

Fostering the Economic and Social Benefits of ICT

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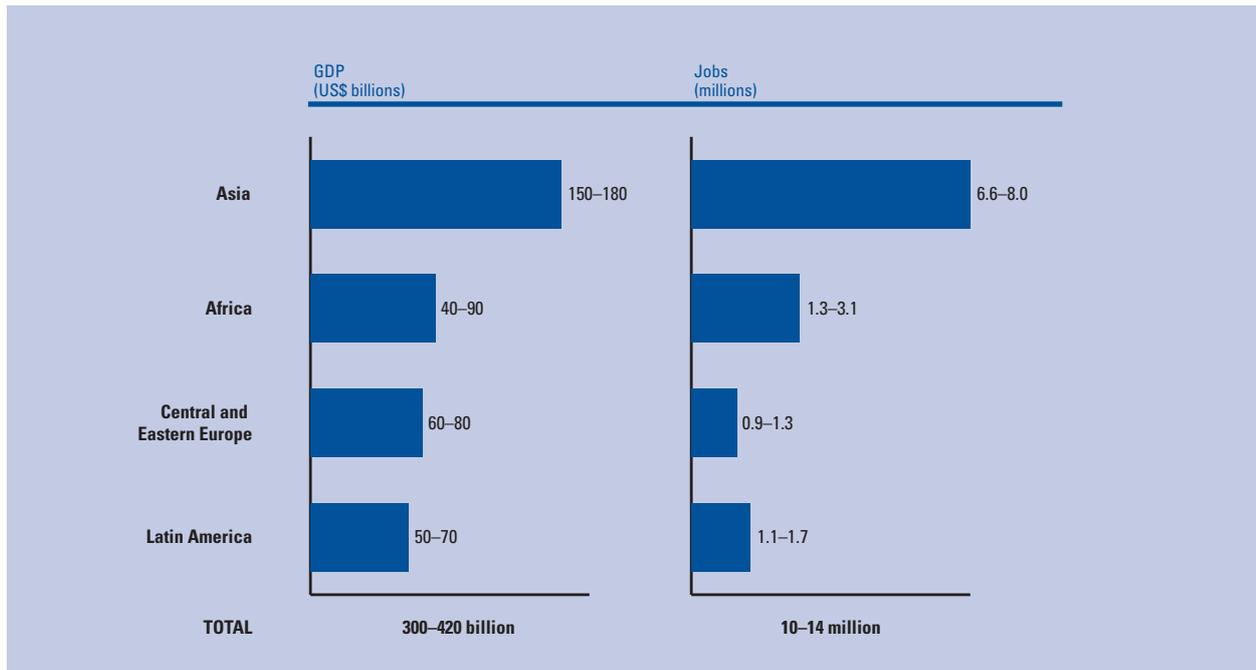
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The ICT industry—including telecommunications operators, computer and software producers, electronic equipment manufacturers—is playing an increasingly important role in the global economy. It created approximately 5 percent of total GDP growth between 2003 and 2008, and it represented 5.4 percent of world's GDP in 2008. That share is expected to reach 8.7 percent by 2020.¹ Because of its size and the nature of its products, the industry has a notable role to play in encouraging economic growth and contributing to other social goods, including improving education and healthcare access and services. Furthermore, recent McKinsey research shows that the ICT industry can potentially contribute to reducing worldwide CO₂ emissions by 15 percent in 2020—an enormous contribution—but we will focus here on the economic and social contributions of the industry.²

ICT enables economic growth by broadening the reach of technologies such as high-speed Internet, mobile broadband, and computing; expanding these technologies itself creates growth, and the fact that technologies make it easier for people to interact and make workers more productive creates additional benefits. McKinsey estimates, for instance, that just one action—bringing mobile broadband levels in emerging markets up to those of more mature markets—could add between US\$300 and US\$420 billion to the world's GDP and 10 to 14 million direct and indirect jobs in areas such as equipment manufacturing and outsourcing/offshoring services (see Figure 1).

ICT's role in enabling economic growth has become more significant as governments are investing to stem the effects of the global financial crisis. As US President Barack Obama noted in January 2009, “Increased broadband spending, electronic medical records, green energy investments, and new computers for schools and libraries are all smart ways to keep America competitive while also creating new jobs and spending.”³ And UK Prime Minister Gordon Brown has likened his government's efforts to extend the country's digital infrastructure to “the roads and the bridges and the railways that were built in previous times to stimulate the economy.”⁴ They are far from alone—Korea, Rep. (Korea) has long been a leader in broadband investment, and today countries from Greece to Malaysia have committed large amounts of money to develop their ICT sectors.

Beyond economic benefits, the ICT industry is uniquely positioned to help build a more socially sustainable future. McKinsey's most recent consumer survey shows that the ICT industry is perceived to be among the top four industries in terms of its potential contribution to society behind only healthcare, agriculture, and utilities (Figure 2). The importance of ICT increased more than any other sector since 2006,⁵ showing that consumers place growing importance on the industry as social contributor. And the recent crisis

Figure 1: Economic effects of leveling out mobile broadband penetration (top-down estimates)

Source: McKinsey & Company analysis.

