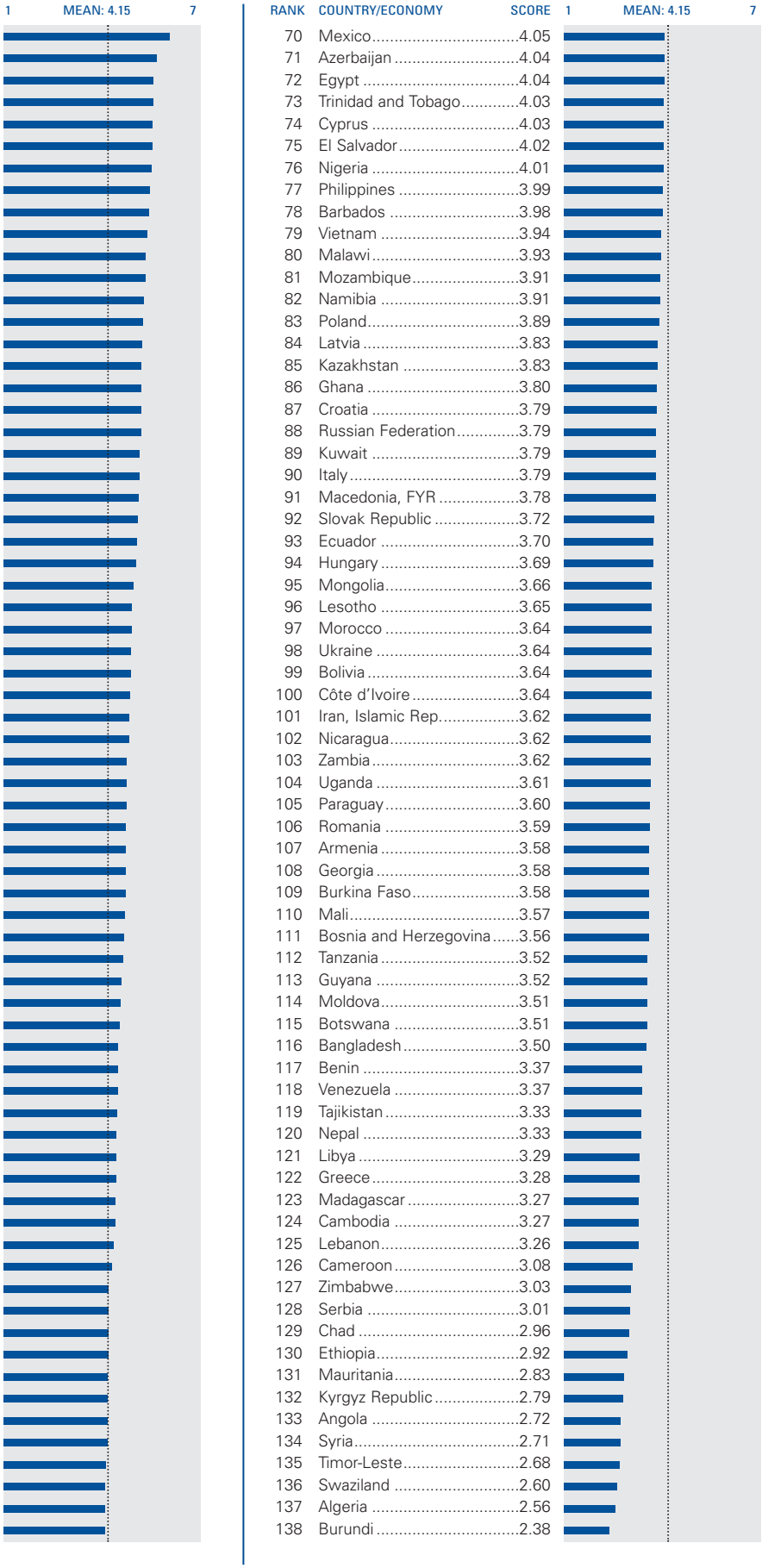


SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

8.08 Impact of ICT on new organizational models

To what extent are information and communication technologies creating new organizational models (virtual teams, remote working, tele-commuting, etc.) within businesses in your country? [1 = not at all; 7 = significantly] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Sweden	6.03
2	United States	5.64
3	United Kingdom	5.53
4	Norway	5.53
5	Singapore	5.52
6	Taiwan, China	5.50
7	Canada	5.48
8	Qatar	5.43
9	Finland	5.39
10	Israel	5.35
11	Netherlands	5.30
12	Iceland	5.30
13	Malaysia	5.25
14	France	5.21
15	Hong Kong SAR	5.19
16	Germany	5.17
17	Estonia	5.16
18	Switzerland	5.16
19	Saudi Arabia	5.16
20	Korea, Rep.	5.12
21	Tunisia	5.11
22	United Arab Emirates	5.08
23	Australia	5.07
24	Denmark	5.03
25	Malta	5.01
26	Lithuania	4.92
27	Brazil	4.89
28	Portugal	4.88
29	Belgium	4.85
30	Uruguay	4.84
31	New Zealand	4.82
32	Oman	4.81
33	Chile	4.80
34	India	4.73
35	Ireland	4.73
36	Colombia	4.72
37	China	4.70
38	Austria	4.70
39	Guatemala	4.69
40	Panama	4.69
41	Luxembourg	4.66
42	Costa Rica	4.65
43	Senegal	4.63
44	Japan	4.56
45	Spain	4.53
46	Thailand	4.51
47	Puerto Rico	4.47
48	Montenegro	4.46
49	Sri Lanka	4.46
50	Bahrain	4.44
51	Indonesia	4.41
52	Dominican Republic	4.41
53	Albania	4.40
54	Peru	4.40
55	Honduras	4.39
56	Mauritius	4.33
57	South Africa	4.28
58	Turkey	4.18
59	Kenya	4.18
60	Jordan	4.18
61	Cape Verde	4.17
62	Brunei Darussalam	4.15
63	Pakistan	4.15
64	Bulgaria	4.14
65	Czech Republic	4.14
66	Gambia, The	4.10
67	Slovenia	4.07
68	Jamaica	4.06
69	Argentina	4.06
70	Mexico	4.05
71	Azerbaijan	4.04
72	Egypt	4.04
73	Trinidad and Tobago	4.03
74	Cyprus	4.03
75	El Salvador	4.02
76	Nigeria	4.01
77	Philippines	3.99
78	Barbados	3.98
79	Vietnam	3.94
80	Malawi	3.93
81	Mozambique	3.91
82	Namibia	3.91
83	Poland	3.89
84	Latvia	3.83
85	Kazakhstan	3.83
86	Ghana	3.80
87	Croatia	3.79
88	Russian Federation	3.79
89	Kuwait	3.79
90	Italy	3.79
91	Macedonia, FYR	3.78
92	Slovak Republic	3.72
93	Ecuador	3.70
94	Hungary	3.69
95	Mongolia	3.66
96	Lesotho	3.65
97	Morocco	3.64
98	Ukraine	3.64
99	Bolivia	3.64
100	Côte d'Ivoire	3.64
101	Iran, Islamic Rep.	3.62
102	Nicaragua	3.62
103	Zambia	3.62
104	Uganda	3.61
105	Paraguay	3.60
106	Romania	3.59
107	Armenia	3.58
108	Georgia	3.58
109	Burkina Faso	3.58
110	Mali	3.57
111	Bosnia and Herzegovina	3.56
112	Tanzania	3.52
113	Guyana	3.52
114	Moldova	3.51
115	Botswana	3.51
116	Bangladesh	3.50
117	Benin	3.37
118	Venezuela	3.37
119	Tajikistan	3.33
120	Nepal	3.33
121	Libya	3.29
122	Greece	3.28
123	Madagascar	3.27
124	Cambodia	3.27
125	Lebanon	3.26
126	Cameroon	3.08
127	Zimbabwe	3.03
128	Serbia	3.01
129	Chad	2.96
130	Ethiopia	2.92
131	Mauritania	2.83
132	Kyrgyz Republic	2.79
133	Angola	2.72
134	Syria	2.71
135	Timor-Leste	2.68
136	Swaziland	2.60
137	Algeria	2.56
138	Burundi	2.38



