

The Growing Possibilities of Information and Communication Technologies for Reducing Poverty

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

The mobile revolution and the poor

From the perspective of the poor, the most relevant development during the past decade has been the rapid diffusion of mobile telephony. The International Telecommunication Union (ITU) estimates that the total number of mobile subscriptions will reach 5 billion in the course of 2010.² Average global mobile subscription penetration at the end of 2009 was estimated to be 68 percent (see Figure 1).

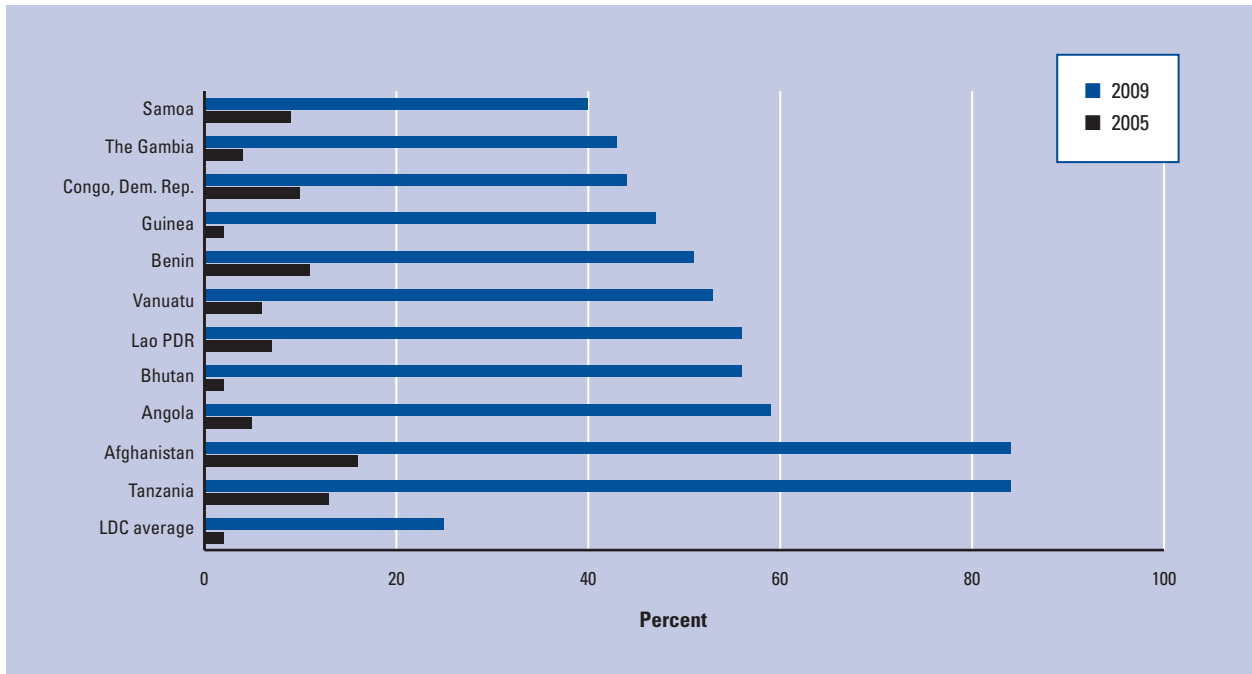
Among the 49 least developed countries (LDCs),³ average mobile penetration rose from 2 subscriptions per 100 population in 2005 to 25 subscriptions per 100 population in 2009 (Figure 1). In some of these countries, the growth rate has been truly remarkable. In the Democratic Republic of Congo, for example,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