Note: The figure shows absolute increases in each region. Assumptions are that mobile broadband reaches February 2009 levels of fixed broadband penetration in Western Europe (54 percent); an increase of 10 percent in broadband penetration leads to a 0.5 percent increase in GDP; employment elasticity of 0.5 percent.

has put even more pressure on all industries, ICT included. When one considers that no other industry in the world can reach out to over 4 billion mobile phone owners almost instantaneously,⁶ or that 422 million households worldwide were connected to the Internet at the end of 2009,⁷ this importance is hardly surprising.

Governments have also realized that ICT can offer social benefits, so they have started large programs to improve the level of health, education, and government services they offer to their citizens. For example, as we will explore later in greater depth, ICT is making an important contribution to health delivery: doctors can directly access their patients' medical records from anywhere.

Creating these economic and social benefits will require not only large investments and commitment from different stakeholders but also changes to existing regulatory frameworks, compromises between governments and industries, and strong public engagement. This chapter will detail how ICT drives growth, discuss the economic and social benefits it can create, and suggest some steps stakeholders should take to fully reap them.

Investing in ICT to drive economic sustainability

Countries have started to invest in ICT because they know that the sector can have a substantial positive impact on social and economic sustainability. Investing in ICT is a key driver of economic development for emerging and developed markets alike. Figure 3 shows

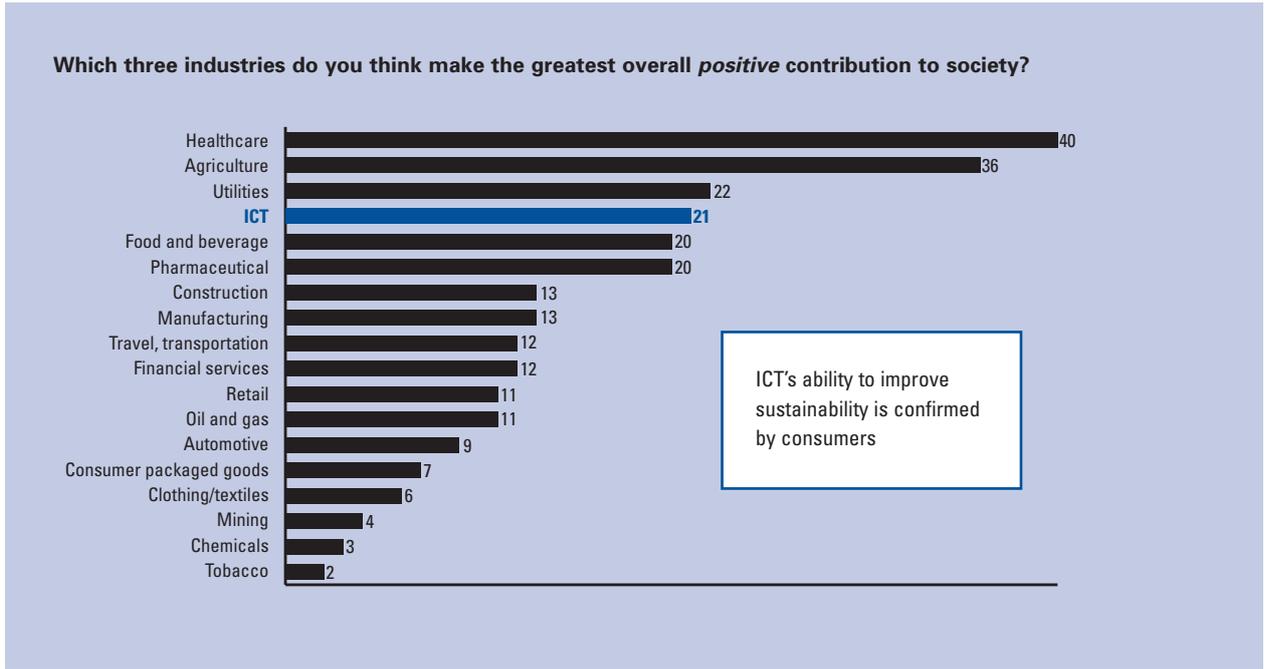
the correlation between ICT readiness—the availability of broadband, computers, and software in a country—and competitiveness. The countries with the most-advanced ICT sectors present the highest levels of competitiveness, suggesting that having a country enabled by ICT improves the overall performance of its economy in the long run.

In fact, investing in ICT can help countries increase their annual GDP growth by 0.6–0.7 percent on average, on an annual basis, for each increase of 10 percent in household penetration, as several studies have shown (Figure 4).⁸

This impact is created by a combination of direct and indirect effects on the economy. Direct effects come from investments in infrastructure (by government and operators), increased availability and penetration of services, and increased employment in the ICT sector.

