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The Linkage Between ICT Applications and Meaningful Development

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Summary

This briefing note focuses on ways in which ICT applications, particularly computer and Web-based digital technologies, can be used to promote sustainable social and economic development and achieve the Millennium Development Goals. A framework for understanding the inter-linkages between the various development sectors and ICT is provided followed by some discussions on the different roles ICTs can play in reducing poverty, providing education and healthcare for all, promoting gender equality and coping with environmental change and extreme climate events.

This briefing note is drawn from the first of nine core modules of the Academy of ICT Essentials for Government Leaders (Academy). The Academy is a comprehensive ICT for development training curriculum that aims to equip policymakers with the essential knowledge and skills to fully leverage opportunities presented by ICT to achieve national development goals and bridge the digital divide. More information on the Academy is available at <http://www.unapcict.org/academy>.

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1. Introduction

The development challenge that the Asia Pacific region poses to the global community of donors, development agencies and practitioners is massive. There is no one-size-fits-all, and a solution that works admirably in one country can fail miserably in another part of the same region.

There is a need, therefore, for each country to find innovative approaches and solutions to address specific developmental needs. In the era of the knowledge society, cutting-edge applications of information and communication technologies (ICTs) make possible such innovative approaches and out-of-the-box solutions, and can place developing countries on a path of rapid growth, as for example in China and India.

This briefing note discusses ways in which ICT applications, particularly computer and Web-based digital technologies,¹ can be used to promote sustainable social and economic development and achieve the Millennium Development Goals (MDGs). Special attention is given to the meaningful application of ICTs in addressing the needs of island, mountainous, landlocked and least developed countries.

2. The MDGs in Brief

The adoption of the Millennium Declaration in 2000 and the MDGs by all 189 member states of the United Nations General Assembly was a watershed in global cooperation. Since 2004 there have been several mid-term reviews of global and regional progress in meeting the targets in different parts of the world. The *Millennium Development Goals Report 2007*² reveals that global progress is uneven and that despite some visible and widespread gains even in regions where the challenges are greatest, large parts of the world will miss the targets set for 2015. The *Global Monitoring Report 2009*³ has called the current state of development 'an emergency', one which has been further impacted by the global economic crisis.

The final report of the United Nations Millennium Project⁴ identified four overarching reasons why the MDGs may not be met: poor governance, corruption, poor policy choices and the denial of human rights. Sometimes being poor is itself a problem: some local and national governments are too poor to make the necessary investments.

Figure 1 is helpful in understanding the linkages between the different sectors of society.

¹ Older technologies such as radio and television will be discussed only in so far as they are integrated with digital technologies.

² United Nations, *The Millennium Development Goals Report 2007* (New York: United Nations, 2007), <http://www.un.org/millenniumgoals/pdf/mdg2007.pdf>.

³ The World Bank, *Global Monitoring Report 2009: A Development Emergency* (Washington, D.C., 2009), http://siteresources.worldbank.org/INTGLOMONREP2009/Resources/5924349-1239742507025/GMR09_book.pdf.

⁴ UN Millennium Project, *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals* (New York: UNDP, 2005), <http://www.unmillenniumproject.org/reports/fullreport.htm>.