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

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

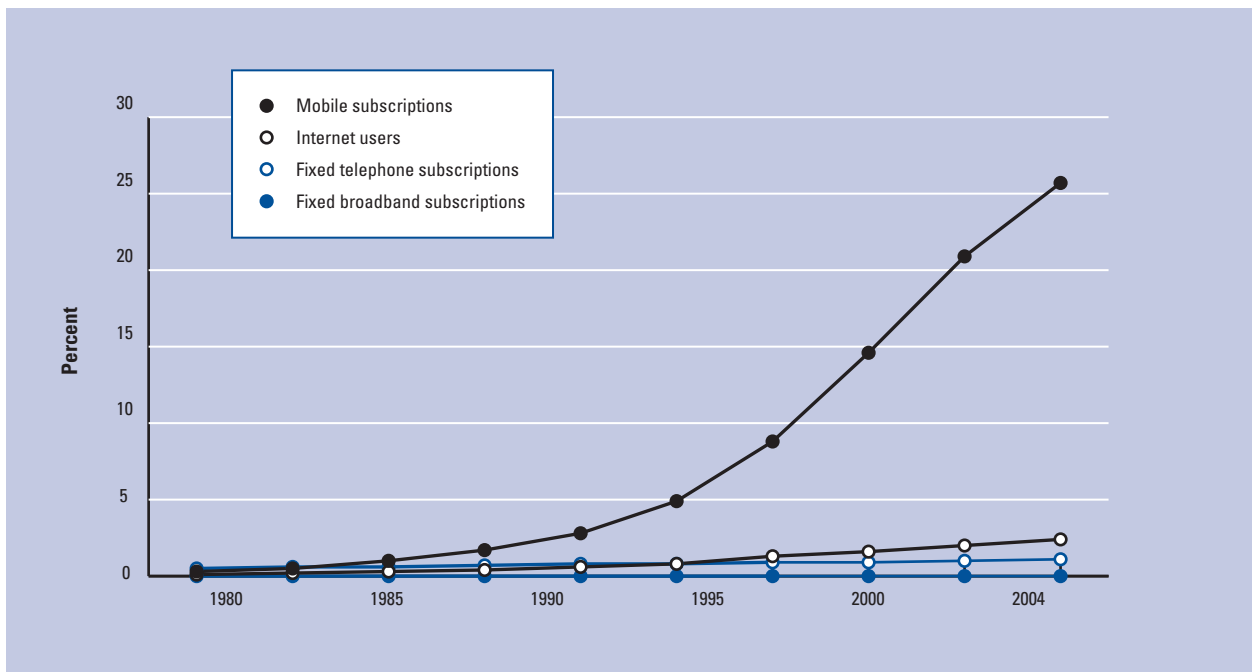
The scope for ICT to improve the lives of the poor has expanded thanks to the emergence of many new and innovative applications and services, especially those linked to mobile telephones. Mobiles are already widely used for voice communication and short message service (SMS); increasingly they are also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

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



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

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



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

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

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

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

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

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

Internet. In Kenya, for example, 99 percent of all Internet subscribers accessed the Internet from mobile phones in June 2009. Mobile-money services are another important application with major implications for the poor. Many low-income economies are under-banked. For almost all, existing data show a higher rate of penetration for mobile telephony than for commercial bank accounts. According to the Consultative Group to Assist the Poor (CGAP), about 1.7 billion of people without a bank account will have a mobile phone by the end of 2010.⁵

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

With the appearance of M-Kesho in Kenya, another landmark in mobile-money was achieved. M-Kesho (*kesho* means “tomorrow” in Swahili) allows people not only to place money in electronic wallets, but also to earn interest on savings and to receive a loan.⁶ The partnership between Safaricom and Equity Bank has enabled customers to access true bank accounts through their mobile application for depositing and transferring

money. The partnership became a viable business option thanks to a change in the policy of the Kenyan Central Bank. In late April 2010, it issued new agent banking regulations that permit local banks to engage in handling money transfers and product promotion, such as receiving account applications through mobiles, although these applications must be approved by a bank staff member. These new regulations paved the way for banks to begin utilizing platforms such as M-Kesho.

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

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

ICT in enterprises and the poor

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

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

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

ICT use in enterprises

Micro-enterprises in low-income countries are rapidly adopting mobile phones as key tools for advancing their commercial activities. Take mountainous Bhutan as an example. In this country, one of the world's poorest, mobile phone use has transformed the everyday lives of dairy farmers. The phones help them obtain information about market prices and stay in direct contact with customers. The result is increased income and less waste, as

farmers can sell their output for higher prices and ship only sufficient milk to meet demand. Mobile phones have also led to reduced travel and waiting times, enabling the farmers to organize their work more efficiently. The government of Bhutan recognizes the business potential of the phones and has launched a mobile-based information service for the farmers.

