handshake

A quarterly journal on public-private partnerships






In this issue

CONNECTIVITY

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Art & Design
Jeanine Delay & Victoria Adams-Kotsch

Digital Strategy
Jeanine Delay

In this issue

"Only connect," E.M. Forster's plea to readers not to live their lives in fragments, could just have easily been uttered by a telecom company in 2014 as it was by Forster in 1910. But today, connectivity—the theme of this issue—connotes the physical networks that allow people to communicate as much as it does the ability to interact with another person or the services one receives from an institution or organization.

Public-private partnerships (PPPs) in Information and Communication Technology (ICT) can connect us in all of these ways. Just as important, it can connect those who are still unconnected, and might remain so without intervention. Throughout this issue, as we see how transformative ICT has already been in the developed world, we acknowledge how far there is to go until everyone is given the same digital resources to succeed. We hear first-hand from the head of Facebook's new Internet.org initiative, which has launched its campaign to bring free Internet access to the base of the pyramid. Other articles and interviews demonstrate how PPP-powered ICT successes advance the economy, improve peoples' health, promote gender equality, and provide educational tools.

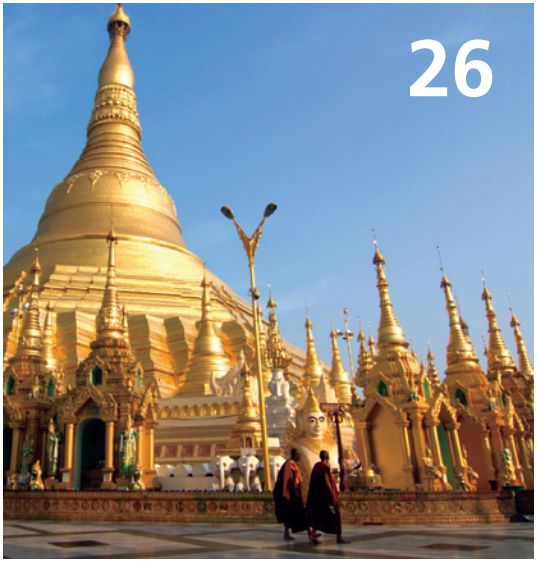
No government can afford to ignore technology, and the momentum behind ICT is unrelenting. The public sector must adopt a strategy for managing it. Smarter infrastructure is better infrastructure, and technology partnerships will deliver better value for money over time.

Laurence Carter,
Senior Director

Tanya Scobie Oliveira,
Editor

Features

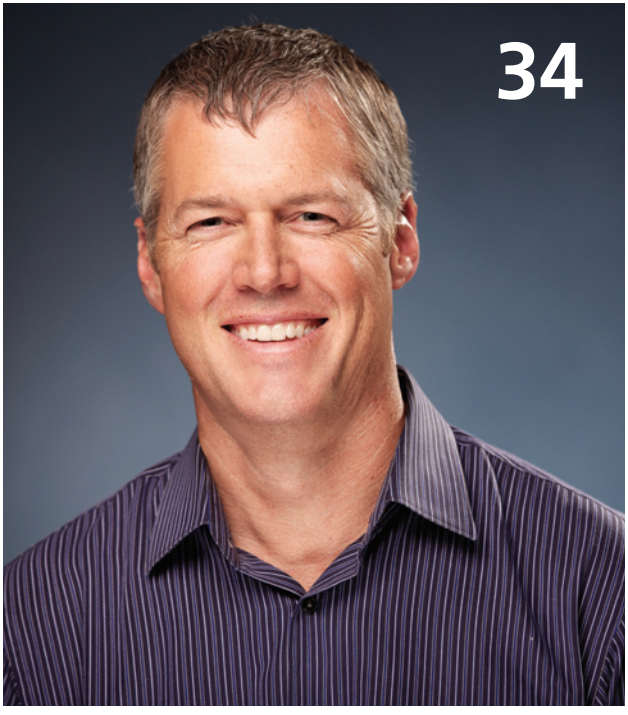
Infrastructure



Services

In this issue

Interviews



Columns

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CONNECTIVITY EQUALS OPPORTUNITY

PPPs narrow the "Broadband Gap"

PERSPECTIVE

By Pierre Guislain, World Bank

You don't need to be a grandparent or even have a particularly long memory to recall a time when information and communications technology (ICT) devices were luxuries only a few could afford, if not something lifted entirely from the pages of science fiction. Reform of the ICT sector happened fast, both in broadband and mobile, and we all feel it in our personal and professional lives. The extraordinarily rapid uptake of mobile telephony in developing countries is the most compelling element of the ICT story, but it's only partly about the technology itself.

The real plot twist lies in why reform took off so quickly. Simply put, the incumbents did not see mobile services as threatening. Telecom companies thought of it as a fancy, add-on service that would be useful for rich people but unthreatening to the standard business model. However,

the new technology was able to fill gaps in countries where there was no service at all, and it was able to make very rapid inroads. Elsewhere, people would have gone through a more traditional rollout of fixed network and then mobile; in developing countries, mobile became the main service because incumbent service was so poor. Mobile moved in because the incumbents had not done their job.

This shows that the most important element of progress in ICT is the creation of an environment where competition can flourish. Public-private partnerships (PPPs) are key players in this chapter of the ICT narrative. We see this in articles and interviews throughout *Handshake*, which examines PPPs in broadband and mobile/telecom (which together comprise our definition of ICT) and the services this infrastructure makes possible. In other words, we're looking at PPPs whose infrastructure creates connections and whose services deliver connectivity.

PPPs PUSH COMPETITION

With PPPs in ICT, the number one issue is competition: is there a pro-competitive environment for new technologies? Will innovative approaches be rolled out? Let's look at the first two waves of the ICT revolution, which set the scene for PPPs.

Twenty-five years ago, when mobile rollout began, it was seen as a substitute for fixed service; no one expected that it would see such a quick uptake among poor people. (Today, the mobile global penetration rate hovers around 93 percent.) What we didn't realize back then is that connectivity—in the form of mobile phones—would give poor people opportunities they didn't have before. For example, if you are a craftsman in Africa before mobile services came your way, you'd have to go to a client's home to ask if they had a job for you; potential clients didn't have a way to find you when they needed your service. Cellphones provide this immediate contact and the ability to provide a service in real time. Since most labor in developing countries is informal, the way they get work is less structured and the potential for having access to employment opportunities, like contracts or jobs, is increasingly dependent on cellphones. The overall growth story in many low income countries can be attributed in part to the rapid expansion of cellular services. Success doesn't follow simply because people use cellphones; they get opportunities, productive opportunities, through their access to telephones. That's the first wave of ICT expansion.

The second wave of ICT expansion came with access to financial services. The best known case is M-Pesa in Kenya, but there are many others that use nontraditional platforms and mobile services as the distribution network. With this, the potential for services that reach poor people in slums or rural areas has increased dramatically. We're not just talking about traditional communications service, but other value-added services that can be delivered over the air and bring a

deepening of the market along with lower costs. Mobile health and education services, which are profiled in these pages, have impacted peoples' lives in a number of positive ways.

Success doesn't follow simply from increased cellphone penetration, but from the new opportunities (access to work, services, finance, and information) made possible by widespread cellphone availability.

Today, we're in the midst of the third wave of ICT expansion: broadband. It's a huge challenge because it's a huge need, and PPP approaches can deliver solutions. The backstory has two parts: One, in many countries, the networks were started by public sector entities, but by and large these do not have the capital or expertise needed. Two, competition remains a key principle to get new entrants in. (This is a problem everywhere, not just developing countries. In fact, the U.S. FCC chairman has issued a significant statement that the U.S. is behind in broadband due to a lack of competition.) Several articles tackle the best way to close the "Broadband Gap," including a piece on how sharing infrastructure can boost private investment and enhance regional prosperity. We focus our attention specifically on PPPs for expansion of broadband in the Middle East and North Africa region, where demographics and current events underscore the need. Here and in other frontier, fragile, and high-risk markets, a PPP approach may be the only way to bridge the digital divide. Development agency support can facilitate cross border regional solutions and create an environment that allows investors to be comfortable. MIGA's explanation of how mitigating the political risk of investments can contribute to ICT access delves into this in greater detail.

If reaching critical mass with broadband was easy, companies would have done it. The most successful PPP approaches to connect people provide a framework whereby the government can invite companies to develop these networks. Alternately, governments might provide some type of financial support where it might not be commercially viable, or some comfort or risk guarantees that would encourage people to invest. If broadband is to reach the UN Broadband Commission's target of getting online 50 percent of the population in developing countries (this corresponds to 1 billion additional citizens), it will require major investments over a short time, significant innovation, and creative financing and operating models.

GUIDING *the rushing river of* ICT PROGRESS

WHY GOVERNMENT ROLES IN PPPs MATTER

For private financiers, official government support to information and communications technology (ICT) projects might seem like trying to push water downhill. After all, isn't ICT incredibly profitable? What's the point of a PPP in this sector, anyway? Here's the rest of that familiar argument: Government should stay out of the way and let the private sector carry forward the communications sector; it is a waste of effort and inefficient to try to push forward something that has its own momentum. Like a rushing river, the naysayers conclude, ICT needs no help advancing down its inevitable course.

It sounds reasonable in theory, but in practice, that approach just doesn't work. The government needs to guide the river down the best course for the citizens it serves, building a weir or mill

By Jeff Delmon, World Bank

to help the river provide maximum benefits to the people who need it. And, just as water is the foundation of life, communication technologies are necessary to prosper in today's world. Knowledge is power. And specifically, access to markets is improved by mobile phones, as is access to banking services, finance, investment opportunities, and education. Successful ICT strategies usher in jobs, empowerment, and economic growth.

REGULATORY TOOLS CAN HELP...

Governments can use regulatory powers to avoid ICT monopolies and improve efficiencies. We see a great example in the Democratic Republic of Congo (DRC), which has an open market and six mobile carriers. The DRC has 13 times as many customers per 1,000 people as does Ethiopia, which has similar per capita income levels but only one carrier.

Government can also encourage efficiency where markets might not. When several competing companies wish to install fiber optic cables, for instance, government officials may require those companies to install common facilities, such as ducts and street furniture, to reduce the inconvenience to the public. Similarly, when installing mobile networks, competing operators may wish to install separate masts for their own purposes, but laws can mandate mast sharing arrangements. These activities also provide cost savings for the operators that should translate into better pricing for consumers, and therefore better penetration of ICT services.

AS CAN PPP FIBER BACKBONE...

ICT services can be significantly improved by the installation of a backbone of fiber optic cables allowing increased capacity and speed of service. In developed markets, ICT operators install their own backbones. However, operators may not be willing to undertake the expense of installing such a backbone in developing countries and more remote areas where revenues may be less obvious. Here, government can use public-private partnerships (PPPs) to make land available and to bring operators together to install such a system—possibly on an open access basis. This might equate to government building canals to bring the river to those parts of the country with restricted access to water.

Burundi provides a good example. Here, the government entered into a PPP with a consortium of local operators to build out and operate a fiber optic backbone, based on government-provided land and a government pre-purchase of capacity from the system to secure financing. Government support was specifically linked to extension of the network to lesser developed

areas of the country that would not normally justify the investment of operator funds.

Governments can use regulatory powers to avoid ICT monopolies and improve efficiencies. We see this in the Democratic Republic of Congo, which has an open market and six mobile carriers.

Haiti offers another good glimpse of the power of PPP. Here, the privatization of the telco was combined with a fiber backbone developed on a PPP basis, which commercial incentives alone might not have achieved. In the South Pacific, small islands work together with partners like the World Bank to create PPP arrangements for submarine cables and backhaul to different isolated island nations, where private ventures might not be tempted. Similar structures were used to tempt submarine cable networks ringing Africa to link to some of the least profitable countries. Output-based subsidies have proven successful in difficult terrain like Nepal, and for vast land masses like Mongolia.

AND LOTS MORE…

ICT requirements of government, hospitals, schools, universities, offices, and a variety of services can be developed through PPPs. E-procurement enables the procurement of goods, works, and services by a government through an Internet-based platform, which lends itself to a PPP solution. When properly designed, it provides opportunities for a wider spectrum of the private sector to participate in government procurement. These types of PPPs are challenging because of the requirements of software updates, new technologies, and changing requirements. Instead of rushing water, this is more like the water at the bottom of the well: sometimes a PPP is needed to draw the water up and put it to good use, especially where the soil is thirsty but the area is not well-resourced. Given the developmental and growth impacts of ICT, such forms of PPP are particularly viable and can provide significant value for money.

AND NOW FOR THE CHALLENGES

While the benefits of ICT PPPs are clear and the need is huge, the challenges, as with any PPP, are significant.

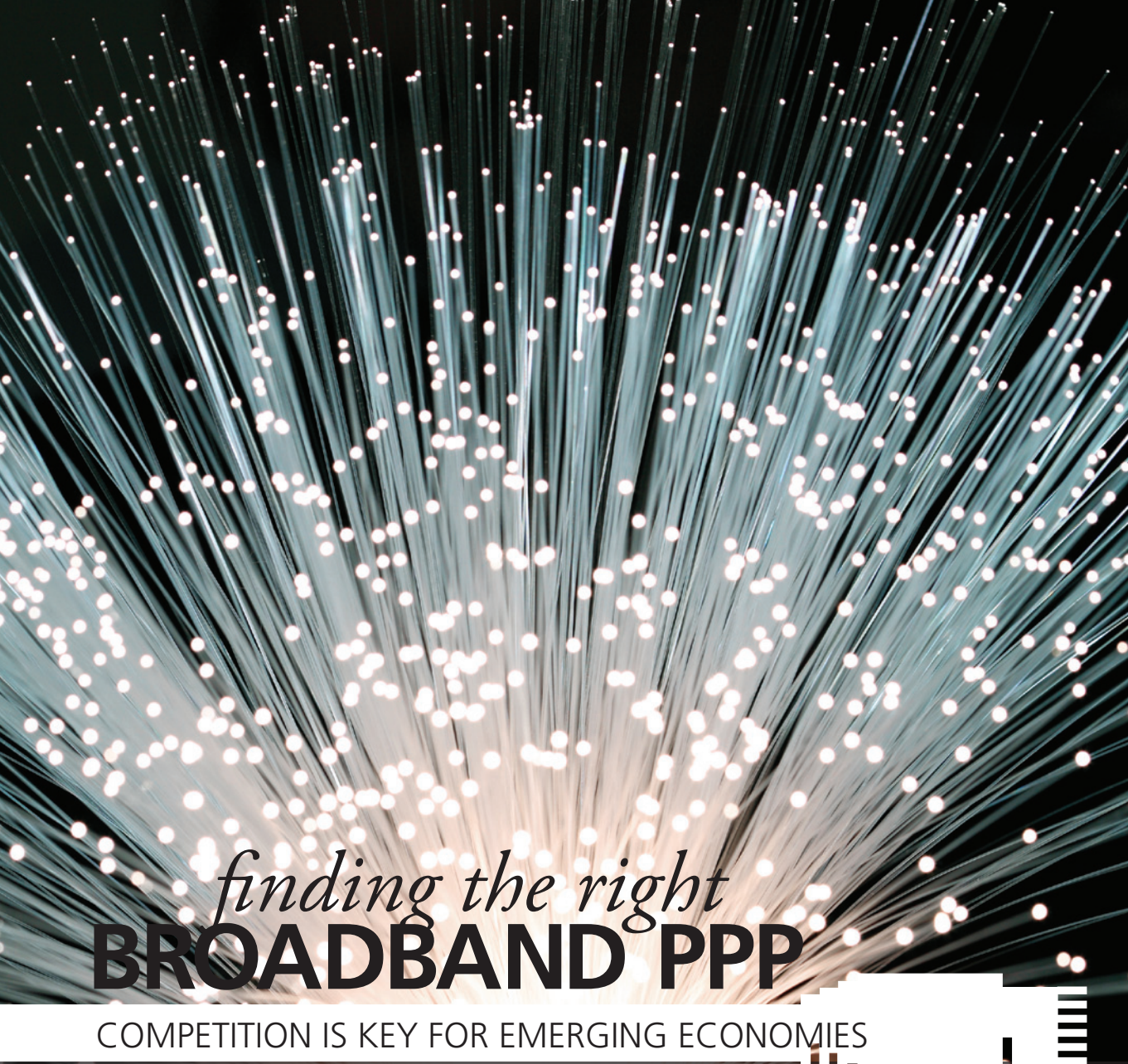
- In developing countries and economies, there are those who benefit from the lack of information made available to the public. They may seek to undermine the relationship between the new telco services and their customers, trying to lock in clients to financing, input supply, or other relationships that would deny them the benefits of the new information. In other cases, they seek to

dominate access to new capacity, buying up capacity, or ensuring pricing is unaffordable. These can act like ill-placed river walls that divert water away from those areas that need it most in order to benefit from the drought. When financing such projects, a full stakeholder assessment can identify such interest groups and allow preventative measures to reduce their influence. Open access regimes can help to keep pricing at a sensible level and assure that access is well distributed.

- Incumbent telcos can either be a force for good or operate like a mighty boulder in the middle of the river, sabotaging sailors' best efforts at navigation. In one country, the recently privatized telco offered to be a core investor in a PPP for communications, only to undermine the structure, withhold its equity share, change the rules at various times during project development, and finally lobby for new regulations that would undermine the very deal it was supporting. The government supported the telco's involvement, only to later expend significant time and money to manage it.
- Government "optimism bias" plays an even more important role in ICT PPPs where relative costs are lower. In a fiber optic backbone, multiple ducts will normally be installed to meet future demand. However, the addition of extra fiber optic cables would impact the project's financials and can undermine the benefits sought by forcing the project company to keep prices high, or to delay extension of the network to additional less developed areas. But fiber optic cables represent less of an absolute cost than would, say, extra lanes on a road, or extra capacity for a power plant, and hence governments are often tempted to insist on such an inefficient investment.

All of these challenges can be overcome with careful preparation, a well-structured agreement, and the good-faith desire that ICT should serve all citizens. This is the best response to those looking at the Internet revolution from the outside who may be thinking "water, water everywhere, nor any drop to drink." h

> *"The single biggest problem in communication is the illusion that it has taken place."*
>
> *—George Bernard Shaw, Leadership Skills for Managers*



finding the right BROADBAND PPP

COMPETITION IS KEY FOR EMERGING ECONOMIES

Choosing a broadband public-private partnership (PPP) is a multi-stage process. Once the scope and type of PPP are defined, examining the legal and regulatory framework can help streamline the decision-making process.

