Information and Communication Technologies, Human Development, Growth and Poverty Reduction: A Background Paper

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Executive Summary / Overview

In September 2003, IDRC organized *A Dialogue on ICTs and Poverty: The Harvard Forum* (http://www.idrc.ca/en/ev-46261-201-1-DO_TOPIC.html). The current paper has been drafted as background for a second Harvard Forum - *A Dialogue on ICTs, Human Development, Growth and Poverty Reduction*, September 2009. Six years later, much has changed. Trends highlighted at the Harvard Forum and elsewhere have progressed and many have accelerated. ICT regulation and policies have improved in many countries, often in response to good research and advocacy. There has been explosive growth in mobile phone access and use in all regions, with both private and non-profit operations servicing the 'bottom of the pyramid' (BoP) with very low-margin, high-volume business models.

In both poor and wealthy countries and populations, mobile phone use has enabled and facilitated the expansion of markets, social business and public services. An entire range of economic services, enabled by mobile phones, has emerged – banking and financial transactions, marketing and distribution, employment services, personal services, and public services.[1] Beyond economic impacts, improvements are being made in other freedoms or dimensions of well-being: personal security, political participation and accountability, peace, dignity and opportunity.

Communication and networking enabled by information and communication technologies (ICTs) are proving in other related ways to be economically, socially, and politically transformative. Their central part in openness and in innovation is striking. Internationally, the spread and appropriation of ICTs has been a key dimension of globalization, urging societies to build communications systems and manage them well, develop infrastructure and the capacity to use it, and implement good policy and regulation. In the right environments, both business and non-profit enterprise have been very effective in rapidly expanding connectivity and services.

One should not forget the negative aspects and possibilities of communications-based transformations, such as mobile phones being used to fan violence, cyber crime and terrorism, and our vulnerability to disruption of communication. In addition, both nationally and internationally, control of communications is often contested, and openness a constant battle.

And yet, affordable mobile Internet – smart phones and data services – exists today in wealthier societies and could become near universal in the next generation. Compared to six years ago, there is *much* more development and research or knowledge base; both conceptual thinking about the transformative impacts of wide-spread communications, and empirical knowledge of ICT demand, use, costs, benefits and impacts.

There is so much activity and so many resources now that it is not possible to survey them thoroughly, and it is also challenging to draw out larger narratives. The main purpose of this paper is to provide glimpses of, and links to, a wide variety of research and action regarding ICTs, human development,

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[1] These include well known examples like: m-banking, remittance transfer, micro finance and insurance; farmers and fishers connecting directly with markets, reduced distribution margins and buyer oligopoly; drivers and, casual workers getting jobs by phone and improving efficiency; child and house care services; telehealth and distance education.

innovation, growth and poverty reduction. In addition, for purposes of discussion, the following narratives are put forward with acknowledgement of their subjectivity.

Arguably there are five main stories which come together at many points in the literature: universal access, economic and social services, openness, human development and innovation.

Connectivity and universal access

The first story is the dramatic increase in ICT connectivity and use globally, with usage nearing universal in many developing as well as advanced countries. Usage is lowest in Africa, on average, but the growth rate is highest in that continent. The poorest of the poor are still unconnected, but *very* poor people spend surprisingly large fractions of disposable income on mobile phone use including calls, messages and other innovative techniques to communicate cheaply or for free (e.g., beeping and 'missed call' messages). Research shows that poor people, like others, value communication highly for social, economic, and other benefits. Both need and effective demand exist. Increasingly, so does supply, through low-price business and non-profit activity, as well as public support in infrastructure, policy and regulation, universal access schemes, and investment in the full range of public and social e-services.

So this is a story of demand on one side, and on the other, the combination of technology and all the processes (market, public, non-profit, political etc.) that produce affordable supply. Connectivity is the basis on which all the potential benefits (and costs) of ICTs rest. And while major increases have taken place with mobile phones, there is still a long way to go in many countries and poorest populations – and in reaching universal broadband connectivity globally.

Services and beneficial access

A second of the five related stories is that of economic and social services enabled or facilitated by connectivity, referred to above – financial, business and distribution, employment, personal and public services. Well known examples in all populations including the BoP include:

- · finance - m-banking, remittance transfer, micro finance and insurance;
- · distribution – primary producers connecting directly with markets, reduced distribution margins and buyer oligopoly;
- · employment and income - drivers and, casual workers getting jobs by phone and improving efficiency; personal – managing security, childcare and home services;
- · public services - telehealth, distance education, many other public services.

Financial and other transactions via mobile phones

- Mobile banking started in the Philippines in the first years of this decade. For the 2 providers, start up investment is estimated at $5-10 million. One processed $123 million/month of transactions in 2006, and the other processed $257,000/day and an additional $28.3 million for the year in remittances.
- In Kenya, Safaricom has a similar system, now with some 2 million users. The system in South Africa is smaller but growing. In Sri Lanka, 'Mobile ATM' began by using mobiles to confirm cash requests by users, who then got cash from a travelling agent; Post Offices later came in as cash providers.
- About 90% of world's population doesn't use banks, and a large and growing percentage of the non-banked uses mobiles; the potential banking business appears both massive and, like connectivity, probably low-margin and high volume in nature.
- Global remittances now amount to about $400 billion, and another estimated $200 billion unreported; SMS based transfer systems, inexpensive and convenient, are gaining ground quickly.
- Phones (SIM cards) are becoming all-purpose financial transactions devices, and there is no obvious limit to related transactions – microfinance, micro insurance and non-financial e-services.
- Poor people don't have much money, but they have some, and have micro-credit worthy activities. Mobile-based financial transactions potentially bring everyone into financial and other services on an affordable basis. To date, awareness of m-banking and financial services is lowest at the BoP, but there is interest among those who are aware.
- The transition to mobile broadband will happen, but will be slow; in the interim, SMS based systems are spreading or projected to spread to most countries. Business development opportunities are immense, and much of the business development takes place locally.
- The potential transformative implications for poorer populations are striking, as are the business and economic opportunities in developing countries.

Openness and open access

The third story is one that started before 'open software' and 'access to knowledge,' and has become a movement that pushes for openness in all the 'layers' of society: social, economic, legal, and technological (infrastructure, software/logic, content). In some areas and countries, openness is increasing through activities such as open source software, open government, open education, open hardware, and open access to academic journals. In other countries, it appears to be advancing more slowly and in terms of intellectual property protection, progress is highly contested and too often backwards in the case of developing countries. Open IP, open business models, open capital and open society concepts are expanding, and ICTs have been a major factor in all these developments, making it possible to communicate, organize, produce and consume more widely and collaboratively, and making 'closedness' increasingly more difficult to sustain.

Human development and capable access

The fourth story is one of human development and greater attention to individual, external and group capabilities and freedoms, as highest-level development objectives. Inspired by Sen's capability approach, this movement advances combinations of economic development, social justice and social choice – the last particularly for public goods, where markets do not function adequately, or in some cases do not function at all.

Arrow's 'impossibility theorem' (formally the 'General Possibility Theorem') is a result of a breathtaking elegance of power, which showed that even some very mild conditions of reasonableness could not be simultaneously satisfied by any social choice procedure, within a very wide family. Only a dictatorship would avoid inconsistencies, but that of course would involve: (1) in politics, an extreme sacrifice or participatory decisions, and (2) in welfare economics, a gross inability to be sensitive to the heterogeneous interests of a diverse population….

Addressing these problems fits well into a general program of strengthening social choice theory (and 'nonobituarial' welfare economics). In general, informational broadening, in one form or another, is an effective way of overcoming social choice pessimism and of avoiding impossibilities, and it leads directly to constructive approaches with viability and reach. Formal reasoning about postulated axioms (including their compatibility and coherence), as well as informal understanding of values and norms (including their relevance and plausibility), both point in that productive direction. Indeed, the deep complementarity between formal and informal reasoning – so central to the social sciences – is well illustrated by developments in modern social choice theory.[2]

Agency is central to the capability approach, as are opportunity and equity; equality in the case of gender. Wellbeing is measured in more spheres (political, social, cultural, ethical) and more dimensions than just the economic ones, including education, health, security, dignity and empowerment. Processes of building capabilities and freedoms, as well as making social choices, are critical and easily reversed through conflict, disaster or pandemic.

Informed public discourse is central in Prof. Sen's writing and the capability approach, an essential ingredient taking many forms in the complex and typically difficult processes of social resolution and choice. Connections between *informed public discourse* and *(open) communications* are not hard to trace. And ICTs and communications, especially at the bottom of the pyramid intersect with capabilities and human development in other basic ways; several propositions are advanced in literature and experience, with some initial evidence and a need for further exploration, both conceptually and empirically.

· Communication enabled by ICTs, notably mobiles, is instrumental in building capabilities and enhancing freedoms. The evidence for economic capabilities is substantial, as noted above. The evidence for political, social, cultural and ethical freedoms is also substantial in the form of a large volume of cases and anecdotes.
· 'External capabilities' are defined as abilities to function that are conferred by direct connection or relationship with another person.[3] Examples are numerous of information and communications technologies (ICT) enhancing development by augmenting external capabilities. Capabilities may reside in networks or, perhaps more precisely, capabilities reside in individuals or groups, but exist because of networks.
· Collective consumption is so extensive in communication enabled by ICT services that this communication is a part public good which, much like education, provides a fundamental base for expansion of capabilities and freedoms. When any individual is educated, healthy, connected, other individuals benefit. The mathematics of networking suggests that externalities or collective consumption benefits are in fact *typically* large, and clearly related to the extent of openness.

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[2] Amartya Sen, Nobel Lecture, *The Possibility of Social Choice*, Stockholm, 1998:
   http://nobelprize.org/nobel_prizes/economics/laureates/1998/sen-lecture.html
[3] James Foster; see section IV below.

Open access and capable access appear to be strongly connected. Open access raises the level of the resources available to individuals and groups, to increase their capabilities. Open access also includes new means of interaction, participation and collaboration – which are transforming relationships and represents new forms of social choice – and are made possible by new information and communications technologies – in particular the emergence of Web 2.0 as a social platform, but also more simple technologies like SMS that allow for group organization and mobilization in the BoP.

· Increased capabilities occur if individuals or groups have the internal capacity (education level, health, political freedoms) to be able to use new technology resources.[4] At the same time, clearly these very capacities are also enhanced by ICT usage, making for a potentially 'virtuous circle' of human development. It is possible that the new technologies and forms of social relationships both require and help generate a new set of skills, and perhaps also moral orientations toward acceptance of opposing inputs and information.

· If capabilities consist of internal capacities that interact with the constraining and enabling resources and factors which the external structure (social institutions, demographic forces, culture, etc) bestow on individuals, open access might be seen as one enabling factor in the external environment. Openness is a social arrangement that is enabled by ICTs and that catalyses the power of ICTs to bring development benefits. Open content, for example, both in terms of open intellectual property and things like collaborative production drastically increase the amount of information available for productive use. But openness is also in turn based on the capabilities of individuals and capacity of a society built over years and decades.

Innovation and creative access

The fifth story is one of innovation, increasingly regarded as fundamental to development. Science and technology policy literature, and more recently innovation systems thinking, has long regarded ICT as a platform technology in a country's innovation system; the other two being biotechnology and (emerging) nanotechnology. ICTs among other things are the carriers of technological knowledge and the links that connect the many essential parts of a national innovation system. Lately, considerable attention has focused on innovation in and for the BoP. Here again, ICTs play critical roles as catalysts, knowledge providers and propagators of innovations. Mobile phones, for example, enable or facilitate a range of economic and social innovations among poor populations.

In this context, it is useful to distinguish different aspects of innovation in terms of *who* is innovating. For example, Heek's model of pro-poor (for the poor), para-poor (with the poor), and per-poor (by the poor) innovation, helps clarify that innovation emerges through combinations of these different activities. The proliferation of mobiles was driven both by innovative pricing schemes by telecoms businesses (pro-poor) and by users innovating with the relatively 'flexible' mobile technology (per poor) to create new forms of use that were otherwise not expected or intended.

Further Interconnection

While these five narratives – connectivity, services, openness, human development and innovation – may be different in many ways, they certainly overlap conceptually and in the examples covered in the survey paper which follows, particularly the Overviews of Chapter 1. Human development and innovation perspectives, for example, appear in many open access activities, and are beginning to appear in the ICT policy and regulatory research work aimed at universal access. Surveys of mobile

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[4] See for example Warshauer, Mark, Technology and Social Inclusion: Rethinking the Digital Divide, MIT Press, 2003.

phone use at the bottom of the pyramid suggest that ICT-enabled communications build human capabilities and freedoms while providing economic services and personal/family/social interaction and community relationships. For the poor too, isolation is changing quickly into connectedness.

A new strand of innovation systems research and activity addresses the design of technologies for human development, cognizant that new technologies usually expand some capabilities while contracting others, and focusing on technology innovation by and for people at the BoP. ICT access and usage is one particular focus of this work, and a recurring enabler in other strands of innovation. Mohammad Yunus speaks about ICTs and innovation in references quoted in Chapter 1 below. Innovation could itself be advanced as an end goal to which connectivity, services, openness and human development contribute. Alternatively, either human development or openness, broadly defined, could also cover much of the ground.

In applied and conceptual senses, it should not be surprising that connectivity, services, openness, human development and innovation – or *universal, beneficial, open, capable and innovative access* perspectives and approaches - would have a lot in common. In many ways, they may represent a range of reinforcing factors. Connectivity enables openness which enables a greater range of capable access which in turn enables more openness and innovation. Patterns of interaction are certainly more complex than this, but there is some strength to the idea that an increase in any one enhances possibilities for all the others.

The distinctions made here may in fact be somewhat artificial, but they may also be useful in terms of policy, action and research ideas they suggest. More specifically, suggested implications for development policy, action and research in the literature summarized in this paper, and the narratives drawn out above, include the following.

Priorities for policy, action and research

1. The telecom and ICT policy/regulation research and advocacy work that has been very active and effective since the beginning of the millennium needs to continue. Crucial to all ICT-supported developments and movements is progress toward low-cost and universal access. Universal/affordable broadband access – much of it mobile - appears possible for the coming generation, but will need concerted policy as well as technology and supply attention.

   While much has been done to improve ICT policy and regulation in many countries, there are still too many exceptions. Further, regulation needs to keep up with rapidly changing technologies. And in addition, ICT regulation increasingly needs to mesh with regulation in other sectors – most notably financial services – a challenge which has only begun to be addressed in most developing countries.

   For the BoP of this generation, expansion of low-cost SMS based financial and other services looks to be taking off, with high value for applied research and policy analysis that helps support expansion and management of country systems and capacities.

   The relationship between policy that determines the nature of the telecoms infrastructure, IP laws, etc. will have a large impact on the all layers of 'openness' in the future; this, in turn, will impact on the spread of content, the possibilities for participation, collaboration, building on the knowledge of others and, consequently, human development and innovation.

2. Research on mobile and ICT usage, particularly at the bottom of the pyramid (BoP), will continue to be very valuable for informing policy, market and social business development, and some of it might usefully include more attention to ways ICTs may strengthen a range of capabilities in individual, local and broader development contexts – through both survey-based research and through case study and anthropological studies. Public, private and non-government ICT investments could become larger and more efficient as a result.

3. The trend, for open access thinking and activity to focus more on the BoP, could usefully be intensified. Compared to wealthier populations, BoP transformations supported by ICTs / communication / networking / information are substantial, but are in some ways different in nature, and start from a much smaller base. Health, education, livelihoods and other wellbeing and capability enhancing initiatives will continue to need and merit subsidy for the '*very-BoP*,' and good investments and operations will need to be designed, built, managed and shared in e-government services, non-profit and business models.

   What are the specific types of information whose openness and availability would be most valuable to BoP groups?

   The first Harvard Forum directed research attention toward social entrepreneurship for connectivity and services for poorer populations. Six years later, one might: 1) expand that attention to include business and government as well as not-for-profit models; 2) maintain e-services focus on health, education and security; and c) underline the importance of telecenters as well as mobile phone access and usage.

4. The trend toward accepting agency (beyond just participation) in development initiatives could become more general, suggesting more knowledge and networking around truly participatory service and benefit delivery models that work. While there is a substantial knowledge base here, it could be made clearer with respect to investments which are more and less transformational in terms of capabilities, and more likely sustainable by consequence.

   Poor grade 4 kids can learn biotech along with daily health knowledge and core subjects, if all the pieces are in place for that to happen: school, teacher, sufficient nutrition/health and inclusion/security to attend, Internet, content, language etc. Priorities are not easy to set, and again agency is a primary basis, aided by human, knowledge and financial resources outside the BoP and internationally. A lot is known, so the volume of development investment should be increased in this area, and the *very applied* supporting research done.

5. Innovation system literature, among other things, says 'experiment, learn, improve' at all levels. Supporting innovation throughout society and in the BoP is a current trend of research and development in the science, technology and innovation systems area which merits more knowledge, action and experience building, and it connects with further research mentioned above on ICT usage and capability building at the BoP.

   The relatively recent focus of innovation thinking on capabilities looks valuable to pursue. Helping design both product and social technologies from the point of view of (poor) users and their capability enhancement – and agency – is challenging. Different designs can affect some capabilities positively and others negatively. Assisting people in the BoP to optimize their ICT-related technologies and innovation is a promising area of research.

6. At this time, one cannot forget that the processes of increasing ICT contribution to human development, sustainable growth and poverty reduction are particularly challenged by global

financial and economic crises. Over the coming months and more, many organizations will be monitoring the impacts of the global crisis on economies, businesses and employment, public services and households - and both identifying and carrying out key mitigation measures. Negative impacts have and will spread through all forms of international 'transactions" - falls in credit, exports, remittances, foreign direct and portfolio investment, ODA and flows of knowledge.

Impacts on communications systems and more particularly on their users could be substantially negative, arresting progress in economic and the other spheres, with particular impact on the poorest. At stake in all sectors are advances in incomes, jobs, work, education, health, security, equity and social functionality. Good management and responses will be central to reducing negative impacts. ICT research and support systems are being scrabbled together and need more backing on an urgent basis as of the time of writing in early 2009.

In the current global economic conditions, the ways in which ICTs can strengthen social safety nets, and both national and international risk mitigation capacities more broadly, merit particular attention in research, policy and investment. It is becoming clear that recovery and sustained development will require the confidence (consumer, investor) provided by sufficient social security and risk mitigation. For example, Mohammad Yunus emphasizes the advantages of microfinance – including ICT-enabled microfinance - over big banking as a stable credit mechanism for large parts of the world's population. Micro-insurance – including ICT-enabled – is an under-studied and under-utilized element of social protection.

The extent and roles of international proprietary and open knowledge flows in globalization and development needs clearer research, together with the impact of the current crises on these flows and the consequences for developing countries and the BoP. Research tends to focus on more easily measured international transactions – trade, investment, credit, remittances, aid – but in an increasingly knowledge based economy, knowledge flows independent of other transactions (such as foreign direct investment) need to be better understood.

7. Finally, global warming and carbon emission are problems urgently needing action. The materials in the paper point to some areas where ICTs are particularly important in adaptation to global warming, but not to a full range of areas of mitigation and adaptation including: energy policy and alternative energies; carbon sequestration; disaster management and preparation for growing incidence of different forms of natural disaster; markets in carbon credits and internalizing the full costs of burning carbon. The role of ICTs and *informed public discourse* is likely to be central in all aspects of global warming. Imaginative and forward looking ICT-related research in this area looks likely to be high in return.

1.   Introduction

In September 2003, IDRC organized A Dialogue on ICTs and Poverty: The Harvard Forum.

The background paper done for that Forum explored ways and mechanisms by which ICTs impact on economic and social activity, with an emphasis on poor people and communities, but a great deal of the material assembled was anecdotal. Today, there is still much to learn, but preparing a background paper is much easier, in light of available research to draw from. It is also in some ways more difficult, given the enormous range of perspectives to cover and try to reflect.

The discussions at the first Harvard Forum, presented in detail in print and video form, at http://www.idrc.ca/en/ev-46261-201-1-DO_TOPIC.html, focused to a considerable degree on three themes:

- _The platform_: Policy and regulatory regimes which enable both commercial and social developments and investments were in 2003 quite recent targets of research and implementation in poorer countries, due to rapidly changing wireless technologies as well as the inertia of vested interests. Policy and regulation was seen to be basic to all prospects for positive impacts of ICTs.

- _Digital entrepreneurship, services and content_: There were several good achievements and models for bringing ICTs to poor populations in ways that are beneficial and sustainable - including for example the large-scale operations of the Grameen Bank. Means of applying best practices and 'replication' or 'scaling up' were raised and discussed.