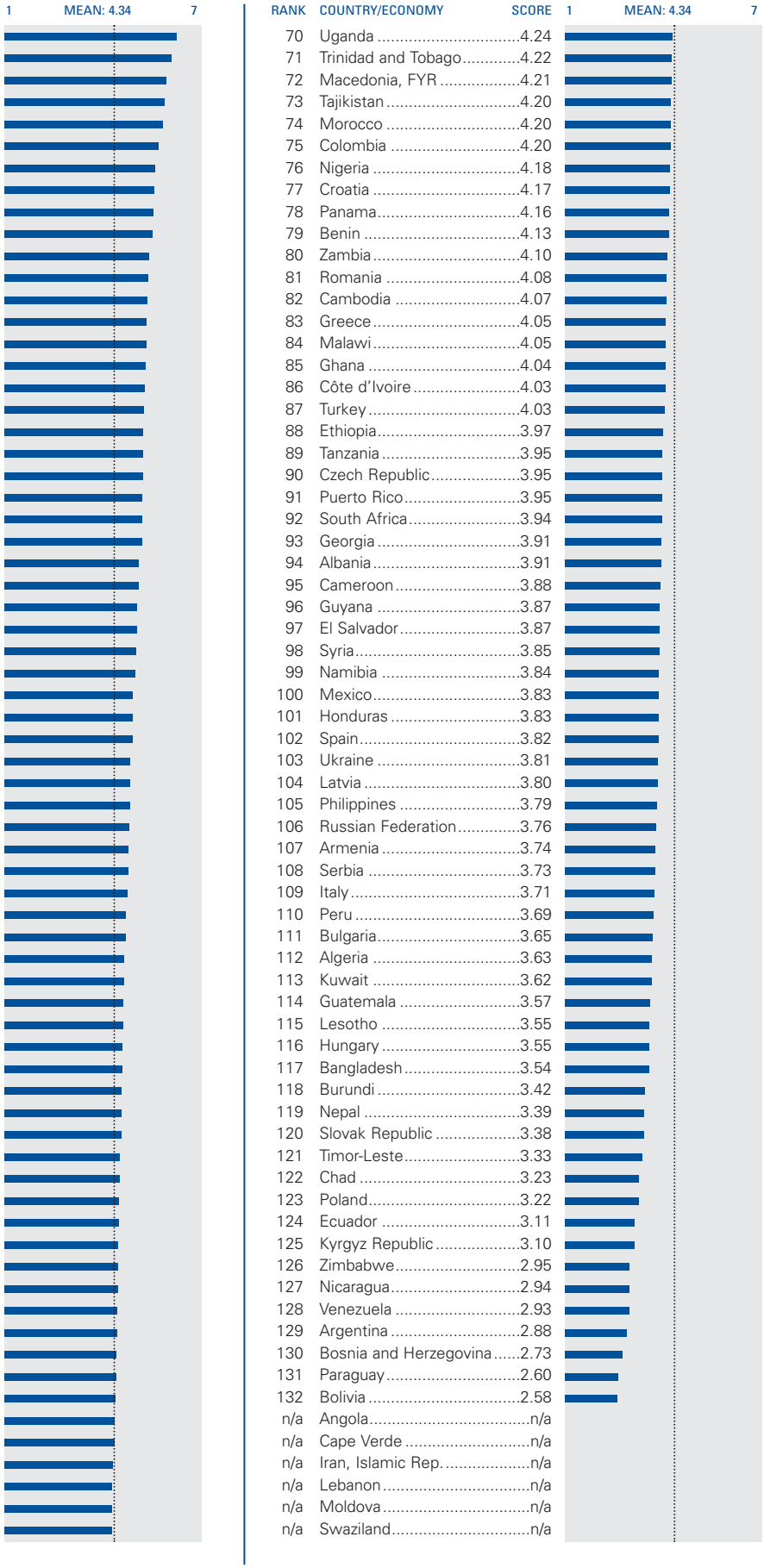
SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