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

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

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

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

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

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

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

Involvement of the poor in the production of ICT

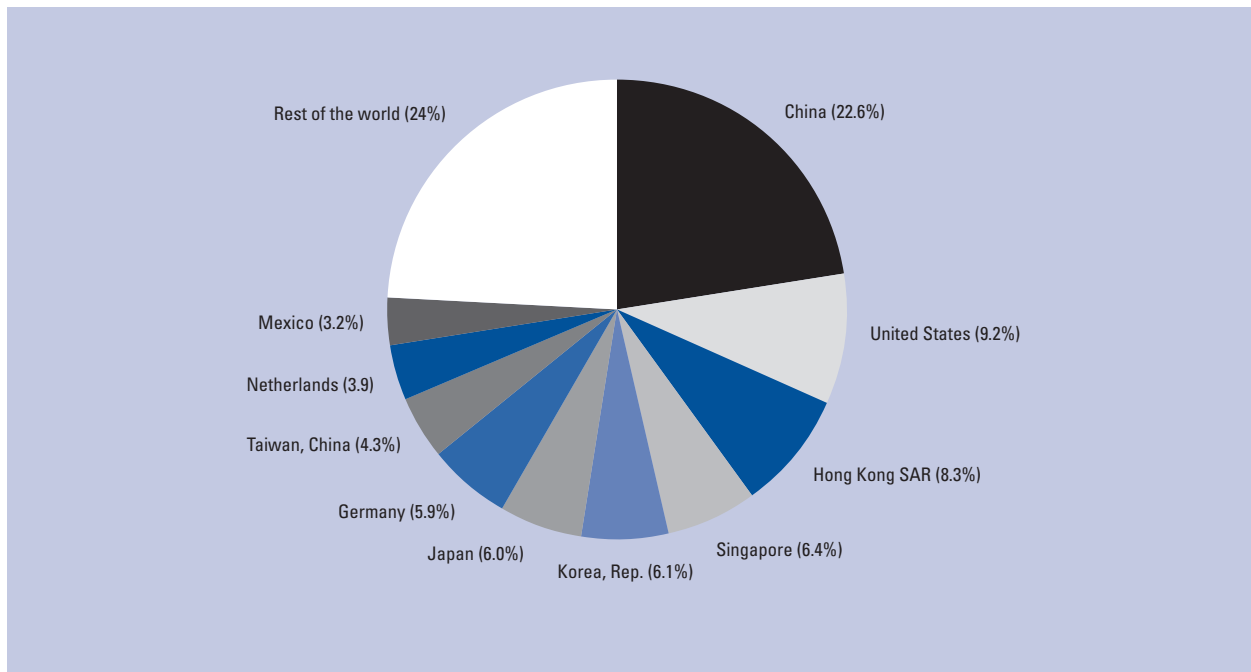
An aspect that has hitherto received little attention is the role of the poor in the production of ICT goods and services. Nonetheless, ICT can contribute to poverty reduction through various channels. The ICT sector can offer jobs and income-generating opportunities and, in some cases, create entirely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

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

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

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

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

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

Source: UNCTAD, based on Comtrade data.

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

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

In China, the world's largest exporter of ICT goods (Figure 3), ICT manufacturing has now expanded to employ millions of migrant workers, who transfer signif-

icant funds from urban to rural areas. At the end of June 2009, there were about 150 million migrant workers within China, of whom 97 percent had reportedly found a job. It has been estimated that 17 percent of these jobs are in electronics and other ICT manufacturing.¹⁴ In absolute numbers, this would correspond to some 25.5 million ICT manufacturing jobs for migrant workers.

ICT and poverty reduction: Some policy recommendations

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

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

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

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

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

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

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

- *Long period for inactivity.* Prepaid validity should be for the longest possible period of time since many of the poor have fluctuating incomes and may not be able to make calls on a regular basis.
- *Per-second charging.* The standard method of pricing calls is a per-minute basis. A number of operators have adopted per-second charging, which benefits poorer users since they can make shorter calls without paying a full minute’s tariff.
- *Nationwide tariff.* Many countries have a single tariff for mobile calls that applies to all domestic locations. This eliminates domestic long distance and roaming surcharges, benefitting consumers.
- *Low denomination recharge.* Offering low denomination recharges ensures that the poorest do not have to tie up funds in unused prepaid credit.
- *Friends and family.* Offering the option of free or lower cost calls to a few selected numbers benefits poor users.

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

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

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

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

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

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

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

Source: UNCTAD, based on information provided by Katalyst.

Note

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

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

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

and their communications preferences to ensure that services are tailored most effectively to meet demand.

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

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

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

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

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

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

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

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

Notes

- 1 UNCTAD 2010.
- 2 ITU 2010.
- 3 The least developed countries (LDCs) are a group of countries that have been identified by the United Nations as "least developed" in terms of their low gross national income (GNI), their weak human assets and their high degree of economic vulnerability. See http://www.nationsonline.org/oneworld/least_developed_countries.htm for further information.
- 4 UNCTAD 2010.
- 5 Morawczynski and Pickens 2009.
- 6 Mas 2010.
- 7 GSMA Development Fund and Cherie Blair Foundation for Women 2010.
- 8 See Ogodo 2010.
- 9 Vincent and Cull 2010.
- 10 IFPRI 2009.
- 11 Gakuru et al. 2009.
- 12 Ahonen 2009.
- 13 Sey 2008.
- 14 Duan and Zhang 2009.
- 15 UNCTAD 2010.
- 16 Zainudeen et al. 2007.
- 17 Heeks 2009.
- 18 Donner 2009.
- 19 See Hellström 2010 for examples of innovative use of mobile applications in East Africa.
- 20 Ban 2010.
- 21 United Nations 1999.

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