

Smart policies to close the digital divide

Best practices from around the world

A report from the Economist Intelligence Unit



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About the report

Smart policies to close the digital divide: Best practices from around the world is an Economist Intelligence Unit report, sponsored by Tele2. Kim Andreasson was the author and Jason Sumner was the editor. Denis McCauley provided advice and guidance throughout the project. The report draws on wide-ranging desk research and interviews with experts and policymakers to uncover successful policies to close gaps in digital access. The Economist Intelligence Unit would like to thank the following experts for their time and insights (listed alphabetically by surname).

- Rodrigo Baggio, founder and president, Center for Digital Inclusion, Brazil
- Doojin Choi, executive director, Digital Inclusion Policy Division, National Information Society Agency, South Korea
- Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, Australia
- Torbjörn Fredriksson, head of the ICT Analysis Section, Science, the Technology and ICT Branch of the Division on Technology and Logistics, United Nations Conference on Trade and Development
- Boris Japarov, general director, Kazakhstan Research & Education Networking Association, Kazakhstan
- Yuanfu Jiang, director of E-Government Department, E-Government Research Center, Chinese Academy of Governance, China
- Vikas Kanungo, chairman of the Society for Promotion of e-Governance, India, policy adviser on mobile governance to the Government of India, and senior consultant to the World Bank
- Neelie Kroes, vice-president of the European Commission responsible for the Digital Agenda
- Herbert Kubicek, director of the Institute for Information Management Bremen and scientific director of the Digital Opportunities Foundation, Berlin, Germany
- Tim O'Leary, chief sustainability officer, Telstra, Australia
- Haiyan Qian, director, Division for Public Administration and Development Management, United Nations Department of Economic and Social Affairs
- Olli-Pekka Rissanen, special adviser for public sector ICT to the Ministry of Finance of Finland and chairman of the governing board of the Information Society Development Centre, Finland
- Felicity Singleton, head of policy for the Government Digital Service, Cabinet Office, United Kingdom
- Lawrence E Strickling, assistant secretary for communications and information, and administrator, National Telecommunications and Information Administration, United States
- Evgeny Styrin, senior researcher, Center for Government Activity Analysis, Higher School of Economics, Russia
- Hamadoun Touré, secretary-general, International Telecommunication Union
- Mark Warschauer, professor in the Departments of Education and Informatics; founding director of the Digital Learning Lab, University of California, Irvine, United States

Executive summary

The socio-economic benefits of the information society are rising rapidly as essential information and services, both in the public and private sectors, continue to move online. At the same time, as this trend accelerates, those excluded from the digital economy are increasingly at a disadvantage. Despite the benefits of online access and the disadvantages of being left behind, numerous digital divide hurdles remain across the world, both within countries and also between them.

Emerging markets in particular still struggle with achieving basic online access for a majority of their residents. Mobile devices have helped to establish a new delivery channel but divides remain in providing affordable access for everyone, and in extending third-generation (3G) network coverage and introducing high-speed fourth-generation (4G) access.

In developed countries, access has increased substantially over the past decade but there is now a necessity to move beyond providing basic access to enhancing levels of education and skills in information and communication technologies (ICT) in order to make the best use of digital channels. Those remaining offline are also the hardest to reach and yet are most often in greater need of digital inclusion as the rest of society forges ahead.

Meanwhile, new technology initiatives—from the inventive use of SMS-based services in rural areas to deployment of high-speed fixed and mobile broadband networks in urban centres—have given rise to new digital divides across the world. This has also opened up digital shortfalls, such as a lack of localised content for these new access channels.

This report, based on extensive desk research and wide-ranging interviews with experts from more than ten developed and emerging-market countries, presents best practices that have been adopted by governments and the private sector globally to bridge digital divides. To seize the full economic and social potential of the information society, this report identifies six areas in which smart policies can improve online take-up. Case studies from the developed world and emerging markets highlighting smart policies are provided in separate sidebars throughout the report. The key lessons are as follows:

- **Making the case at the highest levels.**

Although agreement is nearly universal about the benefits of the information society, the business case must be made at the highest levels of government in order for policymakers to prioritise it and set strategic targets. This is important in ensuring that the digital divide does not also become a next-generation divide as

countries introduce enhanced technologies, such as higher-speed access.

- **Access still comes first.** Nothing is more fundamental to bridging the divide than providing access to ICT in the first place. Despite strong attention to this imperative, developing countries continue to have low numbers of online users. Developed countries have seemingly high numbers of users but face a different set of challenges. The former needs to focus on providing greater coverage for rural areas as well as faster mobile solutions, while the latter must better educate users and those remaining offline about the benefits of ICT.

- **Competition leads to lower costs, more usage.** Competition generally stimulates demand for ICT and online services, as well as in terms of usage. In mobile markets, for example, the link between open markets and affordable services shows why some countries and regions have higher adoption rates than others. To bridge divides in this area, policymakers everywhere need to establish competitive markets through strong and transparent regulations.

- **Measure what matters, especially “useful usage”.** Even after countries have achieved high levels of access to ICT, new digital divides await. One is what users do with their access. Measuring

productive usage challenges governments to find new ways of assessing progress in closing the digital divide, a necessary element in making it a policy priority. In this regard, some countries have created their own bespoke assessments, whereas most look to international comparisons and benchmarking reports.