9th pillar
Government usage

9.01 Government success in ICT promotion

How successful is the government in promoting the use of information and communication technologies in your country? [1 = not successful at all; 7 = extremely successful] | 2008–2009 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.22
2	United Arab Emirates	6.06
3	Malta	5.90
4	Qatar	5.85
5	Taiwan, China	5.79
6	Tunisia	5.67
7	Sweden	5.55
8	Portugal	5.53
9	Denmark	5.50
10	Luxembourg	5.48
11	Estonia	5.39
12	Iceland	5.36
13	Gambia, The	5.33
14	Malaysia	5.30
15	Bahrain	5.30
16	China	5.27
17	Korea, Rep.	5.25
18	Norway	5.23
19	Oman	5.20
20	United States	5.19
21	Jordan	5.19
22	India	5.17
23	Finland	5.16
24	Hong Kong SAR	5.16
25	Saudi Arabia	5.08
26	Barbados	5.06
27	Egypt	5.02
28	Brunei Darussalam	5.00
29	Canada	4.99
30	Azerbaijan	4.97
31	Sri Lanka	4.89
32	Australia	4.89
33	Switzerland	4.88
34	Senegal	4.81
35	Dominican Republic	4.81
36	Cyprus	4.80
37	Uruguay	4.79
38	France	4.76
39	Germany	4.76
40	Slovenia	4.71
41	Netherlands	4.67
42	Austria	4.67
43	Mauritius	4.63
44	Mali	4.61
45	Israel	4.60
46	Thailand	4.59
47	Burkina Faso	4.56
48	Botswana	4.56
49	Mongolia	4.55
50	United Kingdom	4.55
51	Mozambique	4.53
52	Jamaica	4.48
53	Japan	4.48
54	Vietnam	4.47
55	Chile	4.46
56	Mauritania	4.45
57	Kenya	4.44
58	Belgium	4.44
59	New Zealand	4.41
60	Brazil	4.40
61	Libya	4.39
62	Costa Rica	4.37
63	Kazakhstan	4.36
64	Ireland	4.34
65	Indonesia	4.34
66	Madagascar	4.28
67	Montenegro	4.27
68	Pakistan	4.27
69	Lithuania	4.27
70	Uganda	4.24
71	Trinidad and Tobago	4.22
72	Macedonia, FYR	4.21
73	Tajikistan	4.20
74	Morocco	4.20
75	Colombia	4.20
76	Nigeria	4.18
77	Croatia	4.17
78	Panama	4.16
79	Benin	4.13
80	Zambia	4.10
81	Romania	4.08
82	Cambodia	4.07
83	Greece	4.05
84	Malawi	4.05
85	Ghana	4.04
86	Côte d'Ivoire	4.03
87	Turkey	4.03
88	Ethiopia	3.97
89	Tanzania	3.95
90	Czech Republic	3.95
91	Puerto Rico	3.95
92	South Africa	3.94
93	Georgia	3.91
94	Albania	3.91
95	Cameroon	3.88
96	Guyana	3.87
97	El Salvador	3.87
98	Syria	3.85
99	Namibia	3.84
100	Mexico	3.83
101	Honduras	3.83
102	Spain	3.82
103	Ukraine	3.81
104	Latvia	3.80
105	Philippines	3.79
106	Russian Federation	3.76
107	Armenia	3.74
108	Serbia	3.73
109	Italy	3.71
110	Peru	3.69
111	Bulgaria	3.65
112	Algeria	3.63
113	Kuwait	3.62
114	Guatemala	3.57
115	Lesotho	3.55
116	Hungary	3.55
117	Bangladesh	3.54
118	Burundi	3.42
119	Nepal	3.39
120	Slovak Republic	3.38
121	Timor-Leste	3.33
122	Chad	3.23
123	Poland	3.22
124	Ecuador	3.11
125	Kyrgyz Republic	3.10
126	Zimbabwe	2.95
127	Nicaragua	2.94
128	Venezuela	2.93
129	Argentina	2.88
130	Bosnia and Herzegovina	2.73
131	Paraguay	2.60
132	Bolivia	2.58
n/a	Angola	n/a
n/a	Cape Verde	n/a
n/a	Iran, Islamic Rep.	n/a
n/a	Lebanon	n/a
n/a	Moldova	n/a
n/a	Swaziland	n/a