By Michel Rogy, World Bank

Most countries in the world understand that broadband Internet is critical to becoming a knowledge-based economy, central to fostering sustainable economic development and job creation, and strategic to the goals of reducing poverty and boosting shared prosperity. However, making broadband Internet ubiquitous and affordable remains challenging. While Internet access in urban areas can be expected to be financed primarily by the private sector, there are considerably greater challenges in extending coverage to less populated areas.

In the global race for increased broadband penetration, public-private partnerships (PPPs) are an ever more useful instrument for implementing fiber optic projects required to carry the growing broadband Internet traffic. Lessons learned from the World Bank's lending operations can guide officials on how PPPs can facilitate new fiber optic broadband networks in emerging and developed economies.

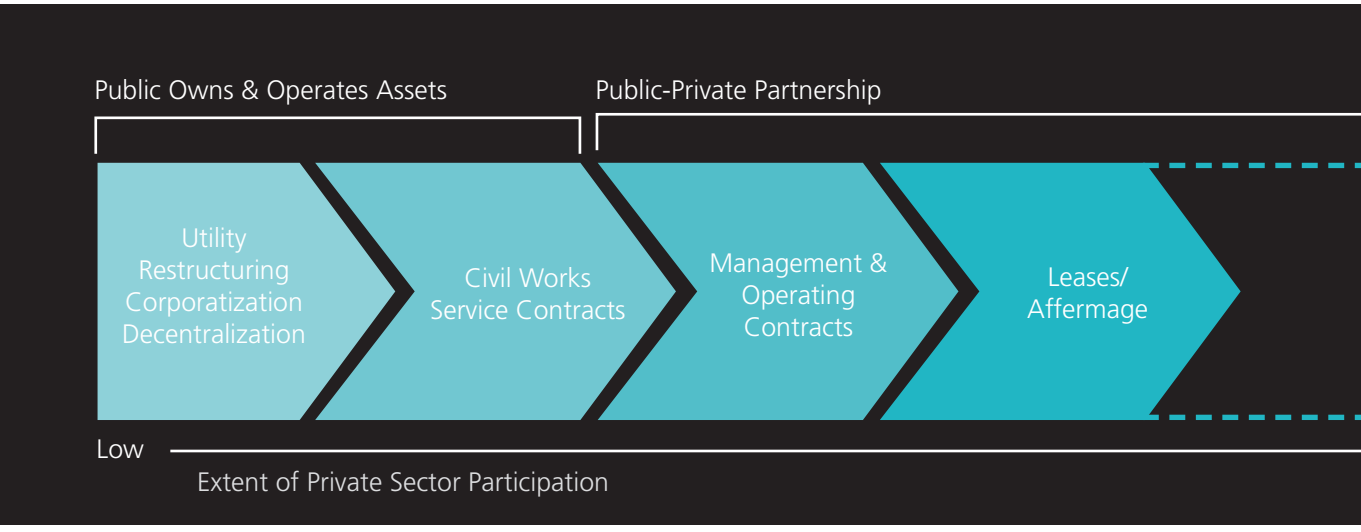
DEFINING THE SCOPE OF THE BROADBAND PPP

Competition is the driving force for accelerated and sustainable telecoms market development. The experience of mobile communications, developed in most countries in a competitive environment, has allowed developing and emerging markets to reach levels of penetration similar to those of high-income countries in a short period of time. Competition triggers private investment and incentivizes operators to be more efficient. As a result, it ensures maximum benefits for end users, both in terms of quality and prices.

Competition is the driving force for accelerated and sustainable telecoms market development.

Consequently, it is key to ensure right from the outset that the scope of the broadband PPP does not reduce competitive dynamics. Broadband PPPs should focus on infrastructure that the private sector would not do alone for quite some time, either on a stand-alone basis or by engaging voluntarily into some form of infrastructure sharing to reduce investment costs. In developed countries, authorities have set up so-called infrastructure databases to keep track of existing and planned fiber rollout, and agreed on an appropriate time horizon (typically around three years) to identify areas where the private sector is considered unlikely to invest. Similar principles should be applied in developing and emerging countries by consulting operators in a transparent process. This would involve discussion of planned fiber optic investments in their strategic plan, which often spans three to five years.

In some small or fragile states, this may lead to a need for a PPP for international fiber connectivity in the form of a submarine cable landing station that the private sector is unable to finance on its own. When authorities are striving for



national fiber connectivity to all provincial capitals and borders to create a national backbone to support broadband traffic throughout the territory, a PPP on some or all missing fiber optic links may be advisable.

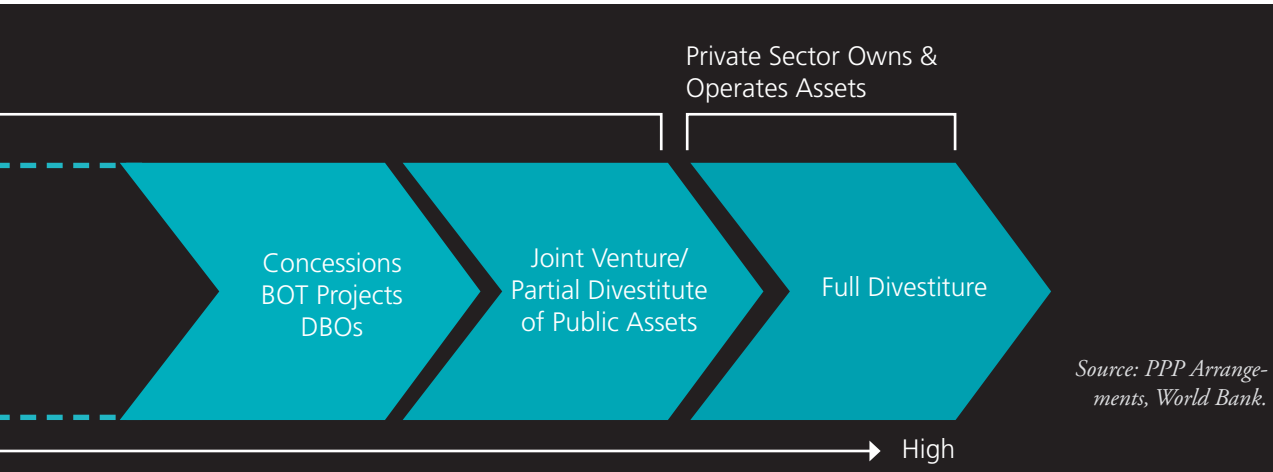
Finally, there will also be a need to expand broadband in rural or remote areas using public subsidies. In this case, it's necessary for the PPP to ensure that public objectives are met. Avoiding the creation of a digital divide, which exists in many developed countries, is key.

BEST PPPs FOR RISK SHARING

Once the scope has been defined, selecting the appropriate type of PPP is important. The decision should be made to ensure that public funds will be used in the most effective and efficient manner while encouraging as much private sector involvement—and especially risk sharing—as possible.

These PPPs can take a variety of forms. For example, in Mauritania, lease/affermage and design build operate PPPs were the two forms evaluated to fill the missing links of the national fiber backbone. In the Democratic Republic of Congo, lease/affermage and concessions were the best fitting PPP forms assessed. Analysis of pros and cons in the specific country context should be conducted in a transparent manner.

The decision on the type of broadband PPP is easier once a reasonable consensus on the business case has been achieved. Because broadband Internet is a new service in many developing countries, demand is uncertain and growth cannot be reliably predicted. This is particularly acute for investments in less populated areas, where there is a need for so-called "patient capital." For the backbone missing links in Mauritania, for example, analyses on the capital expenditures show positive internal rate of return



Source: PPP Arrangements, World Bank.

(IRR) after 20 years, whereas the private sector typically expects positive IRR up to 10 years.

LEGAL AND REGULATORY FRAMEWORK

At the sector-specific level, a telecoms regulatory framework is central for a broadband PPP's effectiveness. First, in terms of licensing and authorization, there is a need for a "carrier's carrier" status. In order to preserve competitive dynamics at the retail level, it is best practice to require the broadband PPP to be active purely at wholesale level, providing the existing operators and service providers with the necessary inputs (such as dark fiber, capacity expressed in Mbit/s) that will enable them to serve end users.

Should the broadband PPP be the sole provider of the necessary inputs—as is the case with international submarine capacity in Sierra Leone; the national fiber optic capacity between the capital city and the provincial capitals in Burundi; and the local capacity in the Limousin Region in France—there is also a need for market power regulation. This will prevent any abuse of a dominant position that would negatively impact the downstream broadband value chain. It involves a complex establishment of service, content, and application providers.

As these examples illustrate, deciding on a broadband PPP is a multi-stage process. As many developing countries are still in the process of visualizing, implementing, or revising their generic PPP framework, the lessons learned so far can guide the process. As with PPPs in every sector, due diligence conducted at the outset will go a long way toward guaranteeing that the type of PPP reaches its goal of serving a large number of people effectively.

BRINGING BROADBAND *to the* MIDDLE EAST

By Benoit Denis, Leonor Gonzalez Koss, & Francesco Totaro, European Investment Bank

Most agree that broadband is necessary for the Middle East and North Africa (MENA) region to achieve its potential. Examining how European institutions facilitated broadband during the last decade offers several important lessons and can guide officials in MENA through this important transition.

Few regions exemplify the importance of wide-ranging and affordable connectivity more than the Middle East and North Africa (MENA). In 2010, only 21 percent of combined households in the Southern Mediterranean countries (Algeria, Egypt, the economies of Gaza and West Bank, Jordan, Lebanon, Morocco, Syria, and Tunisia) had subscribed to mobile or fixed broadband connections. Reasons for the region's low numbers include high prices resulting from a lack of competition; burdensome regulatory frameworks; vast areas with low population density; and gaps in infrastructure. The national backbone—meaning the interconnections among the different sub-networks—was also often substandard.

The World Bank estimates that throughout MENA, a 10 percent increase in broadband subscriptions would lead to 1.4 percent growth in GDP and a 4.3 percent increase in exports. One job created in building a network would create three additional jobs in the economy. This is crucial in a region characterized by high unemployment rates, particularly among its youth, women, and university graduates.

Urbanization and youth are uniquely favorable demographics for broadband take-up. The world has already seen that widespread use of social media and cross-border communication have been powerful enablers of social transformation. Increased access to ICT has also driven new business ventures.

Nonetheless, broadband penetration in the region remains low, and varies significantly among countries. In 2013, 10 percent of the Lebanese population had a fixed broadband subscription, while in Egypt, home of the most prominently tweeted, blogged, and texted social movement, the share is only 3.3 percent. Accord-

PRIVATE DESIGN, BUILD, AND OPERATE

WHAT Private sector builds, owns, and operates the infrastructure but is subject to strict controls, including the setting of roll-out targets and benchmarking, as well as other clearly defined targets.

+ Low public sector burden	– Limited public control
+ Participation of commercial operator	– Funding level must be attractive

EXAMPLE Superfast Cornwall, United Kingdom

Superfast Cornwall aims to make Internet connections of up to 330 Mbps available through fiber broadband to 95 percent of homes and premises on Cornwall and the Isles of Scilly by the end of 2014. BT won a public tender to provide fast fiber optic based broadband services to more than 266,000 premises including 30,000 businesses in the County of Cornwall. An amount of £132 million will be invested in providing the network infrastructure which will then be available to third party service providers on a wholesale basis. The European Regional Development Fund (ERDF) is supporting the project with £53.5 million of funding. BT is providing the balance, giving it strong financial incentives to ensure that not only is the broadband network constructed to the required standards, but that take-up of services by various private service providers is achieved.

ing to a recent study by the European Investment Bank (EIB), €11 billion in investments is needed to ensure that by 2020 all Southern Mediterranean country citizens have access to broadband connections of at least 10 megabits per second (Mbps), with at least 50 percent being able to access the Internet at up to 30 Mbps.

SHOW MENA THE MONEY

Where will those investments come from? High-speed broadband network and New Generation Access (NGA) connections can be a very profitable business. With high take-up potential and often already existing infrastructure, the densely populated coastal areas and cities in the region are an attractive investment for private communication enterprises. In sparsely populated and distant peri-urban and rural areas, however, the rollout of broadband networks is less profitable. While the public sector will pick up a significant part of these needed investments, many governments in the region are constrained by the twin demands of limiting public expenditure and meeting an increasing number of competing demands placed on the public purse.

Public-private partnerships (PPPs) can help establish universal broadband access. In addition to being an alternative method of financing, PPPs in the

broadband sector enable the public sector to access private sector expertise and technology, engendering valuable knowledge transfers. PPPs also provide the public sector with the ability to transfer risk and accelerate the rollout of the necessary infrastructure.

But PPPs are far from being a panacea for the many challenges of providing broadband access to a growing and increasingly more demanding population. A crucial determinant of a PPP's feasibility is whether predicted demand will render the project profitable. In the Southern Mediterranean region, the potential for take-up is significant—from the private as well as the public sector. In Morocco, for instance, a new health decree will introduce online e-health services as a way to improve health care.

To understand PPPs' potential benefits in MENA, it's helpful to look at Europe's experience.

BROADBAND PPPs IN EUROPE

The financial crisis of 2008 exposed severe structural weaknesses in Europe's economy, such as lagging productivity and a lack of social cohesion. Recognizing the Internet's pivotal role in tackling these issues, the European Commission launched its Digital Agenda in 2010, setting out an ambitious NGA program

PUBLIC OUTSOURCING/GOVERNMENT OWNED—CONTRACTOR OPERATED

WHAT Construction and operation of a fully functional broadband infrastructure where the funding itself is being provided from public sector sources. The private sector operator is appointed after a competitive tender and takes responsibility for implementing the infrastructure and subsequently operating the network. In addition, the private company also has responsibility for marketing wholesale and, in certain cases, retail services.

+ Public stability mixed with private expertise	– Returns may not be attractive to the private sector
+ Public sector retains control	– Network management overhead

EXAMPLE Region Auvergne, France

The Region Auvergne plans to provide triple-play series, meaning high speed Internet, television, and telephony over one connection, to 95% of the population by 2025. France Telecom has a 10-year contract to operate and extend the existing broadband network, owned by the Region Auvergne, budgeted to cost € 38.5 million. While principally based on DSL, the network incorporates fiber optic loops that increase download speeds. The PPP has attracted major service providers to provide services to customers.

JOINT VENTURE

WHAT Split in ownership between the public and private sectors. Construction and operation are undertaken by the private sector. JVs make it possible for the public sector to initiate a major part of the project but then allow the private sector to increasingly take control and responsibility based on certain key performance indicators. The public sector initially makes a larger financial commitment but the private sector then takes responsibility until the network becomes self-financing.

+ Benefit to both parties based on risk sharing	– Conflicts of interest may impede success of joint venture

EXAMPLE Metroweb, Milan and Genoa, Italy

The PPP was established in 1998 between a local gas and electricity utility company and a new telecom provider in Milan, and today has successfully expanded to another city, Genoa. It has now evolved to a position where the company is entirely privately owned. The company continues its self-funded expansion, with the Italian Strategic Fund and several Italian banks having invested in it in the past years. This form of PPP makes it possible to secure private sector expertise and support while the public sector retains control in the crucial early stages of network construction and continues to have decision rights when commercial operations have been demonstrated.

that aims for all European citizens to enjoy affordable connections at 30 Mbps and for 50 percent of households to be able to access the Internet at 100 Mbps by 2020. At the time the NGA was launched, only 6.5 percent of fixed broadband lines in the EU provided surfing of up to 30 Mbps and only 1 percent of the population was surfing at up to 100 Mbps.

Public financial institutions have been instrumental in closing the gap. The European Investment Bank, for instance, has extensive experience in financing broadband projects, bringing its know-how and capacity to bear on deals. Projects have typically been supported through lending, grants, or through blending debt finance with EU grants. Europe's rural and peri-urban areas have benefited particularly from EU funding, including bringing broadband to remote regions of Scotland, rural Poland, and economically disenfranchised areas of Italy. In France, the EIB provided a €72 million loan to finance a publicly-owned, privately operated ultra-fast broadband network in the region of Haute-Savoie. A similar project was carried out in the Polish region of Świętokrzyskie.

In 2012, the European PPP Expertise Centre (EPEC) examined a number of these projects to try to determine which PPP models are better suited to the sector, and when PPPs are most appro-

priate. The study found four prevalent PPP archetypes in Europe's broadband sector. These models represent a range of options for combining public and private investment, and offer differing levels of involvement, commitment, and retained risk by the public sector. Each model is applicable in different circumstances, depending on the scope of the required infrastructure, the specific aims of the public sector, and the investment/risk appetite of potential private sector partners.

In each of the PPP models and corresponding examples described, the project varies in the level of risk transfer and financial contribution from the private sector. These European examples highlight points that may be useful as MENA plans its broadband strategy:

PPPs offer benefits in addition to financing

PPPs encourage innovative approaches. They are also able to address the issue of migrating customers from slower, copper-based infrastructure. PPPs will help to ensure that networks are accessible and price levels remain competitive and fair. As the demand for access to digital data continues to increase exponentially, the increase in access speeds will be very welcome. Less populated and remoter parts of the MENA region should not have to face a "digital divide." The PPP

PUBLIC DESIGN, BUILD, AND OPERATE

WHAT Significantly higher level of involvement by the public sector that is justified by the greater control that is being sought. This model offers an alternative when special funding for deprived regions is available. The public sector develops the required infrastructure for broadband services in a conventional way by letting contracts individually. The design, implementation, and operation of the network itself are all directly managed by the public sector. A separate publicly owned company is established that makes the network available to private service providers on a competitive basis.

+ Full public control, no conflict of interest + Socio-economic benefits can be prioritized	– No private sector funds or expertise

EXAMPLE Asturcon PPP, Spain

Asturcon is a Fiber-To-The-Premises, which means fiber goes directly to homes and businesses, in the economically disadvantaged former coal and steel producing Principality of Asturias. The Principality's government owns the network via a public company. Asturcon managed and implements the wholesale network itself, with €55 million invested, in order to keep control of its roll-out objectives and to manage the network directly. The Asturcon project operates in a region of Spain. A wholly public owned, special purpose company has been established (GIT) to offer wholesale services to private service providers. The high level of control has permitted a range of competing private service providers to get involved. Services to business and residents include 100/100 Mbps connections for business and 100/20 Mbps for residential customers.

models discussed in this article suggest that solutions that can prevent this.

NGA PPP contracts pose different challenges than PPPs in other sectors

It is much easier to predict demand and forecast growth for services in a mature sector, such as transport. Broadband is a new service, and it is difficult to predict the current demand and future growth. The broadband value chain is more complex and involves setting up retail and application providers. It also carries a significant technology risk because the broadband technology chosen could be threatened by other technologies during the lifetime of the project. Attitudes to PPPs also vary by country, depending on prior experience in using the mechanism and the market's appetite for risk.