- **Enhancing ICT skills: A role for the private sector and NGOs.** Lack of education and ICT skills are among the most commonly cited digital divides. To ensure that social divides do not also become digital divides, the public sector must better integrate ICT into education initiatives. However, there are also strong reasons why they should encourage non-governmental organisations (NGOs) and the private sector to provide innovative programmes to bridge the divide.

- **Stimulate local content creation and consumption.** Even if other divides are overcome, a gap in access to local information and services, which can help to increase usage, remains. Many countries, particularly emerging markets, have seen new local content initiatives but more can be done as this is a future strategic imperative for the public sector and a private sector opportunity.

Defining the digital divide

There are many definitions of the digital divide. Some view it primarily as a technological gap, in terms of access to, and usage of, ICT. Others, however, take a broader perspective. “The digital divide refers to social stratification due to unequal ability to access, adapt and create knowledge via use of information and communication technologies,” says Mark Warschauer, professor in the Departments of Education and Informatics and founding director of the Digital Learning Lab, at the University of California, Irvine. For this report, the Economist Intelligence Unit has

defined the digital divide in similarly broad terms. When it comes to technologies, the report considers fixed and mobile networks and devices with equal weight, but also attaches importance to the applications and services that run over those networks. The report also employs the term “e-inclusion” as one strategy to overcome the divide, going beyond access to also include usage of both public and private sector services.

Introduction

New imperatives for bridging the digital divide

The digital divide is not a new phenomenon: numerous experts and reports have addressed the divide over the years. However, the rapid development of the information society has created new imperatives for policymakers to bridge the gap further. They include clear economic benefits, social inclusion and constantly improving technologies that will leave the excluded even further behind. This section outlines the evidence behind these factors and summarises a variety of “divides” (see box). The report then addresses the six areas where smart policies can do the most to close the digital divide.

¹Champion for Digital Inclusion: The Economic Case for Digital Inclusion (October 2009): www.parliamentandinternet.org.uk/uploads/Final_report.pdf

²http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Internet_matters

³http://ec.europa.eu/information_society/newsroom/cf/fiche-dae.cfm?action_id=215
<http://blogs.ec.europa.eu/neelie-kroes/digital-champions/>

Economic benefits

In 2009 PwC, a global accounting and advisory firm, found that 10.2m adults in the UK remained offline, including 4m of whom it considered “socially excluded”.¹ The benefits of getting them online were clear: PwC calculated that moving from offline to online transactions could save the government between £3.30 and £12 per transaction. Between cost savings and productivity gains, the report also calculated that if everyone in the UK were online, the total economic return would be at least £22bn. In 2011

the McKinsey Global Institute, a consultancy research arm, estimated that the Internet’s contribution to GDP was 3.4% across the G8 countries plus South Korea, Sweden, Brazil, China and India. Within this group, the Internet’s share of GDP is currently lowest in Russia (0.8%) and Brazil (1.5%) and highest in Sweden (6.3%), illustrating that developing countries not only need to catch up but that there are also great potential benefits if they can.²

Social inclusion

Closing the digital divide is in the interests of business and civil society as well. “The economy of the future is digital,” says Neelie Kroes, vice-president of the European Commission responsible for the Digital Agenda, the European effort to maximise the benefits of the information society. “Today it’s hard to think of many jobs where familiarity with computers and the Internet is not helpful.” The Commission reckons that, by 2015, 90% of all jobs there will require some level of digital literacy.³

The need for speed

Next-generation networks, such as fast and ultra-fast fixed and mobile broadband, are proliferating, but the rapid improvements in speed in some countries threaten to leave others behind. For example, Sweden currently

has 1Gbps connections; the top speed in Kazakhstan is about 100Mbps, or one-tenth of Sweden's level. "The speed of the Internet connection is one of the main indicators by which we measure the digital divide," says Boris Japarov, general director of the Kazakhstan Research & Education Networking Association, an organisation dedicated to supporting higher education initiatives in the country. Higher speed is a crucial element for his network of universities to collaborate with their European and American counterparts. "We just have to catch up," Mr Japarov says. There is evidence that adopting high-speed broadband correlates with further economic benefits. The Broadband

Commission, an initiative by the International Telecommunication Union (ITU, the UN agency responsible for ICT), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) looked at five studies and found that a 10% increase in broadband adoption could improve growth between 0.2% and 1.5%.⁴ One of the studies cited, the World Bank's 2009 report on Information and Communication for Development, specifically noted that in low- and middle-income countries every 10% increase in broadband penetration could increase economic growth by 1.4%.⁵

⁴<http://www.broadbandcommission.org/About/background.aspx>

⁵http://siteresources.worldbank.org/EXTIC4D/Resources/IC4D_Broadband_35_50.pdf

From ability to usage: A summary of divides

There is not just one “divide” but several. In some countries, basic access is the main concern; in others, it is making usage more productive and enhancing ICT skills. Countries also face multiple divides simultaneously. Following is a summary of divides found around the world.