- _Alliances_. Creating alliances to supporting key uses of ICTs in areas of priority for poverty reduction - (girl's) education, gender, health services, political democracy - were proposed and explored.

The current paper has been drafted as background for a second Harvard Forum - A Dialogue on ICTs, Human Development, Growth and Poverty Reduction, September 2009. Most of the material is from online sources, with links. Excerpts and/or tables of contents are generally used. Where 'full text' wasn't found online (with apologies if it is there), review articles are occasionally used. Comments are made very sparingly. Like all synthetic collections, this one is selective and subjective, with readers advised to read widely in referenced and other sources.

Chapter 2 presents some framework analyses by thinkers and practitioners about ICTs and the nature of the communication and information-based changes or transformations which they enable or assist. Conceptual thinking is very forward looking, and based on changes taking place in both advanced and poorer societies. Empirical research on ICT access and use at BoP also confirms that ICT related growth and innovation are occurring, and are highly valued. The overview or framework materials are in alphabetical order by author – in two groups – the first (7) focusing particularly on information and communications, and the second (4) more generally on the BoP.

Chapter 3 begins where chapter 2 ends, with empirical findings and knowledge about ICT use in developing and developed countries, but particularly in poor societies, and with a focus on mobile connectivity. The research and policy work of the LIRNE networks are featured, along with findings

and activities supported by industry research, ITU, World Bank and others. The main story is mobile phones, and the rapid progress they are providing toward universal access.

Chapter 4 looks at ICT implications and impacts from the perspective of human development - capabilities, functionings and freedoms - and reports on relatively recent thinking and research about ways in which ICTs and networks may be of high value in the development of capabilities of individuals and the capacities of organizations.

Chapter 5 takes up the focus on innovation, found also in the IDRC Openness review in Chapter 1, and examines ICTs as a platform technology – both for upper-end innovation in production and export sectors, and for innovation in and for the BoP where local development 'revolutions' are also occurring. Recent research initiatives on innovation for human development are also featured. The chapter continues with two major sections, on open access and on intellectual property, and concludes with a collection of knowledge economy / society perspectives.

Chapter 6 collects online resources on ICTs and poverty reduction – ranging from specific cases of the kind that dominated the 2003 review, to a large and growing volume of overview literature in many economic, social, political and other areas. Following several 'big-picture' reviews, collections are provided under the mostly arbitrary headings of: a) education and health; b) services, incomes and livelihoods; c) conflict, disasters, environment and energy; d) gender, rights, security, governance, and empowerment. The chapter and paper conclude with material on Telecenters.

2.   Overviews

Digital Poverty; Atkinson & McKay

Digital Poverty: Understanding the Economic Benefits of the Information Technology Revolution

Executive Summary

In the new global economy information and communications technology (IT) is the major driver, not just

of improved quality of life, but also of economic growth. Moreover, there are strong indications that IT has the potential to continue driving growth for the foreseeable future. Yet, most policymakers do not adequately appreciate this fundamental reality. In fact, after the post-2000 economic dip many concluded incorrectly that the IT economy was smoke and mirrors.

The reality is that while the benefits of new technologies are often exaggerated at first, they often turn out to exceed initial expectations in the moderate-to-long term. This is exactly what has happened with the digital revolution. The digital economy is more than fulfilling its original promise, with digital adoption rates exceeding even the most optimistic forecasts of the late 1990s. The integration of IT into virtually all aspects of the economy and society is creating a digitally-enabled economy that is responsible for generating the lion's share of economic growth and prosperity.

Notwithstanding the centrality of IT to economic growth, there have been surprisingly few attempts to catalogue what is known about IT's impacts on the economy. This report attempts to do just that by collecting, organizing, and surveying studies and examples of IT's impact in five key areas: 1) productivity; 2) employment; 3) more efficient markets; 4) higher quality goods and services; and 5) innovation and new products and services.

In order to better understand IT's role in economic growth it is important to realize that the digital economy is more than an economy conducted on the Internet. Rather, it represents the pervasive use of IT (hardware, software, applications and telecommunications) in all aspects of the economy, including internal operations of organizations (business, government and non-profit); transactions between organizations; and transactions between individuals, acting both as consumers and citizens, and organizations. IT has enabled the creation of a host of tools to create, manipulate, organize, transmit, store and act on information in digital form in new ways and through new organizational forms. And its impact is pervasive as it is being used in virtually every sector from farming to manufacturing to services to government.

Importantly, the "IT engine" does not appear likely to run out of gas anytime soon. The core technologies (memory, processors, storage, sensors, displays, and communication) continue to get better, faster, cheaper, and easier to use, enabling new applications to be introduced on a regular basis. Moreover, the adoption of digital technologies by organizations and individuals continues to grow.

There is no doubt that the IT revolution has enhanced quality of life, from improving health care, to making it easier for children to get better information and learn more, to giving consumers more convenience in their interactions with business and government and making it easier to measure environmental quality. But while these and other benefits are important, perhaps the most important benefit of the IT revolution is its impact on economic growth. The diffusion of information technology and telecommunications hardware, software, and services turns out to be a powerful driver of growth, having an impact on worker productivity three to five times that of non-IT capital (e.g., buildings and machines). In fact, in the United States IT was responsible for two-thirds of total factor growth in productivity between 1995 and 2002 and virtually all of the growth in labor productivity.

While these productivity impacts from IT are among the highest in the United States, most other nations have benefited from the IT revolution as well. Economists have found significant impacts of IT on the productivity of firms in many other nations, including Australia, Canada, Finland, France, Germany, Korea, Japan, the Netherlands, and Switzerland. Moreover, while its impact is not as large in most developing nations, IT is making a difference there as well, in part because IT expenditures rose twice as fast in developing nations from 1993 to 2001 compared to the OECD average. For example, IT usage in China was responsible for 38 percent of the increase in total factor productivity growth and 21 percent of GDP growth.

IT boosts productivity in a variety of ways. It lets organizations automate tasks, freeing workers up to create value in other tasks. IT also has widespread complementary effects, including allowing organizations to fundamentally reengineer processes and lets organizations more efficiently use capital and natural resources. IT also has a number of indirect effects, which in turn spur higher productivity, including enabling larger markets and better organizational decision-making.

In addition, IT boosts economic output by enabling more people to work. The IT industry itself creates jobs, on average paying 84 percent more than average jobs. Moreover, IT appears to be playing a key role in reducing the severity of the business cycle, allowing the economy to run at full capacity more of the time. Additionally, IT makes it easier for more people to join the workforce, including disabled people and people who cannot work full-time, but who can work part-time or from home.

Our standard of living is not just a function of higher levels of efficiency, but of the quality of products and services. IT is helping organizations boost quality. IT enables more information about quality to be collected, giving organizations greater opportunity and incentive to boost quality. IT also makes it easier for organizations to design more customized products and services, which by definition are of higher quality because they more closely fit the desires of consumers.

Finally, IT is making it easier to create new products and services. IT gives researchers powerful new tools that make discovery easier. Moreover, IT boosts innovation by giving users more of a role in shaping innovation, in part by making research more collaborative.

In short, IT is the major driver of today's global economy. But just because IT has been the leading engine of growth does not mean that policymakers can afford to be complacent. Ensuring that societies fully benefit from the IT revolution means that policymakers must devote the same, if not higher, level of attention to it than they currently give to more conventional economic policy areas, such as managing the business cycle. While this report does not lay out a detailed IT policy blueprint, it offers five key principles policymakers around the globe should follow if their nations are to fully benefit from the digital revolution.

1) Give the Digital Economy Its Due: Economic policymakers need to view IT issues not just as narrow IT policy, but as the centerpiece of economic policy. This means putting issues of digital transformation at the front and center of economic policy.

2) Actively Encourage Digital Innovation and Transformation of Economic Sectors: The private sector will drive much of digital transformation, but government can play a supportive role. Government should support research in emerging IT areas. IT should also use a wide array of policy levers, including tax, regulatory, and procurement policies, to spur greater IT innovation and transformation, particularly in key sectors like health care, education, transportation, and others influenced by public policy. Moreover, government should lead by example by leveraging their own IT efforts to achieve more effective and productive public sector management and administration.

3) Use the Tax Code to Spur IT Investment: Investment is how IT innovations are diffused throughout the economy. Because IT seems have a much larger impact on productivity, tax policies should focus on spurring additional investment in newer generations of IT.

4) Encourage Universal Digital Literacy and Digital Technology Adoption: Ensuring that societies take full advantage of the IT revolution will require that the large majority of citizens participate in the digital economy. National governments need to work in partnership with the for-profit, non-profit, and state and local government sectors to help citizens use and access technology.

5) Do No Harm: Making digital transformation the center of economic policy means not just supporting IT, just as importantly it means avoiding harming the digital engine of growth. All too often well-intentioned policymakers consider laws and regulations that would slow digital transformation.

While the emerging digital economy has produced enormous benefits, the best is yet to come. The job of policymakers in developed and developing nations alike is to ensure that the policies and programs they put in place spur digital transformation so that all their citizens can fully benefit.

The Wealth of Networks; Yochai Benkler

The Wealth of Networks: How Social Production Transforms Markets and Freedom

Yochai Benkler
copy @ www.benkler.org 2006

Chapter 1 - Introduction: A Moment Of Opportunity And Challenge
The Emergence Of The Networked Information Economy
Networked Information Economy And Liberal, Democratic Societies
Four Methodological Comments
The Stakes Of It All: The Battle Over The Institutional Ecology Of The Digital Environment

Part One - The Networked Information Economy Introduction

Chapter 2 - Some Basic Economics Of Information Production And Innovation
The Diversity Of Strategies In Our Current Information Production System
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Introduction

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Autonomy, Property, And Commons

Complex modern societies have developed in the context of mass media and industrial information economy. Our theories of growth and innovation assume that industrial models of innovation are dominant. Our theories about how effective communications in complex societies are achieved center on market-based, proprietary models, with a professional commercial core and a dispersed, relatively passive periphery. Our conceptions of human agency, collective deliberation, and common culture in these societies are embedded in the experience and practice of capital-intensive information and cultural production practices that emphasize proprietary, market-based models and starkly separate production from consumption. Our institutional frameworks reflect these conceptual models of information production and exchange, and have come, over the past few years, to enforce these conceptions as practiced reality, even when they need not be.

This book began with four economic observations. First, the baseline conception that proprietary strategies are dominant in our information production system is overstated. The education system, [pg 461] from kindergarten to doctoral programs, is thoroughly infused with nonproprietary motivations, social relations, and organizational forms. The arts and sciences are replete with voluntarism and actions oriented primarily toward social-psychological motivations rather than market appropriation. Political and theological discourses are thoroughly based in nonmarket forms and motivations. Perhaps most surprisingly, even industrial research and development, while market oriented, is in most industries not based on proprietary claims of exclusion, but on improved efficiencies and customer relations that can be captured and that drive innovation, without need for proprietary strategies of appropriation.

Despite the continued importance of nonproprietary production in information as a practical matter, the conceptual nuance required to acknowledge its importance ran against the grain of the increasingly dominant thesis that property and markets are the roots of all growth and productivity. Partly as a result of the ideological and military conflict with Communism, partly as a result of the theoretical elegance of a simple and tractable solution, policy makers and their advisers came to believe toward the end of the twentieth century that property in information
and innovation was like property in wristwatches and automobiles. The more clearly you defined and enforced it, and the closer it was to perfect exclusive rights, the more production you would get. The rising dominance of this conceptual model combined with the rent-seeking lobbying of industrial model producers to underwrite a fairly rapid and substantial tipping of the institutional ecology of innovation and information production in favor of proprietary models. The U.S. patent system was overhauled in the early 1980s, in ways that strengthened and broadened the reach and scope of exclusivity. Copyright was vastly expanded in the mid-1970s, and again in the latter 1990s. Trademark was vastly expanded in the 1990s. Other associated rights were created and strengthened throughout these years.

The second economic point is that these expansions of rights operate, as a practical matter, as a tax on nonproprietary models of production in favor of the proprietary models. It makes access to information resources more expensive for all, while improving appropriability only for some. Introducing software patents, for example, may help some of the participants in the one third of the software industry that depends on sales of finished software items. But it clearly raises the costs without increasing benefits for the two thirds of the industry that is service based and relational. As a practical matter, the substantial increases in the scope and reach of exclusive rights have adversely affected the operating conditions of nonproprietary producers.

Universities have begun to seek patents and pay royalties, impeding the sharing of information that typified past practice. Businesses that do not actually rely on asserting patents for their business model have found themselves amassing large patent portfolios at great expense, simply to fend off the threat of suit by others who would try to hold them up. Older documentary films, like Eyes on the Prize, have been hidden from public view for years, because of the cost and complexity of clearing the rights to every piece of footage or trademark that happens to have been captured by the camera. New documentaries require substantially greater funding than would have been necessary to pay for their creation, because of the costs of clearing newly expanded rights.

The third economic observation is that the basic technologies of information processing, storage, and communication have made nonproprietary models more attractive and effective than was ever before possible. Ubiquitous low-cost processors, storage media, and networked connectivity have made it practically feasible for individuals, alone and in cooperation with others, to create and exchange information, knowledge, and culture in patterns of social reciprocity, redistribution, and sharing, rather than proprietary, market based production. The basic material capital requirements of information production are now in the hands of a billion people around the globe who are connected to each other more or less seamlessly. These material conditions have given individuals a new practical freedom of action. If a person or group wishes to start an information-production project for any reason, that group or person need not raise significant funds to acquire the necessary capital. In the past, the necessity to obtain funds constrained information producers to find a market-based model to sustain the investment, or to obtain government funding. The funding requirements, in turn, subordinated the producers either to the demands of markets, in particular to mass-market appeal, or to the agendas of state bureaucracies. The networked information environment has permitted the emergence to much greater significance of the nonmarket sector, the nonprofit sector, and, most radically, of individuals.

The fourth and final economic observation describes and analyzes the rise of peer production. This cluster of phenomena, from free and open-source software to Wikipedia and SETI@Home, presents a stark challenge to conventional thinking about the economics of information production. Indeed, it challenges the economic understanding of the relative roles of market based and nonmarket production more generally. It is important to see these phenomena not as exceptions, quirks, or ephemeral fads, but as indications of a fundamental fact about transactional forms and their relationship to the technological conditions of production. It is a mistake to think that we have only two basic free transactional forms-- property-based markets and hierarchically organized firms. We have three, and the third is social sharing and exchange. It is a widespread phenomenon…..

A genuine shift in the way we produce the information environment that we occupy as individual agents, as citizens, as culturally embedded creatures, and as social beings goes to the core of our basic liberal commitments. Information and communications are core elements of autonomy and of public political discourse and decision making. Communication is the basic unit of social existence. Culture and knowledge, broadly conceived, form the basic frame of reference through which we come to understand ourselves and others in the world. For any liberal political theory--any theory that begins with a focus on individuals and their freedom to be the authors of their own lives in connection with others--the basic questions of how individuals and communities come to know and evaluate are central to the project of characterizing the normative value of institutional, social, and political systems. Independently, in the context of an information- and innovation-centric economy, the basic components of human development also depend on how we produce information and innovation, and how we disseminate its implementations. The emergence of a substantial role for nonproprietary production offers discrete strategies to improve human development around the globe. Productivity in the information economy can be sustained without the kinds of exclusivity that have

made it difficult for knowledge, information, and their beneficial implementations to diffuse beyond the circles of the wealthiest nations and social groups. We can provide a detailed and specific account of why the emergence of non market, nonproprietary production to a more significant role than it had in the industrial information economy could offer improvements in the domains of both freedom and justice, without sacrificing--indeed, while improving--productivity….

If the networked information economy is indeed a significant inflection point for modern societies along all these dimensions, it is so because it upsets the dominance of proprietary, market-based production in the sphere of the production of knowledge, information, and culture. This upset is hardly uncontroversial. It will likely result in significant redistribution of wealth, and no less importantly, power, from previously dominant firms and business models to a mixture of individuals and social groups on the one hand, and on the other hand businesses that reshape their business models to take advantage of, and build tools an platforms for, the newly productive social relations….

We are seeing significant battles over the organization and legal capabilities of the physical components of the digitally networked environment. Will all broadband infrastructures be privately owned? If so, how wide a margin of control will owners have to prefer some messages over others? Will we, to the contrary, permit open wireless networks to emerge as an infrastructure of first and last resort, owned by its users and exclusively controlled by no one?....

At the logical layer, the ethic of open standards in the technical community, the emergence of the free software movement and its apolitical cousin, open-source development practices, on the one hand, and the antiauthoritarian drives behind encryption hacking and some of the peer-to-peer technologies, on the other hand, are pushing toward an open logical layer available for all to use….

At the content layer--the universe of existing information, knowledge, and culture--we are observing a fairly systematic trend in law, but a growing countertrend in society. In law, we see a continual tightening of the control that the owners of exclusive rights are given. Copyrights are longer, apply [pg 470] to more uses, and are interpreted as reaching into every corner of valuable use. Trademarks are stronger and more aggressive. Patents have expanded to new domains and are given greater leeway. All these changes are skewing the institutional ecology in favor of business models and production practices that are based on exclusive proprietary claims; they are lobbied for by firms that collect large rents if these laws are expanded, followed, and enforced. Social trends in the past few years, however, are pushing in the opposite direction. These are precisely the trends of networked information economy, of nonmarket production, of an increased ethic of sharing, and an increased ambition to participate in communities of practice that produce vast quantities of information, knowledge, and culture for free use, sharing, and follow on creation by others.

The political and judicial pressures to form an institutional ecology that is decidedly tilted in favor of proprietary business models are running head on into the emerging social practices described throughout this book. To flourish, a networked information economy rich in social production practices requires a core common infrastructure, a set of resources necessary for information production and exchange that are open for all to use. This requires physical, logical, and content resources from which to make new statements, encode them for communication, and then render and receive them. At present, these resources are available through a mixture of legal and illegal, planned and unplanned sources….

The relationship of institutional ecology to social practice is a complex one. It is hard to predict at this point whether a successful sustained effort on the part of the industrial information economy

producers will succeed in flipping even more of the institutional toggles in favor of proprietary production. There is already a more significant social movement than existed in the 1990s in the United States, in Europe, and around the world that is resisting current efforts to further enclose the information environment. This social movement is getting support from large and wealthy industrial players who have reoriented their business model to become the platforms, toolmakers, and service providers for and alongside the emerging nonmarket sector. IBM, Hewlett Packard, and Cisco, for example, might stand shoulder to shoulder with a nongovernment organization (NGO) like Public Knowledge in an effort to block legislation that would require personal computers to comply with standards set by Hollywood for copy protection….

We have an opportunity to change the way we create and exchange information, knowledge, and culture. By doing so, we can make the twenty first century one that offers individuals greater autonomy, political communities greater democracy, and societies greater opportunities for cultural self-reflection and human connection. We can remove some of the transactional barriers to material opportunity, and improve the state of human development everywhere. Perhaps these changes will be the foundation of a true transformation toward more liberal and egalitarian societies. Perhaps they will merely improve, in well-defined but smaller ways, human life along each of these dimensions. That alone is more than enough to justify an embrace of the networked information economy by anyone who values human welfare, development, and freedom.

Other Publications at www.benkler.org
-   Commons in Information and Communications Systems
-   Exclusive Rights Regimes (Copyrights, Patents)
-   Open Spectrum, or Spectrum Commons
-   Democracy, Autonomy, and Information: Theoretical and Constitutional Analysis
-   Internet Regulation Generally

The Network Society (and more); Manuel Castells

The Network Society: A Cross-cultural Perspective

Edited by Manuel Castells, Edward Elgar, Northampton, MA, November 2004.
http://www.e-elgar.co.uk/bookentry_main.lasso?id=3203

Part I: The Theory of the Network Society
Part II: The Cultural and Institutional Diversity of the Network Society
Part III: The Network Economy Part IV: Sociability and Social Structure in the Age of the Internet
Part V: The Internet in the Public Interest
Part VI: Networked Social Movements and Informational Politics
Part VII: The Culture of the Network Society
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The Power of Identity

Identity and Meaning
	African Americans, Christian fundamentalism, Islamic fundamentalism
Social Movements
	Zapatistas, Chiapas, Lacandon
Japans Aum Shinrikyo
	Aum Shinrikyo, yoga, Mainichi Shinbun
Global Terror
	al-Qaeda, anti-globalization movement, Muslim
The Environmental
	environmental movement, deep ecology, Green politics
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	Green politics, environmental movement, space of flows
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The Nationstate in the Age of Multilateralism
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Identities Local Governments and
	Catalonia, Catalan, legitimation crisis
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	information age, space of flows, spaces of freedom
Methodological Appendix
	Alliance , Forza Italia, Komeito
Summary of Contents of Volumes I and III
	AUM Shinrikyo, Barcelona, Anti-Defamation League

The Power of Identity is the second volume of Manuel Castells'; trilogy, The Information Age: Economy, Society, and Culture. It deals with the social, political, and cultural dynamics associated with the technological transformation of our societies and with the globalization of the economy. It analyzes the importance of cultural, religious, and national identities as sources of meaning for

people, and the implications of these identities for social movements. It studies grassroots mobilizations against the unfettered globalization of wealth and power, and considers the formation of alternative projects of social organization, as represented by the environmental movement and the women's movement. It also analyzes the crisis of the nation-state and its transformation into a network state, and the effects on political democracies of the difficulties of international governance and the submission of political representation to the dictates of media politics and the politics of scandal. This substantially expanded second edition updates and elaborates the analysis of these themes, adding new sections on al-Qaeda and global terrorist networks, on the anti-globalization movement, on American unilateralism and the conflicts of global governance, on the crisis of political legitimacy throughout the world, and on the theory of the network state.