Urbanization and youth are uniquely favorable demographics for broadband take-up.

Taking a long-term view on funding and planning

To attract the level of investment required to achieve universal broadband access in the MENA region, significant private sector investment will be crucial. Broadband PPP projects are most likely to be attractive to investors, such as pension funds, which are looking for low but steady annual return over a long period from a business with a steady cash flow. The speed of network rollout once the funds and contractors are in place depends on the size and complexity of the project.

There is no "best" model for a PPP in the broadband sector

The correct model needs to be assessed case by case, taking into account the scale and scope of the project, availability of existing infrastructure, and level of competition. However, the following should be ensured:

- The PPP model should maximize to the extent possible the use of existing infrastructure.
- The PPP model should maximize the use of private sector investment.
- The PPP model should maximize the competition—through, for instance, a wholesale-only obligation.
- The PPP model should not lead to oversubsidization of the private sector while the risk is taken by the public sector.

A favorable political, regulatory, and institutional environment is crucial for the success of broadband PPPs

A necessary condition for the successful implementation of broadband PPPs in the Southern Mediterranean countries is creating a favorable

regulatory and institutional environment. A number of challenges exist in the regulation of NGA Internet access. These include the need to promote competition—for example, by ensuring consistent application of costing methodologies and pricing principles across different wholesale products and safeguarding access to broadband infrastructure for companies without physical assets.

PPP projects need to provide an environment that encourages potentially competing providers to become wholesale customers of the PPP-developed network, and discourage the establishment of alternative infrastructure or a separate network. This means that the network must be open and flexible to enable innovation by service providers at price levels that are competitive and fair.

There also needs to be a high level of certainty that customers will migrate to the new network. The threat from the copper network can be mitigated by incorporating the closure of the existing copper infrastructure as part of the PPP project. This requires the PPP to ensure that regulatory conditions supporting existing services are met, and the participation of the incumbent operator is needed.

Most of the countries in the Southern Mediterranean region have civil law jurisdictions that rely on written laws. PPPs here are more likely to be successful when they are governed by specific laws and regulations, thereby increasing investor confidence and creating an investment-friendly environment. Currently, the only country in the region with a specific PPP law is Egypt. Similar PPP laws are awaiting adoption by the Tunisian and Moroccan governments.

TURNING TO MENA

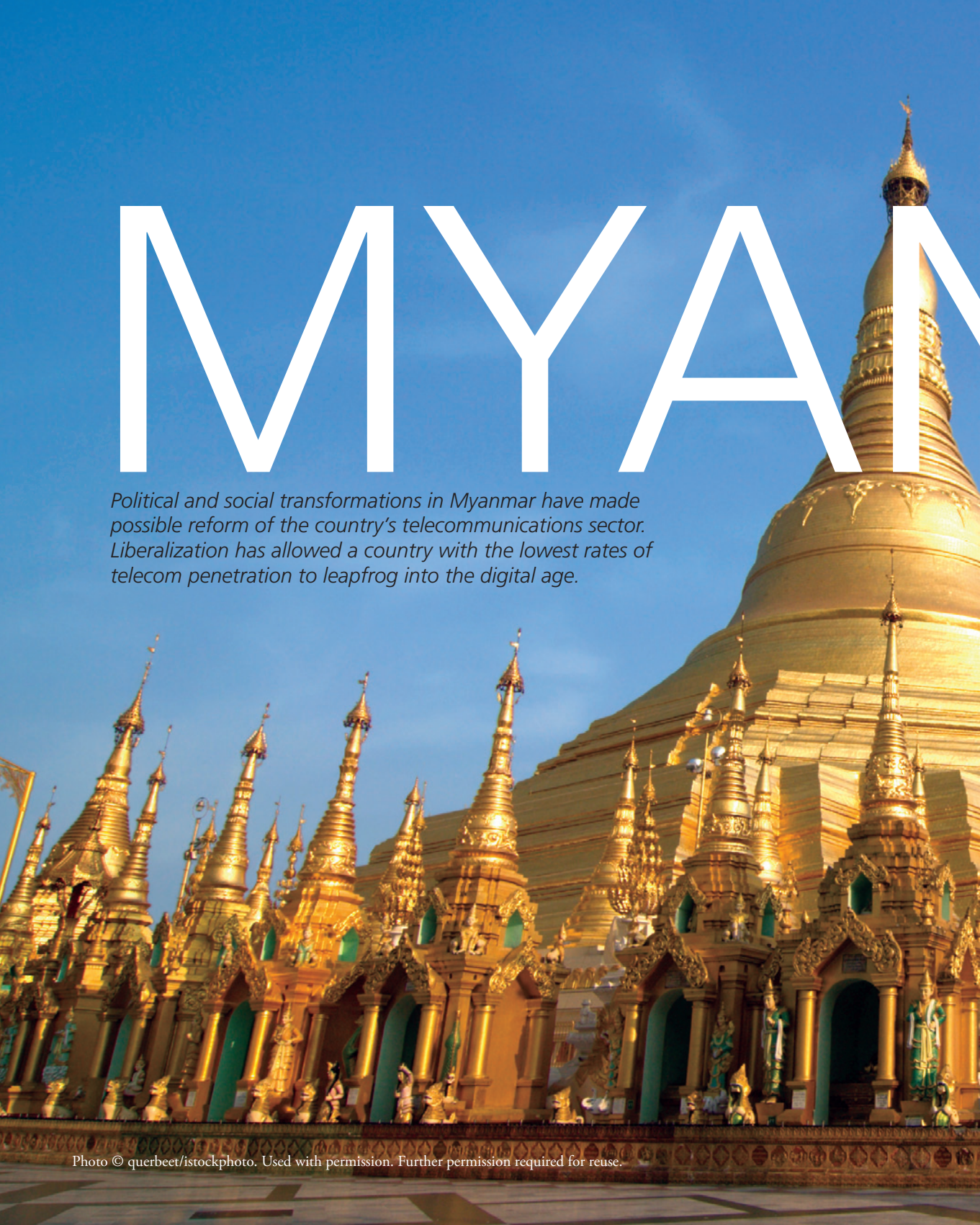
Despite the promise of PPPs for MENA, the number of PPPs reaching financial close is substantially lower than in other developing regions. This is due to two key challenges in the implementation of PPP programs in the region: the identification of projects that are suitable for PPP procurement, and the high costs and complexity of preparing them.

To address this, international financial institutions have deployed several initiatives and advisory facilities that use the European experience as a guide. For example, the EU PPP Project Preparation Facility for the Southern Neigbourhood (MED 5P), funded by the European Commission and led by the EIB, supports projects at different stages of maturity.

The transition to broadband in MENA will transform its people and its economic potential, as in every other region that has leaped the digital divide. But although the promises are similar, the challenges don't have to be. By learning from the European experience, MENA can prepare itself for success that will benefit people both inside and outside its borders.

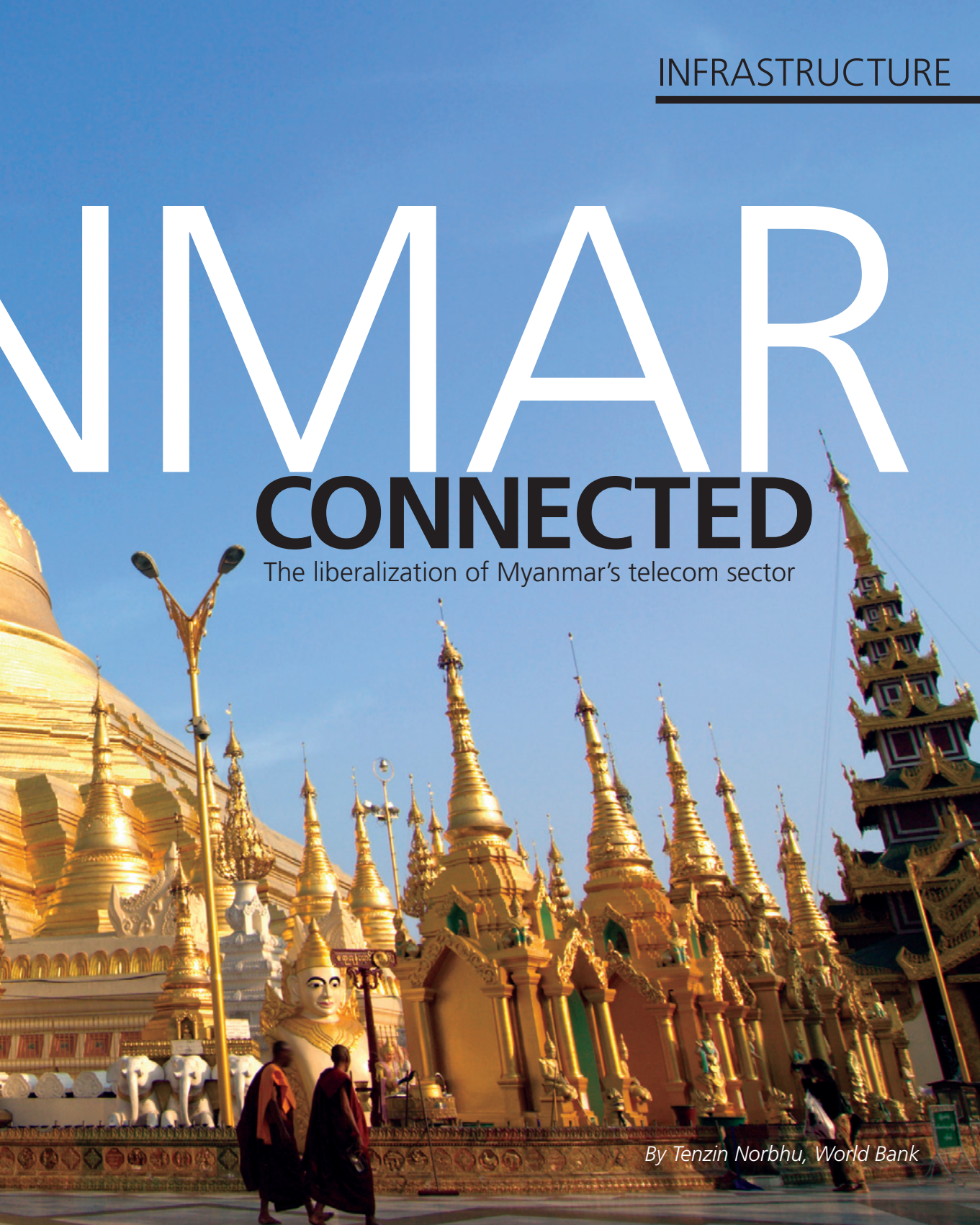
MYAN

Political and social transformations in Myanmar have made possible reform of the country's telecommunications sector. Liberalization has allowed a country with the lowest rates of telecom penetration to leapfrog into the digital age.



NMAR CONNECTED

The liberalization of Myanmar's telecom sector



By Tenzin Norbhu, World Bank

In February 2012, it cost $300 to buy a mobile SIM card anywhere in Myanmar—that is, if such a rare find made itself available. But just over two years later, in September 2014, you could easily purchase one for $1.50—and have your choice from among three operators.

What changed? The liberalization of the telecommunications sector has made possible these and other lightning-fast telecom transitions. Because of successful sector reform, and because Myanmar's development process is taking place in the digital age, the nation's citizens can expect ubiquitous access to telephones and the Internet in the next five years. This presents a tremendous opportunity for Myanmar to leverage modern information and communication technology (ICT) as a platform for socioeconomic development.

NOTHING EXISTS IN ISOLATION

But this digital leapfrogging did not just happen; several important events paved the way. In the last three years, Myanmar, one of the largest and poorest countries in the South East Asian region, embarked on a triple transition: from an authoritarian military system to democratic governance; from a centrally directed economy to market-oriented reforms; and from 60 years of conflict toward peace. As part of the government's ambitious economic, political, and governance reform program, the telecommunications sector was also liberalized to attract foreign investment, create jobs, support development of the local IT industry, and promote ICT as a catalyst for social and economic change.

These much-needed reforms made possible improvements in Myanmar's telecommunications sector and infrastructure performance. Statistics show that at the end of 2013, only 12.83 percent of people had access to cellphones, fixed telephone lines existed among just 1.04 percent of the population, and Internet users numbered only 1.2 percent of the population. These figures are among the lowest in the world.

LIBERALIZING THROUGH LEGISLATION

The October 8, 2013 approval of the Telecommunications Law established the legal basis for sector liberalization in Myanmar. Key sets of rules have been developed within the framework of the law on licensing, competition, access and interconnection, spectrum, and numbering; these rules provide the sector's regulatory framework.

A transparent, competitive licensing process was conducted in 2013 with the support of international advisors. The government received 91 expressions of interest on February 8, 2013 and issued pre-qualification criteria to all interested parties on February 21, 2013. On April 11, 2013, a total of 12 companies were pre-qualified from a long list of 22 companies that submitted their documentation.

The Ministry of Communications and Information Technologies (MCIT) issued a detailed information memorandum, bidding documents, and a draft license to the pre-qualified bidders. Eleven bidders submitted their bids, and two were selected via competitive process on

June 27, 2013. Telenor from Norway and Ooredoo from Qatar received their telecommunication service licenses in January 2014. Ooredoo launched commercial services on August 15, 2014 and Telenor on September 27, 2014.

To assist Myanmar's sector reform process, the Public-Private Infrastructure Advisory Facility (PPIAF) provided a $540,000 Technical Assistance (TA) grant to the Post and Telecommunications Department (PTD) in 2013. The PTD is in charge of regulatory issues as part of the MCIT and is expected to operate as an independent regulator by the end of 2015. This TA supported the development of an operational sector road map, the design and implementation of a regulatory framework, and helped develop technical and administrative capacity within the PTD to address issues related to sector liberalization.

In February 2014, the International Development Association (IDA) approved a $31.5 million credit toward a Telecommunications Sector Reform Project to improve the enabling environment for the telecommunications sector and extend coverage in selected remote pilot locations. It also established priority eGovernment technological foundations and institutional capacity for the government to embark on its public sector reform program.

Some of the key outcomes that are expected include increased access to quality and affordable telecommunication and Internet services across Myanmar; the establishment of a Myanmar National Portal; and the development of capacity to manage the telecommunications sector reform program.

TRANSPARENCY IS THE CLEAR WINNER

PPIAF's Technical Assistance supported the Government of Myanmar's Ministry of Communications and Information Technology in the design of its sector liberalization agenda. As part of this close collaboration, an international best practices report on telecommunications regulations was delivered to the ministry, providing inputs in the design process of telecommunication regulations.

After this feedback was reviewed, officials drafted a set of key regulations on licensing, competition, access and interconnection, spectrum, and numbering. Following public consultations, approval of all rules is expected in 2014. Together, these critical regulations will enable fair competition and sector liberalization. The public consultations have served another purpose as well, institutionalizing a transparent mechanism for the development of the regulatory framework.

Estimates show that by the end of 2015, most of Myanmar's population will live within range of a third generation (3G) or better mobile network system. Broadband uptake in Myanmar will be driven by mobile networks. These changes—made possible by and in turn influencing other important reforms in the country—underscore the role ICT plays as a platform for development. The performance in this part of the world couldn't be more important.

SHARE INFRASTRUCTURE, EXPAND THE INTERNET

Emerging best practices demonstrate the power of partnerships

By Siddhartha Raja, Tenzin Norbhu, & Carlo Rossotto, World Bank

Utilities that share their infrastructures will help reduce the costs and time to deploy telecommunications networks. Governments that create an enabling environment and support partnerships to share infrastructure will help to expand the reach of the Internet, connecting more people to economic and knowledge opportunities around the world.

Connecting to cyberspace requires an immense physical infrastructure. The telecom networks on which the Internet runs are built using thousands of miles of fiber optic cables—overland and submarine—and hundreds of towers carrying antennas. So expanding the reach of the Internet implies significant civil works to create ducts and towers that carry those cable and antennas. Estimates are that civil works make up more than half of the cost of building networks.

This is why telecommunications companies (telcos) often look for ways to share other networks' infrastructures, increasingly across sectors. Being able to run fiber optic cables in an existing duct or put an antenna on a power transmission tower means cutting the costs and time to deploy networks. Fiber optic cables in Paris and some of Japan's cities run through the municipal sewers. In India's mountainous northeast, some states connect to the global Internet via fiber

optic cables laid along the tops of the electrical power transmission towers, which also host mobile telephone networks' antennas. And in Chisinau and Tbilisi, companies compete to get access to municipal ducts and poles.

Yet many utilities have not begun to share their infrastructures, and many countries have not promoted or at least permitted such sharing. In some cases, this is because of policy or regulatory restrictions. At other times, it is due to the lack of coordination across agencies, poor information sharing, or limited institutional capacity. By creating an enabling environment and the mechanisms for such partnerships, governments can play a role in cutting costs and expanding the reach of Internet services. The entry of alternative providers into telecom markets can promote competition by opening new facilities. This is especially true for the developing world, where energy, transport, and water and sanitation systems are being built or improved, and where telecom incumbents might have monopoly power.

Such partnerships—where public utilities host telecom networks' cables or antennas—will benefit host infrastructures as well. Utilities can earn additional revenues by leasing these (often under-used or unused) assets, and can use this connectivity to support their own "smart systems" such as power grid monitoring or intelligent transport systems. The overall benefit, however, is to those citizens and businesses that get to access Internet services and connect to economic and knowledge opportunities globally. Considering the experiences of various utilities and countries will help identify emerging best practices.

EXPERIENCES WITH SHARING

For some time now, electric power transmission utilities around the world have been installing fiber optic cables to help with grid monitoring and control. However, the internal requirement was a fraction of the installed data capacity. India's PowerGrid recognized the potential to use this excess capacity—available on 30,000 kilometers (km) of its network—to provide national connectivity services to a range of telecom networks and government agencies. The utility is also beginning to use its many towers to host antennas for mobile telephone networks. This business contributed about 1.8 percent to revenues and has led the utility to be a key member of the national knowledge and fiber optic backbone networks. Similarly, since 1995, Turkey's transmission utility, TEIAS, has been sharing with telcos about 13,000 km of fiber optic cables installed on its network. Initially sharing exclusively with incumbent Turk Telecom, TEIAS has been leasing its fiber to various private networks since the telecom sector was liberalized.

