



Information and Communication Technologies in Developing Countries: Connecting People, Transforming Service Delivery, and Fostering Innovation

SYNOPSIS

The World Bank has supported more than 100 developing countries to reform their telecommunications and information and communications technology (ICT) sectors, helping spur investment and modernization that in turn accelerates economic growth and poverty reduction. Loans and technical assistance from both the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD) have delivered results as diverse as connecting millions of people to cheaper telephone services in Afghanistan to helping residents of rural Nicaragua access the Internet for the first time.

Challenge

Technological progress is a considerable driving force behind economic growth. ICT infrastructure in particular has attracted much investment, and generated significant fiscal revenues and employment opportunities in developing countries. The number of mobile phone subscriptions in developing countries has increased from 200 million in 2000 to 3.7 billion in 2010, and the number of Internet users has grown more than tenfold.

With Internet penetration at a turning point including in the least connected region, Africa, and with 70 percent of the population in developing countries having access to fixed or mobile telephone, ICT networks now constitute a far-reaching service delivery and citizen participatory platform. ICTs can be used as a vehicle to increase accountability, and transform and extend the reach of service delivery to the underserved in an innovative, fast and cost-efficient manner.

Key remaining challenges and opportunities for developing countries include (i) improving affordability in order to reach one-third of the popu-

lation of IDA countries who currently lives beyond the ICT networks, (ii) widening access to more advanced, affordable ICT services such as broadband for high-speed internet, (iii) leveraging the new ICT infrastructure to improve the delivery of services and to build on it as a source of economic growth, and (iv) developing and aligning people skills relevant to the Information Technology-enabled Services (ITeS) industries and knowledge economy.

Approach

World Bank support is evolving to reflect the new challenges and opportunities of the sector. Technical assistance and investment operations are increasingly focusing on:

- **Closing the ICT infrastructure gap:** The World Bank has worked with more than 100 countries over the last decade to reform their telecommunications sectors. It provided support for privatization and liberalization, and capacity building for governments and regulatory institutions. It has done so through policy loans, technical assistance project components, fee-based services, and policy dialogue.

- **Financing broadband infrastructure:** More recently the World Bank has stepped up its financing of innovative public-private partnerships as catalytic vehicles to attract additional private sector investment in broadband infrastructure. This includes regional communications infrastructure programs to accelerate the rollout of terrestrial backbone networks and submarine cable systems in Africa, Pacific Islands and the Caribbean.
- **Using ICT to improve the delivery of public services:** The World Bank is supporting US\$7.3 billion of ICT components in projects across other sectors, such as education, health and public sector management, as determined by a study in 2006. Components include integrated financial management information systems, computers in schools and universities, digitization of high court proceedings, and electronic land titling. This assessment covered 1,700 projects under implementation or preparation across the Bank portfolio and through stand-alone projects such as the eGhana (US\$84.7 million), eRwanda (US\$10 million), eBenin (US\$15 million) and eArmenia (US\$24 million) projects.
- **Supporting the growth of the IT-enabled services (ITeS) industry:** Such support helps develop and align people skills relevant to the ITeS industries and knowledge economy. It includes a small but growing portfolio of IT industry development projects in Ghana, Mexico, Kenya, Armenia, Nigeria, and Bhutan.

Results

Africa: IDA and IFC Support to Communications Infrastructure in East Africa

The IDA-supported Regional Communications Infrastructure Program (FY07-FY13) and International Finance Corp. (IFC) co-financed Eastern Africa Submarine Cable System (EASSy) illustrate a joint World Bank Group approach to regional infrastructure development.

The first is a US\$424 million program that supports the development of telecommunications terrestrial networks through financing of public-private partnerships and broadband capacity purchases.

The second is a US\$240 million submarine cable connecting the east coast of Africa (from South

IDA Results

In Afghanistan, a US\$22 million IDA credit supported sector reform that made the telecommunications market more competitive. It has attracted over US\$1.2 billion in private investments, improving access to ICT services and reducing prices. This helped increase the number of telephone subscribers from 57,000 to 13.4 million between 2002 and 2010, and reduce costs from US\$2 a minute to 10 US cents a minute. The Afghan telecommunications sector now contributes an estimated US\$75 million in taxes annually.

In Nicaragua, a US\$16 million project supported the strengthening of the regulator, privatization of the incumbent telephone operator in 2001, and introduction of competition in the sector in 2005. It helped bring about a ten-fold increase in mobile subscriptions by 2010. Total telephone penetration (fixed plus mobile) increased from 6 percent in 2001 to 25 percent in 2005, and to over 60 percent in 2008. Thanks to a follow-up project of US\$10 million project, to which IDA contributed US\$7 million, more than 350,000 people in 350 communities in rural Nicaragua received access to telephone services and more than 860,000 people in 104 rural municipal towns received Internet connection for the first time. One hundred public Internet access centers were installed by the project for the benefit of those who could not afford to have direct access in their homes. They pay a modest hourly fee for using Internet access, and receive free training for using the service, as well as for basic computer tasks.