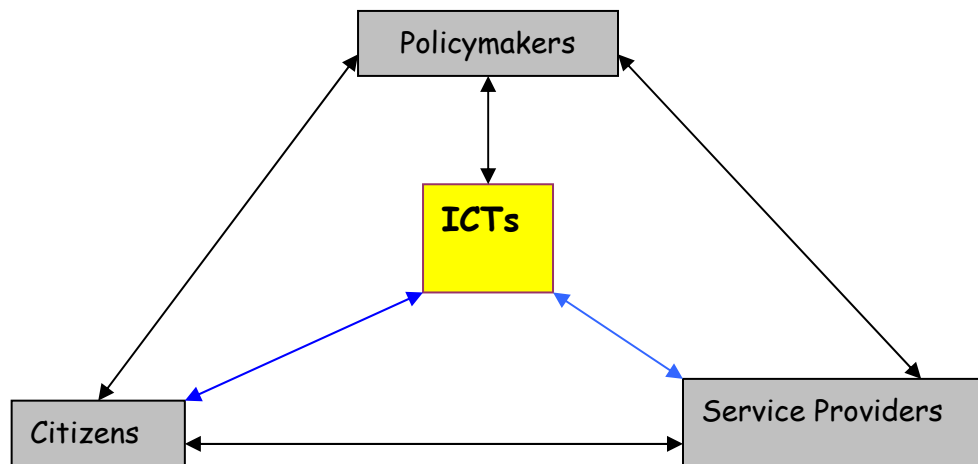


Figure 1: Schematic drawing of the link between ICTs and various sectors of society and government

Citizens, as patients in a hospital, students in schools, consumers of water and electricity, are the **clients** as they pay for these services, either through taxes or through user charges levied by the state. They are the people that government exists to serve.

The **service providers** are the agencies or offices (public or private) where citizens go to for services. Examples include the electricity, water and sanitation supply boards, schools and the education systems, and hospitals.

Policymakers can be identified as elected officials and government officials in position to set policies and determine courses of action, and have supervisory, monitoring and disciplining authority over service providers, including the mandate to reward or penalize based on performance.

Consider the relationship that citizens have with policymakers or elected officials. In principle, citizens influence policymakers and politicians through existing political processes, such as elections. In practice, this is a slow process, does not always work (especially for the poor who have less clout with politicians), and the distance between the citizen and the policymakers and elected officials grows because of weaknesses in the electoral system or the slowness of the process itself; i.e. once every four or five years. Even if poor people can reach the policymakers, services will not improve unless the policymakers can ensure that the service providers will deliver the services to them. It is easier to influence service outcomes by strengthening the link between the citizens and the service providers through the use of ICTs.

The link between all three major players can be accelerated, improved, made more efficient and effective through the use of ICTs, compared with older and slower methods of communication. Indeed, within the last decade, the ability to effectively use computers and the Internet has become a key driver of the rapid development of several Asian countries. ICTs can be used to provide improved and equitable delivery of services, facilitate complex planning processes and coordination across sectors, and enable increased information sharing, outreach and monitoring of key efforts. When ICTs are used to facilitate integrated approaches and cost-effective scalable solutions, the total implementation and operational costs are likely to be lower.

3. Applying ICTs to Meet Development Goals

ICTs, by their very nature, are cross-cutting and their application may be multi-sectoral and multi-pronged. For instance, while ICT deployment for poverty reduction may focus on providing income-generating opportunities, it can also help bring women into the mainstream of economic activity, thus addressing a parallel development goal. However, for purposes of discussion, this section describes the various applications of ICT with special reference to their role in helping achieve a specific development goal or target. The goals are segmented into sectors of development.

It merits mention here that there are two approaches to the deployment of ICTs. One is **direct** and targets the ultimate beneficiaries and uses ICTs to directly link them with the service providers. The second is **indirect** and supportive — i.e. it targets the development of policies, infrastructure, support systems and content, which in turn is expected to benefit the ultimate beneficiaries. Both approaches are critical to the achievement of development goals, but each has a different design at the policy and implementation levels. An effort will be made to look at both types of interventions, within the context of the MDGs.

ICTs and Poverty Reduction. ICTs have an important role in spurring economic growth, which in turn impacts poverty reduction. There is evidence that business and industry have benefited the most from the information revolution. ICT infrastructure and human resources development has given rise to high growth rates in countries like China and India, transforming them into powerful economies.

Industry and private sector-led growth supported by ICTs has in some cases contributed to poverty reduction. However, the poor have benefited less from this type of development than the non-poor.⁵ Because the faces of poverty are many, governments need to address poverty directly and not just through interventions in the economy to spur growth that it anticipates will eventually benefit the poor.