PowerGrid and TEIAS follow different models. While PowerGrid has a tariff "menu" for various services, TEIAS bids out leases of its fiber. As a result, PowerGrid remains fully responsible for the operation and maintenance of connectivity, while TEIAS passes this responsibility on to leasees. The institutional structures vary accordingly. In both cases, however, telecom regulators enabled this new business by having a liberal licensing regime that permitted the utilities to

enter the telecom market. And a new electricity market law and licensing regulation has permitted TEIAS to lease excess fiber optic capacity.

Similarly, gas transmission utilities can also open installed fiber optic capacity. Indonesia's PGASCOM, part of a leading gas transmission and distribution utility, offers upstream data connectivity services across the Sumatra and Java regions. Germany's GasLINE, formed in 1996, offers connectivity capacity to telecommunication companies using fiber optics installed on the rights-of-way of 15 national and regional gas utilities.

REGIONAL REWARDS

Regional connectivity initiatives could also benefit from such sharing. The Baltic Optical Network is an alliance that uses each of the three countries' electricity transmission infrastructures, creating an 8,000 km fiber optic network. Each of these networks is a part or spin-off from each utility's IT and telecom teams. PowerGrid has also connected with Bhutan's electricity transmission utility, helping add redundancy to Bhutan's international Internet connectivity.

Sharing rights-of-way or assets of linear transportation infrastructures such as highways, roads, and railways can also help. Railways have fiber optic cables or microwave networks for traffic management and signaling systems. India's RailTel—a subsidiary of the Indian railways—has developed fiber optic networks using the railway's rights-of-way, and now provides data centers, tower space, and enterprise services. Some, such as Tunisia's railroad company, SNCFT, has leased its ducts, while Morocco's ONCF leases installed fiber optic lines to private telcos.

Use of rights-of-way alongside highways and city roads is a common method to roll out optical fiber networks. However, this often implies multiple digs that could cause damage and inconvenience many. Development of ducts alongside roads could alleviate these problems while cutting costs. For example, the MSRDC, a roads development agency in the Indian state of Maharashtra, has rolled out fiber optic cables on a major expressway, which it then leases. Such joint deployment has long been undertaken in the Republic of Korea. Information sharing and coordination across agencies is a key requirement for these efforts to work. As a result, countries across the European Union have been developing infrastructure atlases to enable sharing of geospatial data, mapping existing and planned infrastructure that can be used or developed. Portugal now has an atlas to map usable infrastructure such as ducts and fiber optic cables on public roads, railways, water, and gas networks. Similar initiatives across Europe are helping in coordination and dispute resolution.

EMERGING BEST PRACTICES

Governments at the national, regional, or local levels can consider some emerging best practices to promote sharing.

Opening markets. Some regulatory regimes prevent alternative infrastructure providers from entering the telecom market, while some might set difficult conditions such as high license fees.

EU countries have simplified authorization regimes in place, and in some countries, such as India, specific "infrastructure provider" licenses allowed companies like PowerGrid to enter the business-to-business market. Lifting restrictions on market entry, and hence on utilization of available infrastructure, will be an important first step.

Establishing coordination and dispute resolution mechanisms. Poor information sharing or coordination will hamper sharing. Cross-sector sharing needs a means of sharing information on the stock and flow of infrastructure. Developing infrastructure atlases, which map out all of the possible rights-of-way, ducts, or fiber optic cables available for shared use can help. Clarifying regulatory powers will also help; for example, in Lithuania, the telecom regulator can clarify if a non-telco infrastructure is shareable. In other cases, standards to develop and manage shared infrastructure are set up. Finland now requires all future transport infrastructures to have ducts for optical fiber. In Brussels, plans on significant infrastructure work have to be filed with a coordinating agency, facilitating co-investment and joint development.

Efforts will be needed to ensure coordination of regulatory regimes to avoid overlaps in competency. For example, telecom regulators are typically responsible for how utilities price data services, while the energy regulators should focus on the core business, and can assist in creating incentives for opening of the infrastructure. Dispute resolution mechanisms are also critical. In Lithuania, the telecom regulator can resolve disputes between two telcos; when a non-telco is involved, the case escalates to a court, where the telecom regulator can provide its opinion.

Building capacity. Some utilities (and governments) are wary of initiating infrastructure sharing efforts due to limited institutional capacity, either within regulatory agencies (for the utility or telecommunications) or within the utility. Utilities may face capacity constraints as starting a "non-core" business could shift limited resources away from the core utility business. However, as the foregoing examples have shown, different models exist, including outsourcing, spin-offs, and subsidiaries. Sufficient regulatory capacity—supported by an overall legal or policy framework—is needed to ensure that regimes for each sector are clear and proportionate.

Sharing infrastructures across sectors will help expand access to the Internet. The precise mechanisms to enable these partnerships will vary by location, host infrastructure, market structure, and legal and regulatory frameworks. The ultimate objective should be to ensure appropriate use of all possible infrastructures to include more people and businesses into the global information society.

The Public-Private Infrastructure Advisory Facility (PPIAF) and the World Bank Group are developing a toolkit on cross-sector infrastructure sharing. The aim of the toolkit is to assist stakeholders across all infrastructure sectors to identify opportunities to share elements of existing or planned infrastructure and to increase the efficiency of infrastructure investments through infrastructure sharing.

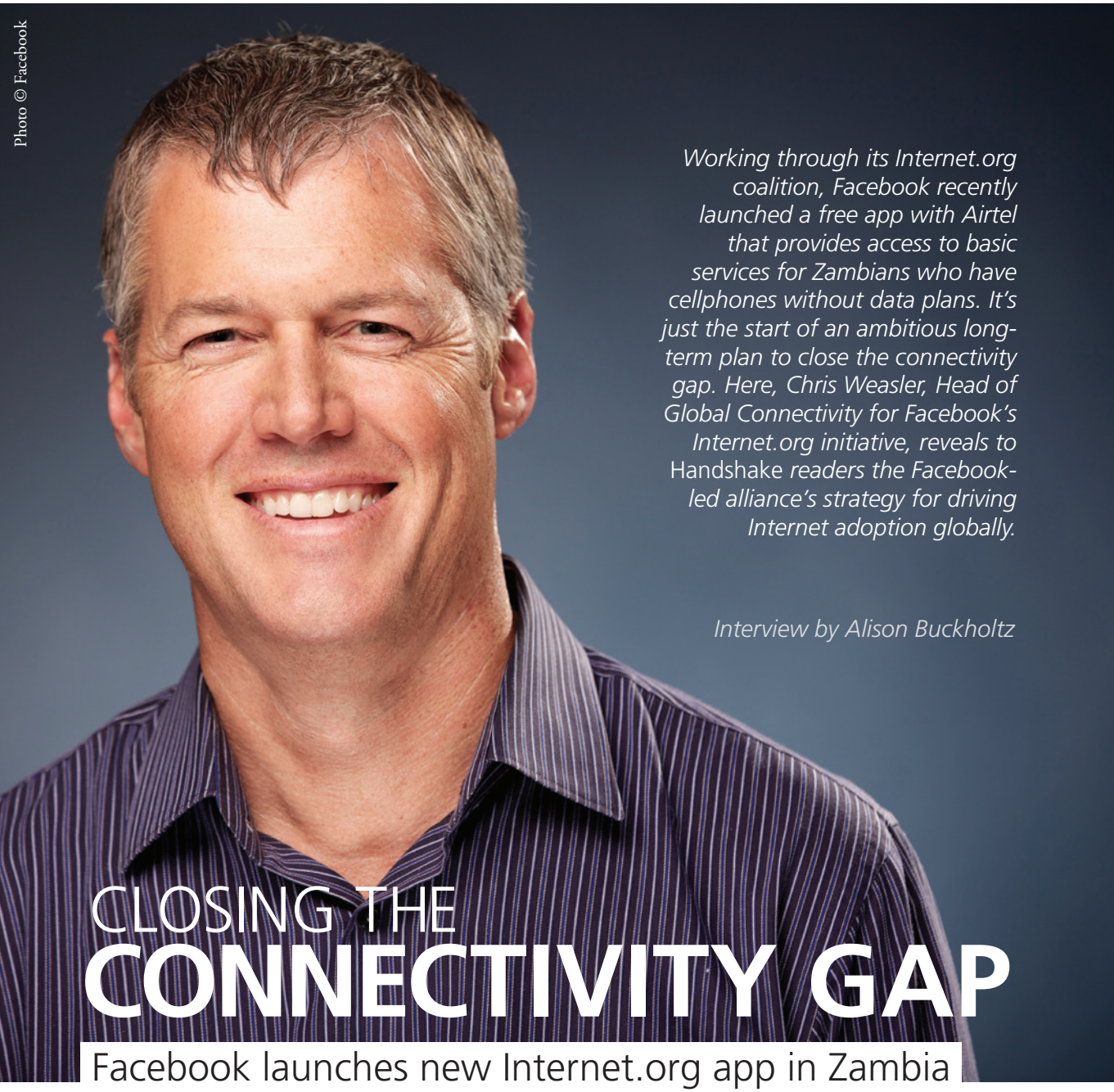


Photo © Facebook

CLOSING THE CONNECTIVITY GAP

Facebook launches new Internet.org app in Zambia

Working through its Internet.org coalition, Facebook recently launched a free app with Airtel that provides access to basic services for Zambians who have cellphones without data plans. It's just the start of an ambitious long-term plan to close the connectivity gap. Here, Chris Weasler, Head of Global Connectivity for Facebook's Internet.org initiative, reveals to Handshake *readers the Facebook-led alliance's strategy for driving Internet adoption globally.*

Interview by Alison Buckholtz

Last year Facebook launched Internet.org, a global partnership to make the Internet available to the two-thirds of the world's population that isn't connected. What is Facebook's role in the initiative?

For over 10 years, Facebook's mission has been to give people the power to share, and make the world more open and connected. In that time, we've connected a lot of people to Facebook but we have also learned that there are hurdles to getting people on the Internet. These hurdles are significant—and diverse. We knew that overcoming them was a task greater than what one company could achieve on its own. With that in mind, we deliberately launched Internet.org as a Facebook-led alliance of partners working together to bring Internet connectivity to the nearly two-thirds of the world that isn't online yet.

How can Internet.org change the way the Internet represents people and answers their needs?

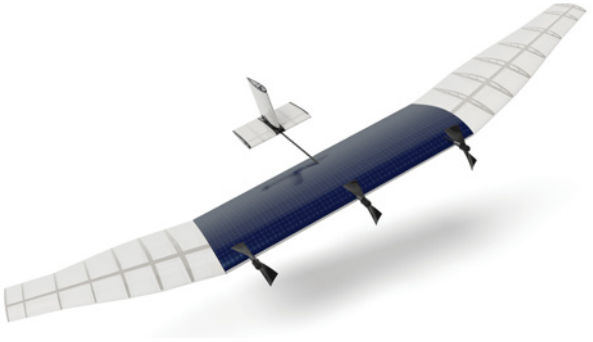
Our starting point is to try to make the Internet available to everyone. When you make it available and affordable, with local language content, and people see how it can provide utility in their lives, people do adopt the Internet. As you drive Internet penetration up in some of those countries where it's low, it starts to represent more people and gives them the ability to participate in the knowledge economy. They not only tap into the collective knowledge of the world, but also become an active contributor to it. Different people will take different approaches, and we don't want to be too prescriptive about how it "should" work in various countries; we just want to give everyone the opportunity to have access. It will benefit those of us already connected, too. Facebook's founder had the benefit of open source tools, and there's no reason to believe the next Facebook couldn't come out of a village in Ghana or a remote location in Myanmar.

How does the Internet.org initiative complement the goals of Facebook's Connectivity Lab, which is developing ways to make affordable Internet access possible in communities around the world?

At the highest level, Internet.org and the goals of the Facebook Connectivity Lab are complemen-

It's easy to take the Internet for granted and assume most people will soon have the access and opportunity we have, but that just isn't the case. Connecting everyone is one of the fundamental challenges of our generation.

—Mark Zuckerberg, Wall Street Journal, July 7, 2014



As part of its Connectivity Lab, Internet.org is working on new delivery platforms—including planes and satellites—for connectivity on the ground, in the air, and in orbit.

Image © Facebook.

tary, and both are tied to the company mission. The Facebook Connectivity Lab is focused on an element of Facebook's broad connectivity agenda—developing space-based technologies to bring the people who live outside of traditional, terrestrial network coverage online through satellites, drones, lasers, and other space-based technology.

Internet.org can be seen as the ultimate public-private partnership for connectivity—a global partnership among technology leaders, nonprofits, local communities, and experts who are working together to make the Internet available to all. Did Facebook have a model for a partnership of this scale?

When Internet.org was launched and originally defined, we didn't have any specific models we were trying to follow—we hadn't done this before, so we consulted with experts and deepened our relationships with existing like-minded partners, especially mobile operators and infrastructure providers. The Internet.org app in Zambia is a really good example of how we have worked with many different stakeholders, public and private, to develop a suite of free basic services. In this case, we worked with the operator Airtel, local governments, and other partners on the ground who all had input into the basic services we're delivering now.

Why did you choose Zambia for the Internet.org rollout?

Just looking at the population of Zambia and knowing that only about 15 percent of the population there accesses the Internet today, we saw there was a huge opportunity to bring more people online. These are early days for Internet.org, so we're looking for partners that are able to move fast, alongside governments that can embrace the projects that we're testing and trialing. The conditions were just right in Zambia to achieve that.

It's widely understood that different communities require different solutions for connectivity. What sort of criteria factors into how Internet.org can work in different areas of the world?

There are billions of people who live within coverage who are not on the Internet—the barriers there are affordability and awareness. But when we look at the 15 percent who are not close to coverage areas or who might live within a weak signal, we see people who live in much lower population density areas that are difficult to serve within a traditional terrestrial network. Either they are off the power grid or there's no reliable access to a cell site, or the challenges are economic—for example, there's just not enough network traffic for the operator to cover the cost of operating that incremental site. That's where some of these different solutions from the Facebook Connectivity Lab come in. All of these solutions are focused outside of the core, dense, urban areas—for example, some of the work that we're doing on solar powered high altitude long endurance aircraft could be good solutions for low population density locations. They can stay aloft for months, they can be deployed pretty easily, and the network architecture that would use those aircraft is somewhat flexible. We're still working through exactly what that looks like, but that's how we're thinking through how to serve different geographies.

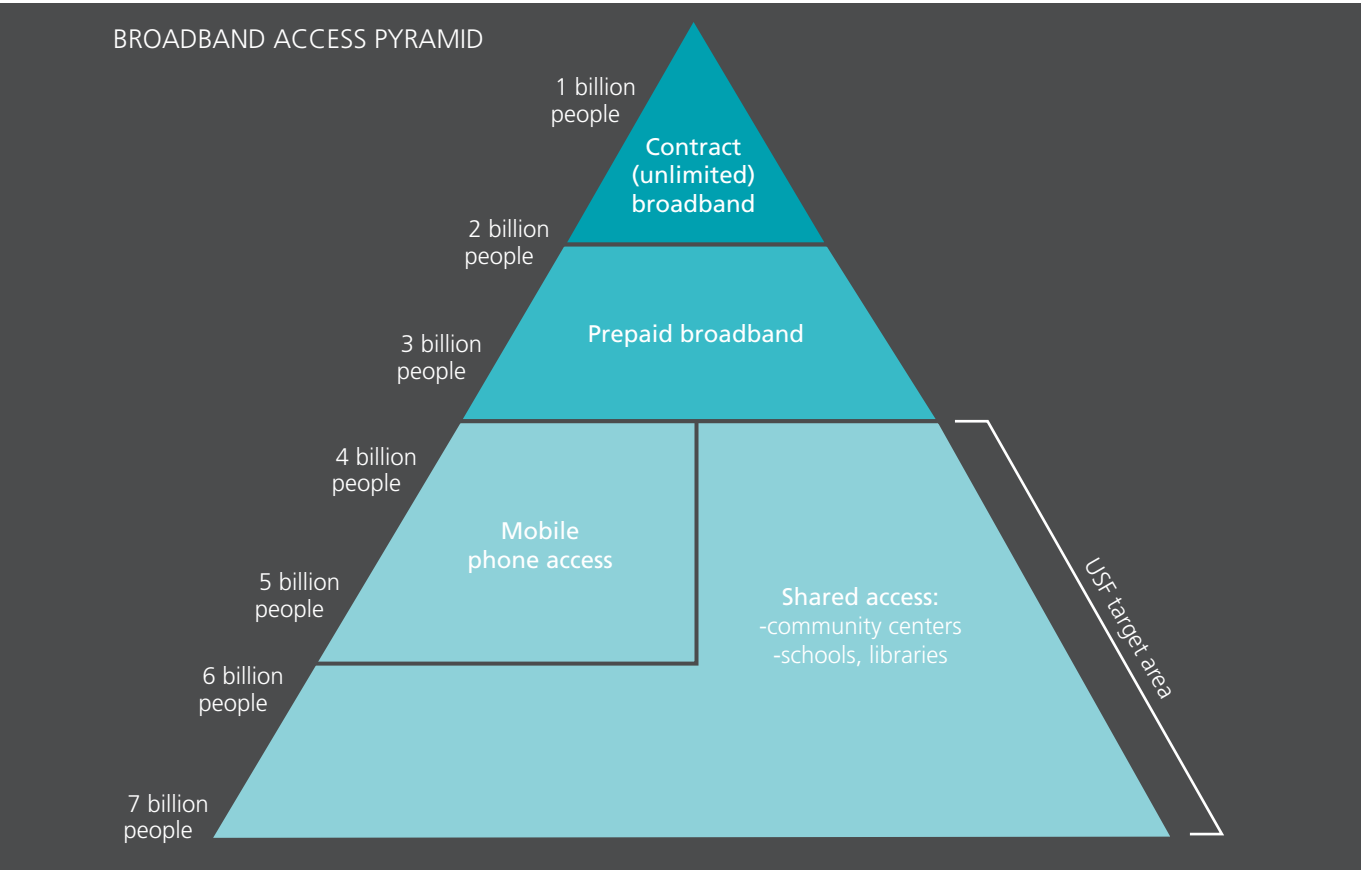
We're also exploring the use of satellites. Satellites have played a meaningful role in communications and connectivity for decades. There are latencies that need to be overcome, but our team is looking at how we can bring the cost down and allow us to launch on a faster timeline.

Facebook's Connectivity Lab is working on new aerospace and communication technologies to advance the Internet.org mission of improving and extending Internet access.

connecting the UNCONNECTED

Universal Service Funds narrow the digital divide

By John Roman, Intel Corporation



The social and economic benefits that come with access to broadband improve lives and create economic opportunity. The "connected" have an opportunity to bring this access to all, and assistance is key.