End of Millennium: The Information Age: Economy, Society and Culture

By Manuel Castells
http://books.google.ca/books?id=1s4U8t7_GMEC&dq=Manuel+Castells&source=gbs_summary_s&cad=0

The final volume in Manuel Castells' trilogy is devoted to processes of global social change induced by interaction between networks and identity.

A Time of Change
>statism, Soviet Union, perestroika

The Extensive Model of Economic Growth and the Limits
>Soviet Union, Gosplan, Gossnab

The Technology Question
>Akademgorodok, Zelenograd, Novosibirsk

The Abduction of Identity and the Crisis of Soviet
>RSFSR, Kazakhstan, Ingushi

The Last Perestroika
>nomenklatura, CPSU, Novosibirsk

Nationalism Democracy and the Disintegration of
>CPSU, Baltic republics, nomenklatura

The Scars of History the Lessons for Theory the Legacy
>statism, Cold War, information society

Informational
>Tutsi, Hutu, South Africa

the Global Criminal Economy
>Yakuza, organized crime, Pablo Escobar

Developmental State versus Information
>keiretsu, Japa, Technopolis

Beheading the Dragon? Four Asian Tigers with a Dragon
>South Korea, chaebol, Singapore

Chinese Developmental Nationalism with Socialist
>China, overseas Chinese, Jiang Zemin

Globalization Identity
>supranationality, Javier Solana, NATO
>Globalization and European Integration
>Alain Touraine, Nokia, ethnic Germans

Identity and Change in the Network Society: Conversation with Manuel Castells

http://globetrotter.berkeley.edu/people/Castells/castells-con4.html

The Network Society and Organizational Change

Your trilogy is on the network society. Help us understand the defining features of that society and how it's different from what came before.

Well, as you well said before, in fact, my trilogy is on the interaction between the network society and the power of identity and social movements. It's that interaction which, I think, defines our world. So in that sense, my trilogy is one, two, three: The Network Society is the new techno-economic system; The Power of Identity is the key -- the salient trend, in terms of social movements and politics, adapting, resisting, counteracting the network society; and then the result of these two elements expresses itself in the macro transformations of the world, which I described in the third volume, End of Millennium.

The network society itself is, in fact, the social structure which is characteristic of what people had been calling for years the information society or post-industrial society. book cover: Network Society both "post-industrial society" and "information society" are descriptive terms that do not provide the substance, that are not analytical enough. So it's not a matter of changing words; it's providing substance. And the definition, if you wish, in concrete terms of a network society is a society where the key social structures and activities are organized around electronically processed information networks. So it's not just about networks or social networks, because social networks have been very old forms of social organization. It's about social networks which process and manage information and are using micro-electronic based technologies.

And when that happens -- when this new structure comes into play -- the capacity of the society to process information and to learn has extraordinary consequences, does it not?

Absolutely. Because, let's take an example. The global economy: the global economy is not the same thing as the world economy of a highly internationalized economy. It's not. Because the global economy is based on the ability of the core activities -- meaning money, capital markets, production systems, management systems, information -- to work as a unit in real time on a planetary scale. Meaning that, at this point, we can process, and we do, billions and billions of dollars in seconds. And that can change from values to values, from markets to markets, from currencies to currencies, which increases the complexity, the size, and, ultimately, the volatility of global financial markets around the world. Which makes, in fact, impossible any kind of autonomy of financial markets in one country or one place vis-à-vis what's happening in the global system; which, therefore, makes extremely difficult

any kind of monetary and budget policy which does not take into consideration the global financial market.

These changes -- economic policy, economic autonomy of governments, and, ultimately, the relationship between the governments and the economy -- are only possible because of deregulation and liberalization that took place in the 1980s in most countries, and because of the existence of an infrastructure of telecommunications, information systems, and fast transportation systems that provide the technological capacity for the system to work as a unit on a global scale.

One of the institutions that's in the path of this phenomenon is the state.

Absolutely.

What does it discover? That, in essence, it's losing control of some of its ability to manage its own economy, to ensure its own social welfare policies, and so on?

Absolutely. It doesn't mean that the states disappear, the nation state's not going to disappear. Let me just first say that. But the degrees of freedom of nation states have shrunk to an extraordinary degree in the last ten years. In some areas of the world, it has become explicit. Let's take the example of the European Union. Governments from the continent, the entire continent, decided to get together so that together they could have some level of bargaining power and some leverage to control global flows of wealth, information, and power. And they built a series of institutions which is not a federal state. It's still based on nation states, but also on supranational institutions which share sovereignty and also decentralize sovereignty to local region governments. These European states also subcontract sovereignty to international institutions, such as NATO, in terms of the armed forces.

So what we have, for instance, in the case of Europe, is a complex system of institutional relations, which I call the network state, because, in fact, it's a network of interactions of shared sovereignty. Under different forms, you have a similar situation in most of the world. In Latin America, some states are with others, but the main thing is that the key economic conditions are governed in connection with international institutions like the International Monetary Fund, through different trade treaties, MERCOSUR or the Andean Pact or the connection to the North American Free Trade Agreement [NAFTA]. So in other words, states operate, still exist, but operate as actors of a much more complex and interactive network.

Even in the case of the United States, few people think that the United States can act alone and impose conditions, both in military or economic terms. To start with, it's not the U.S. Government but the Federal Reserve Bank that has some kind of economic policy, but this economic policy is highly conditioned and shaped by the interaction with the global financial markets. Alan Greenspan does not control the global financial markets. He follows and creates conditions for the economy to perform better under the conditions or the constraints created by the global financial market.

We could say the same thing in technology networks, in flows of trade and flows of information. So the notion here is not the disappearance of the nation state; it's the transformation of a world based on sovereign nation states into a world of interdependence, of nation states sharing sovereignty.

So someone like Alan Greenspan is better positioned to respond to these global flows than someone in another state, for example?

I would say Alan Greenspan is an independent economic authority. In principle, after being appointed, he doesn't follow the instructions of the president or the instructions of the Congress. So in that sense, let's say, the International Monetary Fund is largely autonomous of a specific set of instructions. Alan Greenspan is largely autonomous. The European Central Bank is largely autonomous. So, ultimately, all these decision-makers in the world economic processes have to interact with the global financial markets; with the other decision-makers in these regulatory policies, too; and with their political institutional environment. It's a meta-network of all these networks.

The impact of this information technology is evident even in the conduct of war. It's fundamentally changing how states that need to go to war will go to war.

Definitely. On the one hand, because of the post - Vietnam War syndrome in the United States and post - Algerian War syndrome in Europe, public opinion in most developed countries -- I would say in all developed countries -- is against war. Not only in terms of general values of peace, but people simply don't believe that it's worthwhile to die or to have a fellow countryman dying for a vague, complicated, strategic geopolitical consideration. The Cold War, at least, justified for many people the notion that you had to sacrifice, because the other empire is going to get you. After the end of the Cold War, the dramatic threat posed by a North Korean invasion of the United States is not credible. The notion that Iraq was going to strangle the oil supply of the West, in fact, was halfway credible for a while and then disappeared. No one thinks that Iraq is really a threat for the Western world. At the most, it poses a threat as an element of the terrorist network that is part of the new geopolitics, but that is a different kind of war.

So because of that, the whole strategy has shifted to what I call the development of "instant wars" that are short enough and overwhelming enough to the adversary that public opinion doesn't even realize what's going on. I would say that part of the Gulf War was the beginning of this strategy. I say part, because it took months; but when it actually started, it was one hundred hours to finish. The Kosovo war against Yugoslavia was planned for three days. It just turned out differently.

But the notion here is that through technology, you target the key capabilities of your adversary, and you try to finish the war in a few hours or in a few days. And this is the kind of war we are moving to. On the one hand, technology allows it. On the other hand, public opinion will tolerate only this kind of war. There are dozens and dozens of dirty, slow, killing wars in the world -- the Sudan Civil War has resulted in two million people killed in the last twenty years. So this is another of the extraordinary disparities in the world. Through technology, the rich countries are able to do instant wars, while the poor countries go through machete wars for years and years.

One of the constraints on this war-fighting is the flow of information. It's not just that people no longer feel there are values worth dying for, but their ability to get information about what's happening on the battlefield is the kind of information flow that leaders who want to engage in war have to respond to, and are therefore forced to get out of the war quickly.

Absolutely. The most advanced thinking in this line of argument is in the Rand Corporation. They have detected the emergence of two kinds of major military political tactics. One is the emergence of what they call "no politics," as opposition to real politics; that is, the ability to work on information, values, perceptions in our society and also in societies in the world at large is much more important. This "no politics" is much more important because it builds the public and institutional support for the kind of wars that we proceed with. And the other, in terms of military tactics, is something that is interesting, namely, the development of what is called "swarming" as the key military tactic, which is being

experimented with by all major branches of the armed forces in the United States. The marines, probably, are the most advanced in this thinking, which is based on the idea of splitting the traditional large units and creating a number of self-sufficient, highly powered autonomous units which form the networks that are assembled and disassembled according to specific needs and operations.

These units can become networks only on the basis of strong communication technology capabilities and direct access to information sources, which are organized in a computer network and then accessed through computer networking. (Not on the net, because that would be open code.) So the notion here is of moving from vertical bureaucracies and vertical organizations of large armies killing each other for centuries, to what we are now seeing emerging as small units with a high power of destruction based mainly on air power and naval supply, and at the same time, equipped essentially with information and communication. If you don't have your information and communication, you are blind and you are destroyed.

So what we're seeing in today's world is a meeting of technology with bureaucratic organizations that essentially have to change, if they're going to adapt to the problems that they confront.

Definitely. You see at this point the contradiction between the ability of networks to be more productive and more competitive, and the fact that most societies are still rooted in vertical organizations in a bureaucratic logic: "I am here, I am big. I can destroy you if you move because I'm bigger." It's interesting, in the Silicon Valley culture there is this saying, "It's not the bigger that wins, but the faster."

One of the legendary business tycoons in the world, Barnave, who is the leader of the major engineering company, BBM in Sweden, in one of the meetings we had last year said, "Well, my company is the largest engineering company in the world." They're building in Thailand, China, India, South Africa, etc. "We are predicated on the principle, which is complimentary to this, if you're the biggest and the fastest, then you win." But what he would not challenge is the notion that if you have to choose between size and resources, and agility and adaptability, there's no question that agility and adaptability wins.

This is simple to understand, but difficult to actually implement, because people who are currently in power in bureaucracies, in political organizations, in large corporations, in universities, are there because they have gone through the hierarchy, they have their clientele, they have their systems of support. All this has been pushed out by the out-competing logic of networks. And therefore, they will resist to the end. But by resisting, they bring the organizations down with themselves.

Now, it doesn't mean that networks, by definition, are wonderful. It can be networks of destruction. Networks don't have personal feelings. They kill or kiss. But the issue here is that first you start with a network which is equipped with information technology. That's the key. Then what the network does depends on the programming of the network, and this is of course a social and cultural process.

Mobile Communications and Society: A Global Perspective

Manuel Castells, Mireia Fernandez-Ardevol, Jack Linchuan Qiu and Araba Sey, Cambridge MA: The MIT Press, Jan 2007
http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=10935&mode=toc

Opening: Our Networks, Our Lives - Download Chapter as PDF (41 KB)
1. The Diffusion of Wireless Communication in the World
2. The Social Differentiation of Wireless Communication Users: Age, Gender, Ethnicity, and Socioeconomic Status
3. Communication and Mobility in Everyday Life
4. The Mobile Youth Culture
5. The Space of Flows, Timeless Time, and Mobile Networks
6. The Language of Wireless Communication
7. The Mobile Civil Society: Social Movements, Political Power, and Communication Networks
8. Wireless Communication and Global Development: New Issues, New Strategies
Conclusion: The Mobile Network Society
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Index - Download Chapter as PDF (47 KB)
Appendices - Download Chapter as (639 KB)

Wireless networks are the fastest growing communications technology in history. Are mobile phones expressions of identity, fashionable gadgets, tools for life—or all of the above? Mobile Communication and Society looks at how the possibility of multimodal communication from anywhere to anywhere at any time affects everyday life at home, at work, and at school, and raises broader concerns about politics and culture both global and local.

Drawing on data gathered from around the world, the authors explore who has access to wireless technology, and why, and analyze the patterns of social differentiation seen in unequal access. They explore the social effects of wireless communication—what it means for family life, for example, when everyone is constantly in touch, or for the idea of an office when workers can work anywhere. Is the technological ability to multitask further compressing time in our already hurried existence?

The authors consider the rise of a mobile youth culture based on peer-to-peer networks, with its own language of texting, and its own values. They examine the phenomenon of flash mobs, and the possible political implications. And they look at the relationship between communication and development and the possibility that developing countries could "leapfrog" directly to wireless and satellite technology. This sweeping book—moving easily in its analysis from the United States to China, from Europe to Latin America and Africa—answers the key questions about our transformation into a mobile network society.

See also

Theories of Communication Networks

Peter R. Monge and Noshir Contractor, Oxford University Press, 2003
http://www.us.oup.com/us/catalog/general/subject/Business/Management/?view=usa&ci=0195160371

1. Networks and Flows in Organizational Communication
        Part I: The Multitheoretical, Multilevel Framework
2. Network Concepts, Measures, and the Multitheoretical, Multilevel Analytical Framework

To date, most network research contains one or more of five major problems. First, it tends to be atheoretical, ignoring the various social theories that contain network implications. Second, it explores single levels of analysis rather than the multiple levels out of which most networks are comprised. Third, network analysis has employed very little the insights from contemporary complex systems analysis and computer simulations. Fourth, it typically uses descriptive rather than inferential statistics, thus robbing it of the ability to make claims about the larger universe of networks. Finally, almost all the research is static and cross-sectional rather than dynamic.

Theories of Communication Networks presents solutions to all five problems. The authors develop a multitheoretical model that relates different social science theories with different network properties. This model is multilevel, providing a network decomposition that applies the various social theories to all network levels: individuals, dyads, triples, groups, and the entire network. The book then establishes a model from the perspective of complex adaptive systems and demonstrates how to use Blanche, an agent-based network computer simulation environment, to generate and test network theories and hypotheses. It presents recent developments in network statistical analysis, the p* family, which provides a basis for valid multilevel statistical inferences regarding networks. Finally, it shows how to relate communication networks to other networks, thus providing the basis in conjunction with computer simulations to study the emergence of dynamic organizational networks.

ICT4D 2.0 - The Next Phase; Richard Heeks

ICT4D 2.0 - The Next Phase of Applying ICT for International Development

Richard Heeks
IEEE's Computer, June 2008 (Vol. 41, No. 6)
http://www2.computer.org/plugins/dl/pdf/mags/co/2008/06/mco2008060026.pdf?template=1&loginState=1&userData=anonymous-IP%253A%253A127.0.0.1

(Comment - Selected Excerpts)

Use of information and communication technologies for international development is moving

The phase change from information and communication technologies for international development (ICT4D) 1.0 to ICT4D 2.0 presents opportunities for informatics professionals and offers new markets for ICT vendors. It also brings new challenges to our established methods of working and emphasizes the need for new expertise and new worldviews. Harnessing digital technologies in the service of some of our world's most severe problems requires understanding these changes. Before proceeding, though, we must ask why we should give priority to ICT application for the poor in developing countries.

First, there is a moral argument. Most informatics professionals spend their lives serving the needs of the world's wealthier corporations and individuals because, to borrow bank robber Willie Sutton's phrase, "that's where the money is." Yet seeking to squeeze a few extra ounces of productivity from firms that already perform relatively well, or save a few minutes in the life of a busy citizen, pales in ethical importance when compared to the potential benefits of applying new technology to our planet's megaproblems.

The world's poor live on the frontline of these problems. From climate change to conflict and terror, from disease to resource depletion, the poor in developing countries suffer most. They also suffer from that other blot on the global conscience, poverty, with nearly half the global population living on less than US$2 per day.

Second, there is enlightened self-interest. In a globalized world, the problems of the poor today can, tomorrow —through migration, terrorism, and disease epidemics —become the problems of those at the pyramid's top. Conversely, as the poor get richer, they buy more of the goods and services that industrialized countries produce, ensuring a benefit to all from poverty reduction.

Third and finally, there is personal self-interest. Compare designing a system for an African or Asian community to doing the same for a company in the global North. The former is quite simply more interesting—a richer, more satisfying, more colourful experience.
This explains the 4D element, but what of the ICT half? The standard response on investing in digital technologies rather than, say, a tubewell is that we need to invest in both because development requires water and information.

A more assertive response might give a macro-level answer: Economic, social, and political life in the 21st century will be increasingly digital, and those without ICTs will be increasingly excluded. We might also give a micro-level answer: Ask poor communities or look at how they spend what little money they have; not always, but sometimes, they prioritize the ICT option…

ICT4D 1.0 was not solely restricted to telecenter projects. But the telecenter provided the archetype for this period, which stretched from the mid-1990s forward a full decade. Sadly, these efforts often resulted in failure, restriction, and anecdote. Each of those outcomes led to specific lessons and new watchwords:

- Sustainability. The failure of many ICT4D projects to deliver and survive prompted a new emphasis on ensuring the longevity of such projects.
- Scalability. The limited reach of individual telecenters projects motivated a new search for scalable ICT4D solutions.

- Evaluation. ICT4D 1.0 was often held aloft by hype and uncorroborated stories, which fostered a new interest in objective impact evaluation.

More generally, these outcomes led to a rolling reappraisal of priorities, processes, and purposes. There is no sharp divide to mark the first phase of ICT4D from the second—…

ICT4D 2.0

As we stand on the threshold of ICT4D 2.0, we confront the key technical question of how to deliver the Internet to the remaining five billion people who lack such access. Back in the 1990s, the initial model serving the global North consisted of a PC connected via landline. But attempted rollouts faced major hurdles as the South's poor proved far harder to reach. The model was too costly to be sustainable or scalable. Likewise, the necessary power and telecommunications foundations were often absent.

Pushing forward the Internet-connected PC will therefore require hardware innovations in several areas:
- Terminals…
- Telecommunications…
- Power…

We stand at a fork in the Internet access road. We can keep pushing down the PC-based route when less than 0.5 percent of African villages so far have a link this way. Or we can jump ship to a technology that has already reached many poor communities. Mobile telephony, for example, already reaches out to more than half the African population (www.id21.org/ insights/insights69/insights69.pdf).

Here the requirement for hardware innovations appears relatively limited. At least, we can say that to date the mobile phone offerings from multinational firms appear to be diffusing fairly readily. Half the world's population—stretching well down into the bottom of the pyramid—are mobile phone users, and growth rates currently are fastest in the poorest regions.

Current growth rates will likely carry usage to more than 90 percent of the world's population, leaving the key questions of how to reach the last half-billion, and of how to diffuse Internet-enabled phones, given that most phones in poor communities are currently calls and-SMS-only. For both these questions, the need for hardware innovation might reemerge. Innovations will also occur as bottom-up developments on mobiles converge with top-down attempts to produce lower-cost PC-like terminal devices, ending with something like a BlackBerry-for-development.

Finally, some have asked if the Internet should be the focus or if developers should look at where the poor have already "voted with their wallets" and see whether the simpler, cheaper technologies already in use can deliver sufficient ICT functionality to make a difference. Rather than wait for handset and bandwidth upgrades to allow mobile Internet access, we must determine what can be achieved for development through calls and SMS and, possibly, older technologies. Access figures are hard to come by, but we can estimate that something like 80 percent of the population in developing countries has access to a radio, 50 percent to a television.[2,3] Early in ICT4D's history, these statistics prompted the swift reinterpretation of ICT to incorporate radio and television, and foreshadowed the role convergence would play in ICT4D 2.0. Looking at the technologies that already penetrate—mobiles, radios, televisions—developers must now seek ways to add computing and Internet functionality.

