1 Introduction – Sustainable Development and ICT

Global development has been unequal, even though the trends in human development are generally positive

We live in a divided world: between rich and poor, healthy and sick, literate and ignorant, democratic and authoritarian, and between empowered and deprived. All the technologies that we developed in the past centuries and all the policies we enacted for enhancing human development have not wiped out these glaring disparities. The numbers are depressing: more than 2 million people (1.5 million in Africa alone) die of tuberculosis annually, for which medical treatment exists; about 2.8 billion people live on less than $2 a day; life expectancy in Sierra Leone is 37, a level not seen for centuries in the West, and, in spite of its protestation of hi-tech, India remains the home for the world's largest number of adult illiterates. We can extract such dismal statistics in many areas of human development, infrastructure availability, economic well-being, environment and empowerment. While many categorizations of countries have been proffered (such as developing, emerging economies, economies in transition, etc.), a new label—a sign of the times—is the "digital divide," which describes the development of countries (and groups within countries) in terms of their capacity to harness the power of Information and Communications Technology (ICT).

Numerous organizations, governmental and non-governmental, public and private, global and very local are working to remove the glaring disparities in development. Some of their efforts are already showing results. The poverty rate, for instance, based on a real income level of $1 per day declined from 29 percent to 23 percent in about twenty years. Infant mortality, due in large part to water-borne diseases and poor hygiene, has fallen from 4.6 million in 1980 to 1.7 million in 1999. It is unnecessary to emphasize that much more needs to be done in all areas of sustainable development, especially in specific areas such as Sub-Saharan Africa and South Asia (Figure 1).

In the following section we discuss the targets for sustainable development (SD) projected at various Global Forums and endorsed either unanimously or by a majority of the nations. While every country has its own set of priorities and targets, and some have appropriated the UN promoted targets as their national ones, we shall base our discussions on the UN promoted ones, for they provide a common template for sustainable development missions. Most sweeping and specific are the Millennium Development Goals (MDGs), which span most facets of human development.

In the subsequent sections of this chapter we outline the rationale for the workshops we organized in Washington, DC, and Bangalore, India, which aimed to identify and recommend relevant options of ICT for sustainable human, social and economic development. While referring to the recommendations of the workshops (Chapters 3 and 4) we shall also discuss the challenges, barriers, and metrics for sustainable development, including where ICT is eminently relevant and can provide useful if not path-breaking options.

Development – Global Targets and Statistics

Over the last 15 years, there have been multiple global meetings on issues of development; we focus on four major UN sponsored meetings and resolutions: Agenda 21, Millennium Development Goals, Johannesburg Summit, and the World Summit on the Information Society (WSIS).

Agenda 21 emanated from the Rio Summit on environment and development, and was a statement of principles for environmental sustainability and development. The program areas that constitute Agenda 21 are described in terms of the bases for action, objectives, activities and means of implementation. The Agenda 21 document runs to forty chapters including a section on means of implementation. However, Agenda 21 does not set forth targets, instead arguing for dynamic programs that could be suitably prioritized by countries depending on their situations and objectives. Agenda 21 was promoted as an evolutionary document.

The Millennium Declaration was adopted by the member states of the UN in September 2000, and this was followed by the Millennium Development Goals, which were projected as the road map for implementing the Millennium Declaration. We believe the MDGs, summarized below, are important for establishing targets for development (detailed in Appendix 1).