Both direct and indirect ICT intervention — i.e. using ICTs to deliver services to the poor, and more supportive interventions such as natural resource mapping — are important poverty alleviation strategies. Equally important for addressing the multi-dimensional aspects of poverty are the creation of effective ICT-based systems for supporting large public programmes addressing poverty issues. An example is Malaysia's SINAR system, a database on the urban poor that has proven useful to governments and donor agencies in their efforts to provide services for this sector.

ICTs and Education. The impact of ICTs on education has been second only to their impact on business practices around the world. A broad survey of national efforts shows that the use of ICTs in education is as extensive as it is diverse. ICTs can provide marginalized groups access to schools and educational resources, enhance the quality of teaching and learning, and improve administrative and instructional efficiency.

The potential benefits of ICTs are more likely to be realized when ICTs are introduced in the context of system-wide reform in educational policies and practices. Real learning gains and the improvement of an education system will take place only

⁵ OECD, *Good Practice Paper on ICTs for Economic Growth and Poverty Reduction* (Paris: OECD, 2005), <http://www.oecd.org/dataoecd/2/46/35284979.pdf>.

when all of the elements of educational change, from policies and practices, to teachers, learners and other stakeholders, come together.

ICTs and Gender Equality. Women and girls' access to ICTs remains limited even today. The widening technological gap between women and men has been observed to be reinforcing traditional forms of power dynamics. As ICTs are increasingly becoming a major tool of social participation and economic productivity, failure to equip women with ICT skills will marginalize them further. It is true that some women have used ICTs to directly engage in e-commerce, and access education and e-government, but the technology by itself cannot change the power structures that are deeply embedded in society.

Some initiatives have sought to empower women by building their capacity to not only access and use technologies, but also to participate in their design, influence their content and shape their uses. ICTs can also facilitate women's participation in government and political affairs by providing a communications platform to exchange opinions, to articulate and aggregate interests, and to engage political leaders in women's issues. Women's advocacy groups can effectively use ICTs to network and connect with each other, and to mobilize public opinion.

ICTs and Health. There are two main categories of stakeholders in the health sector who can benefit from ICT support. The first category of ICT-supported health care beneficiaries includes those for whom health services are intended. The second category of stakeholders includes health care providers; medical professionals such as doctors, nurses and caregivers; researchers and health managers; and even policymakers in the area of health care. For the first group, ICT interventions can be direct, linking patients to expert medical services. For the second group of stakeholders, ICT interventions can be indirect and supportive through the creation of health monitoring systems or continuing professional education. Both types of ICT interventions are important.

Using ICTs to link doctors to poor patients in rural areas has a direct and significant impact on the quality and reach of a country's health services. But using ICTs to improve the quality of health care education and administration is equally important as health care education and administration impact upon the provision of health services. In many developing countries there is a lack of a critical mass of health care professionals, including doctor educators for teaching hospitals. Access to important medical literature is limited for both medical students and health workers who must keep abreast of the latest developments through continuing medical education and training. ICTs have a key role to play in meeting these needs. For example, an initiative started by a young doctor in India is providing medical content in multimedia format both online and offline to a large clientele of medical students, aspiring doctors and practicing health professionals.⁶ Global networks are providing access to medical journals and to vast online libraries either for free or at a substantially reduced subscription fee. The World Health Organization (WHO)-supported Web portal (HINARI) is a global effort to provide support to health professionals and policymakers worldwide.

Another critical application of ICT in health is the deployment of ICT-based surveillance systems for the prevention, reporting and monitoring of diseases such

⁶ See "SmarTeach," MEEdRC EduTech Ltd., <http://www.smarteach.com>.

as HIV/AIDS, malaria, tuberculosis and leprosy.⁷ The availability of such systems has enabled both international agencies and national governments to monitor outbreaks of diseases across international borders. For instance, addressing protection against and treatment of quickly spreading diseases such as SARS and the avian flu has been possible only because of ICT-based health surveillance systems.