New Applications

Equating the poor in developing countries with illiteracy is a common mistake. Adult literacy, even in the world's poorest countries, is still greater than 50 percent, and two-thirds of 15- to 24-year-olds are literate.4 Effectively, every community will have at least some literate members who can act as infomediaries, thus massively multiplying the accessibility of written materials, online or otherwise. Nonetheless, we require interface innovation to drive access to ICT-based information, services, and jobs in the fields of audiovisual interfaces and to create interfaces for all local languages.

Even if past and future innovations can provide access to ICT for most of the world, the hardware-plus-interface combination remains an empty husk. When filled with applications software, that husk can play four main development roles: data content handler, interactive communicator, service deliverer, and productive tool. These roles form a sort of chronology that ICT4D has moved slowly toward, closing the gap between supply and demand…

Content…
Interaction…
Services…
Production…

New Innovation Models

Moving forward, there are two extremes along the continuum of different approaches to technology and development. At one end is the passive diffusion view. Taking the lead from mobile telephony's rapid spread, this approach holds that if ICT does have a developmental value for the poor, a combination of private firms' search for profit plus the poor's search for value will make it happen. Any attempt to intervene from outside is foolish and wasteful: a force feeding of the inappropriate that will only lead to messy regurgitation. Conversely, the active innovation perspective feels the market will not deliver—or will deliver too slowly—to the poor. Hence, intervention is required in the form of innovations that will better help to meet development goals. Given that some element of active innovation will likely remain in the ICT4D field, two key questions arise.

First, we must decide what to innovate. As the OLPC experience demonstrates, large-scale hardware and operating system innovations specifically targeted at the bottom-of-the pyramid are risky ventures, reserved only for the brave or foolish. In a moderated way, this even applies to the large private-sector players. Instead, most ICT4D 2.0 innovation is likely to occur on a smaller scale, either in adapting or applying existing technologies.

Second, we must decide how to innovate. In terms of innovation, we can identify three different modes: propoor, para-poor, and per-poor.

Pro-poor efforts

Pro-poor innovation occurs outside poor communities, but on their behalf. Telecenters began as pro-poor efforts and the OLPC was largely designed this way. This can be an effective approach for engaging resources from the global North in developing-country problems. However, it runs into the danger of design versus reality gaps: a mismatch between the assumptions and requirements built into the design and the on-the-ground realities of poor communities.

Various low-cost terminal devices might fall into this gap trap. Initial telecenter models did. And when there's a large design versus reality gap, the outcome is almost certain failure.5 Hence, the widespread lack of success and sustainability reported for telecenter projects.

Nonetheless, there will still be a space for pro-poor innovation in ICT4D 2.0. For example, innovative propoor pricing models have worked. Prepaid plans for mobiles have been an essential part of their uptake in the developing world, and no doubt Microsoft's US$2 Student Innovation Suite software package for developing countries will also prove popular.

To date, the poor have created incomes both around the technology and via the technology. Computer mobiles have been an essential part of their uptake in the developing world,

Para-poor efforts

Para-poor innovation is done working alongside poor communities. Its use has grown during ICT4D 1.0 and will be central to ICT4D 2.0. The need for participative, user-engaged design processes was a key learning point of the first phase. It's a lesson the informatics discipline generally learned several decades ago, but there is always a need to reinvent such wheels when new application areas arise, filled as they are by a gold rush of new actors. Community participation in project design is fraught with pitfalls. Who participates matters—this is often a very small, vocal, elite minority. How they participate matters—individual and group processes produce different results. Why they participate matters as well—participants often give the answers they think designers want to hear. ICT4D participation is complicated because it creates multiple divides between designers and users that must be bridged: techie versus nontechie; rich versus poor; and often a Western versus non-Western mind-set. For certain projects, the divides between urban versus rural and men versus women must also be addressed.

Per-poor efforts

Per-poor innovation occurs within and by poor communities. It was hardly a possibility in the 1990s, thanks to insufficient contact between poor users and the new technologies. This has changed in the past few years. As first mobiles, then PCs, and now the Web started to reach the poor, they have themselves become innovators, although not in the traditional laboratory/R&D sense. Rather, they are adapting and applying the technology in new ways. By and large, we have only anecdotes to date, such as these:
- *New processes*. Beeping (or flashing) communicates a message without completing the call. Street vendors use this method to receive free "I want to buy now" messages from known customers.
- *New business models*. Use of air time as currency has let mobile phones metamorphose into mobile wallets. Those who own phones in poor communities have thus been able to use them for payments or for receipt of remittances from distant relatives.
- *New products*. Backstreet rechipping of phones has been facilitated by emerging informal sector enterprises that strip and resell circuitry from high-end phones, replacing it with basic calls-and-SMS-only functionality. They then sell the resulting high-endbody-with-low-end organs as a unique hybrid for those who want the latest look but lack the budget to match.

As the weight of such anecdotes grows, there will be pressure within ICT4D 2.0 for more systematic means to harvest per-poor innovations. This is well-practiced within the appropriate technology movement, which has already made the transition from pro- to para- to perpoor innovation, and has evolved methods for capturing and scaling new ideas from poor communities. Arguably, such methods might be enhanced during ICT4D 2.0 by adding features from open source and Web 2.0 innovation models…

Integrating Perspectives

We can conclude, then, that each one of these three intellectual domains—computer science, IS, and development studies—offers something to the ICT4D field. Conceptually, this means we need spaces that bring these three domains together. This has yet to be achieved and remains the key intellectual challenge during ICT4D 2.0…

Rectifying this during ICT4D 2.0 demands not just project-level tribrids, but policy- and program-level ones. These can provide a more balanced approach to ICT4D strategy, an innovative approach that pulls its plan of action from an amalgam of the key questions each domain can answer:
- From computer science: What is possible with digital technology?
- From IS: What is feasible with digital technology?
- From development studies: What is desirable with digital technology?

Open ICT4D; IDRC

Open ICT4D

Matthew Smith, Nathan J Engler, Gideon Christian, Kathleen Diga, Ahmed Rashid
IDRC 09/2008 [Condensed Version]

It is clear that the world is changing and that new information and communication technologies are at the core of this change. Society is moving from an industrial model with vertical hierarchical structures to a networked society with increasingly horizontal organizational structures. This change has been largely underpinned by the Internet and increasingly interconnected devices for computation and communication (such as mobile phones) that have massively increased communication and collaboration possibilities. It is in this environment that Openness is becoming an increasingly relevant concept for information and communication technology for development (ICT4D) activities. Indeed, this paper argues that this concept is especially topical for two main reasons: (1) new ICTs enable a whole new range of open ICT4D activities, and (2) policy choices made now will greatly shape the future possibilities to exploit these open ICT enabled activities for developmental gain. Only with a proper understanding, both theoretically and empirically, can we hope to influence policy in a pro-development direction.

Introduction

Understanding Open ICT4D

    The context: new technologies and new possibilities
    Openness: What is it?
    Openness: At the Crossroads?
    Determinants of Openness
    Related Concepts: Public Goods, Excludability and Rivalrousness
    Open ICT4D: Why should the Congolese care?
        Spreading Information and Knowledge for Development
        From Pro-poor to Per-poor Innovations

Overview by Matthew Smith

It is clear that the ICTs are providing the foundation upon which for some fairly rapid changes to the social, political, and economic landscape of the world. This change has been underpinned by the Internet and interconnected devices for computation and communication that have massively improved communication and collaboration possibilities. As the cost of new technologies decreases these trends should continue – facilitating the diffusion of powerful (and smart) networked devices that can access the expanding network infrastructure.

In this environment we believe "openness" is an increasingly relevant concept for ICT development (ICT4D) activities. The term openness (or its cognate "open"), is often applied as a descriptive adjective appended in front of a variety of structures (e.g., open government, open architecture, open society) and activities/form of production/products (e.g., open access to education materials, open source software). We propose a concept of openness that is a generalized abstraction from these particular instances of openness:

Openness is a way of organizing social activities that favours:
    a) universal over restricted access,
    b) universal over restricted participation, and
    c) collaborative over centralized production.

In this section we hypothesise that many Open ICT4D activities provide a more efficient and effective means to achieve development aims. The standing question, then, is when, how, to what extent, and in what circumstances can the power of more open ICT4D activities be applied to achieve the developmental goals of poverty alleviation, improved health and education, increased equitable economic growth and deepened democracy?

<u>Open ICT4D Context</u>

Openness is increasingly relevant concept for ICT4D in part due to two trends. The first trend is the emergence of a new generation of information and communication technologies. There are two main platforms for these technologies. First are mobile phones that operate over the telephony infrastructure and employ applications such as SMS. The second technology is the Internet and the World Wide Web (Web) with the increasing availability of communication access-points and new web-based social tools (Web2.0). Web2.0, in particular, is a set of Web-based tools that allow for a more interactive and collaborative social activities.

The second trend is the fairly consistent reduction in cost of digital content, arguably monotonically approaching zero. This is due to the increased ease and efficiency of copying and disseminating electronic content, in part enabled by new technologies such as peer-to-peer (P2P) sharing.

These two trends allow for a new range of potential social and creative activities. We discuss three, above and beyond what mobiles with SMS and the Internet with Web1.0 technologies provide (i.e., expanded voice and digital communication possibilities, sharing of digital content, etc.):
- Increased possibilities for the coordination, organization, and mobilization of people;
- peer production (open source collaboration);
- creation of user generated content; and
- user-driven innovation.

Defining Open ICT4D

Open ICT4D is the use of new ICTs to engage in "open" processes to achieve development gains. More specifically, open ICT4D is a way of organizing social activities for development benefits that favour:

a) *Universal over restricted access to communication tools and information*. For example, access to the telecommunications infrastructure through a mobile phone, or access to an online content such as MIT's Open CourseWare (OCW) or government information.

b) *Universal over restricted participation in informal and formal groups/institutions*. For example, the use of SMS to mobilize political protests, or new e-government implementations that provide increased transparency and new accountability arrangements.

c) *Collaborative over centralized production of information, cultural content, and physical goods*. For example, open source software, collaborative production of school textbooks, co-creation of government services, mesh networks.

It is crucial to interpret this definition of Open ICT4D as it is intended: *as a hypothesis*. This is not an argument that ICTs will lead to increased openness and will lead to positive development outcomes. Rather, it is the following hypothesis:

There are many processes that can be made more open through the use of ICTs and that doing so will generate development outcomes that are:

(a) *Incrementally better*: i.e., in a more efficient (e.g., faster, cheaper) and/or effective manner (e.g., better leveraging of local knowledge, contextually-appropriate innovations, more local buy in through transparency and participation), and/or

(b) *Transformational*: i.e., in a manner that without an open ICT approach is impossible (e.g., novel innovations, new forms of participation, mobilization, or organization).

There is a corollary to this hypothesis: different activities will function optimally (directly or indirectly generating social value) with greater or lesser degrees of openness. Consequently, as ICTs spread and these social platforms become more prevalent, the central research question is: *how, in what contexts, and to what extent do more open information, communication, participation and collaboration lead to more positive social outcomes?*

Linking Openness, ICT and Development

New technologies and openness principles allow for new possibilities for who can access, use, make and distribute information, knowledge and culture – all of which are core inputs into human welfare and development activities (Benkler, 2006). For example, consider the Human Development Index (HDI). Each of the indicators in the index is "a function of access to information, knowledge, and information-embedded goods and services" (Benkler, 2006) (see Figure 1).
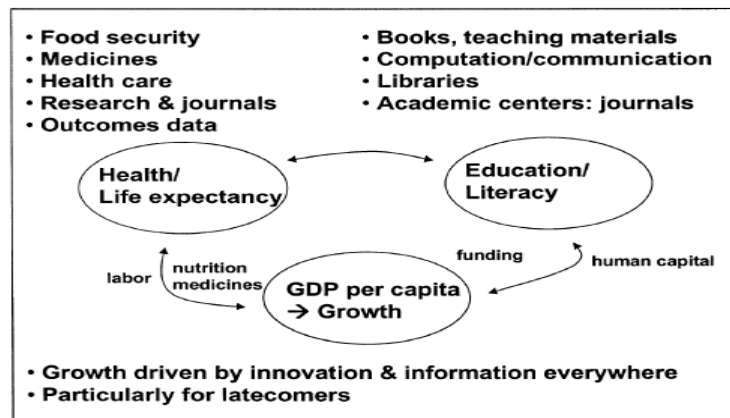
Figure 1 - The relationship between commons-based activities and the HDI.

There are many Open ICT4D activities that link information, and information-embedded goods to development. For example, consider the use of mobile phone communications as a means to receive disaster warning information, market prices, or just simply as a substitute for face-to-face interactions that require travel and time costs. Or how educators and students can gain through access to a open education materials through internet enabled computers in schools, or how ICTs implemented in the public sector can help to increase transparency measures helping to reduce government corruption, or provide a means for a more efficient delivery of information services, resulting in a more effective governance, and the list goes on. An open process regarding the access and use of these resources is especially relevant in the development context where individuals, organizations and states are constrained in their ability to access information, knowledge and information-embedded goods and services, if they are delivered at cost.

Openness can also spur development specific innovation. Access to information and other content as well as to the technologies necessary for collaboration, peer production and/or tinkering are crucial inputs that drive local innovations. Heeks writes of three types of innovation: "*pro*-poor" (on behalf of the poor), "*para*-poor" (along-side of the poor), and "*per*-poor" (by the poor) (Heeks, 2008). Increased openness predicated on open technology platforms would allow highly contextualised per-poor innovations that were not previously possible. Such an approach to innovation (and development, broadly speaking) takes advantage of local knowledge exists at the community level. In this way per-poor innovations have a massive informational advantage. External "pro-poor" projects suffer from the difficulties of extracting local-needs information, as well as the intricacies of the social context. Para-

poor projects try to overcome this through participatory approaches, but is still subject to the stickiness of information (i.e., difficult to extract).

The relevance of local information to appropriate innovations has a parallel in development thought concerned with the epistemic problem that development projects entail. The economist William Easterly (2006) divides development workers into two groups: searchers and planners. Planners attempt to impose from above via top-down structures. In contrast, searchers are the ones with the local information, who search for solutions to local problems. It is only through searchers, Easterly argues, that locally appropriate innovations can emerge. Here we posit that the enhanced spread of information and opportunities for innovation should – theoretically – enable (provided the other contextual supporting aspects are available, for example, bank credit) more opportunities for this type of local searching and innovation.

Development 2.0?

New ICTs pose a challenge to the standard approaches to development. New ICTs and their potentials for open (transparent, participatory and collaborative) activities argue strongly for a "more plural and collaborative Development 2.0" (Thompson, 2007). Our open ICT4D argument developed here poses the same critique and possibilities to development thinking as Thompson's Development 2.0 paradigm. The only potential difference between the two is that openness is not reliant on a particular technology, but is another expression of a movement from a vertical to a horizontal organizational structure with increasing participation of those who receive the benefits of development itself (although this appears to be what Thompson is arguing). In this way, Development 2.0 and Open ICT4D both highlight the possibility of applying more horizontal stakeholder relationships with highly distributed information and enhanced possibilities for feedback loops and coordination over distance in the management and implementation of ICT4D activities.

Open ICT4D Applications

As alluded to, there are a wide range of potential Open ICT4D activities. Here we will list a few:

- *Open Government*: consists of a range of activities including information provision to various forms of participation, interaction and collaboration. These include increased information provision (including commercial, non-commercial, cultural, etc.), increased information provision for accountability purposes (with public feedback mechanisms), enhanced participatory governance and co-creation of public services.
- *Open Education*: teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. The advantage of OER lies in its potential to engage teachers, learners and other stakeholders in an interchange of ideas and expertise for collaborative knowledge building.
- *Open Health***:** operates at several levels: (1) open sharing and collaboration amongst health professionals to enable patients and their care providers to have access to vital and reliable medical information;[5] (2) between medical health professionals and patients answering medical queries in online forums or sharing of treatments and recovery strategies; and (3) online communities of patients and people with health concerns sharing information, experiences and remedies (including alternative and natural remedies).

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[5] For example: http://www.openhealthtools.org/, http://www.oscarcanada.org/ and http://www.open-health.ca/

There are, of course, many more such as open society, open research, open business models, open capital, and open source software, all of which have development applications.

Table 1 Social activities ranging from less to more open.

Activity/Good	Less	← Openness →	More
Open Society	Limited right to assembly	Freedom to assemble	SMS & Social networking sites (e.g. Facebook) as political organizing tools
Media	State controlled media	Corporate controlled media	Independent or distributed media (e.g., blogs)
Cultural content	Books / Radio / Television		Collaborative production of content (youTube, open source movies)
Government decision making	Centralized decision-making	Provide information and perhaps some forms for feedback (email address etc.)	Participatory budgeting
Government Information Provision	Provide data in paper format for those who can come in and get it E.g., government owned/collected spatial and demographic data	Provide data online. E.g., publicly available spatial data (aerial imagery, municipal boundaries, aggregated census data, etc.)	Provide (re)useable data online or collaborative development of data E.g., Participatory GIS using government sponsored spatial data
Government service provision	Provided by offices	Office & e-services	Collaborative creation of services
Software development/provision	Proprietary software	Software APIs	Open source collaborative development
Software use	Use proprietary software	Use open source software (e.g., open source in government, open source e-voting)	
Personal communication	Voice	Phone lines	Mobile phones
Devices	Proprietary/patented hardware	Open software devices (e.g., Open Moko)	Open Hardware
Science/Research	Pay science journals, proprietary research data	Online open journals, Open research data	
Education Resources	Textbooks	School books online/free	Collaborative development of school curriculum
Information	Reference books, etc	Encyclopaedia (Information) free online	Collaborative information development Forums, Wikipedia, etc…
Access	Dial-up	Broadband cable and/or licensed spectrum wireless	Open wireless / mesh networks

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- Center for Information and Communication Technologies (CICT), Technical University of Denmark
- Comunica, Montevideo, Uruguay
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- LINK Centre at the University of Witwatersrand, South Africa
- LIRNEasia, Colombo, Sri Lanka
- Media@LSE Programme at the London School of Economics
- Research ICT Africa!, Johannesburg, South Africa

Mission

- To facilitate telecom reform and infrastructure development throughout the world - through research, training, dialogue, policy and regulatory advice;
- To build human capital in the area as the foundation for effective regulation and governance for new network economies.

Activities

- Research Activities and Reports
- World Dialogue on Regulation for Network Economies
- External Training Initiatives (for Government, Industry and NGOs)
- Expert Analysis & Commentary on Current Issues

Diversifying Participation in Network Development

A.K. Mahan and W.H. Melody (eds), Uruguay, 2007. ISBN (print): 978-9974-8067-0-2
http://lirne.net/2007/09/diversifying-participation-in-network-development/ (download book)

This book is divided into three sections. The first, entitled Affordability and Use, opens with a study on affordability - definitions, analysis and issues. This is followed by two demand side studies, the first focusing on mobile use by the poor; and the second assessing communication expenditures across four developing countries. The final chapter in this section reports on a survey of ICT use by SMEs in eight African countries.

Section 2, *Models to Extend Participation in Network Development* considers microfinance, smart subsidies, community owned microtelcos and the extension of research networks. The countries used to

highlight these alternative approaches include Bangladesh, Nepal, Argentina, Brazil, Colombia, Peru and Ghana.

Section 3, *Regulatory and Information Practices*, begins with two chapters dedicated to the information provision and communication practices of regulators - which are important for cultivating informed participation in regulatory processes. Next regional regulation in support of national regulators and to ensure competitive markets is examined using the Organisation of Eastern Caribbean States as a case study. Further perspective on this is provided by a chapter on multinational operators in African mobile markets. The section concludes with a case study on the regulatory environment in Guyana.

This report is the third in a series of research cycles that WDR is undertaking to assess different approaches to regulation in a rapidly changing telecom environment. With the advent of privatisation, competition, and converging infrastructure sectors, the role of the regulator is in a transitional phase. The first World Dialogue on Regulation research cycle assessed two emerging regulatory trends and the report, The Next Step in Telecom Reform: ICT Convergence Regulation or Multisector Utility Regulation; and the second cycle, Stimulating Investment in Network Development: Roles for Regulators - are both available for download and hardcopies of the second can be ordered from WDR.

ICT Infrastructure in Emerging Asia: Policy and Regulatory Roadblocks

Edited by Rohan Samarajiva and Ayesha Zainudeen
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http://www.idrc.ca/openebooks/378-2/

Introduction: What is… and What Could Have been…
Rohan Samarajiva

Chapter 5: Making a Business out of a Village Phone

.… The Grameen solution also takes into account the demand side of the equation, that is,, the affordability factor. For example, the shared access model used in the VPO program—where one phone provides access to multiple users—concentrates demand and aggregates purchasing power. Citing Prahalad and Hammond (2002, p. 10): 'an individual consumer might not be able to afford a particular product or service, [while] a group, or even a whole village, often can.'