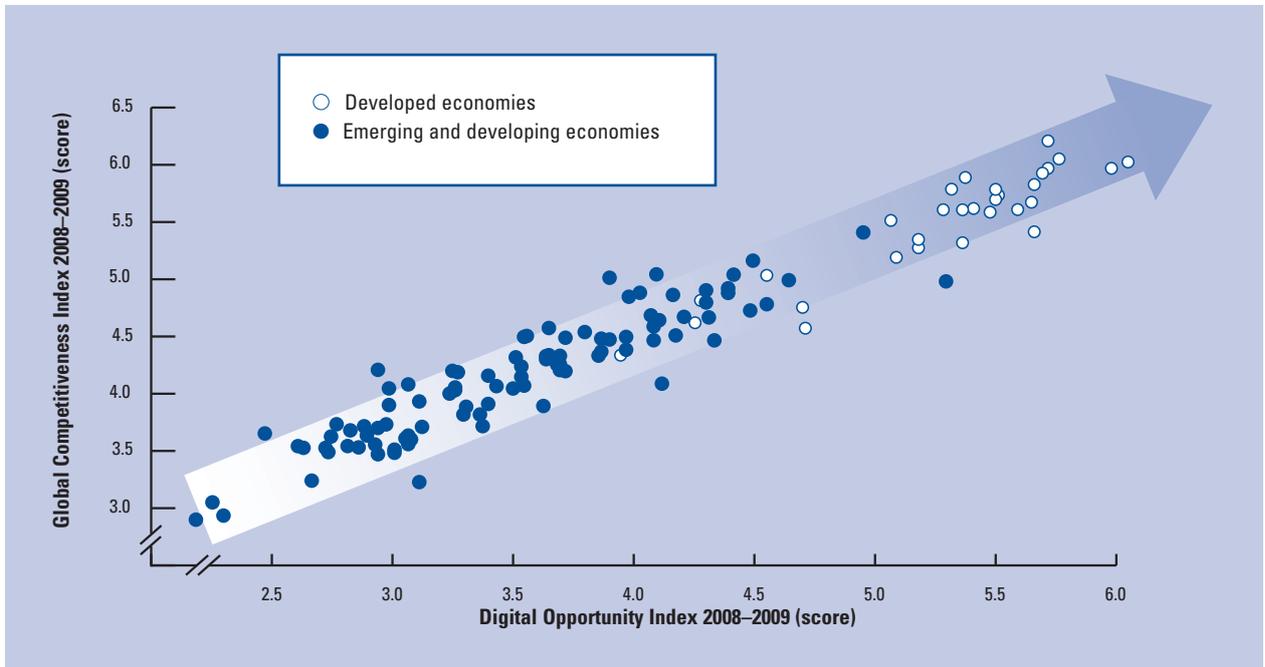
A good example of direct effects is seen in Korea, where growth in the ICT sector was 43 percent between 1999 and 2003; in the same period, it was negative in Japan, less than 1 percent in Malaysia, and 5 percent in Singapore.⁹ Korea drove this growth by pushing forward a national vision to develop its ICT sector; this required a concerted effort between public and private parties and large subsidies from the state. The country invested more than US\$700 million in subsidies between 1995 and 1997 to link around 15,000 institutions in 80 major areas of the country with high-speed fiber networks. It also provided low-interest loans with minimal paper work for individuals to acquire personal computers

Figure 2: Perceived ICT contribution to society (percent of respondents)



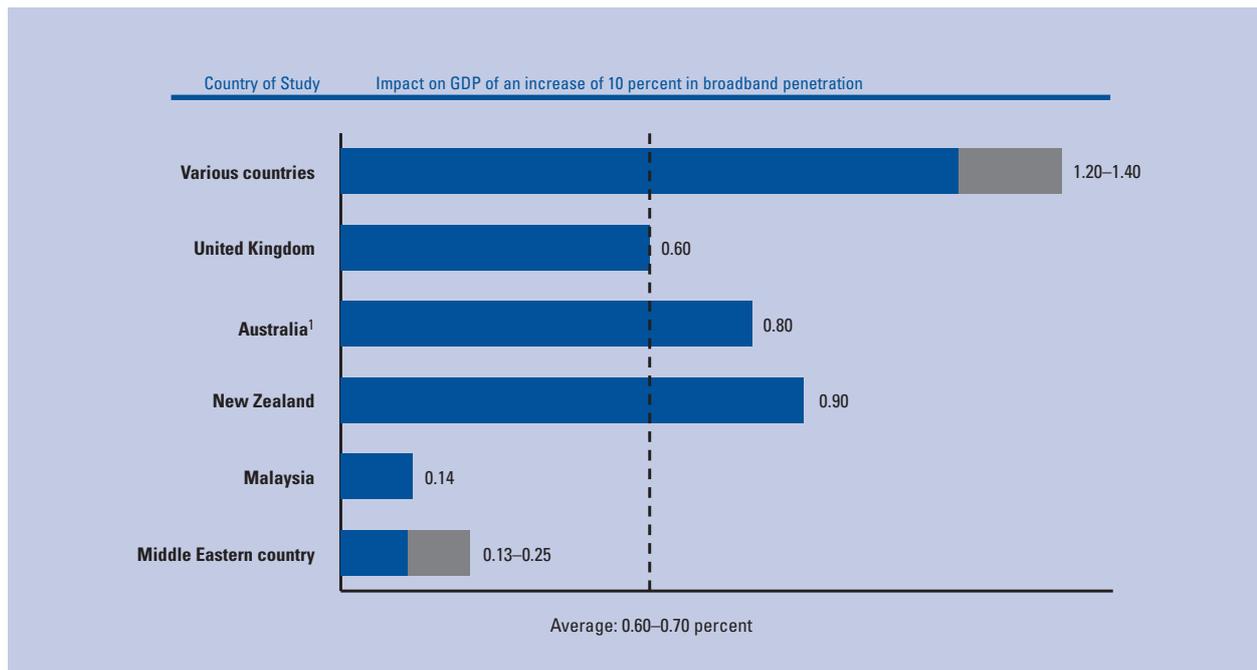
Source: September 2008 McKinsey survey of 4,787 consumers around the world.