ICTs and Disaster Management. Inequitable distribution of resources and unbridled exploitation of natural resources have created a global crisis of monumental proportions. Global climate changes, including global warming, drought and floods, are increasingly being felt in various parts of the world. Island states are particularly vulnerable to the effects of global warming and rising sea levels while landlocked and mountainous states are vulnerable to the melting of glaciers, soil erosion and avalanches, to name a few. The most vulnerable victims of climate change are the poor, wherever they are located, since the scale of global degradation results in the loss of their livelihoods. ICTs have a major role to play in addressing environmental issues and reducing disaster risks, whether through GIS systems for the mapping of natural resources or to draw sharp attention to the consequences of deforestation. For island and other remote areas, integrated planning and management systems using ICTs could be very useful.

4. The Role of Policymakers

Small island, landlocked and mountainous countries have some key characteristics in common. The first is that they have small populations and, consequently, small economies, small markets and limited human and technical resources. In some cases, they also have limited natural resources. Second, they all have problems of great distances: the small island states have oceans of water separating islands while the mountainous countries have impassable mountains. All have remote populations, mostly underserved. And all have transport and communications problems, with poor telecommunications systems. Third, all of these countries are vulnerable to the forces of nature on the one hand, and the winds of globalization, liberalization and privatization sweeping the world on the other. Some of these countries are surrounded by economically and politically powerful neighbours, and few are free from ethnic conflicts that threaten to destroy whatever small gains have been made over many decades of development.

Almost all the conditions that pose severe challenges for development are those which ICTs are best equipped to address. No matter what approach a country takes to address its development goals, the use of ICTs cannot be over emphasized. Yet the success of the use of ICTs depends very heavily on sustained political, policy, and administrative support from elected officials, and policymakers. It is they, who will, drive the agenda for development.

What the experience with any number of ICT interventions in different sectors — economy, education, health and disaster management — in different developing countries have shown is that the role of policymakers is critical. India's experience with the use of ICTs in poverty reduction⁸ and e procurement in Andhra Pradesh⁹ show that political will and commitment made the difference between success and failure.

⁷ UNDP, *Regional Human Development Report – Promoting ICT for Human Development in Asia: Realising the Millennium Development Goals*. (New Delhi: UNDP, Elsevier, 2005), 147-160, <http://www.apdip.net/elibrary#rhdr>.

⁸ National Rural Employment Guarantee Scheme - Andhra Pradesh, Department of Rural Development, Government of Andhra Pradesh, http://nrega.ap.gov.in/Nregs/Home_eng.jsp.

⁹ <http://www.eprocurement.gov.in/home/>.

How was this achieved? It was possible because of:

- Direct intervention and involvement of the head of the government
- Establishment of empowered committees of senior government officials who meet every fortnight to take decisions and resolve problems
- Public-private partnerships between the government who provides the guidelines and the industry who provides the services
- The setting up of special project implementation units in all departments
- The sustained training and capacity building of government officials
- Ongoing monitoring and review of the processes, and independent evaluations conducted by reputed institutions

5. Conclusion

ICT-based development interventions are different from programmes that governments have attempted before. They include not just computers and the applications, but new ways of thinking and doing things. They do not mean simply putting softwares and applications in place. They imply large-scale reform and restructuring of government and how it works and for this, the role of policymakers in terms of a sustained commitment and leadership is an absolute must.

The **APCICT Briefing Note Series** aims to provide at-a-glance information on key information and communication technology for development (ICTD) agendas for high-level policymakers and stakeholders. The series includes: 1) highlights of conventional research papers, assessment and survey reports and publications; 2) policy considerations drawn from the Academy modules; and 3) key challenges and lessons learned based on analyses of best practices and case studies.

APCICT, a regional institute of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), was established and inaugurated on 16 June 2006 in Incheon, Republic of Korea. The role and mission of APCICT is to strengthen the efforts of the 62 ESCAP member and associate member countries to use ICTs in their socio-economic development through building the human and institutional capacity for ICT. In pursuance of this mandate, APCICT's work is focused on three inter-related pillars – Training, Advisory Services and Research. The Briefing Note Series is part of the research pillar. Also under the research pillar is a Case Study Series that provides analyses and compilations of best practices and case studies on different aspects of ICTD and capacity building in the Asia Pacific region.

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