GP also provides airtime to GTC for the VP program at a discounted rate of around 50 percent. Whilst this was initially part of GP's business strategy (embodied in the principle, 'good development is good business'), it is now one of GP's biggest Corporate Social Responsibility programs. The discount is an exclusive privilege offered by GP to GTC, and applies to all rates that are normally charged to GP customers. The tariffs charged by GTC to VPOs are hence less than what regular GP customers pay. The discounted rate allows GTC to cover its costs, and the VPOs to make a profit. Thus, in the absence of an airtime discount, the rates that VPOs would have to charge users in order to cover costs would be much higher; in turn, demand for telecom services would be lower, and hence the profitability of each VP would be reduced, and the sustainability of the program would be negatively affected.

Serving Marginal Customers Profitably: Business Models That Enhance Access

The Grameen solution has two characteristics. First, it is a reseller model, where the telephone is owned by a local entrepreneur, who resells services within the locality—in this case the village. Second, it is an 'in-house' solution—a model of transaction-cost minimization that has appeal in the context of low-trust/credibility conditions in countries with weak law and governance capacities.

The Grameen solution evolved in a specific market, regulatory and technological context; it is by no means a universal remedy for the problem of access to marginal consumers. Yet, as seen earlier in this chapter, the Grameen story does provide very useful policy insights on converting a potentially unfriendly business environment into one that can work for all stakeholders. The keys to its success—the factors that lend themselves to generalization for policy and business purposes—are the identification of the relevant transaction costs and the design of a solution that can minimize these costs; a cost-effective model that would also ensure business sustainability. In the remainder of this part, we extend our central thesis of transaction cost minimization to explore other solutions or models for enhancing network participation.
The Prepaid Reseller Approach

This solution, adopted in the Ugandan variation of the Grameen model, provides a lower-transaction-cost alternative to the 'original' model. The original Grameen model takes a post-paid approach, where the VPOs settle the airtime bill at the end of the month. In the prepaid variation of the model, users who have already secured a handset and connection to a network operator (through the Village Phone-type program) buy airtime in advance—either by purchasing prepaid 'top-up' cards for specific (discreet) values (for example, 100, 500, or 1,000 Taka) or by using 'electronic-refill' systems for any desired amount.6 This can usually be done at designated retail outlets, such as grocery stores. As the services are used, the available credit is periodically 'topped up'.

The most advantageous aspect of this approach is that the need to screen creditworthy customers and ensure repayment is eliminated. People pay for services before using them, so there is no risk of non-payment of bills. Users of prepaid mobile connections have largely been in developing countries,7 where fixed telephony is either unavailable or very limited or, in instances where mobile service exists and marginal customers are unable to obtain 'post-paid' connections for lack of creditworthiness. Often in developing countries, credit histories are not well documented, making it difficult for operators to distinguish between customers who are likely to pay their monthly bills and those who are not. Such informational asymmetries drive up risk and therefore the transaction costs of doing business through monthly subscriptions, or a 'post-paid' approach.

An operator may avoid and/or reduce certain costs through a prepaid approach, but significant costs will still be involved in a prepaid system. Prepaid operations require sophisticated software systems that can keep track of account balances and deduct the correct amount of credit for all types of services provided. Costs are also incurred in printing and distributing charge cards (or top-up cards) to retailers. If an electronic refill system is in place, then this also requires sophisticated software as well as a small piece of equipment for the retailer to credit customers' prepaid accounts.

The Local Reseller Approach

Another solution to network access that has evolved is the reseller model. The basic model is made up of a network operator that owns and maintains the network infrastructure and provides the 'service' (that is, airtime) to a buyer, who then resells this airtime usually for a profit.

There are two versions of this model, each defined by the nature of the relationship between the reseller and the network operator. Here we look at the first version: that of the local reseller. The second kind of reseller is the 'VNO,' or 'virtual network operator', discussed subsequently.

In a local-reseller approach, an entrepreneur obtains telephone line(s) from a network operator, paying a connection fee and a monthly bill, which includes line rental and airtime charges. The local reseller provides telecom services to people in the vicinity, most likely, making a profit. The relationship between the network operator and the reseller is similar to that of a regular customer, except for discounts for wholesale purchase, if at all. Resellers may or may not be required to obtain a license, or register with the regulator, depending on the regulatory regime that prevails in a particular jurisdiction.

In theory, the risk from the network operator's perspective should be greatly reduced, as the local reseller collects use charges from the end users—whom the network operator perceives to be risky. However, this solution has its own problems. The perception among operators in Sri Lanka, for instance, is that the local resellers pose a greater risk factor than individual subscribers, often running up bills in the equivalent of thousands of dollars, leading to line disconnection upon non-payment. Under the current legal infrastructure, there is little to stop these resellers from obtaining a new line at a slightly different address (for example, street number '59/1', as opposed to '59'), under a different household member's name, and by starting a new business. Moreover, in countries where legal enforcement is weak, it is sometimes more costly to take legal action than simply write off bad debts. What is apparent from the empirical evidence on the local reseller approach, therefore, is that its workability depends on the institutional setting—in particular, the norms, principles and practices of law and governance that prevail in a given environment.

The Virtual Network Operator (VNO) Approach

The second kind of reseller is the VNO—exemplified by the British mobile operator, Virgin Mobile. In this approach, the VNO establishes itself as an operator without building a network; instead, it piggy-

backs on the network of an existing operator and resells services under its own brand name, utilizing its own assets such as brand name and distribution facilities.8 In this instance, the relationship between the VNO and the network operator is one where the former purchases bulk airtime from the latter, paying by the minute. The network operator avoids costs such as billing, collection, distribution, etc. The network operator incurs lower operation/variable costs and can afford to sell airtime to the reseller at a discounted or bulk rate.

In the VNO approach, the risk of providing service to the marginal customer is transferred from the network operator to the reseller (the VNO); that is, assuming the VNO does not default on payment to the network operator. An additional benefit accruing to operators is the ability to reach users in segments that have not been captured by their own brand names. What this implies also is that VNOs have the greatest positive impact when they team up with carriers that have a relatively small market share or a brand name that is not strong enough to withstand competition on its own; this model is less attractive for market leaders. As pointed out in the analyses by Pyramid Research (2005a, p. 2), UK's T-Mobile has been able to grow its market share by about 7 percent since it teamed up with Virgin Mobile in 1999. It is questionable, however, if these beneficial impacts would be replicated in the case of market leaders such as Verizon or Vodafone that have established their brand image globally.

An additional point raised by Pyramid Research (2005b) is that there is little space for VNOs in the context of markets that have pent-up demand and scarce network capacity. Telecom markets in the African region, for instance, have very different characteristics—with subscriber growth at record levels, network operators with stretched capacity confronting problems of poor call quality and call completion rates and average revenue per user (ARPU) in the prepaid segments falling rapidly; VNOs do not appear to be a viable option in situations of low ARPU levels.

Conclusion

This chapter attempted to answer two questions, based on empirical evidence: first, what does the evidence indicate with respect to the perception that there is little value in investing in marginal customers. Second, if there is empirical evidence that there is significant business potential at the BOP, what are the business models or approaches that can be used to extend access in a sustainable manner—models that will facilitate a win-win situation for all stakeholders. As illustrated in the analysis earlier in this chapter, the perception that it is not cost-effective to extend network access to marginal customers is not true.

Using the conceptual framework of TCE, we then set out a generic 'rule'—transaction cost minimization—for the structuring of workable and sustainable business solutions to the access problem. Using the Grameen model as a starting point, we unpack the conditions for success. Technology plays a relatively lesser role in generating a workable solution than a correct understanding of the market and the associated transaction costs, and tailoring an appropriate solution. The choice between in-house and out-sourcing models or between different versions of out-sourcing solutions depends on the nature of transaction costs that a business faces in a given environment and at a given time.

Drawing from the microfinance approach taken by Grameen—a market-oriented approach with an appropriately crafted incentive structure, and suitable institutional mechanisms—markets can, and do serve the poor, as well as other marginal customers. To illustrate, the VP program provides VPOs with a livelihood, a means of generating a steady income by reselling telecom services, in effect a 'market' solution. This approach sets into motion a virtuous cycle and facilitates a win-win solution for all

stakeholders, with the VPOs generating an income that in turn increases the certainty of repayment—an encouraging factor for operators to provide rural telecom services.

Chapter 6: Wi-Fi: The Network Fix

…. Wi-Fi 'innovations' in Indonesia are not a result of enlightened policy designed to extend communication infrastructure to unserved areas but rather a workaround solution to hostile market and regulatory conditions. As Samarajiva (2006) concludes in a study on leveraging wireless technologies to achieve rural connectivity, institutions matter. Unless effective policies are in place that allow market entry, manage rights of way, and promote cost-oriented and non-discriminatory access to bottleneck facilities, efforts at bridging the digital divide using wireless technology will fall short of their objectives. The Indonesian experience with Wi-Fi confirms this. Until the market is further liberalized and the regulatory process strengthened, it is unlikely that full potential of the Internet can be realized in Indonesia.

The silver lining for Indonesia is the inherently lower costs of Wi-Fi compared to wired last-mile access technologies, providing the country with potentially explosive Internet growth if regulatory and market conditions are right. A large pool of ICT-savvy teachers and 'geek' activists produced as a result of civil society initiatives, lucidly described in Chapter 4, make it more likely that the benefits of connectivity and infrastructure can be leveraged optimally in Indonesia.

There are a number of lessons from Indonesia that may be applicable to developing countries:

1. Although technology has certain transformative qualities, it cannot by itself bridge the digital divide. The hard work of ensuring that the policy and regulatory pre-conditions must be undertaken in order to realize the benefits of technology.

2. Indonesia shows that Wi-Fi deployment can be commercially viable and that it can be sustained with private investment.

3. Competition in the backbone market is necessary to build the foundation of a developing country's communication infrastructure.

Developing countries with entrenched telecom monopolies can hasten the deployment of broadband by delicensing Wi-Fi frequencies. If ISPs can use Wi-Fi in the access network, they can bypass the incumbent's local loop to provide Internet and other communication services—-if they can be assured of reasonable access to leased lines.

This chapter showed the peculiar uses Wi-Fi was put to in the backbone network, and not in the access network, as is the case in other countries. As the regulatory environment improves and leased lines are made available at more reasonable prices, Wi-Fi use in Indonesia is becoming more normal.

Section 3 Regulation: To Stifle or Enable?

Introduction
This section deals with core issues of telecom policy and regulation. Here, the debates tend to be a little more esoteric than in the previous two sections. The direct implications for consumers of the issues discussed here are not obvious. But they do matter. The interpretation and enforcement of rules in this

'structural' layer of telecom networks have resulted in single telecom operators dominating large geographical areas and in reducing the availability and increasing the price levels of telecom services.

If governments and regulatory agencies get the 'structural' layer wrong, the ramifications can be serious. The design of the Access Deficit Charge (ADC) regime in India, documented in Chapter 10, resulted in enormous additional revenues flowing to the government owned telecom operator BSNL. Revenues like these, together with those from high revenue customers who were already on its network because of its historical position as the monopoly provider, enabled BSNL to build an enormous backbone network that reduced the costs of supplying voice and data services to the rural regions of India, as documented in Chapter 7.

Being present in rural areas and having exclusive access to cheap backhaul capacity, the former monopoly was now in a position to capture most of the universal service funds disbursed by the government, as detailed in Chapter 9. The process that began with the stated necessity of compensating the government owned incumbent for providing services in rural areas below cost ends by transferring massive amounts of funds under various labels from the customers of the private operators to the government owned operator. The evidence so far does not suggest that the objective of narrowing the urban–rural divide is being achieved, as shown in Figure S3.1. Despite the massive transfers to the incumbent, the gap has increased, not decreased, suggesting that incumbent-favoring policies have failed.

Not all the results of the policies of placating and subsidizing the incumbent have been bad. Teleusers at the BOP who were surveyed from Indian rural areas in the study and were reported about in Section 1, reported greater access to fixed phones than their counterparts in Sri Lanka (Figure S3.2).

The chapters in this section raise some critical policy and regulatory issues, but do not necessarily give the final word on them. But it is possible for discerning readers to evaluate the pros and cons of an issue in the light of their specific circumstances and reach appropriate conclusions.

Are the 'big pipes' on which large volumes of voice and data are hauled over long distances within and between countries essential facilities that should provide open access to all competitors on non-discriminatory terms and at cost-oriented prices? Or should they be considered the 'private property' of the incumbents to be used as they please to advance their business in the new competitive environment?

Chapter 7 discusses these questions at length, based on the Indian experience. The Government of India, it appears, has taken a position that the incumbent is free to use its backbone network to optimize its competitive position. The entrants are invited to build their own backbone networks, which several have started to do. The chapter lays out the calculus of determining the commercial viability of building competing fiber networks. Indeed, the private operators with a national scope, as well as infrastructure providers, are building backbone networks.

In other countries, the calculus may be different. The population or customer density that would justify the building of multiple fiber links in India may not exist in another country. The governments and the regulators elsewhere may place a greater value on avoiding wasteful duplication of resources. On the other hand, even if governments see the waste of duplicate backbone networks, they may not be able to effectively regulate the incumbents and have no alternative but to ask new entrants to build their own networks.

Chapter 8 describes what comes closest to a policy fiasco among the policy and regulatory actions analyzed in this book. With all good intentions, the government of Nepal, its regulatory authority, the World Bank, and assorted consultants set out to provide telecom services in one of the most rugged and beautiful terrains in the world, Eastern Nepal including Sagarmatha (also known as Chomolangma or Mount Everest), home to some of the world's poorest people. For this purpose, they selected a great policy instrument, the least-cost subsidy auction, developed and found effective in Latin America.

But the enterprise faced a series of misfortunes. An auction was held and a winner identified. Then the entire royal family of Nepal was massacred and an unpopular and authoritarian king ascended the throne. The winner of the auction departed, forfeiting a considerable deposit. But the proponents soldiered on. They redesigned the auction, obtained necessary assurances from the government, the regulatory authority and the government-owned, unreformed incumbent to ensure that conditions for a fresh bid.

The auction was held and a winner was selected. He did not run away, but started to build his network in Eastern Nepal, using satellite VSAT (very small aperture terminal) technology. Now the edifice began to collapse. The regulator with the skills and the commitment retired and the project lost a strong internal champion. The incumbent invaded the territory of the entrant in violation of explicit commitments and set termination charges for his network at exorbitant levels that compelled the entrant to charge outrageous retail prices. The new regulator did not intervene effectively and at the right time.

This was not all. The external environment that capsized the first auction rolled again. The king banned all political parties and assumed power. Among other things, he shut down all the telecom networks in the country, allowing them to restart very slowly and under onerous conditions. The new entrant found that most of its identified locations were now prohibited and he was not even allowed to visit some locations where he had installed connections.

The question is, should everyone else have followed the first winner of the auction when he cut and ran. At what point does one give up on a project because a country's governance framework has deteriorated? Should one use least-cost subsidy auctions only in countries with good governance and where promises made are kept? If these stringent criteria cannot be met, what can be done about the unserved and the underserved? Is telecom a dessert that can be enjoyed only after the meal of good governance has been served?

These questions resonate strongly with the debate around e Sri Lanka, a path-breaking ICT development project in Sri Lanka that is sliding from satisfactory to unsatisfactory ranking because of a change in leadership resulting in significant deviations from the original design that reflected international best practice (Hanna, 2006). The answers to these questions are not in the chapter, but have to be worked out by the reader in active engagement with the material presented in it.

Like the Nepal least-cost subsidy auction, the Indian least-cost subsidy auctions described in Chapter 9 were conducted most transparently, which suggests that good governance is an attainable goal in South Asia. But the design of the Indian auction was such that pretty much all the subsidies ended up with the incumbent. The massive Indian Universal Service Obligation Fund auctions, the Chapter shows, were designed in ways that more or less determined the incumbent being declared the winner.

Infrastructure sharing, interconnection, and other regulatory preconditions that must exist for a truly fair least-cost subsidy auction are identified in Chapter 9. In a gratifying turn of events, the criticisms made of the universal service subsidy disbursements in early drafts of the preceding research report were

picked up by the Telecom Regulatory Authority of India (TRAI) and included in its recommendations to the Government of India. However, with many countries getting ready to establish universal service funds, the lessons extracted from India's experience are likely to be of great value, even if it is in terms of learning 'what not to do'.

The discussion of the multiple iterations of the process of designing the ADC regime in India provides an object lesson in protracted and progressive policy deliberation. Under enormous pressure from the incumbent as well as its government 'owners', the TRAI designed and announced a series of ADC regimes that were repeatedly corrected and improved in the face of substantive criticism. It is almost as though the iterative process was needed in order to wear down the resistance of the guardians of the incumbent.

The chapters in this section throw significant light on the regulatory preconditions that have to be met for effective action to extend networks in environments of less than optimal governance. It is not a collection of best practices that are presented for emulation, but rather a series of real-life exercises that will help readers make realistic assessments of actions needed to effectively extend networks under difficult conditions.

Chapter 12: Regulating for the Next Billion

In an earlier section we noted that regulators are often interested in users who are 'traditionally underserved'. Here, we will tie the different threads developed in this review chapter to arrive at some conclusions that will be useful for regulators to keep in mind when making or suggesting policy, or making rules for the ICT industry.

A key take-away for us from the social study of technology is that users matter—not just as users, but also as producers and innovators. They often will take a technology that was supposed to do one thing and turn it into something completely unexpected. If the public interest involves giving consumers what they want, regulation and policy should allow such innovation and production, and accommodate it in the development of technology. Of course, users are often unable to change the technical system of an ICT infrastructure. A recent exception is the diffusion of Wi-Fi community networks. Yet, the majority of user innovations might involve changes in use and not structure, like making a business technology such as the telephone into a social communication tool.

Innovation often challenges regulatory structures. From the innovation of the radio-to-phone, Carterfone, ultimately leading to the break-up of Ma Bell (Brock, 2003), to Skype in the Internet age, and Wi-Fi in a liberalized spectrum management environment, new technology has not only brought benefits to users, but has led to paradigm shifts in regulation and law. In a recent statement, the Hong Kong telecom regulator (OFTA) wrote that the regulator was not in favor or against convergence, but wanted to create the right conditions for market forces to play out and allow the smooth introduction of convergence as and when the market demanded it (Au, 2006). Such forward-looking action by regulators can ensure that innovation is not perceived as a problem or a 'disruptor' as much as an expression of both producer and consumer desires.

With respect to regulation for the next billion, this volume has significant findings that throw light on how users and non-users who form part of the next billion use ICTs. First, shared access is an important means of access. Communities are able to support ICT services better than lower income individuals and form a more attractive collective revenue source for service providers. The success of the public

call office and village public telephone programs in India, recorded in Chapter 1, indicates that these modes of access are valuable in bridging the 'access gap'.

Innovation is getting more attention from policy makers around the world. Given the use of converged IP technology to provide a range of services, and with end-to-end networks now in place, users and technologists are able to develop and quickly deploy new and interesting technologies to better serve their needs and requirements. Such decentralization of innovation is apparent in the moves made in many countries towards spectrum-as-commons regimes, the debates on open network access, and the increased use of open source software to control and use media. These developments alter greatly the mechanisms of control of technology. Regulators need to recognize that technology is now open to decentralized innovation—often leading to benefits for users. Innovation will come through in a competitive and incentive-structured environment, where innovators will benefit, monetarily or otherwise, from their creativity.

A regulatory environment that allows entrepreneurship, flexibility, and competitive behavior will bring to all users—within and without ICT networks—the best possible services that serve their needs, and hence the public interest, the best.

Regional and Global ICT Reviews

Digital Review Of Asia Pacific 2007–2008

Chief Editor: Felix Librero,
http://www.idrc.ca/en/ev-116715-201-1-DO_TOPIC.html

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Review of individual economies
Review of sub-regional associations

Foreword
Muhammad Yunus, Founder, Grameen Bank, Nobel Laureate, 2006

The overview of emerging issues in information and communication technologies (ICT) for development in Asia Pacific in this edition of Digital Review of Asia Pacific (DirAP) takes up the question of whether ICT ranks equally in priority with other sectors of development for investing the

scarce resources of poor countries. It then takes the position that ignoring ICT will only lead to further excluding poor countries from the circuits of power and prosperity.

Indeed, this is a small world today and ICT is making it even smaller. The list of Impossibles in this world is shrinking. We should not wait too long to cross off a few more items from this list:

- It is impossible to eliminate poverty from this world.
- It is impossible to provide basic education to all.
- It is impossible to ensure necessary health care to the needy.
- It is impossible to make universal access happen.