Figure 3: ICT readiness vs. competitiveness



Source: World Economic Forum, Competitiveness Index 2008–2009; McKinsey, Digital Opportunity Index 2008–2009.

Note: The Global Competitiveness Index is a composite index of indicators relating to institutions, infrastructure, macroeconomic environment, health, education, market efficiency, technological readiness, business sophistication, and innovation. The Digital Opportunity Index is a composite index of indicators relating to coverage/access, tariffs, equipment penetration, and broadband adoption.

Figure 4: Investment in broadband and economic growth

Source: Qiang and Rossotto, 2009; CEBR, 2003; ACIL Tasman, 2004.

Note: Gray boxes refer to the range indicated.

¹ Tasmania region only.

(PCs) and budgets for the purchase of PCs for teachers and schools. The results are not only 99 percent broadband household penetration but also an ICT sector that is heavily entrenched in Korea's economy: it represents 17 percent of the country's GDP—making the largest contribution by any single sector—and it accounts for over 43 percent of total exports from the country.¹⁰

The direct effects of ICT can also be seen in bringing ICT services to remote, underserved areas. In this case, direct investments will bring job creation and extra spending that benefit the population in these areas. Telefónica, for example developed the Intégrame initiative in Peru, which aims at extending ICT services via public-private partnerships. As a result of these partnerships, mobile, landline, Internet access, and television services are now offered using wireless technology at better tariffs to 62,300 people in 180 locations throughout the country. Further, Intégrame has opened new markets for Telefónica and increased the speed of social and economic development through the inclusion of rural communities.¹¹

ICT's indirect effects include productivity gains for businesses, increased foreign direct investments as a consequence of a country being ICT-enabled, the creation of innovative industry clusters such as knowledge cities, and higher exports of ICT services such as outsourcing.

The Indian Tobacco Company, an Indian conglomerate, illustrates ICT productivity gains for an economy. Their agri-business division, one of India's

largest exporters of agricultural commodities, created e-Choupal in 2000 as a supply chain management system to reach farmers. These have traditionally sold their products through inefficient physical marketplaces where they are forced to take whatever price is offered because they have limited access to information on market prices. E-Choupal, a kiosk with computers and Internet access, is a virtual marketplace where farmers can sell their products (e.g., soy, tobacco, wheat, shrimp) directly to producers, without paying fees to traders or commissions to agents. The tool also provides information in local languages about the weather, market prices, and farming best practices, as well as general news. According to Mr Singh, a farmer in the northern state of Uttar Pradesh, annual incomes in Kurthia have risen from up to Rs50,000 (~€800) before e-Choupal to Rs100,000–Rs120,000 (~€1,600–1,900).¹²

E-Choupal has been useful not only for users but also for ICT, because it has created profitable direct access to farmers and raw materials without intermediary fees. As of 2009, e-Choupal had reached 4 million Indian farmers in 40,000 villages through 6,500 kiosks; the goal is to reach 10 million farmers by 2012.¹³

The social benefits of ICT

Beyond encouraging economic growth, the ICT industry is helping to achieve social sustainability by improving the way societies and governments provide education, healthcare, and services to citizens. Additionally, the ICT

industry is changing the way people interact with each other, creating longer-term and largely positive changes in a variety of areas.

ICT's impact on education

The ICT sector has already dramatically changed the way people study. A wide range of information is available free on the Internet—something that was unthinkable just 20 years ago. The use of email, websites, and virtual classrooms and libraries has proliferated, facilitating the sharing of information on a large scale.

Some countries have set specific initiatives to improve education through ICT. For instance, the deployment of the Jordan Education Initiative (JEI), a public-private partnership that aims to improve education in Jordan through the effective use of ICT, was launched in 2003 with the support of the World Economic Forum. Partnerships with multinational companies such as Microsoft and Cisco have enabled the equipment, with computer labs and broadband Internet, of 100 “Discovery Schools” around the country, along with the creation of e-learning curricula for 50,000 pupils and information technology (IT) training schemes for 3,200 teachers.¹⁴ The performance of Jordan's students is higher in Discovery Schools than in other schools, and higher levels of education are key to reducing unemployment and poverty.