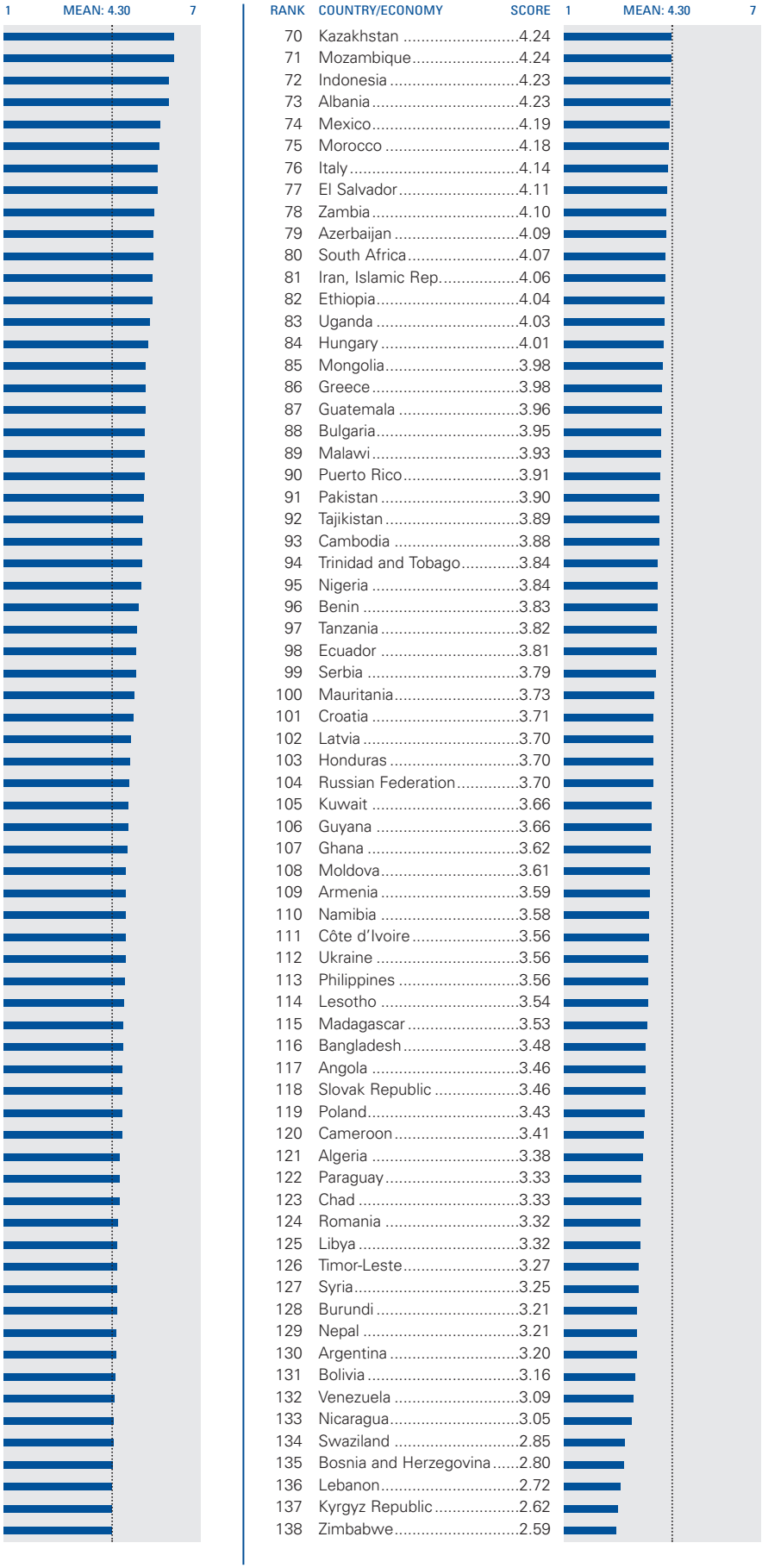


SOURCE: World Economic Forum, Executive Opinion Survey 2008, 2009

9.02 ICT use and government efficiency

To what extent has the use of information and communication technologies by the government improved the efficiency of government services in your country? [1 = no effect; 7 = has generated considerable improvements] | 2009–2010 weighted average

RANK	COUNTRY/ECONOMY	SCORE
1	Qatar	6.16
2	Singapore	6.15
3	Sweden	5.99
4	United Arab Emirates	5.99
5	Taiwan, China	5.74
6	Korea, Rep.	5.73
7	Portugal	5.67
8	Estonia	5.66
9	Malta	5.57
10	Austria	5.54
11	Hong Kong SAR	5.54
12	Bahrain	5.52
13	Chile	5.49
14	Iceland	5.42
15	Malaysia	5.37
16	Tunisia	5.30
17	Saudi Arabia	5.30
18	Oman	5.29
19	Norway	5.28
20	Canada	5.28
21	Finland	5.28
22	Switzerland	5.25
23	France	5.21
24	Luxembourg	5.20
25	Denmark	5.18
26	New Zealand	5.18
27	United States	5.08
28	China	5.03
29	Cape Verde	5.02
30	Netherlands	5.01
31	Australia	4.95
32	Germany	4.94
33	Brazil	4.86
34	Lithuania	4.84
35	Israel	4.79
36	Gambia, The	4.78
37	Dominican Republic	4.76
38	Turkey	4.76
39	Slovenia	4.71
40	Jordan	4.71
41	India	4.69
42	United Kingdom	4.69
43	Ireland	4.69
44	Uruguay	4.66
45	Vietnam	4.64
46	Brunei Darussalam	4.62
47	Colombia	4.61
48	Cyprus	4.60
49	Sri Lanka	4.59
50	Georgia	4.58
51	Senegal	4.58
52	Thailand	4.52
53	Mauritius	4.52
54	Panama	4.50
55	Barbados	4.47
56	Macedonia, FYR	4.45
57	Burkina Faso	4.45
58	Spain	4.43
59	Egypt	4.43
60	Montenegro	4.41
61	Czech Republic	4.40
62	Botswana	4.38
63	Kenya	4.35
64	Mali	4.33
65	Costa Rica	4.32
66	Jamaica	4.29
67	Peru	4.29
68	Japan	4.28
69	Belgium	4.27
70	Kazakhstan	4.24
71	Mozambique	4.24
72	Indonesia	4.23
73	Albania	4.23
74	Mexico	4.19
75	Morocco	4.18
76	Italy	4.14
77	El Salvador	4.11
78	Zambia	4.10
79	Azerbaijan	4.09
80	South Africa	4.07
81	Iran, Islamic Rep.	4.06
82	Ethiopia	4.04
83	Uganda	4.03
84	Hungary	4.01
85	Mongolia	3.98
86	Greece	3.98
87	Guatemala	3.96
88	Bulgaria	3.95
89	Malawi	3.93
90	Puerto Rico	3.91
91	Pakistan	3.90
92	Tajikistan	3.89
93	Cambodia	3.88
94	Trinidad and Tobago	3.84
95	Nigeria	3.84
96	Benin	3.83
97	Tanzania	3.82
98	Ecuador	3.81
99	Serbia	3.79
100	Mauritania	3.73
101	Croatia	3.71
102	Latvia	3.70
103	Honduras	3.70
104	Russian Federation	3.70
105	Kuwait	3.66
106	Guyana	3.66
107	Ghana	3.62
108	Moldova	3.61
109	Armenia	3.59
110	Namibia	3.58
111	Côte d'Ivoire	3.56
112	Ukraine	3.56
113	Philippines	3.56
114	Lesotho	3.54
115	Madagascar	3.53
116	Bangladesh	3.48
117	Angola	3.46
118	Slovak Republic	3.46
119	Poland	3.43
120	Cameroon	3.41
121	Algeria	3.38
122	Paraguay	3.33
123	Chad	3.33
124	Romania	3.32
125	Libya	3.32
126	Timor-Leste	3.27
127	Syria	3.25
128	Burundi	3.21
129	Nepal	3.21
130	Argentina	3.20
131	Bolivia	3.16
132	Venezuela	3.09
133	Nicaragua	3.05
134	Swaziland	2.85
135	Bosnia and Herzegovina	2.80
136	Lebanon	2.72
137	Kyrgyz Republic	2.62
138	Zimbabwe	2.59