ICT is quickly changing the world, creating a distance-less, borderless world of instantaneous communication. Increasingly, ICT is becoming less costly. Thus, ICT has much potential to create opportunities for growth and development in the rural areas of Asia. As ICT begins to create income generation activities in rural areas and as it becomes an instrument of rural economic and social activities, it begins to pay back on our hard-earned investments.

The Grameen Bank in Bangladesh, one of the poorest countries of the world, long ago made the choice to invest the present and future of the poor in ICT. ICT is a new opportunity for grassroots innovation. I saw an opportunity for the poor people to change their lives but only if this technology could be brought to them to meet their needs.

Towards this vision, we created Grameen Phone and we provided loans to poor women to buy phones to sell mobile phone services in the villages where they live. In this endeavour, we see the linkage between microcredit, our established strategy, and ICT, our newer strategy. Today, Grameen Phone is the largest phone company in Bangladesh and serves more than 12 million subscribers.

Social businesses such as Grameen Phone can play a significant role in creating opportunities that will help societies and their members to continue in the path of progress. Social business is a very important concept to me and very close to my heart. I define social businesses as a non-loss, non-dividend company, dedicated to achieving social objectives. Investors can take back their investment money, but they cannot get any dividend beyond that. Promoters of social businesses are the catalyst for positive change in a society.

Today, I would like to challenge our intellectuals, innovators, business leaders, corporations and institutions to help identify ways and means to help create social ICT businesses locally, nationally and internationally. Social business is a promising concept that I would like to bring into the ICT world, for we are applying it in earnest to our work with the poor in the villages of Bangladesh. I would like to emphasize that my challenge to our thought leaders is not only to create social business ideas in the ICT arena, but also to develop replicable designs that will help others in non-ICT sectors to be innovators of social ideas and social businesses.

In the future, I look to DirAP to document the stories of grassroots ICT innovation and learning for the Asia Pacific region, in technology deployment and research, as well as in innovative systems of delivery that bring useable ICT in a sustained manner to the doorstep of the poor.

Digital Review of Asia Pacific, 2009-2010

Chief Editor, Shahid Aktar

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E. About the contributing authors

Foreword

Noeleen Heyzer, United Nations Undersecretary General, UNESCAP

The Digital Review vividly paints the picture of a major dimension of change in the Asia Pacific Region, and indeed in the world. Asia Pacific is my main concern at ESCAP, but changes here and globally are quite similar. Communication and networking enabled by information and communication technologies (ICTs) are proving to be economically, socially, and politically transformative over time. For example, in both poor and wealthy countries and populations, mobile phone use has been skyrocketing and facilitating the expansion of markets, social business, and public services. In fact, an entire range of economic services, enabled by mobile phones, has begun to emerge – transacting micro finance and insurance, marketing and distribution (farmers and fishers connecting with markets, reduced distribution margins and buyer control), employment services (drivers, casual workers), personal services, and public services (tele-health and distance education). And beyond economic impacts, improvements are being made in other freedoms or dimensions of well-being; personal security, political participation and accountability, social peace, dignity and opportunity.

These developments are important, where they are thriving. We should not forget the negative aspects and possibilities of communications-based transformation, such as mobile phones being used to fan violence, cyber crime and terrorism, and our vulnerability to disruption of communication. Nationally and internationally, control of communications is contended, and openness generally best. Internationally, the spread and appropriation of ICTs is a key globalization driver and knowledge carrier. In these circumstances, societies need to build communications systems and manage them well, develop infrastructure and the capacity to use it, and implement good policy and regulation. In the right environments, both business and non-profit enterprise are effective in rapidly expanding connectivity, using low-margin high-volume business models. Affordable mobile Internet – smart phones and data services – exists today in wealthier societies and could be near universal in the next generation. These are stories that the Digital Review is telling, in vivid and thoroughly researched detail, in both snapshots and dynamic pictures of the development and use of digital storage, processing, and communications systems in 30 national economies, with sub-regional and regional overviews..

Browse and be drawn into these pictures and narratives. Read online previous Digital Reviews to highlight changes and trends. Over the coming year, partners of ESCAP, IDRC, and many other organizations will be monitoring the impacts of the global financial and economic crisis on economies, businesses and employment, public services and households; and both identifying and

carrying out key mitigation measures. Negative impacts spread through international 'transactions;" falls in exports, remittances, foreign direct and portfolio investment, possibly ODA and, increasingly, transactions in knowledge. Impacts on digital systems and more particularly on their users could be substantially negative, arresting progress in economic and other spheres, with particular impact on the poorest. At stake in all sectors are advances in incomes, jobs, work, education, health, security, equity and social functionality. Good management and responses, reported in this and the coming Digital Reviews, will be central to reducing negative impacts. So enjoy, respond and don't miss the next editions of the Digital Review of Asia-Pacific!

Preface

Laurent Elder, Maria NG Lee Hoon, Claude-Yves Charron and Alain Modoux

Riding the Waves of Change in a Turbulent Information Age: Sensing ICT Change in the Asia Pacific Region

"The Grameen Bank in Bangladesh, one of the poorest countries of the world, long ago made the choice to invest the present and the future of the poor in ICT. ICT is a new opportunity for grassroots innovation. I saw an opportunity for the poor people to change their lives but only if this technology could be brought to them to meet their needs".
Muhammad Yunus, Digital Review of Asia Pacific 2007-2008: ix.

The sudden onslaught of the current economic turmoil comes long after the authors of this edition of The Digital Review have submitted their manuscripts, and when this issue came to press. The publishers and authors of the Digital Review will be closely monitoring the impacts of this turbulence upon the appropriation of ICT in the region for the next edition. Dr. Yunus has showed the way to all who work towards empowering poor communities, to address their development challenges through effective access to ICTs. At the same time, we are learning that even as communities appropriate ICTs, it is imperative to understand the positive and negative effects of ICTs on given communities, through continuous research and monitoring. Each wave of global change impacts not only the international and regional levels, but also, more and more, on poor rural households, in no small part due to the role of technology. The current turmoil alerts us to keep a watchful eye on the way it causes change in ICT appropriation throughout 2009 and 2010.

In the maiden 2003/4 edition, we referred to the Digital Review of Asia Pacific (DirAP) as an analysis of "a new type of public sphere, more participatory and intentional". That statement was made at a time when we had yet to see the real power of ICT.

Since then, we have seen ICTs completely transform our lives, having, for instance, changed the way politics and governance get played out. This started in Asia, with the now famous "coup de text" in the Philippines, followed by similar innovations in Korea, Pakistan, China and Malaysia. More recently, in the U.S, the Obama campaign also showed how important communications technologies were for creating awareness and motivating action. In the 2005/6 edition of DirAP we had prepared the DirAP audience for phenomena like this. That edition included reference to disruptive ICTs, with close-up examinations of themes like social, political and cultural aspects of e-Governance, popular participation and international politics, as well as developing appropriate ICTs using open source programs and local language tools. In the 2007/8 edition, we had focused on a close-up study of mobiles and wireless. The remarkable growth of cell phone technology and Web 2.0 tools have much

to do with this ascendency of public socialization and conscientization. This prognostic element is central to our motivation in producing DirAP as a regular Asia-watch serial.

While DirAP tracks the way ICTs are used in Asia for political change, we are at the same time keeping a close eye on the way ICTs are impacting on the education, health and livelihoods of disadvantaged people. In the 2009-10 edition of DirAP, we have begun by selecting Education as a principal theme. We are therefore focusing on the state of ICT deployment and innovation in basic education, non-formal education, distance education capacity building in educational institutions and private-public partnership in educational strengthening…

Introduction

Shahid Aktar

The information age has been driven and dominated by technopreneurs – a small army of 'geeks' who have reshaped our world faster than any political leader has ever done….we now have to apply these technologies for saving lives, improving livelihoods and lifting millions of people out of squalor, misery and suffering. In short, the time has come to move our focus from the geeks to the meek. -- Sir Arthur C. Clarke

When Marshall McLuhan coined the term 'global village' in 1962, he was referring to the removal of space and time barriers in human communication as a result of the communication revolution taking place at the time. Today, we are living in a global village in every sense of the term. This has never been more evident than in the financial and economic crisis gripping the world today.

Banks are failing and stock markets are tumbling. The automotive, construction, insurance, manufacturing, tourism and other industries are suffering their greatest losses in years. The prices of commodities like oil, copper, lead, nickel, platinum, and wheat have fallen 65 percent to 88 percent from their peaks. Households have lost billions in real estate and pension fund reserves are dwindling. Countless small- and medium-sized companies are going bankrupt and millions of jobs are being lost. The world is in a deflationary spiral.

Much of the crisis concerns the United States of America and countries in the European Community. But given the interconnectedness of the world's financial and economic systems, economies around the world are experiencing a downturn. Even the biggest economies, like China, are hurting. Li Yizhong, head of China's Ministry of Information and Technology, has noted that "the international financial crisis is having a severe domestic impact" and "just about every industry has overcapacity". Zhang Ping, head of China's planning body, predicts that "[e]xcessive bankruptcies and production cuts will bring massive unemployment, stirring social unrest. Owing to dramatic changes in the international economic and financial environment, the Chinese economy faces growing downside pressure." And the head of the Australian central bank, Glenn Stevens, whose country is one of the key suppliers of natural resources to China, has said that "[t]he most striking real economic fact of the past several months is not continued U.S. economic weakness, but that China's economy has slowed much more quickly than anyone had forecast."

 It will take several years, maybe even a decade, before the recession (some call it 'depression') that the world is facing today can be fully turned around and all the losses made up. The next several years are not going to be easy for most developing countries and many that were already struggling to meet the Millennium Development Goals (MDGs) goals and targets are going to be facing even greater difficulties in realizing these goals. The new information and communication technologies (ICTs) have

been a driving force of the globalized world in which we find ourselves today. Do ICTs have a role in helping to turn the global situation around?

Now more than ever, countries need more efficient, accountable and transparent government. And it is a well documented fact that use of ICTs assists in sharing information more effectively and delivering better services to the public. "ICTs, wisely deployed, can potentially impact almost every sector, making development budgets, private sector investments and commitments from development partners go that much further in terms of cost effectiveness, impact and reach" (UNDP, 2005, p. 1). ICTs help to increase transparency and accountability and decrease corruption. They promote economic growth by improving the interface with business and empowering citizens to participate in advancing good governance. ICTs also help to accelerate the pace of sustainable human development and to "…increase the effectiveness of new and more responsive solutions in the fields of health, education and related MDG focus areas" (UNDP, 2005, p. 1).

The Digital Review of Asia Pacific (DirAP) aims to serve as a guide for ICT-related policy development, planning, research and project implementation in the region. Like the previous editions, the 2009-2010 edition of DirAP reports on key ICT for development initiatives across the Asia Pacific region. The present edition of DirAP consists of four parts:

Part A includes regional overviews on ICT for development, regulatory approaches to ICT, and managing innovation.

Part B, consisting of five chapters, focuses on various aspects of ICT in education.

Part C assesses the ICT initiatives of four sub-regional groups.

Part D reviews the digital status of 30 economies.

The country chapters in Part D report on the status of the technology infrastructure, ICT industries, digital content, online services, key ICT initiatives, enabling policies, the regulatory environment, education and capacity building programs, open source initiatives, ICT-related research and development, and trends and challenges in ICT for development in each of the 30 economies covered. The common framework that underpins these country reports allows readers to undertake a comparative analysis and assess progress across the region…

See also regional and global reviews:

ITU Asia-Pacific Telecommunication/ICT Indicators 2008: Broadband in Asia-Pacific: too much, too little?
http://www.itu.int/ITU-D/ict/publications/asia/2008/index.html

Asia Pacific Telecommunity Yearbook
http://www.google.com/search?hl=en&ei=FY33SZrlKIfKM5qU8L0P&sa=X&oi=spell&resnum=0&ct=result&cd=1&q=asia+pacific+telecommunity+yearbook&spell=1

Digital Review 2007 of Latin America and the Caribbean:Progress and Challenges Policies for Development with ICT-Abridged document
http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/33551/P33551.xml&xsl=/socinfo/tpl-i/p9f.xsl&base=/socinfo/tpl-i/top-bottom.xsl

Global Information Society Watch 2007 Launched

Published by APC and ITeM, 2007
http://www.giswatch.org/files/pdf/GISW_2007.pdf

The Global Information Society Watch 2007 report - the first in a series of annual reports- looks at state of the field of information and communication technology (ICT) policy at local and global levels and particularly how policy impacts on the lives of people living in developing countries.

Studies of the ICT policy situation in twenty-two countries from four regions are featured: Africa (Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Nigeria, South Africa and Uganda); Asia (Bangladesh, India, Pakistan and the Philippines); Latin America (Argentina, Brazil, Colombia, Ecuador, Mexico and Peru); and Eastern Europe (Bosnia and Herzegovina, Bulgaria, Croatia and Romania), with one report from a Western European country (Spain).

The report concludes that when it comes to ICTs for development, there are some conspicuous similarities between the countries. Excluding Spain, the other twenty-one countries each show obvious evidence of the "digital divide" which impacts on the majority of people negatively. According to Brazilian authors RITS, the absence of a people-orientated policy framework in Brazil runs the risk of condemning the vast majority of people to "eternal disconnection." The report also includes provocative, analytical essays on five international institutions (including ICANN and the World Intellectual Property Organisation) questioning the extent to which they allow all stake-holders to participate in their processes. There is a special section on how to measure progress.

'The Global Information Technology Report 2007-2008'

World Economic Forum, INSEAD, 2008
http://www.weforum.org/en/initiatives/gcp/Global%20Information%20Technology%20Report/index.htm

Under the theme Fostering Innovation through Networked Readiness, this year's Report places a particular focus on the role of networked readiness in spurring innovation. The Report uses the Networked Readiness Index (NRI), covering a total of 127 economies in 2007-2008, to measure the degree of preparation of a nation or community to participate in and benefit from ICT developments. It also describes policies for ICT. Sponsored by Cisco Systems, the Global Information Technology Report series is a joint project between the World Economic Forum and an educational organization, INSEAD.

The UNCTAD Information Economy Report 2007-2008 and 2006-2007
http://www.unctad.org/Templates/WebFlyer.asp?intItemID=3991&lang=1

ITU – World Telecommunication/ICT Indicators Database 2008 (12th Edition)
http://www.itu.int/ITU-D/ict/publications/world/world.html

The World Bank ICT at-a-Glance country tables
http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20459133~menuPK:1192714~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html

OECD Information Technology Outlook 2008
http://www.oecd.org/document/20/0,3343,en_2649_33757_41892820_1_1_1_1,00.html

Paul Collier 's Bottom Billion

Comment.
Read Collier, P. 2007. The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done About It. Oxford University Press. The following contains a brief summary and one set of reactions.

Beyond Collier's Bottom Billion

Randy Spence, June 2008, IDRC Working Papers on Globalization, Growth and Poverty
http://www.idrc.ca/uploads/user-S/12168265751GGP_WP_BB_vf.pdf

The 'bottom billion' (BB) people refers to everyone living in a group of 58 bottom countries: most of Africa, Haiti, Bolivia, Yemen, Central Asian countries, Laos, Cambodia, Burma and North Korea. In the book, Prof. Collier argues that these countries are caught in one or more of four traps: the conflict trap, the natural resource revenue trap, the governance trap and the landlocked (with bad neighbours) trap. These countries have missed the fast growth boat that globalization has provided over the past two to three decades to other developing countries, especially Asian countries, to export manufactured products to global consumer markets on the basis of their low-wage labour. The author suggests that there will not be other such boats soon. The prospects for development of these countries are bad, and their problems are everyone's problems, for security let alone humanitarian reasons. What can be done to help these countries develop involves the use of best instruments for each trap, the main instruments being aid, military intervention, laws and charters, and trade policy. More specifically, some main options and proposals are:

- *Conflict trap*: Continued improvement of aid and (long term) peacekeeping in post-conflict situations, and an international charter on post-conflict governance.
- *Natural resource revenue trap*: An international charter for resource wealth; something like a revised version of the Extractive Industries Transparency Initiative.
- *Governance trap*: With intervention in failed states largely discredited by Iraq et al. – charters and norms on international democracy and on budget transparency.
- *Landlocked trap*: Aid on a substantial scale, and with strong management by donors in countries with debilitated governance - plus aid to neighbours for transport corridors.

For countries trying to break out of limbo, an international charter on investment is needed to start domestic and foreign investment flowing, as is trade protection with respect to more advanced developing countries (in Asia) to put their low-labour cost manufactures on a competitive footing. In general, aid agencies should improve their programming and focus on the most difficult environments where their support is the most needed. Peacekeeping capability and decision making should be built by both developed and developing countries. Moreover, key international charters and trade protection measures should be promulgated using existing channels for the most part. Such international charters include the following:

- Charter for natural resource revenue
- Charter for budget transparency
- Charter for post-conflict situations
- Charter for investment
- Charter for democracy

Coordination and focus problems among donors will be stiff; in particular getting government agencies to work together within developed countries and across the global system.

Main Perspectives and Research Findings Presented in the Bottom Billion

- 73% of people in the BB have recently been in a civil war or are in one.
- Civil war is more likely to occur in countries with low income, slow growth/stagnation/decline, dependence on primary resource exports (oil, diamonds, etc.) - and is not statistically related to measures of political repression, ethnic strife or colonization experience.
- Civil wars re-start and get 'institutionalized', and military spending stays high; the immediate post-conflict period is a critical time for intervention and assistance.
- As demonstrated by De Beers and the Kimberly Process for the certification of diamonds, big companies can be a key part of the solution rather than being part of the problem.
- The cost of a typical civil war to the country and its neighbours can be put at about $64 billion.
- Coups are more likely to occur in countries with low or slow growth and where there have been prior coups.
- Democracy undermines a country's ability to harness resource surpluses, especially in countries with close electoral competition; the resource revenue trap tends to generate a political development trap and checks and balances are more important than electoral democracy.
- Growth (and decline) spills over very substantially from neighbours to landlocked countries.
- Being resource poor and landlocked is dismal. Some strategies include increasing neighbourhood growth spillovers, improving economic policies, facilitating coastal access, becoming a haven for the region, not being air-locked or e-locked, encouraging remittances, fostering rural development, trying to attract aid, and creating a transparent investment-friendly environment for resource prospecting.
- Starting from being a failed state, a country is more likely to sustain a turnaround: the larger is its population, the higher is the % of population having secondary education, and whether the country recently emerged from a civil war.
- The expected time before a failing state achieves decisive change is fifty-nine years.
- The cost of a single failing state over its entire history of failure, to itself and its neighbours, is around $100 billion.
- Capital outflows are as important as lack of capital inflows to the BB – by 1990, 38% of Africa's private wealth was held abroad.
- Migration can help, but BB countries have fewer qualified lower-skilled emigrants, and lose more of the domestically key high-skilled.
- Aid can fuel conflict traps and contributes to the Dutch disease, but overall, despite the bureaucracy, aid has been much more successful than oil as a source of development finance.

- Aid *policy* conditionality fails for reasons of condescension and time inconsistency (ease of breaking promises); aid *governance* conditionality (for domestic accountability) may succeed.
- During reform, technical assistance packages of $250 million per year are justified and have an expected payoff of about $15 billion.
- Budget support is appropriate for reasonably well governed BB countries, but well managed 'hands on' aid is needed for the substantial majority of others.
- Aid significantly reduces capital flight and aid worsens the problem of trade barriers.
- Developed country trade protection (agriculture) damages the BB as do their own trade barriers. Some options include regional integration (but not behind high trade barriers), export diversification, giving BB countries trade protection vs. Asia, and rethinking the BB in the World Trade Organisation (WTO).

3-Some Thoughts on the Traps

Focusing on the BB, in terms of countries rather than people, is a choice Prof. Collier made, and one that makes a lot of sense. The world operates in terms of countries, and everyone in these 58 is in jeopardy or (much) worse. It may still be worth keeping in mind that the majority of the world's poor are in Asia, and in countries NOT in the BB group. They are poor within societies that are now growing and developing. One may not be as concerned about them because their countries are, or are becoming, in a position to do something about their plight, or because it is less politically feasible to intervene in favour of the poor minorities living in countries that are progressing. One may also think that they are not as likely as their counterparts in the BB countries to mount security and terrorist threats. Yet, there are some striking counter-examples…

Some elements are clearly missing. Something has to be said about international arms production and trade… If there is a case for new international charters, this certainly has to be a prime candidate from the perspective of need. Probability? Probably low, but asking all the ministries of Northern governments to work together on aid, trade, military intervention and other charters strikes me as no more or less 'heroic' than asking for agreement on widespread arms reduction, where production is done and condoned by precisely these same governments…

… it is more important to be going in the right direction than to be going fast…

The natural resource revenue trap may also highlight two more broad sets of questions relating to sectoral sources of growth. First, are manufactured exports really the only fast boat? They have not always been. In fact, there are no historical fast boats up to about the 1950s. However, manufactured exports have recently been, in the past few decades of rapid globalization, almost the only fast boats. What can a country do if this boat is far from visiting its shores? What about resource and agricultural exports? How are comparative advantages shifting globally and where will the currently 'developed' countries come out? What about non-export sources of growth in the BB countries - domestic or non-traded food products, manufactures and services - which typically account for 90% or more of a market economy? Realistically, given that these may be the only options for some countries for some time, even if Prof. Collier's recommendations were all acted upon, what are the prospects and best ways of pursuing them?...