Another interesting example of an e-education program is in South Africa, a country with a 30 percent adult illiteracy rate. In partnerships with local communities, IBM has implemented labs in schools and associations that use a free Web-based program called Reading Companion. The program employs an innovative speech-recognition technology that listens, guides, and teaches children and adults to read English and improve their literacy skills.¹⁵ For children, the software provides a solid grounding in reading, while it allows adults to gain literacy skills that will help them to search for a job and obtain a driver's license, among many other things. According to IBM, independent evaluations of the technology have shown that young students using the software tested significantly higher on word recognition and comprehension tasks. For adults, the software improved English pronunciation and reading skills, contributed to learning gains, and enabled greater comfort with technology. Access to Reading Companion will be expanded to over 1,000 schools in South Africa over the next three years.¹⁶ In addition, more than 600 sites, schools, and nonprofit organizations are using Reading Companion in 22 countries.¹⁷

ICT's impact on healthcare

The use of ICT for health (e-health) has the potential to transform healthcare by efficiently connecting people and improving information sharing. Currently, e-health is predominantly seen in developed countries. But as the availability of ICT spreads rapidly in the

developing world, there is an opportunity to expand healthcare access to areas where distance, poverty, and scarce resources are currently barriers to even basic care.

Thanks to ICT, doctors can access patients' medical records more easily, have immediate access to test results from a laboratory, and deliver prescriptions directly to pharmacists. Patients with heart problems can carry monitors, which alert their doctors if their conditions change yet allow them to continue with their daily lives as usual.

Denmark is a leading country in national healthcare information exchange, with the successful development of its national e-health plan. The healthcare portal was created in 2003 to enable patients to view their medical profiles and histories, renew their prescriptions, book appointments with doctors, and so on.¹⁸ Healthcare professionals also have access to the same information and additional clinical knowledge. Through the careful use of IT, the Danish health system has saved money, improved efficiency, and laid the foundation for improvements in the quality of care.¹⁹

Another example is a major hospital chain in India, Apollo Hospitals. In collaboration with a leading provider of telecommunications and data communications systems, they are providing basic diagnostics (blood pressure), medical check-ups, and consultation via mobile services.²⁰ This project will enable the provision of affordable and accessible healthcare to millions of people in remote areas.

ICT's impact on government services

Early breakthroughs in e-government—such as the use of ICT to provide and improve public-sector services, transactions, and interactions—have enabled government organizations to deliver better services more efficiently. In many countries, more than 70 percent of taxpayers now file taxes electronically, for example, and many other transactions—ranging from renewing drivers' licenses and paying parking tickets to managing government benefits—can be conducted online. Citizens have a much easier and faster access to government services.

In Singapore, for example, citizens can buy replacement identity cards online by submitting digital passport-sized color photographs and scanned copies of existing identity cards. Also, when citizens are changing their residential address, they need to submit just one single report and all government agencies, educational institutions, and selected private companies will automatically be notified. A customer perception survey conducted by the Ministry of Finance and Infocomm in Singapore showed that, in 2008, 85 percent of respondents made transactions with government electronically, and 88 percent were satisfied, for four main reasons: it is easy to find information, it is user-friendly, the transaction is fast, and it is easy to complete.²¹

In Malta, to take another example, citizens can purchase online copies of personal documents for

themselves and family members (e.g., birth, marriage, and death certificates) dating back to the 1880s. Benefits for governments that are offering these types of services are huge. “As recent research shows,” noted Eurochambres Secretary-General Arnaldo Abruzzini in November 2009, “electronic procedures will lead to more bidders and thus increased competition, which could create savings in the order of €150 billion EU-wide.”²²

Improving information access and communications

ICT is changing the way people access information (with Google and Wikipedia, for example) and interact with each other (through blogs, social networking sites, virtual reality sites, and so forth).

Social networking websites have changed the job recruitment rules. Today these sites are *the* places to find a job and recruit talent. A recent survey, conducted in May 2009, revealed that 72 percent of US companies plan to increase their use of social network recruiting. Ninety-five percent of companies used LinkedIn; Facebook use by companies grew from 36 percent in 2008 to 59 percent in 2009.²³ Interestingly, it also seems that employers are more satisfied with the quality of candidates from employee referrals and social networks than of those from job boards. From the candidate’s point of view, a recent survey showed that today 6 percent of respondents found their last job via a social networking site—which is fairly high when one takes into account that these websites started to acquire a critical mass only a few years ago.²⁴ It seems likely that such sources for job hunting and recruiting will only grow in importance given their overall growth in use.

The latest presidential election in the United States heavily leveraged these types of social networking websites. Internet users could have a connection with then-Senator Obama on more than 15 social networking sites,²⁵ meaning that regardless of Internet users’ preferences, all of them could connect with Obama’s pages. For instance, on Facebook, the largest group of Obama’s supporters is composed of 1 million people, the Obama MySpace page currently has 1.9 million friends,²⁶ and Obama has 3.1 million followers on Twitter.²⁷ He also created his own social network website, MyBarackObama.com, where 2 million profiles were created.²⁸ The large network created by online channels allowed Obama to reach out to people who had not been involved in politics before and would have not been involved otherwise.