Ability	The capacity to use available access varies between groups, particularly among people with disabilities; this is a global issue as, according to the UN, about one-fifth of the world’s population suffers from a disability
Access	Lack of access to ICT and/or lack of access to the Internet has decreased but continues to be a concern, particularly in developing countries
Age	The elderly are often less comfortable using ICT although they could benefit more, given today’s online access to social and health services; youth too can be at a disadvantage
Broadband	Higher speeds are increasingly necessary to reap the full benefits of the digital society; the gap between basic access and broadband access is also an increasingly cited divide
Content	Local content creation and consumption is important as local usage can depend on local solutions; it is also an area linked to both geographical and linguistic divides
Culture	Culture can make a difference in access rates; for example, the former West Germany has higher access rates than the former East Germany
Education	Low education and literacy rates are perhaps the most commonly cited digital divides; it affects the poor, immigrant and disabled populations, among others
Gender	There are sometimes differences in access and usage by gender
Income	The division between rich and poor is as fundamental within countries as much as between them; affects affordability of ICT
Language	Often, there is not enough content in local languages; according to the UN, more than 80% of all websites are in English, yet it is the native language for only one-third of Internet users
Location	Rural and remote areas are often at a disadvantage compared to their urban counterparts
Measurement	There is a divide between countries in how they measure and keep track of progress in closing divides; what gets measured tends to get done
Mobile	Many countries rely on mobile devices to bridge the access gap but this can also introduce new forms of divides both in terms of technology and speed—second generation (2G) compared with 3G and 4G—as well as usage patterns
Skills	There are differences in the skills levels of people when using various ICT; overlaps with education and usage divides
Usage	Increasingly, what people do with their access, or “useful usage”, is a key divide in using ICT productively
Source: Economist Intelligence Unit.	

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Making the case at the highest levels

The economic and social benefits of the information society are clear but the business case must still be made to policymakers at the highest levels of government. One area where governments can influence take-up is their approach to broadband networks but policymakers should tread carefully as results can differ widely.

The benefits of e-inclusion

Digital divides affect access to a broad range of public services including education, health and other social services, and European policymakers in particular have led the way in recognising the benefits of “e-inclusion” (shorthand for a set of strategies to extend digital access to those disadvantaged by age, income, social status or other barriers).

Digital by default in the UK

The UK government established the “digital by default” policy, for example, meaning that technology will be the primary channel through which services are delivered. “In doing that we try to reach as many people as possible to ensure that everyone can enjoy the digital

benefits and that nobody is left behind,” explains Felicity Singleton, head of policy for the Government Digital Service in the Cabinet Office. The government followed up by appointing a high-level figurehead, Martha Lane Fox, co-founder of lastminute.com, a travel site, as its “digital champion” for the country’s e-inclusion initiatives. To establish a business case to inform government policy, as a first step Ms Lane Fox commissioned the previously cited PwC research to assess the potential economic benefits of greater digital inclusion in the UK.⁶

As a result, the government’s subsequent campaign to get more people to use the Internet—the Race Online 2012—received major media attention and moved an additional 2m people online in two years. Capgemini, a consulting firm commissioned to evaluate progress, said establishing the business case and driving a national conversation around the divide were key success factors.⁷ The European Union also recently suggested that member states model their initiatives on the UK’s experience.

⁶ Champion for Digital Inclusion: The Economic Case for Digital Inclusion (October 2009): www.parliamentandinternet.org.uk/uploads/Final_report.pdf.

⁷ Evaluating the work of the UK Digital Champion and Race Online 2012 (March 2012) <http://ukdigitalchampionmodel.com/wp-content/uploads/2012/04/Evaluation-of-UK-Digital-Champion-and-Race-Online-2012-vFINAL.pdf>

Different paths to broadband's economic promise: South Korea and Australia

To achieve the full benefits of the information society, governments must take advantage of fixed and mobile broadband access, which offer a wide variety of opportunities, from tele-health and online education initiatives to working remotely. But the path towards the same objective can differ. South Korea spends less than 1% of its government revenue on developing its high-speed network, while Australia, a country with a controversial government-led approach, is set to spend almost 8%. But both calculate that they stand to gain from their investments.⁸

South Korea: Broadband is a policy priority

In the 1990s, partly as an effect of the 1997 Asian financial crisis, South Korea looked to ICT as an engine for recovery and future growth, illustrated by the release of the Cyber Korea 21 strategy in 1999, one of the first national government plans looking to create an information society. Today, South Korea has achieved that vision and enjoys high rates of broadband access, while its IT industry (including ICT) plays a crucial role in the economy. For example, Doojin Choi, executive director at the Digital Inclusion Policy Division at the National Information Society Agency, says that in 2011 the IT industry constituted 11% of the country's GDP and the value of IT exports reached US\$15.7bn, which represented 28% of all exports.

According to Mr Choi, the reasons for the country's success are threefold:

- South Korea recognised the potential of broadband and made it a policy priority.
- There is close co-operation between the central and local governments as well as private sector service providers.
- There is an emphasis on universal ICT education in order to increase demand for such services.

A World Bank report also credited the country's successful broadband strategy to a combination of deregulation, competition, privatisation, government investment in the construction of

backbone networks and subsidised loans to telecommunications operators.⁹

Australia: The National Broadband Network

The National Broadband Network (NBN) is part of the National Digital Economy Strategy—announced in May 2011—which aims to make Australia a leading digital economy by 2020.¹⁰ To do so, the NBN promises to provide fibre optic access to 93% of premises, while the remaining 7% will be covered through a combination of wireless and satellite access. This will allow all constituents to reap the social and economic benefits in areas such as tele-health, an important divide to bridge in a large country.