SOURCE: World Economic Forum, Executive Opinion Survey 2009, 2010

9.03 Government Online Service Index

The Government Online Service Index assesses the quality of government's delivery of online services | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	Korea, Rep.	1.00
2	United States	0.94
3	Canada	0.88
4	United Kingdom	0.77
5	Australia	0.77
5	Spain	0.77
7	Norway	0.74
8	Bahrain	0.73
9	Colombia	0.71
10	Singapore	0.69
11	France	0.68
12	Netherlands	0.68
13	Denmark	0.67
13	Japan	0.67
15	New Zealand	0.64
16	Malaysia	0.63
17	Belgium	0.63
18	Chile	0.61
19	Israel	0.58
20	Mongolia	0.56
21	Germany	0.55
22	Jordan	0.53
23	Egypt	0.53
24	Kazakhstan	0.53
24	Sweden	0.53
26	Hungary	0.50
27	Estonia	0.50
28	Ireland	0.50
29	Lithuania	0.48
29	Tunisia	0.48
31	Finland	0.48
31	Uruguay	0.48
33	Austria	0.48
34	Malta	0.47
35	Kuwait	0.46
36	Czech Republic	0.45
37	Switzerland	0.44
38	Mexico	0.44
39	El Salvador	0.43
40	Croatia	0.42
41	Latvia	0.42
41	Romania	0.42
43	Argentina	0.41
44	Bulgaria	0.41
44	Peru	0.41
46	Slovenia	0.40
47	Iceland	0.40
48	Philippines	0.39
49	Poland	0.39
49	Portugal	0.39
51	Luxembourg	0.38
52	Cyprus	0.37
53	Brazil	0.37
53	China	0.37
53	India	0.37
53	Oman	0.37
57	Dominican Republic	0.37
58	Bangladesh	0.36
58	Greece	0.36
60	Slovak Republic	0.35
60	Turkey	0.35
60	Ukraine	0.35
63	Angola	0.34
63	Trinidad and Tobago	0.34
65	Thailand	0.33
66	Russian Federation	0.33
67	Azerbaijan	0.32
67	Côte d'Ivoire	0.32
69	Macedonia, FYR	0.32
70	Ecuador	0.32
70	Kyrgyz Republic	0.32
72	Montenegro	0.31
73	Albania	0.31
73	Saudi Arabia	0.31
75	Guatemala	0.31
75	South Africa	0.31
77	Bolivia	0.30
77	Costa Rica	0.30
77	Venezuela	0.30
77	Vietnam	0.30
81	Honduras	0.30
81	Mauritius	0.30
81	Moldova	0.30
84	Italy	0.29
85	Brunei Darussalam	0.28
85	Panama	0.28
87	Qatar	0.28
88	Bosnia and Herzegovina	0.28
89	Cape Verde	0.27
90	Iran, Islamic Rep.	0.27
90	Lebanon	0.27
92	Lesotho	0.26
92	Paraguay	0.26
94	Sri Lanka	0.26
95	Nicaragua	0.25
96	United Arab Emirates	0.25
97	Georgia	0.25
97	Pakistan	0.25
99	Indonesia	0.24
100	Kenya	0.24
100	Morocco	0.24
102	Jamaica	0.23
103	Serbia	0.22
104	Barbados	0.20
104	Botswana	0.20
104	Ethiopia	0.20
107	Mali	0.18
108	Guyana	0.18
109	Senegal	0.18
110	Armenia	0.17
110	Tanzania	0.17
112	Mozambique	0.17
113	Nepal	0.17
114	Madagascar	0.17
115	Burkina Faso	0.16
116	Cameroon	0.15
117	Ghana	0.15
118	Cambodia	0.14
118	Libya	0.14
120	Timor-Leste	0.13
121	Zimbabwe	0.13
122	Benin	0.12
123	Zambia	0.10
124	Uganda	0.10
125	Algeria	0.10
126	Nigeria	0.10
127	Mauritania	0.09
127	Tajikistan	0.09
129	Gambia, The	0.08
130	Namibia	0.07
131	Burundi	0.04
131	Syria	0.04
133	Chad	0.02
134	Malawi	0.02
135	Swaziland	0.00
n/a	Hong Kong SAR	n/a
n/a	Puerto Rico	n/a
n/a	Taiwan, China	n/a

SOURCE: United Nations, *UN E-Government Survey 2010: Leveraging e-Government at a Time of Financial and Economic Crisis*

9.04 E-Participation Index

The E-Participation Index assesses the quality, relevance, usefulness, and willingness of government websites for providing online information and participatory tools and services to the people | 2010

RANK	COUNTRY/ECONOMY	SCORE
1	Korea, Rep.	1.00
2	Australia	0.91
3	Spain	0.83
4	New Zealand	0.77
4	United Kingdom	0.77
6	Japan	0.76
6	United States	0.76
8	Canada	0.73
9	Estonia	0.69
9	Singapore	0.69
11	Bahrain	0.67
12	Malaysia	0.66
13	Denmark	0.64
14	Germany	0.61
15	France	0.60
15	Netherlands	0.60
17	Belgium	0.59
18	Kazakhstan	0.56
19	Lithuania	0.53
20	Slovenia	0.51
21	Austria	0.50
21	Norway	0.50
23	Cyprus	0.49
23	Sweden	0.49
25	Croatia	0.46
26	Colombia	0.44
26	Ireland	0.44
28	Kyrgyz Republic	0.43
28	Mongolia	0.43
30	Finland	0.41
30	Israel	0.41
32	China	0.37
32	Mexico	0.37
34	Chile	0.34
34	Malta	0.34
36	Guatemala	0.31
36	Hungary	0.31
38	Bulgaria	0.30
38	Nicaragua	0.30
38	Tunisia	0.30
41	Brazil	0.29
41	Egypt	0.29
41	Jordan	0.29
44	Latvia	0.27
44	Lebanon	0.27
44	Portugal	0.27
47	Greece	0.26
47	Ukraine	0.26
47	Uruguay	0.26
50	Poland	0.24
51	Kenya	0.23
51	Kuwait	0.23
53	Italy	0.21
53	Macedonia, FYR	0.21
53	Turkey	0.21
56	Argentina	0.20
56	Bolivia	0.20
56	Costa Rica	0.20
56	India	0.20
56	Moldova	0.20
56	Switzerland	0.20
62	Dominican Republic	0.19
62	Philippines	0.19
62	Romania	0.19
62	South Africa	0.19
66	Azerbaijan	0.17
66	Brunei Darussalam	0.17
66	Cape Verde	0.17
66	Côte d'Ivoire	0.17
66	Libya	0.17
66	Luxembourg	0.17
66	Pakistan	0.17
66	Peru	0.17
74	Cameroon	0.16
74	Ecuador	0.16
74	Montenegro	0.16
74	Oman	0.16
78	Sri Lanka	0.14
78	Venezuela	0.14
80	Albania	0.13
80	Czech Republic	0.13
80	Honduras	0.13
80	Indonesia	0.13
80	Morocco	0.13
80	Qatar	0.13
80	Russian Federation	0.13
80	Trinidad and Tobago	0.13
80	United Arab Emirates	0.13
89	Cambodia	0.11
89	Mali	0.11
89	Mauritania	0.11
89	Mozambique	0.11
93	Panama[1]	0.11
93	Swaziland[1]	0.11
95	Bangladesh	0.10
95	Barbados	0.10
95	Botswana	0.10
95	Saudi Arabia	0.10
99	Ghana	0.09
99	Guyana	0.09
99	Jamaica	0.09
99	Lesotho	0.09
99	Thailand	0.09
99	Vietnam	0.09
105	Angola	0.07
105	Benin	0.07
105	El Salvador	0.07
105	Iran, Islamic Rep.	0.07
105	Slovak Republic	0.07
105	Uganda	0.07
111	Burkina Faso	0.06
111	Chad	0.06
111	Georgia	0.06
111	Madagascar	0.06
111	Mauritius	0.06
111	Nepal	0.06
117	Armenia	0.04
117	Bosnia and Herzegovina	0.04
117	Ethiopia	0.04
117	Iceland	0.04
117	Serbia	0.04
117	Tanzania	0.04
123	Tajikistan	0.03
123	Zimbabwe	0.03
125	Malawi[1]	0.02
126	Algeria	0.01
126	Burundi	0.01
126	Gambia, The	0.01
126	Namibia	0.01
126	Nigeria	0.01
126	Paraguay	0.01
126	Senegal	0.01
126	Syria	0.01
126	Timor-Leste	0.01
135	Zambia	0.00
n/a	Hong Kong SAR	n/a
n/a	Puerto Rico	n/a
n/a	Taiwan, China	n/a