The power of the change generated by social networks was also evident when a 25-year-old Moldovan woman put a message in Twitter after she and her six other friends were discussing doing something about the recent—and allegedly fraudulent—parliamentary elections. This message created a demonstration that raided the parliament and pushed the Moldovan president to order a recount of the recently held elections.

Speaking about the power of Twitter, the woman said “we expected at the most a couple of hundred friends, friends of friends, and colleagues [...] when we went to the square, there were 20,000 people waiting there. It was unbelievable.”²⁹

All these examples show new ways in which innovative ICT technologies are having a profound impact on the way people interact and communicate with each other. Many of these technologies will undoubtedly lead to new social benefits.

Unleashing the potential of ICT requires investments

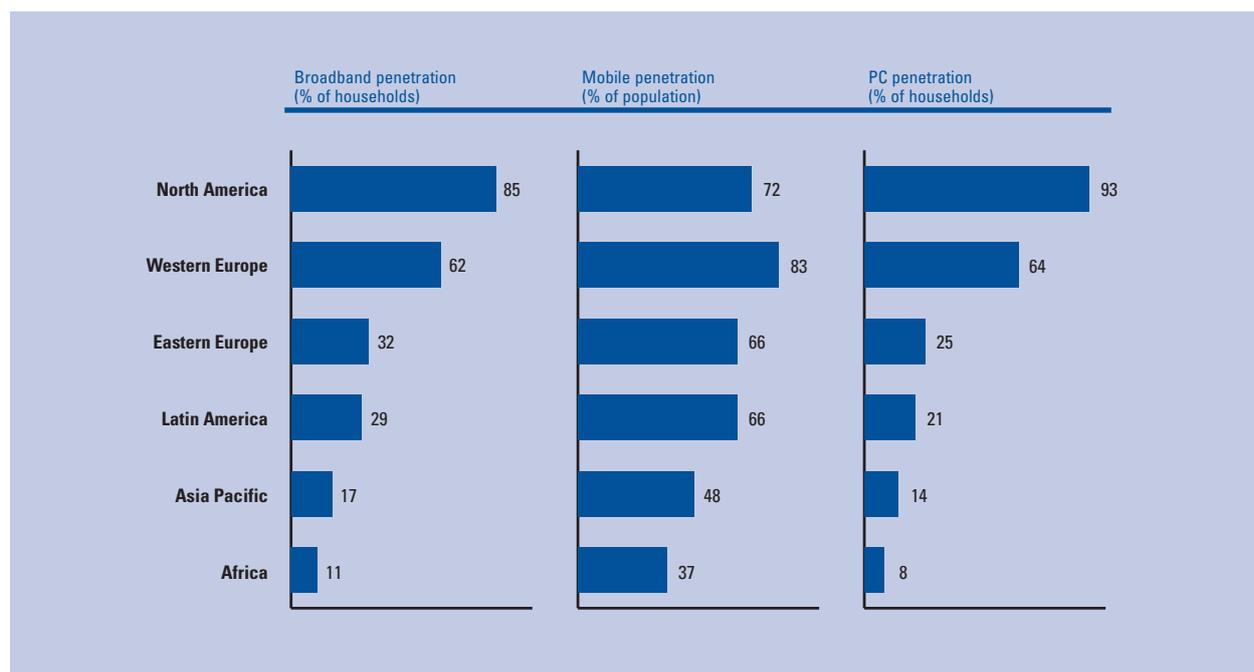
The economic and social benefits of ICT are clear. However, this impact could be significantly increased if the penetration of ICT, including mobile phones, broadband, and PCs, was expanded. Figure 5 shows the coverage of these technologies in the different regions of the world. Developed countries have room to continue to expand their current penetration of these technologies, but also—and possibly more pressing—emerging economies need to close the gap with more advanced economies to reap the benefits of ICT. If they can, ICT will likely bring them even more significant benefits than it will to developed economies.

Increasing the penetration levels of high-speed broadband, mobile, and PCs was in developed and developing countries will be extremely costly and is not likely to be profitable for ICT companies alone. For example, in the EU15 countries, McKinsey estimates that the capital investments required to bring high-speed, fixed broadband networks will be as much as €250–300 billion over the next couple of years.³⁰ But in this same region, the industry will generate some €250 billion in cash flows over the next five years.³¹ That means that the industry would need to invest all available cash to build these networks, leaving nothing for maintenance or other types of network upgrades, or anything else. At its current investment rates, the industry would take some 15 years to roll out new networks. The situation is obviously even more unbalanced in emerging economies, where penetration levels are lower—and consequently the necessary investments would be higher—than in Europe.

The estimates above indicate that governments, at least in Europe, will need to invest large amounts of money to enable their countries with ICT. Making these investments work will require a concerted approach among all industry stakeholders.

All stakeholders need to adapt their strategies and cooperate

It is no easy task to align the interests of the various stakeholders when so much is at stake: ICT companies seek revenue, governments seek access to innovative services and tax revenues as well as economic growth,

Figure 5: ICT penetration rates, by region (2008)

Source: Pyramid Research data, Q3 2008; World Cellular Information Service (WCIS) online database, accessed October 2009.

and regulators seek consumer welfare and competition. Countries that manage to bring the different agendas together will see faster adoption of ICT and will be better positioned to benefit from it. Below there are some suggestions for each group.