Africa to Sudan) to Asia and Europe. These projects have contributed to a 90 percent reduction in wholesale capacity prices in East Africa, with retail prices already starting to drop by about one-third in Kenya and Rwanda. In Kenya, this has helped in increasing the number of internet users to 8 million in 2010 from 2 million in 2007.

Ghana: Innovative Project Design through e-Government PPPs in e-Ghana

The e-Ghana Project (FY07-FY12, IDA) has an innovative design featuring a public-private partnership to transform revenue collection, using a joint venture between Government revenue agencies and a private sector partner. The project has helped the Government attract US\$40 million in private sector investment for developing and deploying an electronic tax application to automate revenue agencies and the Registrar General's Department. Upon completion, this application is

expected to help the Government increase compliance and transparency, and broaden the tax base, while reducing the incidence of fraud, upgrading Government employee skills, and developing a template for upgrading other agencies.

Mexico: Skills development for improved employability in the IT-eS Industry.

Through the Mexico IT Industry Development Project (FY09-FY13, US\$80 million, IBRD), the World Bank has assisted the Government of Mexico in the creation of MexicoFIRST, an institution aimed at closing the gap between demand and supply of skilled workers in the ever-changing IT industry. Through partnerships with global companies and strong links to local IT clusters, academy, and industry associations, MexicoFIRST provides certification programs that increase the quality of the Mexican labor pool. Students end up paying between 10 and 40 percent of the certification prices, making it more affordable. As of 2010, more than 6,000 people have been trained and certified in skills that will qualify them for employment with higher salaries. It is expected that more than 30,000 people will be certified by the end of the project. The certification gives the Mexican labor pool the currency to qualify for jobs higher in the value chain.

Rwanda: Enabling women through access to ICT training

The recently-closed eRwanda Project (FY07-FY11) financed 18 telecenters for rural populations and equipped 12 district offices with computers and office software, allowing the local government offices to be connected to Kigali's central government. The project also financed four ICT buses that have been roaming among Rwanda's district offices, teaching youths, civil servants, farmers, politicians and private sector entrepreneurs on ICT skills. Throughout the project, 2,822 citizens were trained on ICT subjects, helping them gain skills that will serve them throughout their lifetimes as employees, entrepreneurs, and local leaders, including 760 district office staff. eRwanda also had a strong gender focus. Among the trainees were 685 council women in rural areas, who learned how to access information and run relevant applications for their farms or cooperatives.

Bank Contribution

➤ Since its inception, the World World Bank has

IDA Results

In Rwanda, the eRwanda project (US\$10 million IDA grant) supports the government's efforts to use ICT for improving service delivery. The project has funded networks in government ministries and district offices around the country, and the development of a government portal linking government information and websites. By establishing telecenters and four "ICT buses" that travel throughout the country and train villagers in using ICTs, the project is providing ICT services to populations that currently do not have ICT access. In Ghana, support from IDA (US\$84.7 million) and four other development partners, combined with the government's proactive policies, contributed to a competitive and vibrant industry with a telephone penetration of over 60 percent. The eGhana project is providing support to the local IT-enabled services industry including support to develop a Business Process Outsourcing Facility. Over 1,000 jobs have been created in the industry during the last two years. Already AT Kearney Global Services Location Index has raised Ghana's rank among 50 countries in terms of location attractiveness from 27th in 2007 to 15th in 2009, and first in terms of financial attractiveness. The eGhana Project is also providing financial assistance to support a partnership between the public and private sector to train some 50 training institutions and 6,000 business process outsourcing agents. This is expected to further strengthen Ghana's position as one of the most attractive locations for IT-enabled services business in Africa.

supported more than 100 developing countries with investments and technical assistance in ICT. Since 2003, it has committed over US\$1.3 billion for investment in standalone ICT projects, including US\$ 776 million by IDA.

- In addition, the World Bank supports IT components in lending projects across other sectors, such as education, health, and public sector management. In a 2006 study, this figure was estimated to be US\$7.3 billion in some 1,700 active projects under preparation or implementation.
- The Bank's investments have contributed to attracting over US\$30 billion in private sector investments in ICT in low-income countries from 1997-2007.
- US\$45 million was spent on analytical work and technical assistance in the ICT sector since 2000.