SOURCE: United Nations, *UN E-Government Survey 2010: Leveraging e-Government at a Time of Financial and Economic Crisis*

[1] 2008

Technical Notes and Sources

The present section complements the Data Tables by providing additional information for those indicators that enter the composition of the Networked Readiness Index 2010–2011 and that are not derived from the World Economic Forum's Executive Opinion Survey.

The number next to the variable corresponds to the number of the Data Table that shows ranks and scores for all countries/economies on this particular indicator.

For variables 3.04, 3.05, 8.04, and 8.05, we have divided the raw values by the population figures relative to the year of each corresponding data point. For variables 4.04, 4.05, 4.06, 4.07, 4.08, 5.06, and 5.07, we have divided the raw values by the PPP conversion factor to market exchange rate ratio figures relative to the year of each corresponding data point.

The source of population figures is The World Bank, *World Development Indicators Online* (accessed in January 2011). The sources of the *PPP conversion factor to market exchange rate ratio* figures are The World Bank, *World Development Indicators Online* (accessed in January 2011) and the International Monetary Fund, *World Economic Outlook* (October 2010).

The data used in this *Report* represent the most recent available figures from various international agencies and national authorities at the time when the data collection took place. It is possible that some data have been updated or revised since then.

Pillar 1: Market environment

1.07 Total tax rate

Sum of profit tax, labor tax and social contributions, property taxes, turnover taxes, and other taxes, as a share (%) of commercial profits | 2010

The total tax rate measures the amount of taxes and mandatory contributions payable by the business in its second year of operation, expressed as a share of commercial profits. The total amount of taxes is the sum of five different types of taxes and contributions payable after accounting for deductions and exemptions: profit or corporate income tax, social contributions and labor taxes paid by the employer, property taxes, turnover taxes, and other small taxes. For more details about the methodology employed and the assumptions made to compute this indicator, visit http://www.doingbusiness.org/methodologysurveys/.

Source: The World Bank, *Doing Business 2011*

1.08 Time required to start a business

Number of days required to start a business | 2010

For details about the methodology employed and the assumptions made to compute this indicator, visit http://www.doingbusiness.org/methodologysurveys/.

Source: The World Bank, *Doing Business 2011*

1.09 Number of procedures required to start a business

Number of procedures required to start a business | 2010

Time is recorded in calendar days. The measure captures the median duration that incorporation lawyers indicate is necessary to complete a procedure with minimum follow-up with government agencies and no extra payments. For more details about the methodology employed and the assumptions made to compute this indicator, visit http://www.doingbusiness.org/methodologysurveys/.

Source: The World Bank, *Doing Business 2011*

Pillar 2: Political and regulatory environment

2.08 Software piracy rate

Unlicensed software units as a percentage of total software units installed | 2009

This measure covers piracy of all packaged software that runs on personal computers (PCs), including desktops, laptops and ultra-portables, including netbooks. This includes operating systems, systems software such as databases and security packages, business applications and consumer applications such as games, and personal finance and reference software. The study does not include software that runs on servers or mainframes. For more information about the methodology, refer to the study available at http://www.bsa.com/globalstudy.

Source: Business Software Alliance/International Data Corporation, *Global Software Piracy Study 2009* (May 2010)

2.09 Number of procedures to enforce a contract

Number of procedures to resolve a dispute, counted from the moment the plaintiff files a lawsuit in court until payment | 2010

The list of procedural steps compiled for each economy traces the chronology of a commercial dispute before the relevant court. A *procedure* is defined as any interaction, required by law or commonly used in practice, between the parties or between them and the judge or court officer. This includes steps to file and serve the case, steps for trial and judgment, and steps necessary to enforce the judgment. For more details about the methodology employed and the assumptions made to compute this indicator, visit http://www.doingbusiness.org/methodologysurveys/.

Source: The World Bank, *Doing Business 2011*

2.10 Time to enforce a contract

Number of days to resolve a dispute, counted from the moment the plaintiff decides to file the lawsuit in court until payment | 2010

Time is recorded in calendar days, counted from the moment the plaintiff decides to file the lawsuit in court until payment. This includes both the days when actions take place and the waiting periods between. For more details about the methodology employed and the assumptions made to compute this indicator, visit http://www.doingbusiness.org/methodologysurveys/.