Government's role: To build and support ICT strategies

Governments around the world are acknowledging, sooner or later, that the benefits of ICT are great and also that the business case is difficult for ICT companies. The main role of the government should be to help craft and support a vision for the ICT sector that can bring the interests of the different parties together and put them to work toward a common goal. The best way to do this is by:

Creating a strong ICT vision and strategy

Governments around the world are realizing that having an ICT vision matters—they need to understand how their ICT sector can best enable other parts of their economies and social interests in order to convene industry stakeholders and align them to work toward that vision.

Governments in the most networked countries have done just that. Singapore, for instance, has a vision of becoming an information society by 2015. To do this, its government has put in place a strategy called *Singapore i2015*, which, according to Vivian Balakrishnan, Singapore's minister for communication, seeks to "double the value added of the ICT industry to \$17

billion, to triple ICT exports to \$40 billion, to quadruple software and IT services revenues to \$24 billion, and finally to create of 80,000 new jobs, achieve a household broadband penetration rate of 90 percent and ensure that every household with school-going children will own a computer with connections to the Internet."³²

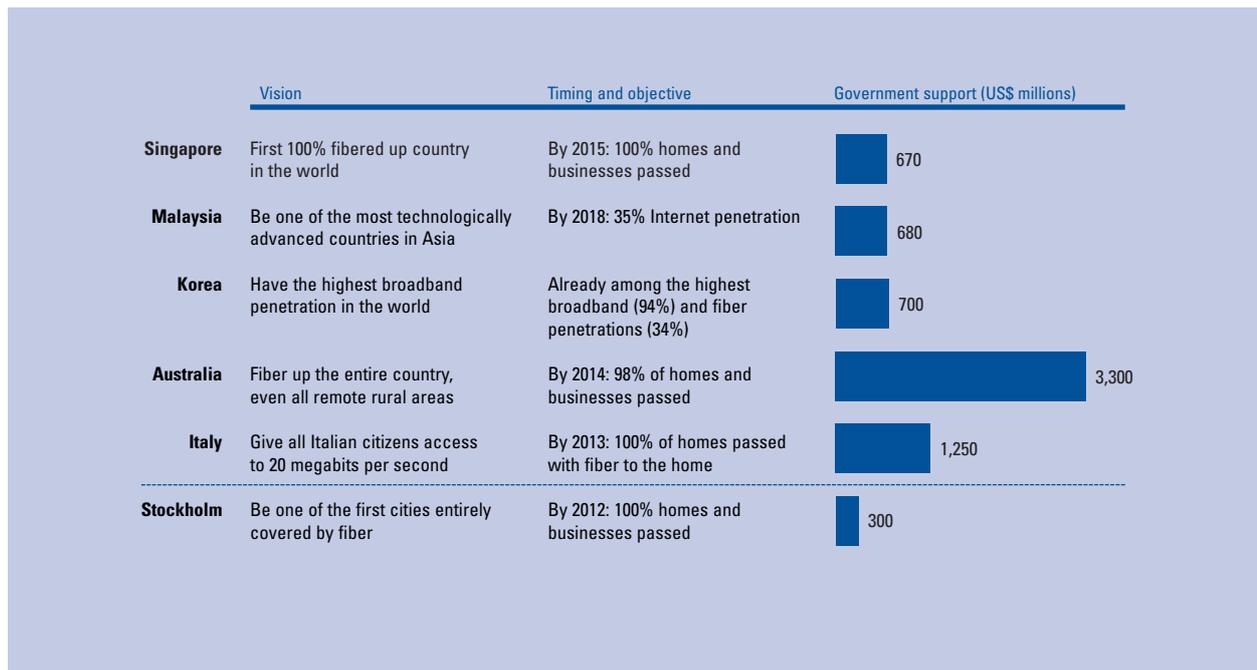
The Singaporean government is working on stimulating the demand for ICT services by sponsoring a broad range of programs such as e-learning, e-health, and e-government. It is creating initiatives to put several sectors of its economy at the global technological forefront. The e-logistics program, for example, aims at orchestrating supply chain processes in the logistics industry, which includes the busiest port in the world in terms of tonnage, to increase manufacturing productivity in Singapore.

Supporting the ICT strategy financially

Initial government financial support to a country's ICT strategy is crucial since economic benefits and demand for some of the new services will necessarily be unclear for industry players. Many countries in the world have made significant investments in the past couple of years (Figure 6).

The industry's role: Deploying state-of-the-art networks and creating innovative products

The ICT industry—more specifically, ICT companies—should re-examine its potential and take advantage of its significance in order to create social, economic, and

Figure 6: Announced government support for ICT development

Source: McKinsey & Company analysis.

environmental benefits. This is not an industry that should be looking for profit alone; it is an industry that is part of the solution for many countries that face key challenges such as climate change or economic development for their people. Other industry stakeholders, such as governments and regulators, will start to expect more and more from the industry. Failing to participate in helping countries and people reap the benefits of ICT can actually put the industry's current business models at risk, if, for instance, unfavorable regulations were to be passed.