Based on previous studies, one government report reckoned that the economic benefits from widespread adoption of the NBN may reach between A\$2bn and A\$4bn a year in tele-health alone.¹¹ Stephen Conroy, the Minister for Broadband, Communications and the Digital Economy, confirms that providing improved services through the NBN is at the heart of the government's agenda for digital inclusion, including realising the benefits of online education, tele-health and tele-work.

But to achieve such goals, the government has taken the controversial approach to design, build and operate the network. In June 2011, the government's NBN entered into an agreement with Telstra, Australia's largest telecoms provider, to re-use existing infrastructure, decommission its copper network and help build the NBN. By taking the lead role, the government claims it will shorten build time, reduce costs and accelerate take-up, all of which are key strategies to address the digital divide, although critics are questioning such strong government intervention.

⁸ Full speed ahead: The government broadband index Q1 2011. EIU, 2011. https://www.eiu.com/public/topical_report.aspx?campaignid=broadband2011

⁹ http://siteresources.worldbank.org/EXTIC4D/Resources/IC4D_Broadband_35_50.pdf

¹⁰ http://www.nbn.gov.au/files/2011/05/National_Digital_Economy_Strategy.pdf

¹¹ National Digital Economy Strategy, which cites Access Economics, Financial and Externality Impacts of High-speed Broadband for Telehealth (July 2010)

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Access still comes first

None of the socio-economic benefits countries seek from ICT can be realised without access. “[Overcoming the access divide] is still the biggest challenge we are facing,” says Hamadoun Touré, secretary-general of the ITU. He points out that although there are 2.4bn people currently connected to the Internet and some 6bn people with mobile phones, two-thirds of the world’s population remains offline and over a billion do not have basic mobile access.

Mobile technology has improved access

Lack of access remains a particularly acute problem in low-income countries where only about six out of every 100 people were Internet users in 2010, according to the World Bank’s World Development Indicators report.¹² Lower-middle-income countries (about 14 Internet users per 100 people) and upper-middle-income countries (34 per 100) fare better, although a majority of their populations remain offline, making this their greatest immediate challenge.

The rapid rise of mobile technology has proven helpful in bridging the access divide, particularly among developing countries (see Chart 1, next page, showing an increase in users). However, remaining challenges with mobile access include the move from providing simple SMS and text-based services to higher connectivity speeds

and smart phone access. For example, in 2011, 90% of the world’s population could use 2G mobile networks but only 45% had access to 3G networks, according to the ITU.¹³ Greater coverage must be a policy priority in order for users to take advantage of full browsing capabilities and increase their productivity. Even today, some 30 countries do not offer commercial 3G connectivity at all. And in large countries such as China and Kazakhstan, roll out of 3G networks is limited to major metropolitan areas, creating an urban-rural divide.

Closing the gap within but also between countries is increasingly important as the world moves towards ever greater speeds. The introduction of 4G networks can potentially increase the gap within countries if it is introduced in selected areas, but it can help to bridge the divide between nations as it opens up the possibility for developing countries to leapfrog. “We must keep an eye on such opportunities,” advises Haiyan Qian, director, Division for Public Administration and Development Management, United Nations Department of Economic and Social Affairs.

The opportunity to leapfrog will depend on the ability of policymakers to create a strong and transparent regulatory environment in which business interests converge with policy and social

¹² databank.worldbank.org

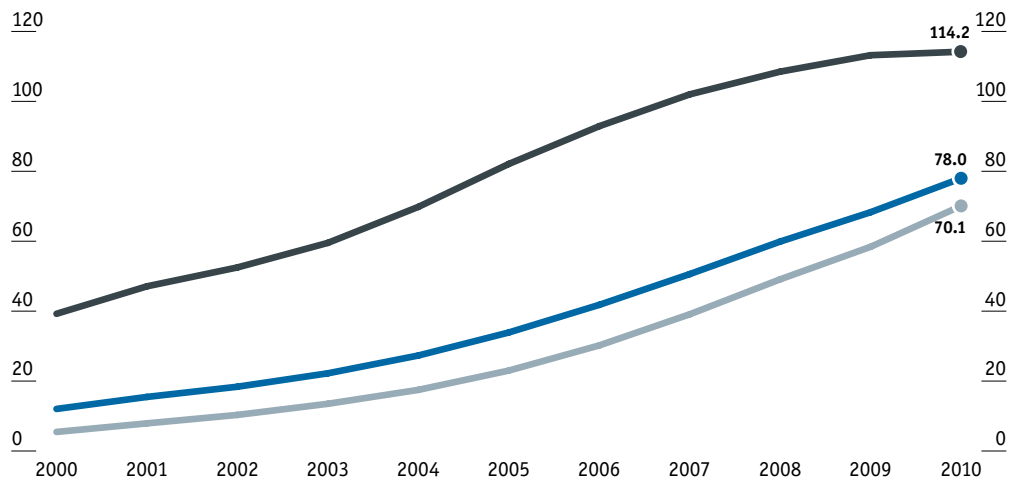
¹³ ITU ICT Facts & Figures 2011

Chart 1

An increase in users

(mobile cellular subscriptions per 100 inhabitants, 2000-2010)

— Developed — Developing — World



Note. The developed/developing country classifications are based on the UN M49, see: <http://www.itu.int/ITU-D/ict/definitions/regions/index.html>.
Source: ITU World Telecommunication /ICT Indicators database.

priorities. For example, the potential benefits are obvious but, at least initially, they could also come at a price as the affordability of new handsets and 4G data services can also increase the divide between rich and poor. (In the longer term, however, the cost efficiency advantages of 4G networks may well mean reduced data transmission prices for customers.) Similarly, in developed countries, the introduction of higher-speed 4G networks means that the geographical divide is set to continue well into the future as it takes time to implement infrastructure that covers large parts of most countries.