The digital divide contributes to an economic divide. Countries with significant penetration are thriving, and despite efforts to improve Internet access in many developing countries, many nations and countless numbers of people are being left behind. The United Nations Broadband Commission has established goals for countries to close these gaps, and there has been progress: for example, over 134 countries now have national broadband plans. But many low-income and remote populations remain unserved; the International Telecommunications Union's "ICT Facts and Figures" reports that over 4 billion citizens lack Internet connections.

This leaves "the connected" with a formidable opportunity—and in many places, this opportunity is being seized. Market mechanisms have connected the first 2 billion users worldwide, and with new business models and public-private partnerships, these same approaches are on the way to enabling the third billion. The pre-paid subscription model, along with facilities competition, has made cellphones nearly ubiquitous. Applying the pre-paid model to broadband via the R3B program—a partnership among government, service providers, equipment manufacturers, and content providers offering pre-paid broadband, affordable PCs, and desired content—has quickly added millions more online.

UNIVERSAL SERVICE FUNDS CLOSE THE GAP

Connecting the remaining billions of people with broadband requires public assistance because market forces are not sufficient to act in the near term. Universal Service Funds (USFs) are one valuable tool to close these service gaps, and best practices from around the world can model results for governments considering this approach. In Malaysia, for example, the USF provided netbooks and subscriptions to more than 1 million low-income students, which more than doubled household Internet penetration in three years. Turkey is another success story; the country is using USFs and other funds to transform the education system, providing elec-

tronic whiteboards, laptops, and tablets, along with a 21st century curricula and the appropriate teacher training. These programs greatly help to increase broadband use.

The reality, however, remains: several billion people who are in the lower tier of the pyramid live in remote locations and have extremely low incomes, and therefore shared access can be one of the most effective solutions for the short term. Shared access through telecenters, libraries, and schools provides a number of benefits, such as low cost access to devices that connect to the Internet, digital skills training, and access to e-government services.

Connecting billions of people with broadband requires public assistance because market forces are not sufficient to act in the near term. Universal Service Funds (USFs) are one valuable tool to close the service gaps in low-income and remote areas.

USFs have established hundreds if not thousands of telecenters in remote areas. Success stories in Colombia, Malaysia, Pakistan, and Ghana prove that they are providing a means for millions of underserved villagers to gain access to essential skills and services. In India and Bangladesh there are also thousands of these shared access centers. Some are managed by villagers, who may act as agents of the banks (assisting with bill paying and microloan financing), or agents of the government (providing online registrations to access government services) while also providing PC skills training and access to email.

WANTED: WORKSHOPS

Despite the benefits of USFs, much of the funds around the world remain underutilized. A recent ITU study shows that of 69 funds reviewed, a majority had little to no activity, and at the time less than half permitted deployments for broadband. Out of $23.2 billion available for Universal Service Funds in 2010–2011, $11.8 billion remained unused. One factor contributing to low usage of available monies is inability to manage the fund.

To help address the capacity issues, Intel is leading a series of regional broadband and Universal Service Fund workshops where government and industry leaders gather to share what works and what doesn't to enable more people to get online. The money is available, the tools are accessible, and the will exists. As we spread the word about these resources, we look forward to connecting far-flung populations and making the world a little bit smaller, for the benefit of us all.

This article was adapted and updated by the author for Handshake *from the ITU Broadband Commission report, 2014.*

BUT WHAT DOES IT ALL MEAN?

Since the late 1990s, access to information and communication technologies (ICTs) has seen tremendous growth, driven primarily by the wireless technologies and liberalization of telecommunications markets. Mobile communications have evolved from simple voice and text services to diversified innovative applications and mobile broadband Internet. *The Little Data Book on Information and Communication Technology 2014* illustrates the progress of this revolution for 214 economies around the world. It provides comparable statistics on the sector for 2005 and 2012 across a range of indicators, enabling readers to readily compare economies. This book includes indicators covering the economic and social context, the structure of the information and communication technology sector, sector efficiency and capacity, and sector performance related to access, usage, quality, affordability, trade, and applications. The glossary contains definitions of the terms used in the tables.

BY THE END OF 2013...

6.8 billion mobile-cellular subscriptions globally.

2.7 billion individuals using the Internet.

700 million fixed broadband subscriptions.

All figures estimated.

THE DIFFERENCE *is in the* DETAILS

Legal Aspects of ICT & Telecom PPPs

ICT PPPs differ from those in other infrastructure sectors. Though PPPs are still an effective way of using scarce public funds to catalyze and "crowd-in" private sector participation and financing, each project needs to be looked at individually, while paying close attention to risk allocation.

By David Satola, World Bank

Although PPPs are at their core an assignment of risk between private sector and public sector parties, these agreements also define governance arrangements. For PPPs in information and communications technology (including telecommunications), or ICT, the governance arrangements ensure fair competition and open access. This is an area where PPPs in ICTs differ from PPPs in other infrastructure sectors.

Most countries have telecommunications legislation and a sector regulator to ensure efficiency and fair competition in the provision of infrastructure and services. Generally, regulated industries such as ICT require different levels of oversight from the PPP regulator. Governments must be careful to limit the opportunity for regulatory arbitrage among the PPP and sector regulators by market players, ensuring that the regulatory oversight of the telecom regulator does not conflict with that of the PPP supervisor and vice versa.

PPPs IN TELECOM

In telecom, PPPs are often used for the financing, installation, and operation of infrastructure (typically fiber optic broadband, both terrestrial and submarine), and the provision of services that use the infrastructure. The contracts are typically "transactional"—they involve setting up joint ventures, sometimes through a corporate vehicle and sometimes via contract for the express purposes of the project.

For example, the Africa Connects Europe (ACE) submarine cable consortium is not an entity, but a joint venture (JV) by contract. Of the 20+ members of ACE, consortium members who are

benefitting from World Bank financing are using PPPs for the construction of domestic infrastructure and the distribution of broadband capacity locally, mostly in the form of corporate JVs that include shareholder agreements and articles of incorporation or the equivalent.

Some elements of the corporate JV type of PPP that the ACE agreements incorporate are worth noting:

- ***Entry, exit, and continuity:*** Provisions regarding entry and exit from the venture, including the rights of first refusal upon exit, should be considered. The JV PPP should also include appropriate provisions that give the parties incentives to continue in the venture. These could include spacing out investment obligations throughout the rollout of the project (as opposed to allowing private participants to "back-load" their investment after public sector money is invested).
- ***Open access and fair competition:*** JV PPP contracts address the governance of the venture, including, critically, issues of open access and fair competition. For added protection, material decisions affecting open access and fair competition could be given "super-majority" voting rights in the consortium documentation. This gives minority participants (usually the government entity) rights to ensure that the public policy objectives that the venture was set up to achieve are respected.
- ***Downstream arrangements:*** The contract should also consider the need for the JV to enter into further downstream arrangements, including financing and construction of infrastructure, obtaining operational licenses, and even "outsourcing" the network operations functions to third parties.

PPPs IN E-GOVERNMENT

While some of the legal arrangements for e-government projects may include the purchase of hardware and software from vendors for running government databases, or outsourcing contracts with other vendors to run systems on behalf of governmental entities, these arrangements are qualitatively different than the transactional PPPs typical in telecommunications. An e-government contract is a long term, ongoing relationship typified by the transfer of some governmental function to a private party. The PPP contract focuses on the service-level aspects of the activity, shifting risk and liability to the private provider that is performing a function on behalf of a governmental entity.

The financial aspects of these contracts are very different from those in the telecom infrastructure context. While there is an element of investment, the main distinguishing factor is the ongoing provision of service. Accordingly, the financing of these PPPs may also include financing by the government of the service provider through ongoing operational revenues via license fees, or using revenues generating from provision of the service. Though these differences may seem minor at first, each one creates a set of circumstances that deserves close attention to result in a successful project. h

"KNOW WHAT YOU KNOW"

How local governments can engage communities through technology

In a paper for the Berkman Center for Internet & Society at Harvard University, scholars looked at three cases of community fiber networks in the U.S. to determine what went wrong, what went right, and what lessons could be learned as these networks are rolled out in other cities around the world. Susan Crawford, a Visiting Professor at Harvard Law School, is the paper's lead author and the coauthor of the new book, The Responsive City: Engaging Communities Through Data Smart Governance. *She also served as Special Assistant to President Barack Obama for Science, Technology, and Innovation Policy (2009) and as a member of Mayor Michael Bloomberg's Advisory Council on Technology and Innovation. Here, she discusses how government officials can make technology a priority, how to get public-private partnerships right the first time, and why "e-governance" is just "governance."*

Interview by Alison Buckholtz

In your recent paper, you looked at three American cities' approaches to community fiber networks. How would the lessons learned from these cities apply to similarly-sized cities around the world?

We have a major problem in the U.S. when it comes to high-speed Internet access, and that problem is undermining our ability to take on other challenges—including widening inequality, educational deficits, expensive healthcare, crumbling infrastructure, and climate change, among other issues. Our problem is that Americans pay too much for second-class (cable) access to the Internet, and too many poor and rural Americans are being left behind entirely.

We have gotten in this situation because of policy failures at the federal level over the last ten years or so, and mayors across the country are getting fed up. So I have been focusing on city-level fiber planning that will help mayors get inexpensive, ubiquitous, unlimited fiber optic connections in place. This will facilitate broad wireless coverage as well. Many cities already have public fiber assets in place but have not thought about how to use those facilities to help their citizens.

My recent paper (written with three of my students) about San Francisco, Washington, D.C., and Seattle fiber efforts outlines what those cities have already been through with respect to fiber planning. All three have a long way to go, but other cities around the world can benefit from their thinking. Developing societies can leapfrog ahead—they won't be stuck on a cable plateau in the same way the U.S. is—and move right to fiber. Large financial institutions are coming to understand the business model for fiber and will be in a position to back these plans.

Which cities are doing a good job improving governance through technology, and what elements have converged to make these e-government projects successful?

The arrival of fiber connections to the Internet, decreasing costs for storage of data, wide availability of smartphones, knowledge of data analytics, and a new generation of policy/tech leaders in local government is creating the opportunity for thickening the mesh of democracy in a positive way. The goal is to build trust in the public sector by "showing your work" in innumerable small ways that are visible to the public—which will help cities collectively address major civic problems. *The Responsive City* lifts up a wide variety of stories along these lines. We are just at the beginning of this paradigm shift.

Chicago is one of my favorite cities in the world, and it is making great progress on the responsive front. Mayor Rahm Emanuel's leadership has been critical; he has a terrific team in City Hall that is building open-source tools that will, among other things, provide a map-based interface to city services that could be adopted by smaller cities. Chicago has built a "data diction-

ary" that identifies all the fields in all of its data, making interoperability among databases belonging to different cities possible—and thus comparisons among cities. A local nonprofit, Smart Chicago, in partnership with local foundations and community groups (as well as City Hall), devised a way for constituents to identify and track neglected buildings—feeding that information right into the city's 311 system and putting pressure on the city to be responsive. Chicago is carefully proceeding with understanding its own data (formerly hidden in databases that were not linked) to help it understand how to target its resources. Where are air quality issues? How is traffic flowing? What infrastructure needs fixing? Many of the steps Chicago has taken are quite simple—but they're revolutionary given the way local government usually operates. This isn't "e-government." It's just government.

What are the most important figures that local officials should look at if they want to leverage data and be more responsive to their citizens' needs?

The first step for a local government is to know what it knows. This sounds simple, but it may take months to figure out what data and other technology assets are hiding in various city agencies and how they might relate to each other. Transport data, infrastructure data, city fiber, city employees who are knowledgeable about data science—a thorough inventory needs to be taken. The next step is to ensure the city has hired people who are flexible, knowledgeable about technology, and have the full trust of the city leadership—and to give them a budget and running room to make progress on pilot projects that will prove to city agencies that collaborating both inside and outside the walls of their local city hall will benefit everyone.

What should public-private partnerships (PPPs) do better to be more widely utilized as e-Governance tools?

When it comes to software and servers, cities do not necessarily need to buy large enterprise systems that will trigger ongoing payment obligations. A city should not have to pay to ask questions of its own data. But a future crucial partnership may involve borrowing employees from the private sector to serve for short (two-year) stints in government—bringing in 21st century expertise to help infuse local government with current technology knowledge. And city employees should have opportunities to exit and return, for the same reason and for similar periods of time. No amount of "continuing education" will substitute for these real-life opportunities. The current generation of students should be given the chance to work for a short period of time in local government as well. These steps will lead to long-term changes that will strengthen democracy.

Another important PPP may involve fiber infrastructure. A city or local government may not be the best actor to itself manage a dark fiber installation. While retaining ownership and control, and while requiring openness to retail-level services, the city can call for fiber to be built and assist the private entrant by providing loan guarantees, access to city poles and rights-of-way, and other assistance.

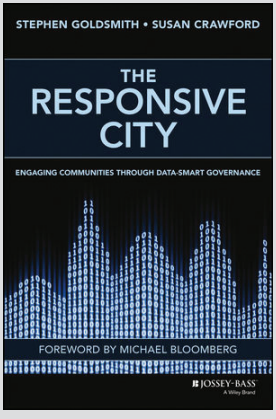
When advising high-level government officials on using technology to innovate for the benefit of communities, what arguments are most convincing?

By 2050, three-quarters of the world's people will be living in cities. Cities are under great pressure to do more with less, while facing grave challenges of inequality, climate change, and economic dislocation. At the same time, the long-run benefits of democracy over authoritarianism need to be demonstrated. Digital technology, harnessed by thoughtful policy and wielded by knowledgeable leaders, can help on both these fronts, allowing the city to show its work, listen to the concerns of its inhabitants, and deliver services more effectively. Yes, it requires an upfront investment in the city's employees and in basic infrastructure. But the payoffs are incalculable.

You've emphasized that data-smart governance needs a cadre of city officials and innovators to lead the charge and empower public employees with the discretion to translate these technological advances into action. What's the key?

The secret sauce here is leadership. Leaders who fundamentally understand the transformative impact of interactivity and the Internet will be able to articulate the vision and provide the political cover that is needed to accomplish the goals of *The Responsive City.* Without leadership, none of this will happen.

Paper citation: Crawford, Susan P. and Connolly, John S. and Nally, Melissa and West, Travis, Community Fiber in Washington, D.C., Seattle, WA, and San Francisco, CA: Developments and Lessons Learned (May 27, 2014). Berkman Center Research Publication No. 2014-9. Available at SSRN: http://ssrn.com/abstract=2439429



ABOUT *THE RESPONSIVE CITY*

The Responsive City is a compelling guide to civic engagement and governance in the digital age that will help municipal leaders link important breakthroughs in technology and data analytics with age-old lessons of small-group community input to create more agile, competitive, and economically resilient cities. The book is co-authored by Professor Stephen Goldsmith, director of Data-Smart City Solutions at Harvard Kennedy School, and Professor Susan Crawford, co-director of Harvard's Berkman Center for Internet & Society.

IN GHANA, P *is for* PATIENCE

Ghana's e-government PPP and the value of long-term strategies

By Mavis Ampah & Randeep Sudan, World Bank

Most African countries have realized the importance of private investment and are experimenting with private sector partnerships for the construction, maintenance, and/or operation of capital intensive projects. Where they have succeeded, as with Ghana's e-government public-private partnership (PPP), results benefit the entire society.

In April 2010, the Government of Ghana signed a public-private partnership (PPP) contract to reengineer business registration processes, deploy state-of-the-art application software and hardware, and employ best-in-class solutions for the Ghana Revenue Authority and the Registrar General's Office. This was part of a broader program to achieve greater efficiency, transparency, and effectiveness in the delivery of selected government services using ICT.

The PPP was structured on a design, finance, build, operate, and transfer model. The government supported the project through resources from a World Bank-financed "eGhana Project," contributing about one-third of the $60 million project costs; the private sector contributed the remainder. The agreement was for the private sector to build and manage the e-tax and electronic business registration platform until their investment costs were recovered—within five

and not exceeding seven years from the effective date of the contract. At the end of the operations period, the system would be turned over to designated government organizations for continuing operation.

The objective of eGhana was to broaden the tax base, increase compliance and transparency, reduce incidence of fraud, and improve the competitiveness of the business climate in Ghana. The existing processes led to fraud and significant delays; for example, business registration in Ghana before the automation took on average about two weeks. After automation, businesses could complete registration in three to five days, and planned improvements will ultimately reduce this to one day.