Furthermore, what is actually happening at the 'bottom of the pyramid' (BoP) in the BB and OBB countries? Is "the fortune at the bottom of the pyramid eradicating poverty through profits" (C.K.

Prahalad 2006)? Frankly, yes! There are large changes going on in some BB and OBB countries in terms of expansion of markets and services at the BoP – for instance, microfinance and insurance are now managed by mobile phone. Moreover, personal security is going up because of networking. Pretty much the whole range of economic services is beginning to emerge – finance, insurance, marketing and distribution (farmers and fishers connecting with markets, reduced middleman margins), employment services (drivers, casual workers), personal services, public telehealth and education services. These developments are quite new but look important and have a lot to do with the predicted diffusion of ICTs, a key globalization driver and knowledge carrier deserving more attention and analysis in general, and in the BB countries in particular…

Bad governance can take many forms. From the book and my experience, there are a few main dimensions that might be suggested. Main dimensions of governance traps, for example, might be usefully explored along the following axes:

1. well-motivated / corrupt
2. military / non-military
3. politically cohesive / fragmented
4. competent / incompetent

A country may have problems in none, some or all dimensions; the number of variations being 15. A few examples may illustrate such variations.…

The requirements for achieving a growth spurt are not the same as those for sustaining growth and development. The latter have more to do with the development of capabilities of individuals, institutions, processes and systems in private, non-profit and public sectors – a subject little touched in The Bottom Billion and further explored below…

Welfare economics is not by itself a sufficient basis for economic or overall governance and public policy, but it remains a vitally important part. Borrowing from some current thinking on development and growth, development is the expansion of what a society is able to do; individuals, systems and institutions that know how to do things - build and sustain markets and enterprises of all sizes, governments of all levels, non-profit and civil organizations. These capabilities take decades to build, but only years to unravel; development is asymmetrical, up and down. All sectors need capable people everywhere. Individual and group capabilities increasingly reside in and are reinforced by networks. Economic growth is measured as the increase in production and consumption of goods and services by all of the sectors of the economy - typically 60-70% market, 5-15% non-profit and 20-25% government. Private sector growth is still the lion's share of economic growth.

The more important government functions for growth, beyond avoiding conflict and corruption, are articulating and implementing economic and regulatory policies, that is, monetary, fiscal, trade and investment policies, and sectoral regulations. Over time, of course, public spending and investment are also key to growth, particularly infrastructure, education and health. However, none of these key policy functions will be done well without capable people and institutions, and the same is true in the private and non-profit sectors, including informal sectors that make up typically ¾ or more of an economy...

The critical importance of competition and good regulation in telecoms and the ICT sector is understood today, and there are stakeholder groups actively and successfully making improvements in many BB countries. This took a while. The World Bank (WB) and major donors pushed privatization of monopoly government telecoms heavily in the 1990s, and got what they asked for; monopoly private telecoms. Expansion of landlines halted, literally. Mobile phone operators, however, avoided

regulators and monopoly long enough to have enough (three or more) service providers in an economy to ensure real competition. Mobile use has expanded exponentially. Good regulation achieves spectrum allocation, competition, interconnection, low cost of service and a society's universal service objectives. The WB and other donors were not the only ones to miss focusing on what was most needed, that is competition. They were rather focused on the privatization ideology relative to research; not the Bank's finest hour. Sequencing is important everywhere; more below.

What about biotechnologies, nanotechnologies and cognitive technologies? Their rapid progress will be a prominent feature of the global economy, potentially very positive in terms of economic activity and human well-being - longer lives, better health, cheaper cleaner energy, cheaper food - but also with big ecosystem, biodiversity and security risks. BB countries will benefit last, and incur high risks because of their weak regulatory systems – e.g. bio-safety for genetically modified crops. A lot of effort is going into strengthening these capabilities. Most BB countries are actively engaged with new technologies and innovation systems – including innovation in and for the BoP – the few exceptions include Burma, Cambodia and countries which are in conflict.

Knowledge is becoming a relatively larger factor of production in the global economy; this is hard to measure and prove, but accepted widely, with the implication that education, research and innovation systems are important pieces of the system-building that constitutes development. Several major donors are providing more and better aid in this area and experience suggests it is especially needed and useful in BB and OBB countries, wherever there is not actually conflict or general failure. Good foreign partners are important. New technologies promise to fuel global economic growth and development, if managed well, but also to widen the gap between the BB countries and the rest in the coming decades. A significant positive impact through ICT-related development at the BoP might reasonably be expected, and trickle-down from the growth impacts of ICTs and newer technologies in the more advanced sectors of the economy and countries of the world…

Understanding what is going on in the BoP and in BB countries, with the refocusing and redevelopment of business in the BoP, looks inexpensive and worthwhile. Where are markets and services expanding quickly, and how big is the role of mobile phones, ICTs, and other factors? What is the size of the BoP economy and how much economic opportunities would be realized if it grew at significant rates of about 5 or 10%? What are ICTs, communications and networking contributing in terms of the capabilities of individuals, groups, systems and institutions? How can policy and donors best help?...

It is past time, one might argue, to stop fighting and put human development and welfare economics together. While somewhat complex, this is not so daunting; students increasingly get it and vote with their feet. Globalization brings tension and volatility along with the growth kick, and there are enough other areas of conflict among regions, nations, religions and others to be able to afford a wasteful conflict over growth and capability development. *It is not one or the other, it is clearly both…*

In one perspective, global growth has been pushed quite single-mindedly for three decades and has been achieved in large measure. Very little explicit attention was given to security and environment, and that was successful too – conflict and increasingly disastrous environmental destruction were the results. *Beware of what you do not ask.* Recent research on happiness indicates that it has remained static or has declined in wealthy countries over the past 50 years in spite of enormous growth in per capita incomes. *Beware of what you ask.* Depression and crime are large and growing problems. Some of the ways in which we pursue growth are responsible for the static and declining happiness observed. The countries that have asked for both human development and growth have also generally

succeeded - Holland, Sweden, Norway, Denmark, Switzerland, New Zealand, Australia, Canada and others. It is known to be possible because it has been done…

The Oxford Poverty and Human Development Initiative (OPHI) has developed and is piloting measures of security, dignity, empowerment and employment quality for use in many current international datasets, including the World Bank Living Standards and Measurement Survey (LSMS), the World Bank Core Welfare Indicators Questionnaire (CWIQ), Demographic and Health Survey (DHS), the UNICEF Multiple Indicator Cluster Survey (MICS) and the International Household Survey Network (IHSN). A pilot project is beginning with the international Community Based Monitoring Systems Network (CBMS). There are dozens of other valuable data initiatives…

An interesting hypothesis is that individual, group, system and institutional capabilities increasingly reside in, and are reinforced by, networks. Capability development is noticeably changing and speeding up with the networking power and mathematics of electronic communications. It is less visible in the BB countries, but it is there. For instance, mobile phones are helping to build both economic activity and personal security in poor communities…

Moving beyond economic growth to development will require conceptual frameworks that go much further than welfare economics, particularly the neo-liberal version. Important approaches can be found in the human development and capability framework, in areas including institutional and behavioural economics, and elsewhere. It is more important for societies to be moving in the right direction than to be getting there fast. Will the dominant neo-liberal paradigm recognize its flaws and work with other essential approaches? Most current evidence says 'not very soon'. The page will turn eventually, when global problems get sufficiently large and clear. In the interim, there will be a lot of patient work, a lot of villains who thrive in the North and South with the backing or disregard of the major powers, and a growing tendency to discard the useful and important elements of welfare economics instead of using them for the creation of broader and more effective understanding and practice.

Fortune@BoP; Prahalad

The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits

C. K. Prahalad, Wharton Publishing, 2005
http://www.whartonsp.com/bookstore/product.asp?isbn=0131467506#info4

The world's most exciting, fastest-growing new market is where you least expect it: at the bottom of the pyramid. The last couple of decades have seen great increases in sales, now multinational corporations are seeing markets with sluggish or no growth. One market that's been overlooked is also the fastest growing market in the world, and it's where you least expect it: at the bottom of the pyramid. Collectively, the world's 5 billion poor have vast untapped buying power. They represent enormous potential for companies who learn how to serve this market by providing the poor with what they need. This creates a win-win situation: not only do corporations tap into a vibrant market, but by treating the poor as consumers they are no longer treated with indignity; they become empowered customers. Corporations who service this market form an economic infrastructure, which creates real jobs for the poor, and finally an end to the vicious cycle of poverty. This book is a 3-part manifesto: passionate argument; detailed case studies from India, Peru, Mexico, Brazil, and Venezuela, and range from salt to

soap, banking to cellphones, health to housing; and lastly, a CD with digital videos shot on location, designed to bring these innovations alive. CK Prahalad shows why we can't afford to ignore "Bottom of the Pyramid"(BOP) markets.

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III. CD: 35 MINUTES OF VIDEO SUCCESS STORIES FILMED ON LOCATION IN THE BOTTOM OF THE PYRAMID IN INDIA, PERU, MEXICO, BRAZIL, AND VENEZUELA.

Casas Bahia (3:54)	CEMEX (3:07)
Annapurna Salt (4:05)	Hindustan Lever Limited (4:16)
Jaipur Foot (4:40)	Aravind Eye Care (6:08)
ICICI Bank (4:23)	ITC e-Choupal (4:08)
EID Parry (4:12)	Voxiva (3:33)
E+Co/Tecnosol (4:34)	Andhra Pradesh (3:30)
Innovations in Energy: E+Co's Investment in Tecnosol	Interactive practices text in PDF format
Citizen Centricity: E-Governance in Andhra Pradesh	The EID Parry Story

From Chapter 2: Twelve Principles of Innovation for BOP Markets

1) Focus on price performance of products and services.
2) Innovation requires hybrid solutions. BOP consumer problems cannot be solved with old technologies.
3) As BOP markets are large, solutions that are developed must be scalable and transportable across countries, cultures, and languages.
4) All innovations must focus on conserving resources: eliminate, reduce, and recycle.
5) Product development must start from a deep understanding of functionality, not just form.
6) Process innovations are just as critical in BOP markets as product innovations.
7) Deskilling work is critical.
8) Education of customers on product usage is key.
9) Products must work in hostile environments.
10) Research on interfaces is critical given the nature of the consumer population.
11) Innovations must reach the consumer (both highly dispersed rural market and a highly dense urban market).
12) Paradoxically, the feature and function evolution in BOP markets can be very rapid. Product developers must focus on the broad architecture of the system – the platform – so that new features can be easily incorporated.

The End of Poverty; Sachs

The End of Poverty: Economic Possibilities for our Time

Jeffrey D. Sachs, The Penguin Press, New York 2005
http://www.earth.columbia.edu/pages/endofpoverty/index

Acknowledgements
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 1. Global Family Portrait
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 3. Why Some Countries Fail to Thrive

Common Wealth: Economics for a Crowded Planet

Jeffrey D. Sachs, Penguin Press, New York 2008
http://www.sachs.earth.columbia.edu/commonwealth/

Africa: Cell Phones Could Transform North-South Cooperation

Cindy Shiner, interview with Jeffrey Sachs
http://allafrica.com/stories/200902161504.html

The rollout of broadband Internet services and the rapid spread of cell phones is narrowing the digital divide between Africa and developed countries, and could potentially revolutionize how development assistance works, says Jeffrey Sachs, director of the Earth Institute at Columbia University. He spoke to AllAfrica's Cindy Shiner.

You have said that the cell phone is the single most transformative technology for development. How would you define its importance in terms of what it has done and can do for Africa?

I think it's a remarkable technology. It's incredibly powerful and it's quickly reaching the poor on a market basis. So we have something that... has tremendous power to support development...and the markets are really carrying the rapid scale-up. It's this combination that makes the phones so important. In terms of what they do it's a way to break economic isolation, indeed isolation of all sorts.

Rural poverty has in the past been defined almost by its isolation.

Communities that don't have motor transport, that lack basic roads, electricity -- these communities live by themselves in a state of subsistence. Making business in these settings, even getting very basic information about prices of food products in local markets, being able to make a transaction, being able to hire truck services, being able to call for an emergency, has been impossible until the cell phone. [Now] what we're seeing is cell phones spreading everywhere. Soon pretty much every village is going to have at least one because connectivity is spreading dramatically.

It doesn't take more than a few phones to make a transformative difference in an area. We're seeing small businesses develop by virtue of people having phones, being able to find clients, make purchases, get supplies. There's e-banking or mobile banking, which has been pioneered in a few places, like Kenya, but I think it's just going to spread dramatically now. And more and more we're seeing new services added to the cell phones, and especially as we move from 2G to 3G [second- to third-generation] mobile standards I think we're going to see an incredible burst of new uses of the phones.

The International Telecommunications Union aims to connect African cities and villages by 2015. Is this a realistic goal and to what extent might this help the continent achieve the Millennium Development Goals?

Mobile penetration is expanding dramatically. The number given for 2007 is about 250 million subscribers in Africa and the numbers are continuing to rise very, very rapidly. I would guess that the vast majority of those users have SMS available but generally not Internet connectivity by phone. But there is a lot of rapid upgrading of the mobile networks now so that in some of our areas of work, in the Millennium Villages, we have essentially 3G standards. So there's Internet connectivity coming with the mobile phone connectivity, and that's enabling clinics and schools and other local institutions and businesses to have wireless Internet on computers linked to the mobile networks. Now in addition, there will be a rollout of broadband, not only through wireless Internet, but a spread of fiber.

But in a large part of East Africa there still is a lack of connection of African cities to the Internet backbone other than through satellite, and that's because the submarine cable, as far as I know, still has

not been turned on for East Africa, although it's supposed to be happening soon. There is very little fiber connecting that submarine cable to interior cities. So there's a whole mix of problems here on moving from 2G to 3G standards on cell phone networks and connecting Africa in general, and especially East Africa, to the global Internet backbone.

West Africa has made some more progress.

In 2009 there should be the first East African submarine fiber available on a commercial basis and there are some other systems that are supposedly going to be completed in 2009 and 2010 as well. And then there's going to be a need for a dramatic increase in physical fiber, terrestrial fiber, which I think can happen partly commercially and partly through government and donor financing in future years. There will be a lot of progress, but whether every place is on broadband by 2015 one would tend to doubt. It depends a lot on how technologies evolve and the extent to which the phone networks, which will be pretty comprehensive, will carry broadband by then.

And how will broadband connectivity help in achieving the Millennium Development Goals?

I think that broadband is going to be an incredibly powerful addition to just about every aspect of life -- as we're finding it is in countries that already have it. Certainly in business it's vital for linkages with customers, suppliers, with reducing transaction costs, with breaking monopolies, providing market information.

It will enable schools and universities throughout Africa that have almost no books or libraries right now to have access to global libraries online -- an incredible wealth of information. And this will, I think, change education significantly from the primary school level up through universities and in research communities as well, which up until now have been tremendously hindered with a lack of timely access to cutting edge scientific information.

It's going to change healthcare. We already know of the expansion of ambulance and other emergency medical services increasingly being carried on mobile networks. Broadband will enable a deeper integration of these emergency networks with the primary health system. Telemedicine will really play a role and there are some very good models in India for large-scale telemedicine based on broadband that will be transferred to Africa.

Distance education can use broadband very effectively. We -- the Earth Institute of Columbia University -- are now in the process of partnering with a number of African universities for sharing online material for what we call global classrooms that are linked together through Skype or Internet-based video conferencing. So I think the education side will benefit tremendously.

Financial services are supported both by mobile phones and by computers and so broadband will quickly bring financial services into communities that did not have them before.

I actually think that we've turned the corner on the digital divide -- not that it's closed but that a gap that seemed to be widening pretty relentlessly is now going to be narrowing in the coming years and I think narrowing quite quickly. We'll find that it's in business, it's in emergency services, it's in public education, it's in primary healthcare, banking, distance learning, scientific communications, entertainment and all the rest, and this will make a very big difference.

For mobile phones and high-speed Internet to help Africa develop, this technology must be affordable. How can African governments help support this technological revolution to benefit their people?

I think the first thing that we've seen is that deregulation has been essential -- taking away monopolies. That's happened in a lot of Africa but there still is a lot of deregulation to do because some countries are clinging to monopolies either on the Internet or on the mobile network. So I'd say regulatory policy is the first thing.

The second is a long period of negotiation on the East African fiber. It was delayed by lack of agreement among the governments about tariffs and access and other management issues and I think this delay has been very, very costly.

The third is the extent to which public finance can be used to increase access. Donor countries have promised for a long time to be supporting things like computers in schools or IT systems for public health and so on and some of that is finally starting. The private sector will carry some of this... African governments can do a bit but they can do much more if they get the kind of help to do these things that has been promised from the donor countries.

How about taxes?

Taxes are also part of the regulatory environment. The phone companies have been cash cows traditionally both for governments and often for political parties. This has been one of the reasons for a reluctance in many places to deregulate, but it's a mistaken view and a very costly one. So reducing the taxes and essentially opening up these services for broad competition is really important and a [will bring] very good economic return.

What will an equally connected Africa mean for the developed world?

All of this will be enormously beneficial for Africa's overall development and for its capacity as a partner in providing global public goods. I think that what we'll see is that Africa becomes a more reliable partner in trade, in becoming part of global production networks, in tourism, in cooperation on urgent [matters] such as disease surveillance and sharing meteorological data and other information that is extremely important for global information systems and global hazard management.

Another thing that all of this can do is revolutionize how development assistance works. You can't very easily distribute aid to 10,000 communities separately and so we tended [in the past] to go through national governments. But now with IT systems one can actually have much more sophisticated aid delivery and monitoring systems with a lot more decentralization. And we know when aid reaches the local level it is far more effective and far better monitored. So I think we're going to see from a rich IT system a whole new platform for development cooperation as well.

Can you tell us about the ICT component of the Earth Institute's Millennium Villages Project in Africa?

[The project] covers about half a million people in a dozen countries.

We have a partnership with Ericsson where the company, with incredible generosity and effectiveness, is putting mobile connectivity in all the Millennium Villages. Wherever it's up to regulatory approvals and standards, and technologically possible, Ericsson is providing not only cell phone coverage with the local service providers but also wireless Internet connectivity.

On that basis we're rolling out a large number of interventions in the villages, in public health, in schools, in mobile banking and agricultural finance that will be made a lot easier by the presence of the phones. We're doing some special initiatives with the use of the phones both for training and then empowering community health workers in public health delivery. This is quite a core part of the Millennium Village strategy at this point.

Recently Ericsson completed the connectivity to one of our most remote sites, which is a camel herder and sheep and goat herder village in Kenya, towards the Somali border in a very arid region. Nobody ever in history had made a phone call from this place. Now there is not only phone connectivity, but there is wireless Internet and already a number of small businesses that are being empowered or being enabled by the fact that there is this connectivity.

Creating a World Without Poverty; Yunus

Creating a World Without Poverty: Social Business and the Future of Capitalism

Muhammad Yunus, Public Affairs, 2007
http://www.grameenfoundation.org/yunus_book/excerpt.php

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My first book, Banker to the Poor, told the story of the founding and early development of the Grameen Bank. It also explained the workings of microcredit and its power as a weapon in the global battle against poverty.

This book takes the story a step further. Its purpose is to outline the next phase in the economic and social revolution spearheaded by the Grameen Bank and the microlending movement - namely, the emergence of social business in the vanguard of a worldwide effort to eliminate poverty, unleash the creative energies of all people, and make true abundance possible for every human being.

Three themes are central to this book.

The first is poverty—its causes and cure. I will show that poverty is created by economic, social, and political systems, and by false ideas—not by the laziness, ignorance, or moral failings of the poor.

The second theme is the role of women as drivers of the coming revolution. Current social arrangements especially victimize poor women. If the creativity, energy, and desire for family improvement that are latent in hundreds of millions of the world's women can be unleashed, nothing can stand in their way.