Developed world: Metrics mask challenges

In developed countries, measurement surrounding the access divide can also be misleading. For example, progress is still primarily tracked through basic access rates to computers and the Internet. According to this metric, improvements have been substantial. In 2002, 39% of EU15 households had Internet access; in

2010, the equivalent figure was 73%, according to Eurostat, the European statistics office.¹⁴

But this overshadows the need to make even greater improvements. To put things in perspective: only 50% of Europeans use the Internet daily and 30% have never used it, according to the EC Digital Agenda website.¹⁵ Commonly cited reasons include perceived lack of need and affordability, particularly among those frequently cited as digitally excluded, such as older people, those with low incomes, less education and the unemployed.¹⁶

Similarly, more than 90% of US households can subscribe to broadband Internet but only 68% actually do. While better education and higher income is correlated to higher adoption rates, says Lawrence E Strickling, the US government's assistant secretary for communications and information and the administrator of the National Telecommunications and Information Administration (NTIA), "the one reason that

¹⁴ <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsiir040&plugin=1>

¹⁵ http://ec.europa.eu/information_society/newsroom/cf/pillar.cfm?pillar_id=48&pillar=Enhancing%20e-skills

¹⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0245R%2801%29:EN:NOT>

comes up more than others in our research is the idea that people don't see a need for it."

Laggards to leapfrogs

Encouragingly, countries do have the ability to make the jump from fixed access laggards to mobile leapfrogs, particularly with the introduction of 3G and 4G services. In this endeavour, just as the digital divide must be made a policy priority by making the business case for it, digital inclusion must also be made a

policy priority by explaining the socio-economic benefits to people.

Perhaps because they are poor, users in many developing countries can immediately see the potential benefits of being connected, and this illustrates one way in which otherwise digitally disadvantaged parts of society can use mobile devices to access both public and private sector information and services to enhance their lives (see box).

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Mobile devices have been a game-changer.

”

Vikas Kanungo,
chairman of the Society
for Promotion of
e-Governance

Mobility in India: Connecting rural areas with local, relevant content

In India, like in most of Asia, intense competition has led mobile operators to a high-volume and low-margin model, which has helped to increase the number of users. But earlier this year, the highly touted example of the "Indian model" faced a licensing scandal that sent Andimuthu Raja, the telecommunications minister, to jail, while the courts stripped numerous operators of their licences, creating concern particularly among foreign investors.

Mobile access: A game-changer

Despite such recent troubles, however, the story on the ground illustrates how affordability has enabled previously excluded segments of the population to consume digital services, both public and private. Before the scandal, India had 15 operators that served about 900m mobile subscribers in a population of 1.2bn. "Mobile devices have been a game-changer," says Vikas Kanungo, chairman of the Society for Promotion of e-Governance, policy adviser on mobile governance to the Government of India and senior consultant to the World Bank. "Because the average value per user is coming down, they [telecoms operators] have now started to offer innovative services and there is a lot happening in this area, such as a move from voice-based to content-based services," he explains.

News to use

One example is LifeLines India, which is developed by OneWorld, a network of organisations

looking to support ICT and sustainability, in collaboration with British Telecom and Cisco Systems, two private sector players. LifeLines provides farmers with a system through which they can SMS text or use landlines to call experts who advise them on fertilisers and other farming techniques. Today, it serves over 200,000 farming households across three states in rural north and central India. A similar example is Reuters Market Light (RML), provided by Reuters, the information services company, through which subscribers can receive personalised weather forecasts, local prices and other information relevant to farming. Currently, RML has almost 1m registered unique subscribers in more than 40,000 villages around the country.

One reason for the success of such programmes is that users see the value in them. In the South Indian province of Kerala, fishermen started using mobile phones to get information on prices in different markets so they knew where to get the most for their catch. In this endeavour, Robert Jensen, now a professor of public policy at UCLA, showed that mobile access was correlated to market efficiency. He reckoned that the system decreased consumer prices by 4% and increased profit for the fishermen by 8%.¹⁷

¹⁷ Mobile marvels: <http://www.economist.com/node/14483896>
Original source: Jensen, Robert (2007). "The Digital Provide: Information (Technology), Market Performance and Welfare in the South Indian Fisheries Sector," Quarterly Journal of Economics, 122(3), p. 879 – 924.

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Competition has proven to be a crucial parameter, not only in providing access but also in providing affordable access.

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Torbjörn Fredriksson,
UNCTAD

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Competition leads to lower costs, more usage

In most markets, higher levels of competition almost always stimulate demand. This is certainly true of ICT markets such as online services, where multitudes of providers (including in places such as China and Russia) offer an enormous variety of services and products and are providing real choice to consumers.