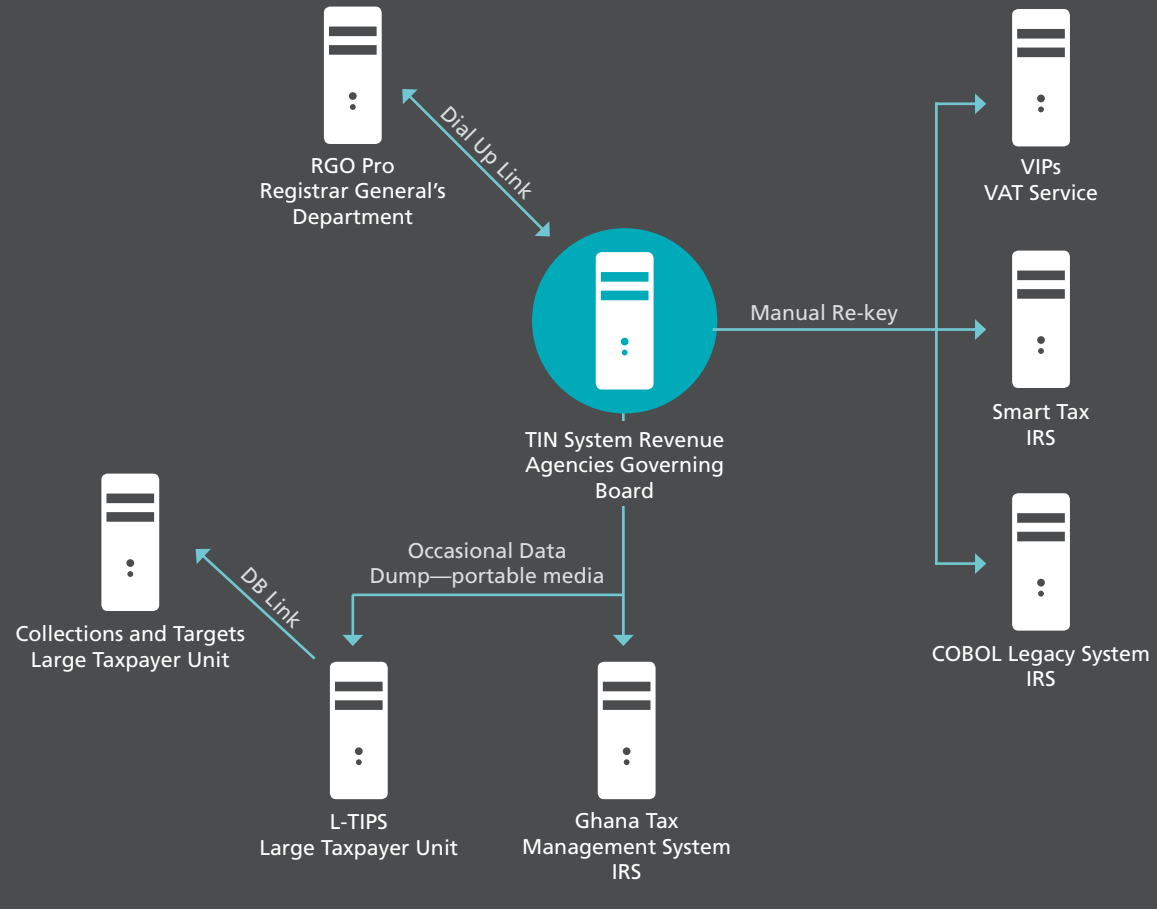
OVERCOMING CHALLENGES

The process of automating Ghana's revenue agencies and the business registration system faced significant challenges along the way. For example:

- The consultation process to validate the PPP design took over a year.
- A first bid process to select private partners overlapped with the financial crisis, which resulted in potential private partners requesting a greater contribution from the public sector.
- Prices for the second bid were about 40 percent higher than the government had projected.
- A new Ghana Revenue Authority Bill was passed immediately after award of the contract. This required consolidation of the five original revenue agencies into a single Revenue Authority and changed the scope of the awarded contract, though the payment terms remained unchanged.
- Ghana discovered oil, which made any perception of revenue sharing with its private partner politically sensitive, even though the repayment was limited to total cost.
- Protracted World Bank procurement processes added to delays in starting the program. This was due in large part to the World Bank's rigorous due diligence process, given that the contract was not awarded to the lowest bidder, because the winning bidder had technical superiority.
- Disagreements between private partners and their sub-contractors on intellectual property rights issues delayed implementation.
- Inadequate capacity of the public partner to manage complex business re-engineering processes further slowed the project's implementation.

Despite these challenges, the eGhana PPP—now in its fourth year of implementation—is considered a flagship project for the government and one of the more successful PPPs in the country. The tax registration systems are streamlined, bringing on-line some 400,000 new taxpayers. The combined impact of new taxpayers and new businesses seeking to normalize operations is already having a positive impact on the revenues of the Registrar General's department and the economy as a whole.

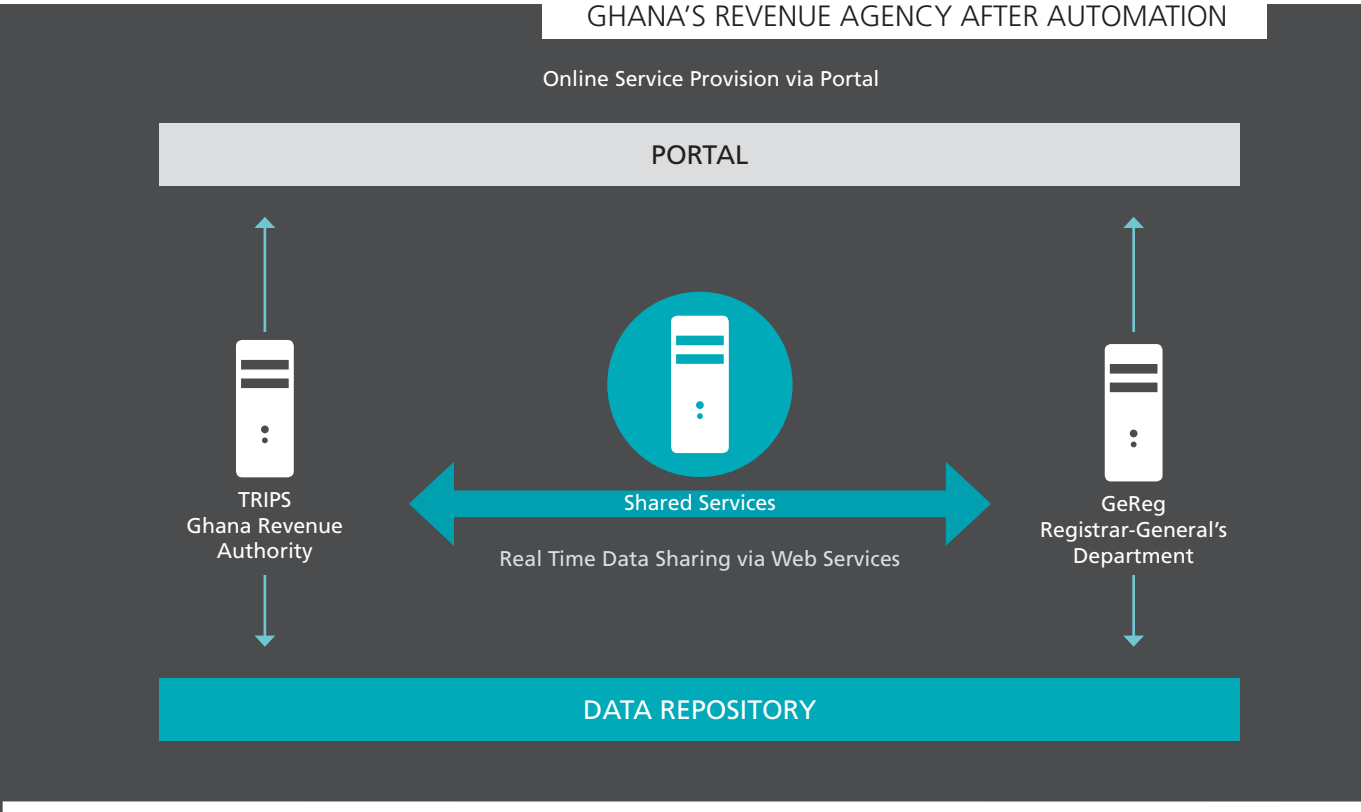
GHANA'S REVENUE AGENCY BEFORE AUTOMATION



MODELING CHANGE

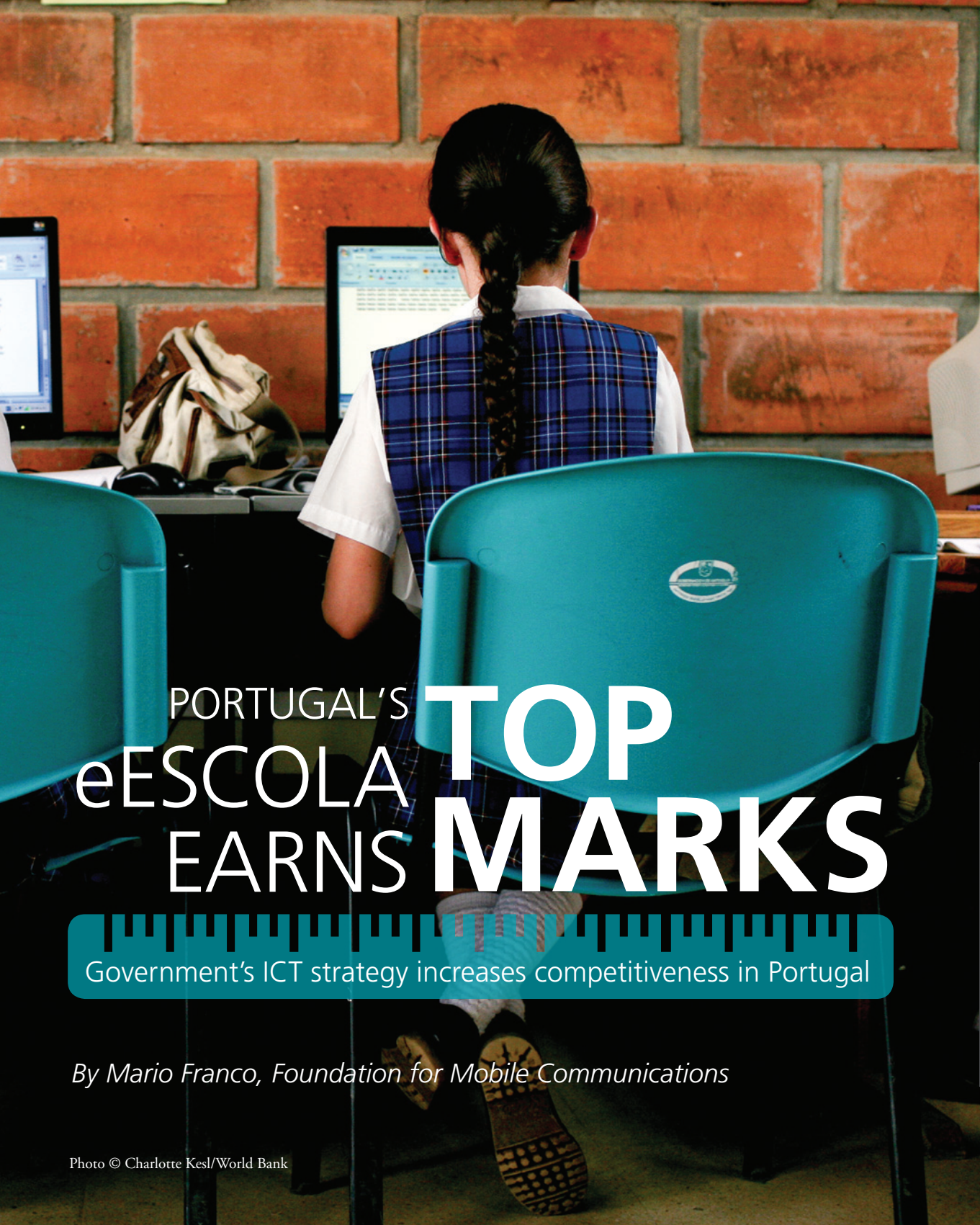
Other countries can learn from Ghana's e-government PPP. In particular, it's important to keep in mind that the implementation of complex PPPs (especially for tax modernization) requires the utmost commitment of all partners to the broader vision of improved efficiency and services to citizens. It also requires that all partners remain flexible to policy changes that may improve outcomes. Communicating continuously with the public and relevant stakeholder institutions throughout the project implementation process is key as well.

Staying the course brings measurable benefits to all parties. For the government, it includes a



broadened tax base, potential increase in revenues, reduced inefficiencies, and cost savings. Taxpayers gain access to new, simplified online services. For the private partner, rewards vary and may include agreed interest on investment or share of revenue collected in other countries. In Ghana's case, the share of revenue was capped at total cost of investment. There are also rewards for development partners in the form of improved governance and judicious use of scarce public funds.

Ghana's experience with the e-government PPP provides lessons for other PPP projects in the country. This is particularly important following the country's adoption in June 2011 of the National Policy on PPPs, as the country moves to put in place the requisite legal framework. The potential benefits of the partnership, including leveraging private capital to complement limited public resources, more efficient public services, and improved national and business competitiveness, provide promising lessons for structuring more PPPs both within and beyond Ghana's borders. h



PORTUGAL'S eESCOLA EARNS TOP MARKS

Government's ICT strategy increases competitiveness in Portugal

By Mario Franco, Foundation for Mobile Communications

Photo © Charlotte Kesl/World Bank

When the Portuguese government introduced broad, deep Internet access to society during the last decade, the results were described as a "technological shock." The aftershocks in education have been especially strong because of eEscola, which has raised education outcomes and increased competitiveness.

Portugal's eEscola program has been the most significant element of government efforts to provide society with broad, deep Internet access. eEscola debuted with ambitious goals: to make computer equipment (portable devices) and broadband Internet (particularly wireless) easily available to students, teachers, adults in training schools, and youth associations. The aim was to develop a knowledge society and economy in Portugal, and over a decade after implementation, eEscola boasts about 1.7 million beneficiaries. Overall, about 17 percent of the Portuguese population has directly benefited, and about 43 percent of the Portuguese population has

PORTUGUESE PROGRESS TRACKED IN GLOBAL COMPETITIVENESS REPORT

According to the Global Competitiveness Report, Portugal moved ahead 15 positions in 2014, jumping from the 51st to the 36th position. Portugal also improved in the technical readiness category among the 144 countries studied, climbing from the 29th to 26th position.

PORTUGAL 2013–2014		PORTUGAL 2014–2015	
Technological Readiness	29	Technological Readiness	26
Overall	51	Overall	36

indirectly benefited. In total, the program has involved about 1.2 million new subscribers.

eEscola has created a networked society characterized by its social interactions, knowledge sharing, and information research.

But eEscola has done more than simply earn good grades for itself and its students. It has shifted Portugal's education paradigm and created a networked society characterized by its social interactions, knowledge sharing, and information research. Specifically, it has:

- Prepared new generations for the challenges of the information and knowledge society and economy;
- Contributed to the technological modernization of Portuguese schools and society as well as to entrepreneurship;
- Supported the transformation of Portuguese schools through digital learning spaces, promoting collaboration, creativity, communication, and problem solving skills;
- Provided access to eContent and eServices, and further strengthened the ICT skills of students, teachers, adults in training programs, youth associations, and their families;
- Supported the education technology industry development, leveraging its degree of expertise;
- Improved dialogue capacity among teachers, students, and parents; and
- Bridged the digital divide by stimulating the diffusion of ICT among Portuguese families.

PART OF A LARGER PLAN

The eEscola program is a critical component of the Portuguese Technological Plan for Education, an unprecedented effort to promote schools' technological infrastructure and the availability of content and services online for

ABOUT THE FOUNDATION FOR MOBILE COMMUNICATIONS

The Foundation for Mobile Communications manages eEscola. It was created by the government and comprises three mobile operators: Vodafone Portugal, Portugal Telecom and Optimus (Orange). To ensure the Foundation's independence from the different operators, the telecom operators bestowed on the government the management power of the Foundation.

students, teachers, and others. Specific goals for schools included:

- Simplification of school management;
- Provide schools with quality web services, critical for the education system;
- Launch IT infrastructures allowing "digital education";
- Facilitate education entities with tools to better coordinate, supervise, and control results; and
- Provide schools with high-speed broadband Internetv and enable services such as voice, videoconference, TV, and surveillance over IP.

Both the overall national ICT plan and the eEscola model may be very useful to other governments seeking to enhance student scores as well as overall competitiveness. To create a successful initiative, it is important to have a holistic view of the classroom, the school, and all levels of the education administration. It must be sustained by an approach that leverages industry expertise, and above all, industry's full involvement.

On the government side, three elements are key:

- Make equipment available and provide easy access at affordable prices;
- Mobilize all the "actors"—publishers, communications operators, educational community officials, producers and distributors of equipment, and the educational community in general; and
- Mobilize and sensitize society and the business community to the availability of people with new skills and consequently the need for new profiles of employability.

A program like eEscola, executed carefully and within the context of a national ICT strategy, can facilitate students' improvement, entrepreneurship, and innovation while enhancing citizens' competencies across an entire society. Ultimately, such a positive report card reaps rewards throughout the economy.

TELECOM OPERATORS WIN, TOO

eEscola strengthened telecom operators' investments in the modernization, expansion, and quality of their mobile networks and services, in order to respond to the growth of data transfers. It also widened the territorial coverage, especially toward the more disadvantaged and remote areas. Overall, eEscola promoted competition among operators while leveraging the 3G and other network capabilities. Services improved while the market grew.

INDIA'S ICT PARTNERSHIPS *transform government*

By Shashank Ojha, World Bank

The organizational transformation that is required for successful e-government projects demands the sort of highly structured relationship that public-private partnerships are known for. India's National e-Governance Program—which takes a holistic view of e-government across the country, integrating departmental initiatives into a collective vision, a shared cause, and a massive countrywide infrastructure—is a proven model that other governments can adapt.

Innovative use of information and communications technology (ICT) has revolutionized business, but the pace of adoption in government remains slow as many struggle to keep up. It's not for lack of desire: many officials fear that their administration will miss out on the fruits of the ICT revolution due to their inability to deliver on expectations from citizens and businesses. Policymakers worldwide, and especially in the developing world, are eager to "leapfrog" into the digital way of doing things.

But e-government projects that involve successful adoption of these complex and ever-changing technologies also require significant organizational transformation. It's no wonder that e-government initiatives are often regarded as high risk, high return investments.

INDIA'S PPP LEADERSHIP

India leads the developing world in public-private partnerships (PPPs) for e-government projects and it has several successful initiatives that are useful models for others to follow (see example projects). Its National e-Governance Plan, supported by the World Bank, is a national program which takes a holistic view of e-government across the country. It integrates departmental initiatives into a collective vision, a shared cause, and a massive countrywide infrastructure and has created the foundation

TO PROCURE OR TO PARTNER? THAT IS THE QUESTION

- E-government projects require complex technology design and solution.
- High level of obsolescence due to evolving technology trends make these projects risky.
- Technical capabilities required for e-government project are diverse, high-cost, and are difficult to retain; they cannot be developed overnight.
- The failure rate of e-government projects is very high, so optimal sharing of risks between partners is critical.

DEFINITION, PLEASE

The Gartner Group defines e-government as "the continuous optimization of service delivery, constituency participation, and governance by transforming internal and external relationships through technology, the Internet, and new media."

for other successful projects. This program has strengthened the PPP approach in e-government through a clear set of policies on PPPs, a Guidance Note, and a model Request for Proposal.

This foundation is critical. Most government agencies do not have the capability and experience to manage the multi-dimensional risks resulting from complex technology adoption, and organizational change, or the technical expertise to effectively manage these investments. The challenge is not about procurement of these new ICT tools, but managing the risks and challenges during the entire project life cycle, which includes planning, acquisition/construction of the assets, and its efficient operation. This requires expert core capabilities within the organization. Too often, their absence results in failure of e-government investments.

RELATIONSHIPS MATTER

Success is more likely when officials realize that e-government PPPs are not a standard replacement for the run-of-the-mill procurement approach for all of government's ICT needs. It is not about procuring the best technical expertise from the private sector and dumping all the project risks on the private partner.

Instead, every successful PPP is a carefully crafted relationship that has been designed with care and understanding of realities on the ground. These models must be developed by a team of multi-disciplinary experts. They must be based on legitimate and well-established management concepts for developing customized solutions for risk management, capital optimization, and creation of project-specific governance structures in project financing. When these pieces are in place—as the examples here demonstrate—e-government can serve the people as well as the government, sealing the unofficial compact between the two to work together for the benefit of all.