Source: The World Bank, *Doing Business 2011*

2.11 Internet and telephony sectors competition index

Level of competition index for Internet services, international long distance services, and mobile telephone services on a 0 to 6 (best) scale | 2004—2008

This variable measures the level of competition for retail Internet access services, for international long distance calls, and for digital cellular mobile services. For each economy, the level of competition in each of the three categories was assessed as follows: monopoly, partial competition, and full competition. The index is calculated as the sum of points obtained in each of the three categories above (0 = monopoly; 1 = partial competition; 2 = competition), with 6 as the best possible score.

Source: The World Bank, *Information and Communications for Development Online Database* (accessed in December 2010)

Pillar 3: Infrastructure environment

3.01 Telephone lines

Number of main telephone lines per 100 population | 2009

A *main telephone line* is a telephone line connecting the subscriber's terminal equipment to the public switched telephone network and that has a dedicated port in the telephone exchange equipment.

Source: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

3.02 Mobile network coverage rate

Percentage of total population covered by a mobile network signal | 2009

This indicator measures the percentage of inhabitants who are within range of a mobile cellular signal, irrespective of whether or not they are subscribers. This is calculated by dividing the number of inhabitants within range of a mobile cellular signal by the total population. Note that this is not the same as the mobile subscription density or penetration.

Source: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

3.03 Secure Internet servers

Secure Internet servers per million population | 2009

Secure Internet servers are servers using encryption technology in Internet transactions.

Sources: The World Bank, *World Development Indicators Online* (accessed in January 2011); national sources

3.04 International Internet bandwidth

International Internet bandwidth (Mb/s) per 10,000 population | 2009

International Internet bandwidth is the sum of capacity of all Internet exchanges offering international bandwidth measured in megabits per second.

Source: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

3.05 Electricity production per capita

Electricity production (kWh) per capita | 2007

Electricity production is measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, it covers generation by geothermal, solar, wind, and tide and wave energy as well as that from combustible renewables and waste. Production includes the output of electricity plants designed to produce electricity only, as well as that of combined heat and power plants.

Sources: The World Bank, *World Development Indicators Online* (accessed in January 2011); US Central Intelligence Agency (CIA), *The World Factbook* (accessed in January 2011)

3.06 Tertiary education enrollment rate

Gross tertiary education enrollment rate (%) | 2008

Tertiary enrollment rate is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the tertiary education level. Tertiary education, whether or not leading to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

Sources: The World Bank, *World Development Indicators Online* (accessed in January 2011); national sources

Pillar 4: Individual readiness

4.03 Adult literacy rate

Adult literacy rate (%) | 2008

Adult literacy is defined as the percentage of the population aged 15 years and over who can both read and write with understanding a short, simple statement on his/her everyday life. Whenever data come from economies classified by the World Bank as *high income*, we assume a rate of 99 percent, in accordance with the approach adopted by the United Nations Development Programme (UNDP) in calculating the 2009 edition of the Human Development Index.

Sources: World Bank, *Ed Stats Database* (accessed in January 2011); national sources

4.04 Residential telephone installation fee

One-time residential telephone installation fee (PPP $) | 2009

This measure refers to the one-time charge involved in applying for residential basic telephone service. Taxes should be included. If not included, it should be specified in a note including the applicable tax rate. The amount is adjusted for purchasing power parity (PPP) and expressed in international dollars.

Sources: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

4.05 Residential monthly telephone subscription

Monthly subscription for residential telephone service (PPP $) | 2009

Monthly subscription refers to the recurring fixed charge for subscribing to the public switched telephone network. The charge should cover the rental of the line but not the rental of the terminal (for example, the telephone set) where the terminal equipment market is liberalized. In some cases, the rental charge includes an allowance for free or reduced-rate call units. If there are different charges for different exchange areas, the largest urban area is used. The amount is adjusted for purchasing power parity (PPP) and expressed in international dollars.

Sources: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

4.06 Fixed telephone tariffs

Fixed telephone tariffs for a 3-minute local call during peak hours (PPP $) | 2009

This variable refers to the cost of a 3-minute call within the same exchange (local call) using the subscriber's equipment (i.e., not from a public telephone). The amount is adjusted for purchasing power parity (PPP) and expressed in international dollars.

Sources: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

4.07 Mobile cellular tariffs

Average per-minute cost of different types of mobile cellular calls (PPP $) | 2009

This measure is constructed by first taking the average per-minute cost of a local call to another mobile cellular phone on the same network (on-net) and on another network (off-net). This amount is then averaged with the per-minute cost of a local call to a fixed telephone line. All the tariffs are for calls placed during peak hours and based on a basic, representative mobile cellular pre-paid subscription service. The amount is adjusted for purchasing power parity (PPP) and expressed in international dollars.

Source: Authors' calculations; International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

4.08 Fixed broadband Internet tariffs

Monthly subscription charge for fixed (wired) broadband Internet service (PPP $) | 2009

Fixed (wired) broadband is considered any dedicated connection to the Internet at downstream speeds equal to, or greater than, 256 kilobits per second, using DSL. The amount is adjusted for purchasing power parity (PPP) and expressed in international dollars.

Sources: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

Pillar 5: Business readiness

5.05 Business telephone installation fee

One-time business telephone installation fee (PPP $) | 2009

Installation (or connection) refers to the one-time charge involved in applying for basic business telephone service. The amount is adjusted for purchasing power parity (PPP) and expressed in international dollars.

Sources: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

5.06 Business monthly telephone subscription

Monthly subscription for business telephone service (PPP $) | 2009

Monthly subscription refers to the recurring fixed charge for subscribing to the public switched telephone network. The charge should cover the rental of the line but not the rental of the terminal (for example, the telephone set) where the terminal equipment market is liberalized. In some cases, the rental charge includes an allowance for free or reduced-rate call units. If there are different charges for different exchange areas, the largest urban area is used. The amount is adjusted for purchasing power parity (PPP) and expressed in international dollars.

Sources: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

5.08 Computer, communications, and other services imports

Computer, communications, and other services as a percentage of total commercial services imports | 2009

Computer, communications, and other services include such activities as international telecommunications; portal and courier services; computer data; news-related service transactions between residents and nonresidents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; and personal, cultural, and recreational services. The total volume of computer, communications, and other services imports is divided by the total volume of commercial service imports, defined as the total service imports minus imports of government services not included elsewhere.