Latin America and South Asia: A study in contrasts

So too, vibrant competition in mobile and fixed access should increase usage rates while less competition can certainly hold it back. In Latin America, for example, the top priority for telecoms operators is to maximise average revenue per user (ARPU), which means that services are relatively expensive and are therefore consumed by lower numbers of users, especially compared to their South Asian counterparts who have opted for a model based on increasing user numbers and usage. One factor is the lack of competition in many parts of Latin America, where telecoms provision is often a monopoly or a duopoly, whereas in much of South Asia there is competition between several providers.

“Moving towards a high-volume model is an attractive way to really reach those at the bottom of the pyramid,” observes Torbjörn Fredriksson,

head of the ICT Analysis Section Science, the Technology and ICT Branch of the Division on Technology and Logistics of the United Nations Conference on Trade and Development (UNCTAD), whose office tracks the divide from a development perspective, including through its annual Information Economy Report.

Similarly, a 2009 special report in *The Economist* argued it was clear that liberalisation improves telecoms adoption, citing one example in which Somalia—a war-torn country with an unregulated telecoms market—had higher mobile density than Ethiopia, which maintained a government monopoly.¹⁸

Competition and costs

One reason is the link between open markets and affordability. “Competition has proven to be a crucial parameter, not only in providing access but also in providing affordable access,” says Mr Fredriksson. His office has previously found a strong correlation between the cost of ICT and access penetration, particularly among the poor.¹⁹

The ITU secretary-general also cites declining prices as one of the key challenges to bridge the divide globally. “Governments need to put necessary legal and regulatory frameworks in

¹⁸ Mobile marvels: <http://www.economist.com/node/14483896>

¹⁹ www.unctad.org/ier2010

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The Finnish model is one of open competition and private-sector-led development with political support.
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*Olli-Pekka Rissanen,
special adviser to the
Finnish government*

place for competition and the private sector will seize the opportunity to make money,” says Mr Touré. In this effort, he also calls on governments to reduce taxes to lower the cost of communications. However, it is also important to stress that an open market does not mean weak regulation. Most interviewees also agree that governments need to set clear rules to promote fair competition in a transparent manner.

The Finnish model

Interviewees familiar with countries with high access levels, such as Finland where 86% of the population regularly use the Internet, also cite market forces as a key success factor.²⁰ The country has three major competing telecoms

operators (TeliaSonera, Elisa and DNA) with their own fixed and mobile networks. There are also numerous so-called last-mile operators providing access via leased networks. “The Finnish model is one of open competition and private-sector-led development with political support,” says Olli-Pekka Rissanen, special adviser for public sector ICT to the Ministry of Finance of Finland and chairman of the governing board of the Information Society Development Centre in Finland. However, although he describes the current market environment as healthy, he also cautions that the government has to take an active approach in monitoring the situation to ensure that proper competition continues.

²⁰ <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tin00091&plugin=1>

4

Measure what matters, especially “useful usage”

By recognising the socio-economic benefits of ICT, governments hold the regulatory ability to stimulate access, strengthen competition and enhance affordability. But once people find their way online, how do they use that access? Today, “useful usage”—the extent to which ICT is used for productive purposes—challenges governments on what to measure and how to determine progress.

The US and Russia: Access does not always equal more use

In the US, for example, despite the rise in the proportion of the population using computers and the Internet, reports have shown that the socio-economic gaps have actually increased, notes Mr Warschauer. One reason, he claims, was a misplaced belief that the digital divide could be bridged by just giving people access to ICT. This fallacy was reinforced by the simplicity in tracking progress as increasing numbers of people with access to a device or to the Internet kept rising steadily. But this did not address the extent to which such devices were used or how.

Similarly, in Russia, according to Evgeny Styrin, a senior researcher at the Center for Government Activity Analysis of the Higher School of Economics in Moscow, the government initially tracked progress by the number of schools with Internet access, and according to this measure great progress has been made. Formally,

all schools in Russia now have the Internet. However, there is no central information available as to whether ICT skills are actually taught or whether people use the devices.

Finland: The ICT skills divide

For most countries, having 86% of the population regularly use the Internet may be a feat using traditional measures.²¹ But to Mr Rissanen, Finland suffers from a skills divide. People are “born digital”, he says, meaning that they are accustomed to using ICT from an early age, exemplified also by videos showing toddlers playing with iPads. But there is a gap in using ICT productively. For example, even at an older age, many use ICT only for social media or to search for basic information. Meanwhile, they do not know how software products for the office work.

Bespoke metrics in South Korea

Measuring useful usage means finding innovative ways of assessing progress, a necessary element in making ICT inclusion a policy priority. In South Korea, says Mr Choi, “there is a wide gap remaining in terms of using ICT devices or information in a productive way.” In order to track the digital divide properly, South Korea created its own annual Digital Divide Index in 2004. It consists of metrics on accessibility, capacity, as well as quantitative and qualitative

²¹ <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tin00091&login=1>

indicators assessing actual utilisation. To keep up with ongoing evolution, the country will update its methodology starting in 2012 in order to provide a “better reflection of updated information on computer and Internet-based divides and the mobile ICT environment”, explains Mr Choi.