EXAMPLES

COMMON SERVICE CENTERS PROJECT: VEHICLE FOR INCLUSIVE GROWTH

- Citizen service delivery outlets.
- Government-to-citizen, government -to-business, and government-to-government services.
- Over 100,000 across the country.
- Largest telecenter project in the world
- Cost: $1.3 billion
- Private Partners: $1 billion
- Government: $300 million
- Capex + Opex by private partner.
- Staffed by entrepreneurs from village.
- Government provided viability gap support for four years.
- Government services to citizens and businesses.
- Managed through a Special Purpose Vehicle at the national level.

More details: www.csc.gov.in

ANDHRA PRADESH E-PROCUREMENT PROJECT

- PPP approach using the Build-Own-Operate model.
- Capital investment by private partner.
- Tender fees shared between government and private partner.
- Sound business model.
- Procurements worth about $2 billion per year.
- Reduced tender cycle time (135 days to 35 days).
- Speedy rollout and 24/7 help desk support by private partner.
- Huge cost savings.
- Fair and transparent. Cartels eliminated.

More details: http://www.eprocurement.gov.in

MCA 21: A PPP MODEL FOR MINISTRY OF CORPORATE AFFAIRS

- PPP approach uses the Build-Own-Operate-Transfer model.
- Entire government-to-business interaction processes automated.
- Digitizing about 45 million paper documents in MCA's archives.
- Setting up a data center.
- Building the computing infrastructure.
- Setting up 52 facilitation centers and operational support for five years.
- Designing the application software.
- Setting up secure electronic payment gateways.

More details: www.mca.gov.in/MCA21

a "virtuous" PLAN VIVE DIGITAL

Greater access, greater demand in Colombia

Photo © Ministerio TIC

Interview by Alison Buckholtz

Diego Molano Vega is Colombia's Minister of Information Technologies and Communications. In 2010, Molano created Plan Vive Digital, the ambitious national technology plan that places Colombia among one of the top countries in the region for information and communications technology (ICT) progress. Here, he gives Handshake *readers an inside perspective on how the strategy developed, why it's been so successful, and what steps other governments can take to achieve similar results.*

You've described Plan Vive Digital as a virtuous cycle, where better infrastructure will allow more and better services at lower prices, which in turn stimulates the development of content and applications, and thus the growth of demand. How have you seen this work in practice?

Infrastructure is key: in the last four years, we consolidated one of the largest high speed broadband infrastructures in the region, where 96 percent of the municipalities in Colombia now have a fiber optic backbone and the additional 4 percent of the municipalities will be connected with microwaves by 2015. We also promoted competition in the mobile service, where now we have 10 mobile operators. Six of them operate 4G networks.

We have been working hard to connect the SMEs, where Internet penetration increased from 7 percent in 2010 to 60.6 percent in 2014. For households, while only 17 percent were connected in 2010, 50 percent will be connected at the end of this year.

But you weren't satisfied with those numbers. Why?

Having this backbone infrastructure was not enough. We needed to reach the final users at the base of the pyramid and the rural areas of Colombia. We addressed this issue by creating Community Internet Centers: 899 Puntos Vive Digital, and 7,621 Kioscos Vive Digital (rural centers of more than 100 inhabitants). In those centers we provide training, connectivity, telephony, entertainment, and other tech services.

The Ministry has also delivered 2 million computers and tablets to public schools and libraries. To be consistent, this strategy has been reinforced with training for teachers and children. Other strategies implemented are the ViveLabs (digital content centers) aimed to foster the digital content industry, such as video games, animation, and audiovisual. Apps.co, our digital entrepreneurship program, has more than 66,000 entrepreneurs being trained in business models and ICT skills.

As Plan Vive Digital's milestones are reached, how do your goals and strategies for the project change?

In 2010 we had 2.2 million broadband connections in the country. Now have more than 9.3 million. Infrastructure is still very important, and we have to keep increasing that number. But the new Digital Plan 2014–2018 aims to strengthen the demand side of the digital ecosystem. This new Plan has two main goals: to be world leaders in the development of social applications aimed at the base of the pyramid, and to be the most efficient and transparent government through ICT.

Two of your goals include encouraging good government through the use of ICTs and giving citizens the power to interact with the state through the use of ICTs. How has this changed the way people think about the government and how it works for them?

Colombia is a leader in e-government in Latin America. Colombian citizens interact even more with the state because many procedures are now done online in a faster and efficient way. Today, we have more than 2,000 public services online.

> *"Having this backbone infrastructure was not enough. We needed to reach the final users at the base of the pyramid and the rural areas of Colombia.*

However, we still have some challenges. In order to accomplish our goals, we will require that state entities share online information; we will also implement digital rights for Colombian citizens, for which we will create the "Digital Citizen Folder." Through this "folder," every Colombian will have an ID, an email, a space in the cloud, and access to all e-government services.

What advice would you give to government officials in other countries who want to create a Plan Vive Digital of their own?

Plan Vive Digital has been effective at involving all the stakeholders, and this is the key to success. Despite tough situations, we have explained and internalized the necessity of digital development in our country. This has been one of the greatest, and not so visible, achievements. We managed to demonstrate to the Colombian Congress, the regional governments, the private sector, and the international community that we crafted a solid ICT policy. And most importantly, we showed them the importance of ICT in every sector of the economy and how technology can help address the main concerns of the country. In our case, this includes reducing poverty, creating jobs, and fostering productivity and competitiveness.

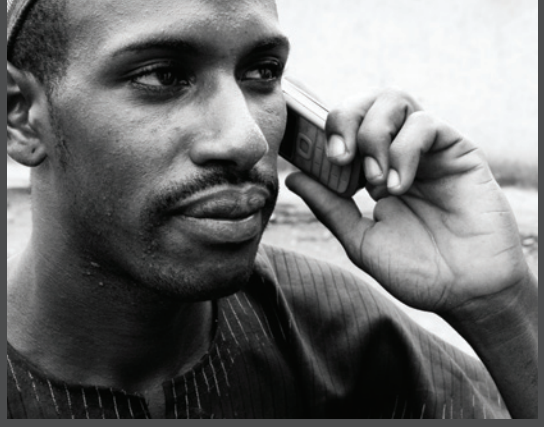
The first principle of Plan Vive Digital is 'the market as far as possible, the State as far as needed.'

All eyes were on us, because Plan Vive Digital was so ambitious. Over time, because of hard work, our results were even better than we ever expected.

What elements of Plan Vive Digital are public-private partnerships, and how can such partnerships advance national ICT strategies in general?

The first principle of Plan Vive Digital is "the market as far as possible, the State as far as needed." It is a quote from President Santos' book, *The Third Way*, which was written in 1999.

What it means is that for every project of the Ministry we aim to promote public-private partnerships to expand infrastructure and services in the country. The Plan has always sought to make public-private alliances in order to encourage investment. One of the Ministry's most important roles is to generate public policies that will grow the private sector.



ICT IN FRONTIER MARKETS

Mitigating risks brings rewards

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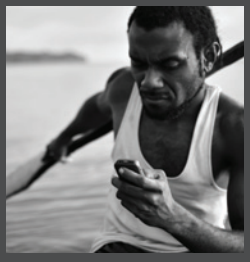
Frontier markets continue to offer opportunities and higher rates of return for ICT investors as other markets have become saturated. Over the past several years, eager consumers in countries such as Afghanistan, Iraq, and Myanmar have sought to join the connectivity revolution. Yet investors are aware of the significant and unique risks associated with these markets—especially with key sector regulatory instruments such as licensing and frequency allocations.

ICT operators are often concerned about the possibility a host government will impose arbitrary or discriminatory changes to terms and conditions or cancel licenses, concessions, and/or shareholder agreements when these involve the government (as with partial privatizations, or broadband public-private partnerships). Another challenge for telecommunications projects, whose revenues come in local currency, is the ability to convert and transfer earnings outside the country in order to pay dividends or service hard-currency debt. In addition, for frontier markets that are affected by conflict, the risk of sabotage and destruction of assets can be acute.

RISK INSURANCE TO THE RESCUE

Awareness of these risks has resulted in a steady demand for political risk insurance coverage of



For frontier markets that are affected by conflict, the risk of sabotage and destruction of assets can be acute. Awareness of these risks has resulted in a steady demand for political risk insurance coverage of ICT investments over the past decade.

By Yann Burtin, MIGA

ICT investments over the past decade. The Multilateral Investment Guarantee Agency (MIGA), the political risk insurance arm of the World Bank Group, has supported projects in nearly 30 countries, including Afghanistan, Democratic Republic of Congo, and Iraq. MIGA's robust pipeline coming from well-established and new operators (both mobile 4G and broadband), primarily in lower-income countries, testifies to an ongoing demand for risk mitigation for telecoms investments.

In MIGA's experience, operators who approach MIGA to discuss political risk insurance are concerned about issues surrounding telecom licenses and spectrum—their most valuable assets. They are particularly interested in obtaining protection against arbitrary changes made by host governments to terms and conditions of licenses. These risks can be particularly prevalent in countries where a political transition is triggered by events such as a coup d'état.

MIGA's research on political risk bears out this prevailing concern in the broader investment community: adverse regulatory change is cited as the risk of most concern to investors.

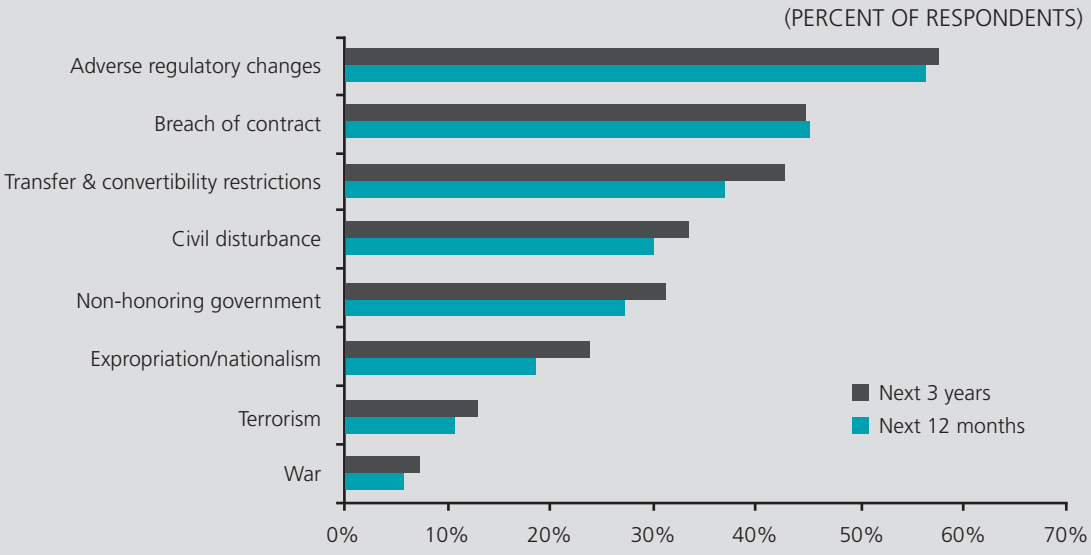
EXPERIENCE PAYS

MIGA's experience in managing potential claims highlights the broad range of political risks in the telecoms sector. In one MIGA-guaranteed investment, the host country government unilaterally closed several private cellphone operators. In this case, the government first attempted to make a retroactive increase of 600 percent in the 10-year licensing fees of the MIGA-insured cellular phone company, and then simply terminated the company's license.

Adverse regulatory change is cited as the risk of most concern to investors.

At the request of its guarantee holder, MIGA met with the government to discuss the suspen-

TYPES OF POLITICAL RISK OF CONCERN TO INVESTORS IN DEVELOPING ECONOMIES



Source: MIGA-EIU Political Risk Survey 2013

sion and noted the detrimental impact of the government's actions on the nation's investment climate, especially given the government's publicized desire to make the country attractive to investors. Continued negotiations, the assistance of the World Bank, and diplomatic pressure from the investor's home country resulted in an amicable settlement of the dispute and the issuance of a new license. Immediate intervention and the prospect of reduced foreign direct investment helped to achieve a resolution in only a few months.

In another country, military authorities seized and denied an operator's access to its cellphone towers. This situation would have warranted a business interruption claim under war and civil disturbance coverage, or possibly even an expropriation claim. Ultimately the assets were returned to the operator because the host country authorities did not want to trigger a claim under a MIGA guarantee.

MIGA also intervened in a case where an operator encountered difficulties in converting locally

earned currency in order to repay its loans. Again, MIGA drew on its leverage as part of the World Bank Group to resolve the issue with the central bank of the host country. Transfers were completed in a timely manner, allowing the investor to repay its loans.

MORE IMPORTANT THAN EVER

MIGA is supporting MTN Afghanistan, one of Afghanistan's four major mobile operators. The company has been remarkably successful and boasts over 6.2 million subscribers as of June 2014. MIGA first provided coverage to MTN in 2007 when it started its operations in the country. The MIGA guarantees covered MTN's installation and operation of a mobile GSM network via its Afghan subsidiary. In 2011, MIGA issued an additional guarantee totaling $80.4 million for a period of up to 10 years, covering the expansion of the company's operations.

It's worth noting that MIGA's coverage for war and civil disturbance was not used in this investment, as the operator was able to obtain coverage at a more competitive rate through its corporate political violence insurance program. MIGA is covering the investment against the risks of transfer restriction and expropriation, which were deemed as essential in a relatively untested regulatory environment with limited capacity, a weak public sector, uncertain property rights, and pronounced insecurity.

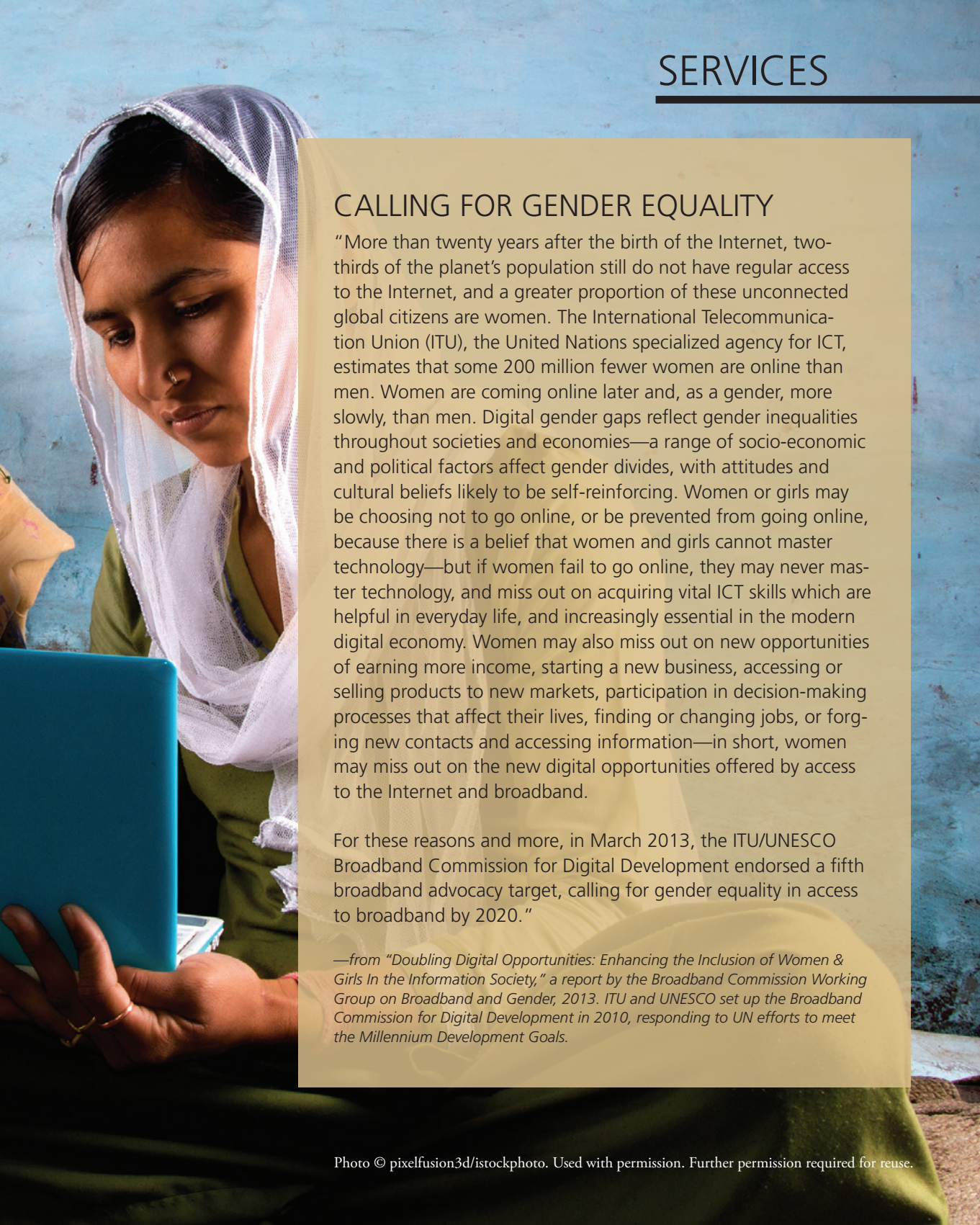
Despite these grave risks, MTN continues to enjoy high profitability while making significant contributions to the country. The company offers its customers a range of affordable telecommunications services, including cellphone, Internet, satellite, and public pay phones.

Operators who approach MIGA to discuss political risk insurance are concerned about issues surrounding telecom licenses and spectrum—their most valuable assets.

Intervention has been key to successfully mitigating political risks in the ICT sector. In Afghanistan, for example, the World Bank supported reform of the telecommunications sector with a comprehensive package of capacity building, support for drafting of legislation and licenses, and rehabilitation of the government's network. From having a single operator with a barely functioning network in 2002, Afghanistan is now home to a thriving and competitive industry that benefits local consumers and businesses. That's the definition of turning risk into reward.

Mind the [Gender] Gap

Why broadband and mobile matter for women



CALLING FOR GENDER EQUALITY

"More than twenty years after the birth of the Internet, two-thirds of the planet's population still do not have regular access to the Internet, and a greater proportion of these unconnected global citizens are women. The International Telecommunication Union (ITU), the United Nations specialized agency for ICT, estimates that some 200 million fewer women are online than men. Women are coming online later and, as a gender, more slowly, than men. Digital gender gaps reflect gender inequalities throughout societies and economies—a range of socio-economic and political factors affect gender divides, with attitudes and cultural beliefs likely to be self-reinforcing. Women or girls may be choosing not to go online, or be prevented from going online, because there is a belief that women and girls cannot master technology—but if women fail to go online, they may never master technology, and miss out on acquiring vital ICT skills which are helpful in everyday life, and increasingly essential in the modern digital economy. Women may also miss out on new opportunities of earning more income, starting a new business, accessing or selling products to new markets, participation in decision-making processes that affect their lives, finding or changing jobs, or forging new contacts and accessing information—in short, women may miss out on the new digital opportunities offered by access to the Internet and broadband.