Industry stakeholders can do this by concentrating on what they do best: deploying state-of-the-art networks that all citizens can access and developing innovative products that help countries increase their social, economic, and environmental sustainability. If done strategically, many sustainability activities create financial value for the ICT industry. Other recent McKinsey research shows that these activities can create financial value along the four dimensions of value the market typically assesses: growth, return on capital, risk management, and management quality.³³

The regulators' role: Creating the right incentives for industry to develop the ICT sector

Regulators and competition authorities will need to manage the way they design industry incentives carefully. They must allow the industry to generate enough profits to make their investments affordable while maintaining low enough prices to promote adopting the service.

It is this wide service adoption that will enable most of the potential social and economic benefits.

The challenge for regulators is not an easy one. It can be illustrated by what is currently one of the hottest debates in the industry: the network neutrality debate. In this discussion, network operators (mobile and fixed) are trying to differentiate the way in which data are handled on their networks by giving higher or lower priority to different content. For example, if a content provider would like some types of services to reach the final customer faster (a video, for example), it would need to pay an extra fee. Network operators do not want companies using their expensive networks free of charge; content providers do not want to pay for the use of networks when they never had to pay for this before. Both groups have strong positions that offer benefit to society in different ways—faster networks versus more content availability. The way regulators resolve the issue will have significant effects on industry structure.

ICT is an increasingly important industry economically, and—because of the nature of its products and services—one that can create significant benefits for society as well. Increasing the reach of ICT creates economic growth and enables better healthcare, education, and government services, among many other social benefits. And all this can happen while ICT reduces its carbon emissions.

The key to reaping ICT's economic and social benefits is cooperation among the industry, regulators, and government policymakers. Government has a central

role to play: in countries that have succeeded with ICT investments, government has provided both a clear strategy and crucial initial funding. We hope that a better understanding of ICT benefits will encourage all stakeholders to work together on the next generation of ICT investment.

Notes

- 1 McKinsey analysis; data are from Global Insight, timeframe 2003–20.
- 2 The Climate Group 2008.
- 3 Obama 2009.
- 4 Brown made these remarks in an interview with *The Observer* in January, 2009. See Hinsliff 2009.
- 5 McKinsey consumer surveys in July 2006, September 2007, and September 2008.
- 6 ITU World Telecommunication/ICT Indicators Database, 2009.
- 7 Gartner 2009.
- 8 The impact of the ICT sector is likened to that of investing in high speed Internet access. See Qiang and Rossotto 2009; CEBR 2003, and ACIL Tasman 2004.
- 9 McKinsey analysis; data are from Global Insight, timeframe 1999–2003.
- 10 Ministry of Information and Communication (MIC) of Korea.
- 11 Telefónica website, Intégrame case study, available at <http://www.telefonica.com/ext/rc08/atlasrc/cspages/site/casestudypopup-en-08073.html>.
- 12 Yee 2008; see also <http://www.echoupal.com/>.
- 13 ITC Infotech's presentation to the German Global Compact Network, June 4, 2009, Berlin.
- 14 See <http://www.weforum.org/en/initiatives/gei/Jordan%20Education%20Initiative/index.htm>.
- 15 See IBM, Corporate Citizenship & Corporate Affairs, Grant Programs, available at <http://www.ibm.com/ibm/ibmgives/grant/adult/ReadingCompanion.shtml>.
- 16 See IBM 2008.
- 17 See IBM 2008.
- 18 See www.sundhed.dk.
- 19 Edwards 2006.
- 20 Ericsson website, www.ericsson.com/thecompany/press/releases/2008/06/1225191, Corporate Social Responsibility Report 2008.
- 21 According to the Infocomm Development Authority (IDA) of Singapore website (<http://www.ida.gov.sg/Publications/20090717150535.aspx>), the E-Government Customer Perception Survey was conducted in March 2009 with 1,200 respondents above the age of 15.
- 22 Vandystadt 2009.
- 23 "2009 Social Recruitment Survey Results," Jobvite survey, May 2009 in the United States with 438 respondents (human resources and talent management professionals). See <http://recruiting.jobvite.com/2009-social-recruitment-survey.html>.
- 24 Linked-In Survey realized online since February 2009 with 4,300 respondents in November 2009. See http://www.linkedin.com/osview/canvas?_ch_page_id=1&_ch_panel_id=1&_ch_app_id=7231830&_applicationId=1900&_ownerId=0&appParams={%22uri%22:%22Yanswers\show/20649%22.
- 25 Vargas 2008.
- 26 MySpace website, as of January 2010.
- 27 Twitter website, as of January 2010.

- 28 Melber 2008.
- 29 Stack 2009.
- 30 McKinsey estimates, assuming 50 percent of homes passed with Fibre To The Home (FTTH) and 40 percent with Fiber to the Curb (FTTC); estimated upgrade cost for FTTH of € 1,100–1,400 per household.
- 31 McKinsey estimates.
- 32 Balakrishnan, 2007.
- 33 Mirvis and Ryu 2009.

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