Other international initiatives: Benefits and drawbacks

Beyond their own efforts, policymakers, including those in Finland and South Korea as well as those in emerging markets such as Kazakhstan and Russia, increasingly use international reports and benchmarks such as the UN e-government survey to assess their progress towards the information society.

For better or worse, such assessments are helpful but can also inadvertently influence policy and funding priorities within countries, an unintended consequence of ranking countries on a global scale. For example, when Finland dropped in various international rankings in the late 2000s, it made local headlines. As a result, political support increased and clear targets were established, says Mr Rissanen.

A separate effort comes from The Partnership on Measuring ICT for Development, an international, multi-stakeholder initiative that compares experiences and indicators among countries without ranking them per se. It aims to identify globally comparable ICT indicators, assist developing countries in collecting them, and track progress globally. About a dozen organisations, most from within the UN system, contribute expertise and relevant indicators. These include UNDESA, the organisation behind the e-government survey, the ITU and UNCTAD, the latter of which provides data related to the use of ICT by businesses. Currently, UNCTAD has such usage data for 68 countries, including 36 developing countries.²²

A continuing challenge is that ICT indicators always evolve. The concept of “useful usage” is a recent one, for example. Even developed countries struggle to keep up with what to measure and how. Nonetheless, policymakers everywhere must stay on top of measurement trends, since it is instrumental at a policy level to bridge divides and prove the value of initiatives.

²² More information available at <http://www.itu.int/ITU-D/ict/partnership/> and <http://measuring-ict.unctad.org>

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The Internet should be integrated into [school curriculums] because unequal distribution corresponds to unequal educational and social chances.

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*Herbert Kubicek,
Digital Opportunities
Foundation, Germany*

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Enhancing ICT skills: A role for the private sector and NGOs

Lack of education and a lack of skills to use available technologies are commonly cited digital divides, and although certainly governments must do more, this is also a prime opportunity for the private sector and NGOs to help bridge divides.

Interviewees agree that governments around the world need to do more to integrate ICT into formal education. “The Internet should be integrated into [school curriculums] because unequal distribution corresponds to unequal educational and social chances,” says Herbert Kubicek, director of the Institute for Information Management Bremen and scientific director of the Digital Opportunities Foundation in Berlin, Germany.

“I don’t look at it as a digital divide but as a social divide,” agrees Mr Warschauer. To improve the situation at the broadest level, he also suggests greater integration of digital tools into learning, as he believes that technology is a means to so many other areas and not simply an end in itself.

Governments cannot go it alone

The public sector often struggles in helping people make productive use of ICT, and

increasingly, successful policies are developed by other sectors. “Governments should work with NGOs and companies to make solutions sustainable,” says Rodrigo Baggio, founder and president of the Center for Digital Inclusion in Brazil. In Germany, Mr Kubicek says the government has abandoned digital inclusion efforts and now views it as a market choice. In Russia, Mr Styrin cites the lack of public-private partnership as one of the reasons for the continuing divide. In the UK, Ms Singleton says that the government needs the cooperation of the public, private and civil society sectors to get the last 10% of the population online because it is the most difficult segment to reach, and one that is more likely to be bridged through community organisations. “Getting all those remaining people online is going to take a lot of tailored work,” says Ms Kroes, while agreeing that “some of the actions aren’t best done by governments at all, but by NGOs and activists able to reach out to those most at risk of Internet exclusion”.

Illuminating the potential for other sectors: Global examples

Private companies, such as Telstra, the largest Australian telecommunications provider, and non-governmental organisations (NGOs), such as the Center for Digital Inclusion (CDI) in Brazil and the Digital Opportunities Foundation in Germany, illustrate innovative efforts to help bridge the ICT skills gap.

Telstra: Access for everyone in Australia

"We want to ensure that all Australians benefit from being connected," says Tim O'Leary, chief sustainability officer at Telstra, Australia's largest and oldest telecoms provider. Its "Access for Everyone" programme is now in its tenth year and last year alone the company provided benefits worth about A\$200m to help under-served segments of the population access the Internet, such as those on low incomes, those with disabilities, indigenous Australians, the elderly and those in remote locations. For these groups, Telstra has found that online training programmes or training brochures are only marginally useful. Instead, based on feedback from workshop surveys, the company believes that its face-to-face seminars are much more effective. One example of this is the "Connected Seniors" initiative designed to assist older Australians to gain both confidence and competence in using smart phones and tablet devices. The initiative connects senior high school students with older Australians in a structured training programme that offers a unique but highly effective dynamic. Young people are confident with technology but can still relate to the elderly. "The feedback has been fantastic," says Mr O'Leary. Through its simple motto to provide access, improve capability and increase online safety, the company trained 62,000 people in 2011 alone.

CDI: A five-step programme in Brazil

"The most important challenge is to train local people and educate them, not only to be users but also citizens who can produce content and knowledge and understand how to use it in an entrepreneurial way to generate opportunities," says Rodrigo Baggio, founder and president of

the Center for Digital Inclusion in Brazil, about his efforts to improve digital inclusion and by extension, society at large. CDI is the NGO that went global with its five-step programme that combines technology and civic education. First, the organisation learns about the day-to-day reality of the participant. Second, it stimulates the participant by providing a challenge. Third, it has the participant use technology to overcome the challenge. Fourth, it implements projects through interaction while encouraging entrepreneurship. Fifth, it evaluates progress. Today, this simple approach has helped more than 1.4m people across 12 countries. They include some of the hardest to reach segments of the population, including from the favelas, rural areas, indigenous villages, prisons and hospitals. "They are diverse but we customise our approach to different realities," Mr Baggio explains.