For these reasons and more, in March 2013, the ITU/UNESCO Broadband Commission for Digital Development endorsed a fifth broadband advocacy target, calling for gender equality in access to broadband by 2020."

—from "Doubling Digital Opportunities: Enhancing the Inclusion of Women & Girls In the Information Society," a report by the Broadband Commission Working Group on Broadband and Gender, 2013. ITU and UNESCO set up the Broadband Commission for Digital Development in 2010, responding to UN efforts to meet the Millennium Development Goals.

By Henriette Kolb, IFC

MOBILE PARTNERSHIPS BUILD A BRIDGE FOR WOMEN

Studies have shown that women reinvest 90 percent of their incomes in community and family versus roughly 35 percent for men. And yet women are frequently shut out of fully benefiting from and contributing to economic activity owing to constrained access to health care, education, market information, and financial services.

According to recent data, 300 million fewer women than men across the world use mobile phones. But those that do enjoy enhanced access to information and markets, and can more effectively participate in and contribute to economic activity. This improvement in women's productivity and livelihoods is critical not only for development but for GDP. Vodafone has put the economic value of closing the mobile gender gap at $6.6 billion, and that figure covered only the 27 markets in which it is active. Figures like this demonstrate that mobile is no longer "just" about making a call—it's about making the call for shared prosperity beyond gender and geographical barriers.

Mobile telephony has the power to do this and overcome other social and economic bottlenecks faced by women. However, there's the not-so-small matter of getting mobile phones into the hands of women that need them most. Across the developing world, several partnerships are underway to overcome this access gap.

INDIA

In India, mobile operator Telewings, also known as Uninor, partnered with GSMA, a trade organization for mobile operators, to roll out a pilot project to launch a service featuring a pair of linked SIMs; recharging one with airtime will top up the other with bonus minutes. The only criteria is that at least one of the SIMs must be used by a woman. Uninor hopes its trial will shed light on barriers to women's access to mobile phones and services, and improve teledensity among rural Indian women.

AFRICA

In Sub-Saharan Africa, as mobile penetration has grown rapidly, demand has developed for more sophisticated mobile financial products. In Ghana, a partnership of local operator Tigo and the insurance firms MicroEnsure and Vanguard Life offers Family Care Insurance, a free-of-charge life insurance plan. Tigo customers gain cover based on airtime purchases made during the previous month, which makes Tigo "stickier" to its subscribers. In markets where the vast majority of mobile users buy pre-paid cards and may switch among as many as three SIM cards, customer loyalty is essential to mobile providers.

The value of this life insurance offering to poor Ghanaian families is difficult to overstate. MicroEnsure claims that because "less than two percent of Ghanaians have a life insurance policy, families typically sell assets, [and] use savings to finance funerals. Women and children are often the first to be affected; children are removed from school and women and children forgo proper nutrition and healthcare."

Mobile banking also offers a path to better health and safety. For instance, with support from the Vodafone Foundation, a Tanzanian hospital recently set up Text to Treatment, a service that uses the online currency service M-Pesa to facilitate treatment for obstetric fistula—a childbirth-related condition that affects one million women worldwide. Prospective patients receive cash transfers via M-Pesa for transport costs; service "ambassadors" receive rewards for each patient referral.

MOBILE BANKING AND THE "STICKY" FACTOR: THE STORY OF M-PESA

This 6-minute animation tells the story of how M-Pesa, the popular mobile money transfer program, came to Kenya. It's narrated by Michael Joseph, the managing director of mobile money at Vodafone and the program's founder.

"Thanks to Text to Treatment I was able to receive treatment for fistula at the CCBRT hospital. My travel cost was paid for via M-Pesa. I needed two operations but now I am able to work and lead an active life. I'm an ambassador for CCBRT and I find other patients who can benefit from treatment. I've even rented a house that they can stay in while they wait to travel for surgery."

Elizabeth lives with her two children and husband in Mbeya, 830 kilometers from Dar es Salaam.

Source & photo credit: Connected Women, Vodafone.

By Sevi Simavi,
Cherie Blair Foundation for Women

MOBILE PARTNERSHIPS FEED ENTREPRENEURSHIP

There's no disputing that mobile phone ownership, coupled with value added services, gives women in business a chance to succeed. But when the mobile industry and the development sector partner to offer sustainable, tailored solutions for women entrepreneurs, the results are transformational. The Cherie Blair Foundation's partnership with Self Employed Women's Association (SEWA) and Vodafone Foundation in India is an ongoing example of how mobile technology makes a lasting difference in women's lives.

SEWA's Rural Distribution Network (RUDI) is a successful agricultural cooperative with 3,000 members. Based in Gujarat, India, RUDI buys raw produce, such as lentils and spices, from local farmers and adds value by cleaning, processing, and packaging the stock. These are then sold across Gujarat through a network of saleswomen, known as "RUDIbens," reaching over a million households annually.

The growing scale of RUDI's operations could no longer be supported by its informal paper-based management system and word-of-mouth stock orders. In partnership with SEWA and the Vodafone Foundation in India, the Cherie Blair Foundation developed a mobile-based management information system to support the RUDI network.

Before the inception of the system, RUDIbens traveled up to seven hours to order and collect stock from the RUDI processing centers, only to find the products unavailable because of difficulties forecasting demand. The mobile application now enables the women to place orders and generate sales reports using their simple feature phones. The information is sent to a cloud-based server using inexpensive SMS and orders are instantly captured on the RUDI management computers, providing greater visibility of their sales by product, geography, and RUDIben. Since the application launched in December 2012, RUDI has increased its turnover by 10 percent.

This model proves that for women entrepreneurs in developing economies, even the most basic phones can be the key to increasing income and managing their businesses.

AND THE WINNER IS....

The RUDI Sandesha Vyavhar application is the winner of the 2014 GSMA Global Mobile Award for Best Mobile Product, Initiative, or Service in Emerging Markets and the 2014 mBillionth award for mWomen and Children.

cherieblairfoundation.org/mobile.

The Old Man & ICT

By John Kjorstad, KPMG

HOW TECHNOLOGY PPPs CAN REEL IN PROGRESS

Our world is filled with advancing information and communications technology. Most of us can't escape it—a buzz in the pocket whenever an email has landed or a blinking notification that suggests something important has happened.

(The author pauses to check his smartphone... someone he has never met completed an ice bucket challenge, and his recently purchased copy of Ernest Hemingway's *The Old Man And The Sea* has been dispatched by Amazon.)

It's become part of the fabric of our lives—for better or for worse.

Government and infrastructure are different. They are "salao" in the words of Hemingway, and particularly unlucky when it comes to modernizing information and communications technology (ICT). For them, this pursuit is not unlike Santiago's literary battle with the great marlin. It's not that ICT is beyond their capability, but with their rigid institutions and long-term investments in aging assets, they are ill-equipped to stay ahead of rapidly changing technology.

Infrastructure is expensive and built to operate for decades. ICT changes overnight. It may surprise you to recall that Apple's first iPhone (the one that didn't allegedly bend in your pocket) was released less than 10 years ago, in June 2007. The first iPad debuted less than five years ago, in April 2010. These devices, and others like them, have revolutionized human behavior in terms of e-commerce and how we process the information we use to interact with everyday infrastructure.

I can now wield my phone to pay for my daily commute by using "tap and pay" to pass through the same barriers as those carrying paper tickets. I can also find out if my train is delayed by checking an app long before I've arrived at the station—diverting my commute to alternative routes if there are any reported issues. The train operators haven't created this technology on their own. They've partnered with those with the expertise to deliver a more effective service.

PURSUING POLITICAL CHANGE

This sort of instant information changes everything—even how our elected officials choose to

interact with us. Gone are the days of a passive democracy when politicians would canvass local opinion on the campaign trail ahead of an important election. Welcome to the age of 24-hour news and an active democracy, where millions of smartphone users can sway public opinion overnight, forcing elected leaders to react more swiftly.

YouGov, an online polling and research firm in the United Kingdom, raised eyebrows in September ahead of Scotland's referendum for independence. The firm uses a reward system and email to attract users and get them to complete online surveys. Its tightening poll numbers ahead of the historic Scottish vote—some of which even suggested a lead for the Yes campaign—spurred political action from a nervous establishment. Leaders from the UK's three main political parties united to promise Scots more devolution in exchange for a No vote less than 24 hours before polling stations opened. The next day YouGov published its final poll shortly after voting ended: No-54 percent to Yes-46 percent—an accurate forecast of the eventual 55 percent—45 percent official result.

DON'T CATCH THIS FISH ALONE

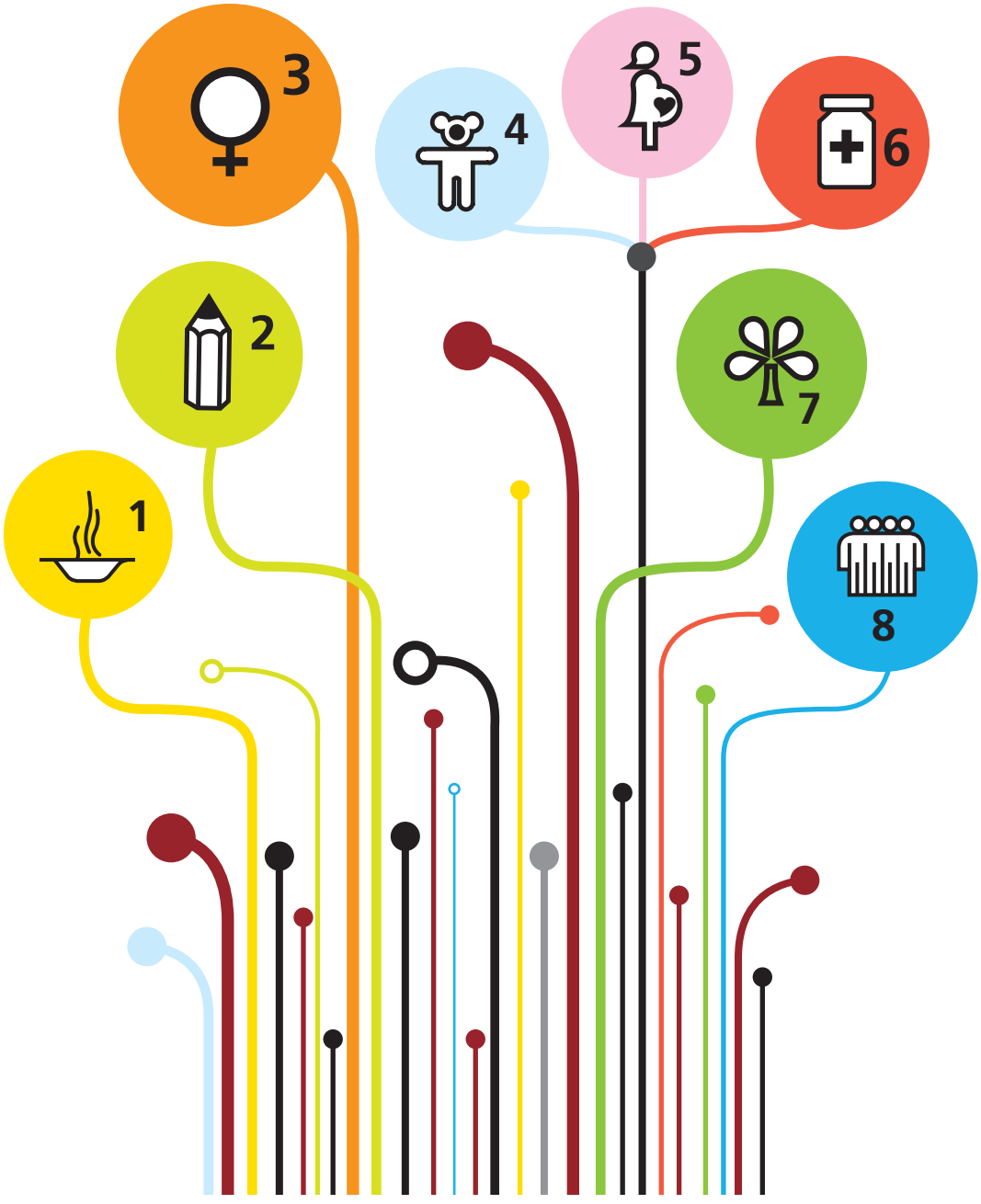
Advancing technology will continue to redefine our individual relationship with government and public services. The establishment would be ill-advised to try and land this fish on its own. By partnering with the private sector to get the best out of ICT, government can drive competition, promote innovation, and demand performance through concession-based public-private partnerships.

The concept of e-government and e-infrastructure has been slower to catch on, and it's not surprising why. Government, infrastructure, and public services are institutions where rapid change poses a significant risk to public order. Even when change is encouraged, it is rarely executed cheaply, swiftly, or without great difficulty.

For decades the U.S. government has grappled with plans to transform American air traffic control from a ground-based to a satellite-based system. The disappearance this year of Malaysia Airlines flight MH370 may finally spur real action. However, by the time a new system gets implemented—might the technology already be out of date? How can governments ensure that they remain in step with the rapid pace of change instead of forever trailing it?

One good example to follow is the health sector, which uses private partnering and service contracts as an effective method for managing technology risk and leveraging professional expertise—including upgrades when relevant new technologies become available. The public sector can effectively transfer this risk onto a private partner who is then incentivized to stay ahead of the technology curve. These provisions will work for ICT as well.

Governments can no longer afford to ignore technology. The momentum behind ICT is as unrelenting as it is sophisticated. The public sector must adopt a strategy for managing it. Smarter infrastructure is better infrastructure and technology partnerships will deliver better value-for-money over time. h



CONNECTIVITY

the MILLENIUM DEVELOPMENT GOALS

When the Millennium Development Goals (MDGs) were originally defined in 2002, no one could have imagined what an important part Information and Communications Technology (ICT) would play in accelerating progress. Here are just some of the ways ICT brings each of these goals within reach.

ERADICATE EXTREME POVERTY AND HUNGER

ICTs can help reduce poverty by increasing access to economic opportunities, allowing for the expansion of local businesses, strengthening social networks, and reducing and averting transportation costs. Access to knowledge assets—information, expertise, market price data, and basic healthcare and nutrition guidelines—can also improve living standards and bring people out of the poverty trap. Connectivity is key to making this happen; available data suggests a strong and positive correlation between communications and levels of development. At the micro level, even for very small fishing and farming businesses, good communication links facilitate market matching efficiencies.

By Jose Toscano, INTELSAT

ENSURE ENVIRONMENTAL SUSTAINABILITY

Broadband networks have made an important contribution to ensuring environmental sustainability. These networks improve practices in agriculture and forestry; monitor air and water pollution; improve disaster warning and relief; improve the efficiency of the energy, transportation, and goods and services sectors; and harness social networking for transformative change.

GLOBAL PARTNERSHIP FOR DEVELOPMENT

Connectivity afforded by ICTs and the increase of broadband availability has encouraged global partnerships and facilitated cooperation in many areas.

PROMOTE GENDER EQUALITY AND EMPOWER WOMEN

Women remain economically and socially marginalized and undereducated in many emerging economies and rural areas. ICTs can give these women access to education, healthcare, government services, employment opportunities, and financial services. In particular, there's a potential virtuous circle at play between mobile financial services and access for women. One study across five diverse, emerging markets shows that women consistently prove to be highly active household financial managers and could benefit greatly from access to mobile financial services.

ACHIEVE UNIVERSAL PRIMARY EDUCATION

Education contributes to the overall economic growth potential of a nation, and broadband-enabled ICT enables the development of m-learning and e-learning.

IMPROVE HEALTH ACCESS

ICTs and broadband telemedicine have already made a significant impact with relatively simple and low-cost technology. It has helped to reduce child mortality; improve maternal health; and combat HIV/AIDs, malaria, and other public health issues in many areas of the world.

ICT BRINGS DOCTORS AND PATIENTS TOGETHER

Intelsat's satellite technology supports associations in the fight against HIV/AIDS in Africa. The Global Digital Solidarity Fund is using a DVB/SCPC service technology out of Intelsat gateway hub station in Fuchsstadt, Germany to support associations in the fight against HIV/AIDS in Burundi and Burkina Faso. The new Internet connections create a link with clinics located far from urban centers. Bush doctors have access to high throughput IP two-way connectivity with leading hospitals in Africa and worldwide. With this technology, patients can be monitored regularly, starting with their first visit to the clinic doctor.

Intelsat has also provided satellite capacity to support an international telemedicine network in Morocco. This network allows doctors at Children's National Medical Center in Washington, D.C. to conduct medical consultations and training sessions with health care professionals in Morocco, increasing efficiency at a low cost.

EDUCATION VIA SATELLITE

Intelsat and Mindset, a developer and distributor of educational materials in Africa, have developed a partnership to support increased access to education via satellite. Their mission is to provide quality Internet access and support to deliver educational materials to schools, hospitals, and clinics in South Africa, as well as to homes. Applications include distance learning, telemedicine, video conferencing, and voice communications.

WHAT'S CONNECTIVITY WORTH?

Of the world's 7 billion people, only 2.7 billion have access to the Internet today. A Deloitte study finds that extending Internet access in Africa, Latin America, India, and South and East Asia to levels seen in developed countries today would deliver these results:

Long run productivity could be enhanced by as much as 25% in these developing economies.

The resulting economic activity could generate $2.2 trillion in additional GDP, a 72% increase in the GDP growth rate, and more than 140 million new jobs.

Personal incomes would increase by up to $600 per person per year, thus lifting 160 million people out of extreme poverty.

Evidence on the link between health literacy and mortality rates suggests that Internet access could save 2.5 million people and 250,000 children.

2.5 million HIV/AIDS patients could increase their life expectancy thanks to better monitoring and adherence to treatment.

Another 640 million children may be able to access the Internet and the wealth of information it makes available while they study.

Source: Value of connectivity: Economic and social benefits of expanding Internet access, *February 2014. Deloitte.*

> “Freedom of connection with any application to any party is the fundamental social basis of the Internet. And now, [it] is the basis of the society built on the Internet.”

—Tim Berners-Lee, creator of the World Wide Web, on Net Neutrality

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