- infoDev, a global trust fund program administered by the World Bank, has supported over 20,000 growth-oriented small- and medium-sized enterprises in the technology and tech-enabled space in over 89 countries through 322 “incubators”.
- Sister organizations of the World Bank have provided additional support. (i) The Multilateral Investment Guarantee Agency (MIGA) has provided investment guarantees totaling US\$1.3 billion in the ICT sector in developing countries since its inception in 1988, including US\$550 million in sub-Saharan Africa. MIGA estimates that its support has leveraged some US\$6 billion of foreign direct investment in the sector. (ii) The International Finance Corporation (IFC) has provided investments of over US\$3.8 billion since 2001 for 199 private ICT sector projects in developing countries, of which US\$2.05 billion were in 33 low-income countries, and mobilized an additional US\$1.2 billion of financing.

Partners

The World Bank has worked extensively with other partners in the ICT sector:

- On policy formulation, the World Bank has worked with the International Telecommunication Union (co-producing the Telecommunications Regulatory Handbook) as well as bilateral agencies on raising awareness for open access policies.
- On ICT infrastructure financing, funding for the EASSy project, a 10,000 km submarine cable system linking South Africa with Sudan via landing points in Mozambique, Madagascar, the Comoros, Tanzania, Kenya, Somalia and Djibouti, was done in partnership with other donors and the funding was undertaken by IDA jointly with the IFC with AFD, European Investment Bank, African Development Bank (AfDB), and Kreditanstalt für Wiederaufbau Bankengruppe (KfW) of Germany. The World Bank and AfDB are also working together with the Africa Union on the Central Africa Backbone program. The Bank is collaborating closely also with the Inter-American Development Bank (IADB) in the preparation of the Caribbean Regional Connectivity Infrastructure Program, which will enhance international and

national connectivity to 18 countries. IADB is assisting in particular with project implementation in Haiti and the Dominican Republic.

- On ICT as an enabler of transformation, the Bank is collaborating with AfDB and the African Union on a flagship effort, Transformation-Ready: The strategic application of information and communication technologies in Africa, which studies the transformational impact of ICTs in a wide range of sectors as well as on trade and integration. In addition, in 2011 the World Bank is launching the “ICT Innovations for Improved Service Delivery and Accountability” Knowledge Platform to mobilize practitioners, innovators, technology companies, and civil society on improving the accountability, quality and delivery of public services. Memoranda of Understanding have been signed with Government of Korea, Government of Singapore, Microsoft, IBM, Intel, L1, Gemalto and Pfizer. Pfizer is collaborating on two e-Health pilot projects
- On facilitating project development, the Korean Government has made available a US\$15 million Korean Trust Fund on ICTs focusing on project development for investment and lending, and innovative analytical work related to ICT as an enabler of transformation. The Finnish Government is providing infoDev with approximately US\$16 million to support grassroots innovation and entrepreneurship and to scale up mobile applications to address local challenges with global relevance.

Moving Forward

Remarkable developments in the ICT sector—the increasing spread and now near ubiquity of mobile phones in developing countries, the growing penetration and affordability of Internet services including broadband, and the emergence of innovative ICT applications in many sectors of the economy—indicate the huge potential development impact of ICT. In this context, the World Bank is reassessing and refocusing its role and priorities for engagement in the ICT sector and across sectors to help developing countries mobilize ICT for poverty reduction and growth. As part of formulating the World Bank’s new ICT Sector Strategy, an approach paper proposes three strategic directions: Connect, Innovate, and Transform. The first strategic

direction targets connecting users, including those in rural areas, to affordable access to voice, high-speed Internet and information networks. The second direction supports innovation, by using ICT across the economy and promoting the growth of ICT

industries with a focus on ICT skills development. The third aims at transforming the delivery of public and private services across sectors through the strategic use of ICT for an increased development impact.

LEARN MORE

- ICT Sector Unit Website: www.worldbank.org/ict
- ICT Sector Strategy 2011: www.worldbank.org/ict/strategy
- ICT Sector Strategy Approach Paper: http://siteresources.worldbank.org/INTICTSTRATEGY/Resources/2010-12-27_ICT_Sector_Strategy_Approach_Paper_EN.pdf
- World Bank ICT on Facebook: <http://www.facebook.com/pages/World-Bank-ICT/184545358231136>
- World Bank ICT on Twitter <http://twitter.com/WorldBankICT>
- E-Development Thematic Group: www.worldbank.org/edevelopment
- infoDev: www.infodev.org
- Success stories: <http://go.worldbank.org/G4PCUA5AN0>

Multimedia

- Departmental blog “World Bank ICT Blog”
- RCIP: Unleashing Africa's Potential -- <http://www.youtube.com/watch?v=eA-Ene4nJsc&p=5EC7BDD03F5CDAA5&playnext=1&index=13>
- Towards 2020: ICT in Action in Rwanda -- <http://www.youtube.com/watch?v=8UYBw0nSr1o>