The Digital Opportunities Foundation: Bringing ICT to the elderly in Germany

The Digital Opportunities Foundation, established in 1999, has numerous programmes in place, including one that aims to bring the Internet to older people, particularly those living in homes for the elderly. The organisation seeks approval to set up Internet-connected computers in the homes and help people get online. The *Internet erfahren* or "experience the Internet" programme also illustrates the Foundation's strong belief in ongoing life-long learning. "It's important because of the evolution of technology and changing patterns of use," explains Herbert Kubicek, director of the Institute for Information Management Bremen and scientific director at the Foundation. For example, even if someone learned how to use a computer five years ago, they would not necessarily understand how to use social media.

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Stimulate local content creation and consumption

Even in areas where access exists and basic education and resources for enhancing ICT skills are available, there are new challenges to bridge the divide. Today, the creation and consumption of local information is one of the greatest hurdles towards increased productivity, especially in developing countries.

China: The need to focus on content

In China, says Yuanfu Jiang, director of the E-Government Department, in the E-Government Research Center at the Chinese Academy of Governance, the three primary digital divide challenges are access, skills and content. The government pays a lot of attention to the first two, he notes, but not enough attention has been paid to content. It is a political issue—if local services cannot be provided and consumed digitally, this is a problem. But it is also a private sector opportunity to offer services that people need, particularly in remote areas. For example, rural Chinese farmers can purchase new agricultural products but there may be a lack of information in the local language on how to use them. Similarly, in India, there are 26 languages, and the English-speaking population is achieving digital literacy much faster than the others, making local content the “biggest challenge”, according to Mr Kanungo.

²³ http://www.safaricom.co.ke/mpesa_timeline/timeline.html

Mobile payments in Kenya

But the challenge goes beyond geography and language and the overall answer to bridge the divide is improved local content creation. This effort goes beyond merely enhancing digital literacy to facilitating the use of IT applications. One oft-cited local solution is M-PESA, a mobile payments system designed and created for Safaricom, a mobile operator in Kenya, that was launched as a way to simply transfer funds. However, people soon started using it in new ways. Supermarkets began to accept payments through the system, as did other retail shops and various institutions, such as local schools.

It has been a rousing success. After M-PESA launched in March 2007 it had 19,671 active mobile users. In June 2010, the number of subscribers surpassed 10m, roughly one-third of the population of Kenya. In March 2012 and numerous awards later—including two 2011 AfriCom awards for changing lives through innovative solutions—the service now has almost 15m active users.²³

Beyond traditional IT support

Developing local software and encouraging domestic IT industries to create products tailored for local markets goes beyond traditional

support for IT exports and outsourcing and is quickly becoming a public sector imperative. It also represents a private sector opportunity. In China, for example, the Baidu search engine and Renren social network both offer glimpses of how locally created products can provide solutions and supplement or replace services from international conglomerates while stimulating the domestic economy. ■

Conclusion

Preparing for future divides

Compared with just a decade ago, governments have made significant progress in expanding ICT access. Some developed countries are reaching near universal access through fixed and mobile connections. Developing countries, meanwhile, have some way to go to catch up on access rates but are gaining ground by expanding mobile services.

Policymakers cannot be complacent, however. This report has highlighted new imperatives for strategies to bridge the digital divide, in all of its many manifestations.

But even if governments could somehow solve all of the current challenges, the goalposts continue to move—for example, the global trend towards

ever higher fixed and mobile access speeds is set to expand divides between and within countries. Similarly, as access to faster networks improves, policymakers must continue to try to ensure that entire populations are skilled enough to use online services to their full potential.

Just as social divides have always been part of history, digital divides are likely to continue well into the future, especially since the two are increasingly intertwined. If one gap is closed or reduced, another is likely to emerge or widen. Such is the nature of technological progress. But countries that take a proactive approach in implementing smarter policies now will be better prepared to respond to future challenges, and thus reap the benefits of more inclusive communities and richer economic prospects.

While every effort has been taken to verify the accuracy of this information, neither The Economist Intelligence Unit Ltd. nor the sponsor of this report can accept any responsibility or liability for reliance by any person on this white paper or any of the information, opinions or conclusions set out in this white paper.

LONDON

26 Red Lion Square
London
WC1R 4HQ
United Kingdom
Tel: (44.20) 7576 8000
Fax: (44.20) 7576 8500
E-mail: london@eiu.com

NEW YORK

750 Third Avenue
5th Floor
New York, NY 10017
United States
Tel: (1.212) 554 0600
Fax: (1.212) 586 1181/2
E-mail: newyork@eiu.com

HONG KONG

6001, Central Plaza
18 Harbour Road
Wanchai
Hong Kong
Tel: (852) 2585 3888
Fax: (852) 2802 7638
E-mail: hongkong@eiu.com

GENEVA

Boulevard des Tranchées 16
1206 Geneva
Switzerland
Tel: (41) 22 566 2470
Fax: (41) 22 346 93 47
E-mail: geneva@eiu.com