Source: The World Bank, *World Development Indicators Online* (accessed in January 2011)

Pillar 7: Individual usage

7.01 Mobile telephone subscriptions

Mobile telephone subscriptions (post-paid and pre-paid) per 100 population | 2009

Mobile telephone subscriptions refers to subscriptions to a public mobile telephone service that provides access to the public switched telephone network using cellular technology, including number of pre-paid SIM cards active during the past three months. This includes both analogue and digital cellular systems (IMT-2000, Third Generation, and 3G and 4G) subscriptions, but excludes mobile broadband subscriptions via data cards or USB modems. Subscriptions to public mobile data services,
private trunked mobile radio, telepoint or radio paging, and telemetry services are also excluded. It includes all mobile cellular subscriptions that offer voice communications.

Source: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

7.02 Cellular subscriptions with data access

Percentage of cellular subscriptions with data access at broadband speed | 2009

Cellular subscriptions are subscriptions to mobile cellular networks with access to data communications (e.g., the Internet) at broadband downstream speeds (here defined as greater than or equal to 256 kilobits per second). Note that this corresponds to *potential* mobile broadband subscriptions and not active subscriptions. The denominator corresponds to the total number of post-paid and pre-paid subscriptions. Subscribers to fixed wireless, public mobile data services, or radio paging services are not included.

Sources: Authors' calculations; International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

7.03 Households with a personal computer

Percentage of households equipped with a personal computer | 2009

The proportion of households with a computer is calculated by dividing the number of households with a computer by the total number of households. A *computer* refers to a desktop or a laptop computer. It does not include equipment with some embedded computing abilities such as mobile cellular phones, personal digital assistants (PDAs), or TV sets.

Sources: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010); national sources

7.04 Broadband Internet subscribers

Broadband Internet subscribers per 100 population | 2009

A *broadband* Internet connection is any dedicated connection to the Internet of 256 kilobits per second or faster, in both directions. *Broadband subscribers* refers to the sum of DSL, cable modem, and other broadband (for example, fiber optic, fixed wireless, apartment LANs, satellite connections) subscribers.

Source: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

7.05 Internet users

Internet users per 100 population | 2009

Internet users are people with access to the worldwide network.

Source: International Telecommunication Union, *The World Telecommunication/ICT Indicators Database 2010* (accessed in December 2010)

Pillar 8: Business usage

8.04 Local office patent applications

Number of patent applications filed by residents at the national patent office per million population | 2009

Patent application counts are based on the filing date and the country of residence (or nationality, in the absence of a valid residence) of the first-named applicant. For more information about this indicator, refer to Box 3 in Chapter 1.1.

Sources: World Intellectual Property Organization (WIPO); national sources

8.05 Patent Cooperation Treaty applications

Number of international applications filed through the Patent Cooperation Treaty per million population | 2010

Application counts are based on the international filing date and country of residence of the first-named applicant. Data for Hong Kong SAR, Puerto Rico, and Taiwan are not available as these economies are not members of the United Nations. For more information about this indicator, refer to Box 3 in Chapter 1.1.

Source: World Intellectual Property Organization (WIPO)

8.06 High-tech exports

High-technology products as a percentage of total goods exports | 2009

The value of high-technology exports is expressed as a percentage of the value of the country's total goods exports (excluding re-exports). According to the World Bank, *high-technology exports* are products with high R&D intensity, as in aerospace, computers, pharmaceuticals, and scientific instruments. The classification of high-technology comes from the United Nations Industrial Development Organization (UNIDO) and corresponds to product groups 5, 6, 7, and 8 (excluding categories 667 and 68) in the SITC revision 3 product classification.

Sources: Authors' calculation; United Nations COMTRADE database (accessed in December 2010)

Pillar 9: Government usage

9.03 Government Online Service Index

The Government Online Service Index assesses the quality of government's delivery of online services | 2010

This index captures a government's performance in delivering online services to the citizens. There are four stages of service delivery: (*Emerging, Enhanced, Transactional,* and *Connected*). Every online service is assigned to a particular stage according to its degree of sophistication. In each country, the performance of the government in each of the four stages is measured as the number of services provided as a percentage of the maximum services in the corresponding stage. Examples of services include online presence, deployment of multimedia content, governments' solicitation of citizen input, widespread data sharing, and use of social networking. For more details about the methodology, visit the UN's Global E-Government Survey 2010's page at http://www2.unpan.org/egovkb/global_reports/10report.htm.

Source: United Nations, *UN E-Government Survey 2010: Leveraging e-Government at a Time of Financial and Economic Crisis*

9.04 E-Participation Index

The E-Participation Index assesses the quality, relevance, usefulness, and willingness of government websites for providing online information and participatory tools and services to the people | 2010

This Index captures the extent to which governments create an environment in which citizens can be more active and support their governments. The index takes into account e-participation in all its aspects, ranging from e-information to e-consultation and e-decision making. For more details about the methodology, visit the UN's Global E-Government Survey 2010's page at http://www2.unpan.org/egovkb/global_reports/10report.htm.

Source: United Nations, *UN E-Government Survey 2010: Leveraging e-Government at a Time of Financial and Economic Crisis*

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Vineet Nayar is Vice Chairman and CEO of HCL Technologies. Since 2005, first as President and then as CEO, he has led a remarkable turnaround that saw the company triple its revenues and income and enjoy robust growth even during the economic downturn. The transformative management practices he has introduced at HCL have been the subject of a Harvard Business School case study and have prompted *Fortune* magazine to characterize the company under his leadership as having "the world's most modern management." HCL has been cited by *BusinessWeek* as one of five "most influential emerging companies," and it was named Best Employer in India by the global human resources services company Hewitt Associates. Mr Nayar recounts the story of HCL's transformation in his book *Employees First, Customers Second: Turning Conventional Management Upside Down* (Harvard Business Press, 2010). He also is a regular blogger for *Harvard Business Review* (http://blogs.hbr.org/hbr/nayar) and at www.vineetnayar.com. He joined HCL in 1985 after earning his MBA from XLRI, one of the leading business management schools in Asia. In 1993, he created the start-up company Comnet, where he developed and implemented many of the ideas that are core to the Employees First, Customer Second philosophy. In 2005, he became President of HCL Technologies and in 2007 was named CEO. He became

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