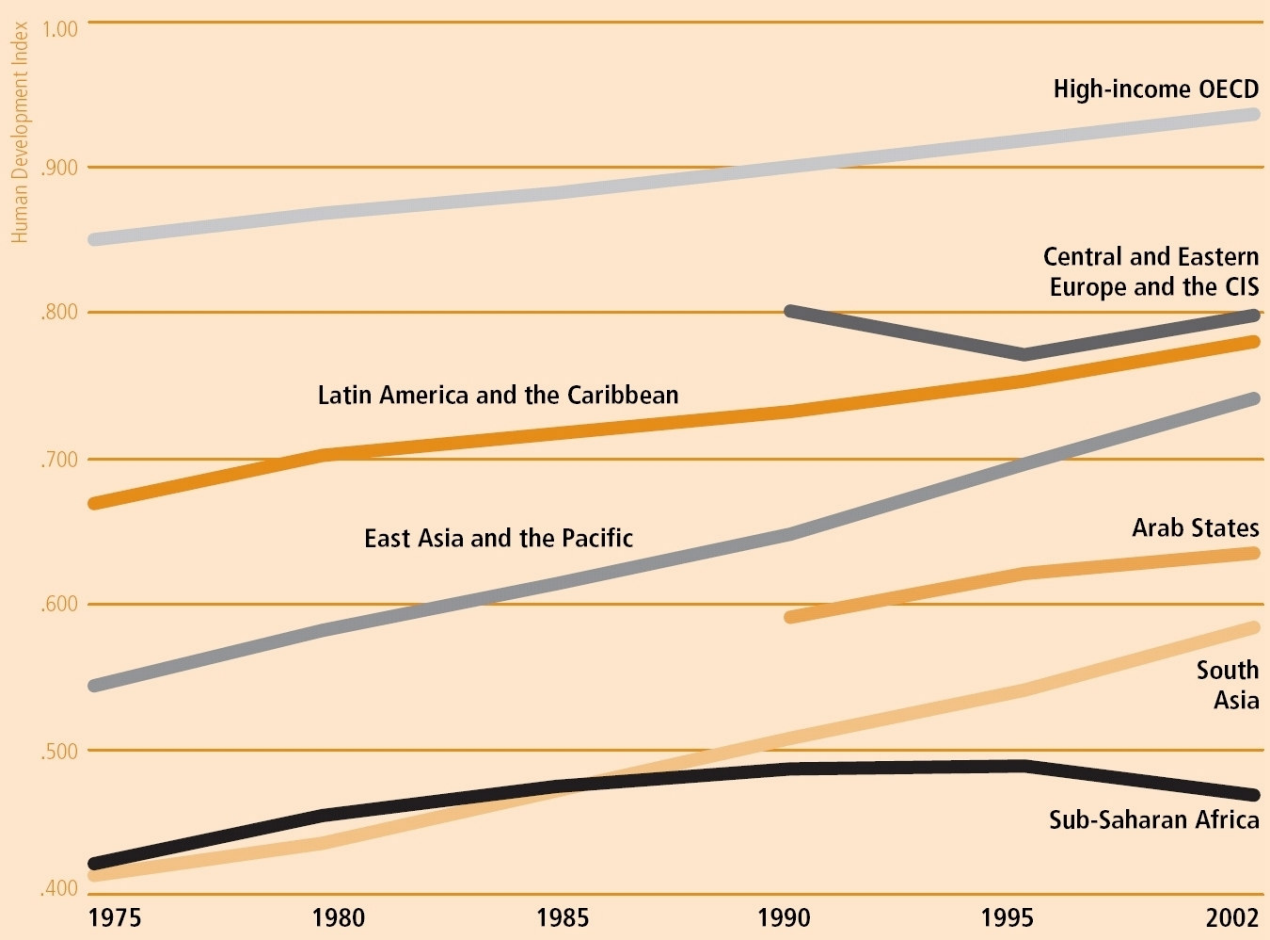
Global development targets are embodied in the Millennium Development Goals (MDGs)

Millennium Development Goals (MDGs):

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria, and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

The Johannesburg World Summit on Sustainable Development (2002) also drew out some of the targets of the Millennium Declaration. However, the scope of the Johannesburg Declaration was more extensive and included many areas of deprivation and action points. For instance, the 19th article states “We reaffirm our pledge to place particular focus on, and give priority attention to, the fight against worldwide conditions that pose severe threats to sustainable development of our people, which include chronic hunger, malnutrition, foreign occupation, armed conflict; illicit drug problems; organized crime; corruption; natural disasters, illicit arms trafficking; trafficking in persons; terrorism; intolerance and incitement to racial, ethnic, religious and other hatreds; xenophobia; and endemic, communicable and chronic diseases, in particular HIV/AIDS, malaria and tuberculosis.”

This summit chose to focus on five particular areas, Water, Energy, Health, Agriculture and Biodiversity, known as the WEHAB framework. The Summit also underlined the importance of technology for development such as cost-effective desalination of seawater recycling and renewable energy resources, diversification of energy supplies, advanced energy technologies and even phasing out of subsidies. There was an explicit reference to Information and Communications Technologies for development in Johannesburg. The importance of ICT culminated in the World Summit on the Information Society (WSIS), Phase I of which was held in Geneva in December 2003. Chapter 2 goes into more detail on WSIS.



Source: UNDP Human Development Report 2004

Figure 1: Human Development Index (HDI). HDI is a composite measure measuring quality of life statistics, beyond merely economic (GDP-based) metrics. The disturbing decline in HDI in Sub-Saharan Africa is primarily due to decreasing longevity and health, especially from HIV/AIDS.

Drivers for the ICT-SD Workshops

A few technologies can be classified as all-purpose technologies as their innovations extend over many areas, and these, in turn, become indispensable elements in society's portfolio of development. Over a period, their contributions to economic and human development become impressively large, replacing older and less efficient methods. Their ubiquity makes one wonder how it was possible to manage in the past without accessing such technologies! Electricity is often cited as a typical example of an all-purpose technology. In spite of electricity's obvious advantages, it took almost a century before electric power could become commonplace. Applications from new technologies are faster these days. The diffusion of radio and television was faster than electricity, and that of the Internet is spectacular. Within 35 years of its existence the Internet has some one billion users and its performance has multiplied manifold (and the World Wide Web, practically speaking, is scarcely a decade old). The rapid diffusion of the Internet and new communications technologies such as mobile telephony suggests that innovations from ICT for SD can also be faster than the progression shown by earlier technologies. This may provide society with targeted tools for sustainable development programs. However, much of ICT research is geared towards sophisticated applications of ICT or makes assumptions

about end-users and their capabilities. The workshops, and this report, aim to bring the ICT and developments communities together.

ICT is recognized as an all-purpose enabling tool for development…the debate is not one of "either–or" but of complementarity

ICT is now part of development. "The debate in the 1990s over choosing between ICT and other development imperatives has now shifted from one of tradeoffs to one of complementarity."[1] There are many initiatives, groups, and programs working on ICT for Sustainable Development. The International Telecommunications Union (ITU) has a development group charged with ICT development and increased penetration, and the UN ICT Task Force focuses on many aspects of ICT for SD. The Development Gateway Foundation, supported by the World Bank, is a clearinghouse and repository for vast information on ICT and development. The G8 instituted the Digital Opportunities Task Force (DOT Force) in 2001 to strengthen efforts on ICT and development. ICT4SD's global visibility can be gauged by the public challenge Kofi Annan, the UN Secretary General, made to Silicon Valley and ICT leaders on November 5, 2002 to make ICT relevant for global human development.[2]

This report does not attempt to comprehensively summarize either the state of knowledge in the ICT or the development arenas. Nor does it present case studies on what works and what doesn't. It presents a slice of all of these, with the aim of guiding global research in ICT for sustainable development. It attempts to combine bottom up (needs-based) requirements from various facets of human development to top down (technology-push) solutions.

Structure of the Workshops

The two workshops were structured to bring together the communities of ICT and of development

ICT experts, especially those working at the cutting edge, typically lack awareness of the problems that professionals working in areas of human development encounter (and the converse is also the case). We therefore structured the first workshop in Washington, DC, June 26-27, 2003, to discuss problems of human and social development. About one dozen presentations covered various dimensions of the problem: from agriculture to urban transportation; from health issues to economic growth options for developing countries. In the concluding session it was suggested that before the second workshop in Bangalore, it was essential to identify the more important problems in SD where the use of ICT would be relevant. For this we sent out a specially designed questionnaire to the participants of the two workshops as well as other professionals requesting their problem preferences. On the basis of the responses received and the meetings the organizers had with experts working in these areas, we produced a discussion note for the Bangalore workshop citing areas of human development and suggesting possible ICT options, to help set the agenda.

The Bangalore Workshop focused on Working Group sessions, spanning various themes of human development (Infrastructure, Basic Human Development, Economic Development, and Empowerment and Governance). Appendices 1 and 2 have more details on the respective Workshop Agendas and Participants. There were informal presentations within groups to identify and recommend appropriate ICT challenges. The working groups were also charged with presenting brief summaries of the role for and research needs in ICT. The deliberations at these sessions contributed to the development of an Action Plan for SD. In the following chapters, we summarize and integrate the discussions at various sessions of the two workshops and the proposed Action Plan suggested by the various groups, concluding with a desideratum on where we go from here.

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1 As quoted from Markle Foundation/Accenture/UNDP in *ICT and MDGs: World Bank Group Perspective*, December 2003.

2 Kofi Annan has also appealed for relevant science to help meet the MDGs, e.g., in an editorial in *Science*, March 7, 2003: A Challenge to the World's Scientists.