The third theme is technology as a crucial enabler of the revolution. New ways of managing and communicating information are already changing lives the world over. Now these tools must be made available to everyone, including residents of the most remote villages in Asia, Africa, and Latin America. The result will be decentralization of economic and political power as worldwide markets in ideas, goods, and services become accessible to all.

When I give public talks about my work, I usually end by sketching my vision of the world of the future. Imagine a world in which there are no more poor people. In such a world, when a child asked his or her parents, "I saw the word poverty in a book—what does it mean?" they would reply, "We'll take you to visit the poverty museum."

Perhaps this idea seems impossible, a remote goal that could never be achieved. But consider this: For thousands of years, the world always had smallpox. Millions of women died from complications of childbirth. Sufferers from mental illness were trapped in helpless agony and loneliness. Most countries were ruled by tyrants or hereditary elites. Few people lived beyond the age of thirty.

Today, all these conditions have been swept away, thanks to science, technology, education, and social progress. Most of all, improvements in living conditions have been produced by new ideas. People began to see that illness was caused by microbes, not by evil spirits; that simple measures like sanitation could drastically reduce disease; that human beings, given the opportunity, were capable of governing themselves. When the time is right, a new idea is capable of transforming the world.

The time has come for the new idea of social business to lead the world's next great transformation—to take the vision of a world in which poverty can be found only in a museum and turn it into reality.

Prepare bailout package for the world's poor

Dr. Yunus' lone voice at Davos reverberates
http://muhammadyunus.org/content/view/190/128/lang,en/

NOBEL Laureate Muhammad Yunus, alone among all participants at the World Economic Forum in Davos, has spoken of the need for a safety net for the world's poor. His remarks, made against the backdrop of the on-going global recession, drive the point home that for all the bailouts that

governments have been planning for global corporate business not much can be expected if the plight of the poor is ignored.

We are of the opinion that by focusing on the issue, Yunus has in his own way drawn necessary attention to a crisis that just might be up ahead for the poor nations of the world. It should now be for the more prosperous, though gravely afflicted affluent societies, to refocus on the issue. With former US president Bill Clinton endorsing Yunus' suggestions, the shaping of a concerted approach here ought not to be a problem.

Indeed, the worldwide recession has revealed a number of factors that one did not quite anticipate in the last twenty years. The collapse of companies and financial institutions nearly everywhere has not only meant a loss of jobs but, more worryingly, has exposed their basic institutional weaknesses. Which is a good reason why at Davos this year, the corporate sector was conspicuously absent. For a change, the usually dominant, sometimes domineering, attitude the business sector adopted at the annual WEF year after year was absent. Instead, it was government leaders from Europe and elsewhere who were in charge. That did not much help matters, though, since the Davos conference failed to emerge with anything resembling hope for the world. The rich nations did not speak for the poor. Yunus did, to his credit. One will be forgiven for thinking that Davos this year was a meeting of desperate minds which eventually were left looking for ideas that were not there.

With the old razzmatazz of Davos now having dwindled to pale light, Dr. Yunus' emphasis on relief for the poor is a call of conscience that cannot be trivialised. Where Bangladesh is concerned, the bailout package idea for the poor that Yunus has suggested should now be picked up by our diplomatic establishment as a strategy. On its own and in association with other nations, Bangladesh can focus on the fallout of the recession on poorer societies and on how best the world's rich nations (their lifestyles will not change, as Yunus has pointedly noted) can contribute to the effort to keep them going. In this connection, Dhaka will need to bring a fresh perspective into its dealings with donor nations and organisations and vice versa in order to arrive at a respectable, acceptable solution to the problems of poverty lurking all around.

A Poverty Free World- When? How?

Romanes Lecture at Oxford University, held on December 2, 2008
http://muhammadyunus.org/content/view/177/127/lang,en/

… I have chosen today as the title of my speech "A Poverty Free World- When? How?" because I believe that not only is poverty the most pressing issue of our time, I also believe, at the same time, that it is a problem that we have fully the capacity to tackle and overcome within the first half of this century - if only we choose to do so.

I am a compulsive optimist as far as poverty is concerned. I am an optimist because I am convinced that poverty is not as difficult or complex an issue as we are constantly told it is. After all, poverty is about people. I have always said that the ingredients for ending poverty comes neatly packaged within each person. A human being is born in this world fully equipped not only to take care of him or herself, but also endowed with the ability to enlarge the well being of others in the world.

Why is it then that more than a billion people on the planet suffer through a life-time of misery and indignity, spending every moment of their lives looking for food for physical survival alone?

Poverty is not created by Poor People

Poverty is not created by the poor people. Rather it is created by the economic and social system that we have designed for the world. It is created by the institutions that we have built, the concepts we have developed by the policies borne out of our reasoning and theoretical framework. In order to overcome poverty, we have to go back to the drawing board and redesign our concepts and institutions.

The Banking System

One major institution that needs to be redesigned is the financial institution. There is something fundamentally wrong with an institution that leaves out more than half the population of the world, because they are consider not credit worthy. This is what my work with Grameen Bank has been about, to design a banking method which can deliver the financial service to the people left out, particularly to the women, the most difficult to reach...

Capitalism and the Financial Crisis

Banks explain that poor people are not credit worthy. But the real question to ask is whether banks are people worthy. In the context of the total collapse of the financial system, this question becomes more relevant and urgent. We are still in the midst of the worst financial crisis of the century. In Grameen Bank there are no legal instruments between lender and borrower, no guarantees, no collateral. You can't get riskier than that, and yet our money comes back while the prestigious banks all over the world are going down with all their intelligent paperwork, all their collateral, all the lawyers and legal systems to back up their lending. This contrast raises many questions in one's mind…

With the collapse of the housing market in the United States, the whole house of cards has come down. Millions of people around the world who did nothing wrong are suffering. And the worst effects, as usual, will be felt by the poor. As economies falter, as government budgets collapse, and as contributions to charities and NGOs dwindle, efforts to help the poor will diminish. With the slowing down of economies everywhere, the poor will lose their jobs and income from self-employment.

Bailout cannot be relied on as solution to market problems. In the long-run, self-protection is possible only when market can ensure that it will not allow a crisis to develop in the first place…

I believe we can tackle some of these challenges within the free market system of capitalism provided we design appropriate built-in mechanism to protect the system.

Capitalism is Half-Done Structure

Even if we can overcome the problem of financial crisis, we'll still be left with some fundamental questions about the effectiveness of capitalism in tackling many other unresolved problems. In my view the theoretical framework of capitalism that is in practice today is a half-done structure.

The theory of capitalism holds that the marketplace is only for those who are interested in making money, for the people who are interested in profit only. This interpretation of human being in the theory treats people as one-dimensional beings. But people are multi dimensional. While they have their selfish dimensions at the same time they also have their selfless dimensions. Capitalism, and the marketplace that has grown up around the theory, makes no room for the selfless dimensions of the

people. If some of the self sacrificing drives and motivations that exist in people could be brought into the business world to make impact on the problems that face the world, there would be very few problems that we could not solve…

CSR vs Social Business

Corporate social responsibility (CSR) is considered to be a part of company policy nowadays. CSR usually means let us make money, and then use part of that wealth to help society…

I am proposing a different structure of the market itself; I am proposing a second type of business to operate in the same market along with the existing kind of profit maximizing business. I am not opposed to the existing type of business (although I call for many improvements in it like many others do.) I am proposing a new business in addition to the existing one. This new type of business I am calling "social business," because it if for the collective benefit of others.

This is a business whose purpose is to address and solve social problems, not to make money for its investors. It is a non-loss non-dividend company. Investor can recoup his investment capital. Beyond that there is no profits to be taken out as dividends by the investors. These profits remain with the company and are used to expand its reach, improve the quality of the product or service it provides, and design methods to bring down the cost of the product or service…

The concept of a social business crystallized in my mind through my experience with Grameen companies. Over the years, Grameen created a series of companies to address different problems faced by the poor in Bangladesh. Whether it is a company to provide renewable energy or a company to provide healthcare or yet another company to provide information technology to the poor, we were always motivated by the need to address the social need. We always designed them as profitable companies, but only to ensure its sustainability so that the product or service could reach more and more of the poor - and on an ongoing basis…

Some people are skeptical. Who will create these businesses? Who will run these businesses? I always say that, to begin with, there is no dearth of philanthropists in the world. People give away billions of dollars. Imagine if those billions could be used in a social business way to help people. These billions will be recycled again and again, and the social impact could be all that much more powerful. CSR money of the companies could easily go into social businesses. Each company can create its own range of social businesses.

Once the concept of social business is included in the economic theory, millions of people will come forward to invest in the social business because they all have those social dreams in their hearts. We will need to create social stock markets to channel these funds to appropriate social businesses.

Information Technology Can Help End Poverty

The other area where huge strides are being made is in the area of information technology. The advances being made are happening at such a rate that it is difficult to keep up. All manners of gadgets, devices are being created, making those that have come before obsolete in very short periods of time. Websites and online platforms are transforming the way we communicate, do business and interact with each other. The world is getting smaller, but only for those who can afford the technology, and for those who are trained to use it. Unless it is properly directed, the way these advances are taking place , it will go on to deepen the digital divide.

I have been arguing for years that technology could play a powerful role in closing the gaps between the rich and the poor, in a way that other things cannot do. If we could channel some of this brilliant creativity and innovation into creating IT solutions to the problems of the poor, we would succeed much more quickly in our race to end poverty. From e-healthcare and mobile phone banking to online market places to sell the products and services of the poor around the world, we are beginning to see what the possibilities are.

The future of poverty, as I see it, will be decided by the technological devices and services that are designed a priori for poor people. These will be designed with their needs in mind, rather than those created for the well off and adapted for the poor. We have the technology, but we have to transform it into the digital genie for the poor.

A broad range of technology has a fundamental role to play in the current global food crisis that we are seeing today. The poor countries like Bangladesh are facing the brunt of this crisis. The shortage of food will wreak havoc in the lives of millions of the poor. As populations rise, their incomes and expectations rise, the global demand of food will continue to rise steadily. We need new technological revolution in agriculture, to ensure that we can have a much higher output of food, grown on the finite amount of land that is available to us. With all the advances taking place today, there is no question that we can come up with breakthroughs in agricultural production, in terms of both yield and quality.

It's disheartening to see many of the world's poorest falling back toward poverty just when we thought the planet was ready for a big step forward. We had thought food shortages were a thing of the past, but now they are back—not due to any lack of productive capacity on the part of the world's farmers, and certainly not due to lack of effort by the farmers themselves, but due to forces that could have been averted—the economic crisis and the world's failure to address the need to improve agricultural technology to increase yields. We have to focus our attention at the global level to tackle this great new challenge to the world's poorest…

Poverty can be overcome

The thought that always energizes me is that the poverty is not created by the poor people. Poverty is an artificial imposition on the people. Poor people are endowed with the same unlimited potential of creativity and energy that any human being in any station of life, anywhere in the world. It is a question of removing the barrier in front of the poor people to unleash their creativity to solve their problems. They can change their lives, only if we give them the same opportunity that we get. Creatively designed social businesses in all sectors can make this unleashing happen in the fastest way.

We are fortunate enough to have been born in an age of great ideas and great technologies... You the next generation, have to decide that poverty no more! We overcame slavery. We overcame apartheid. We have done other things that people once thought impossible. We have put persons on the moon, into space to explore far away worlds. We can overcome poverty, if only we decide that this does not belong to the world that you want to create. It is up to your generation to decide the world you choose to live in will not contain the scourge of poverty.

3. Mobiles and ICT: Access, Uses, Services

LIRNEAsia

Teleuse at the Bottom of the Pyramid 3 (Teleuse@BOP3)

http://lirneasia.net/projects/2008-2010/bop-teleuse-3/

Terms like the 'next billion' and the 'bottom of the pyramid' have now become commonplace in the telecom industry. Emerging markets have accounted for 85 percent of new connections today, according to the GSM Association; China, India, as well as Russia and Brazil together have contributed 30 percent of the third billion subscribers alone. Mobile communication is spreading in emerging markets so rapidly that industry experts are predicting that many in the developing world will experience the Internet for the first time on a mobile rather than a PC. Mobiles are now (and will increasingly become) payment devices that can also send/process/receive voice, text, images; in the next few years they will also be capable of information-retrieval and publishing functions normally associated with the Internet.

LIRNEasia conducted two consecutive demand-side surveys on telecom use at the BOP in 2005 and 2006. Teleuse@BOP1 serving essentially as a pilot, surveyed 3,200 respondents among teleusers at the BOP in 7 districts in India and 4 in Sri Lanka. Teleuse@BOP2 was based on a 6,269 representative-sample survey, representative of teleusers at the BOP in Pakistan, India, Sri Lanka, the Philippines and Thailand. The key findings uncovered a phone-owning potential for 115 million current non-owner users at the BOP between mid-2006 and mid-2008 in the five countries studied alone.

Teleuse@BOP3, similar to previous studies, aims to explore issues on the rise, and provide insight into these areas of interest to better equip policy-makers to develop appropriate policies, for industry to craft appropriate products and services and for more people at the BOP to join the information society. One particular issue that will be explored is the rise of 'more-than-voice' or 'Mobile2.0 applications at the BOP, the underlying theme of LIRNEasia 's 2008-2010 research program. The study will explore the use of these applications, most specifically relating to mobile payments, especially remittances by expatriate workers. The study will also capture the teleuse experience of migrant workers in the countries where the study is conducted.

Telecom use on a Shoestring: a Study of Financially Constrained People in South Asia

http://lirneasia.net/projects/2004-05/strategies-of-the-poor-telephone-usage/

The aim of this research is to understand the use of telecom services by the 'financially constrained' people, or bottom of the pyramid (BOP) in three countries in South Asia, namely Bangladesh, India and Sri Lanka. The findings on Bangladesh are based on a meta-analysis based on the wealth of information already available, and are available in a separate paper (available below). The findings

on India and Sri Lanka are the result of a survey that was conducted in the two countries in April and May of 2005, and are available below(Scroll down for downloads). A brief introduction to the survey and its findings is below.

The survey seeks to answer questions such as how do the financially constrained communicate? why they choose to use the form of access that they use, i.e., fixed, mobile or public? how do they use telecom services? what benefits do they gain from use?

The survey was implemented in seven different localities in India and four in Sri Lanka; the different localities were selected, not to get a representative sample of either of the two countries, but to capture the diversity within the two countries, taking snapshots of eleven very different markets, in terms of telecommunications access, economy, population and geography.

The results of the research have revealed a striking finding, that amongst the 'financially constrained' (defined by income level and socio-economic classification) users sampled, almost two thirds do not even own the phone that they use. This means that in the conventional indicator used to gauge telecom access, teledensity –the number of telecom subscribers per one hundred inhabitants – this segment of users are not accounted for.

Additionally, 31 per cent of fixed owners and seven per cent of mobile users allow other people (non-family) to use their phones. Most often, owners did not charge for use, but where respondents do charge others for using their phones, the amount charged was either below or at cost. This has compelling implications for operators, given that one connection serves more than one user's needs.

Respondents were found to be using the phone more for 'relationship maintenance' (e.g., keeping in touch, etc) rather than instrumental purposes (e.g., business transactions). At first glance this seems counter-intuitive, given that these 'financially constrained' users as defined, have monthly incomes of less than USD100 (as defined by the methodology used); however it is very plausible that the distinction between relationship maintenance and instrumental calls is not clear, for instance where small businessmen do business with relatives.

It was found that in choosing a mode of access (i.e., fixed, vs. mobile vs. public access), convenience factors (for e.g., ease of access, mobility, ease of use) played as important a role as cost factors.

Although mobile users perceive the service to be expensive, they still are willing to spend a considerable amount of their incomes on it. Seventy per cent of mobile users perceive the cost of mobile communication to be either 'high,' 'very high' or 'extremely high.' Yet 64 per cent of mobile users spend at least USD4 per month on mobile communication; amongst these users, whose monthly household income is no more than USD100 this yields a conservative estimate of at least 4 per cent of monthly income being spent on telecommunication. This percentage was found to be even higher in places like Jaffna, where one third of mobile users were found to be spending over 12 per cent of monthly income on telecommunication, much of which is spent on international calls.

There is clearly a great unmet demand amongst financially constrained people, with many stating that they would increase use should prices come down by half, particularly amongst mobile users (49 per cent, compared to 26 per cent of fixed users and 26 per cent of public access users).
Another key set of findings relate to gender patterns in the use of telecom services. There is extensive literature that supports the thesis that women and men differ significantly in their use of telecom services; women are said to use the phone more than men, spending more time on the phone, and

more for 'relationship maintenance' purposes rather than instrumental purposes. The findings in both India and Sri Lanka show no significant differences on these factors other than for a few. For example, 17 per cent of male mobile users use mobiles for business transactions and enquiries, while the corresponding figure for females is four per cent; this might be explained by the occupation of these males, being traders and businessmen.

Several detailed studies' have been developed from the vast source of data that has been obtained. Some of these look at:

* 'Strategies' in the use of telecom services (paper available for download below)
* Expenditure and cost perceptions (paper available for download below)
* Case-study of telecommunication use in Jaffna, a post-conflict society

Teleuse on a Shoestring:

Poverty reduction through telecom access at the 'Bottom of the Pyramid'
Harsha de Silva & Ayesha Zainudeen
http://www.lirneasia.net/wp-content/uploads/2007/04/lirneasia_teleuse_cepa_-mar07_v30.pdf
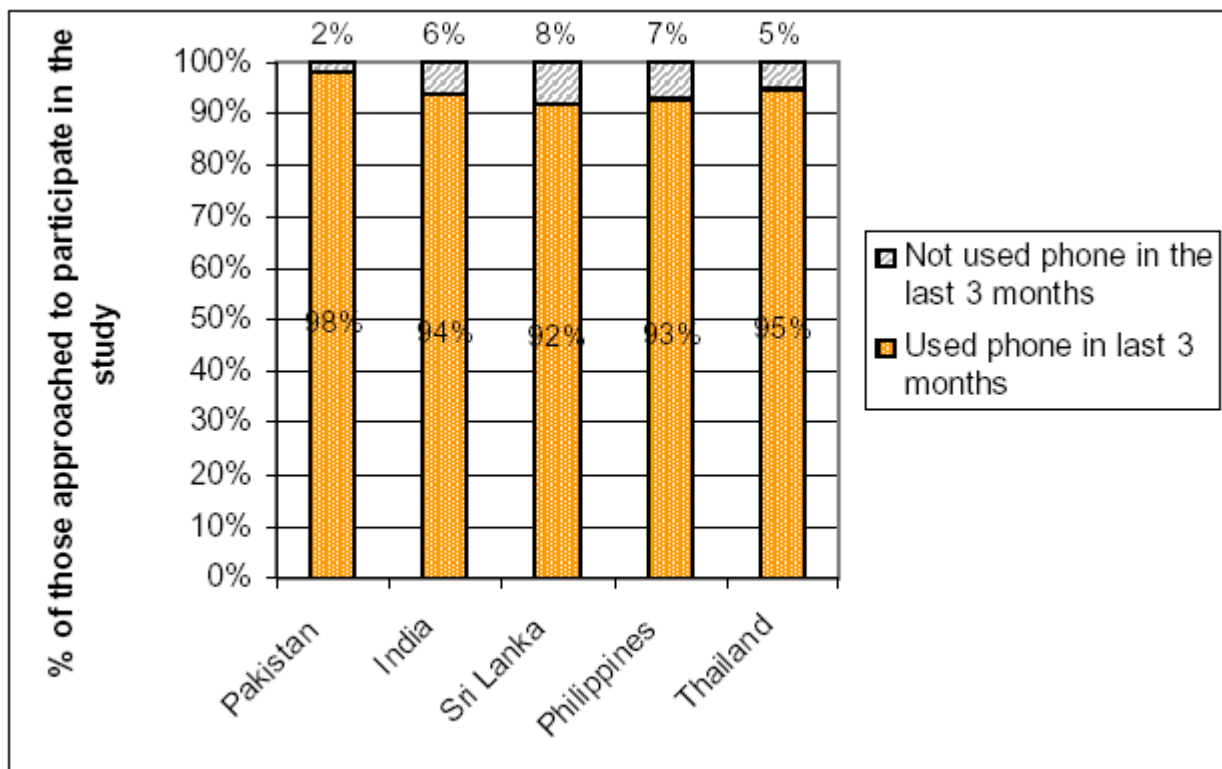
Figure 1: Use of a phone in the three months preceding the study.

However, what we find is that while people have access to many different modes of telecommunication (personal mobile phones, household fixed phones, public phones, neighbours' phones, relatives and friends' phones, etc.) ownership patterns vary significantly across the region as seen in Figure 2.
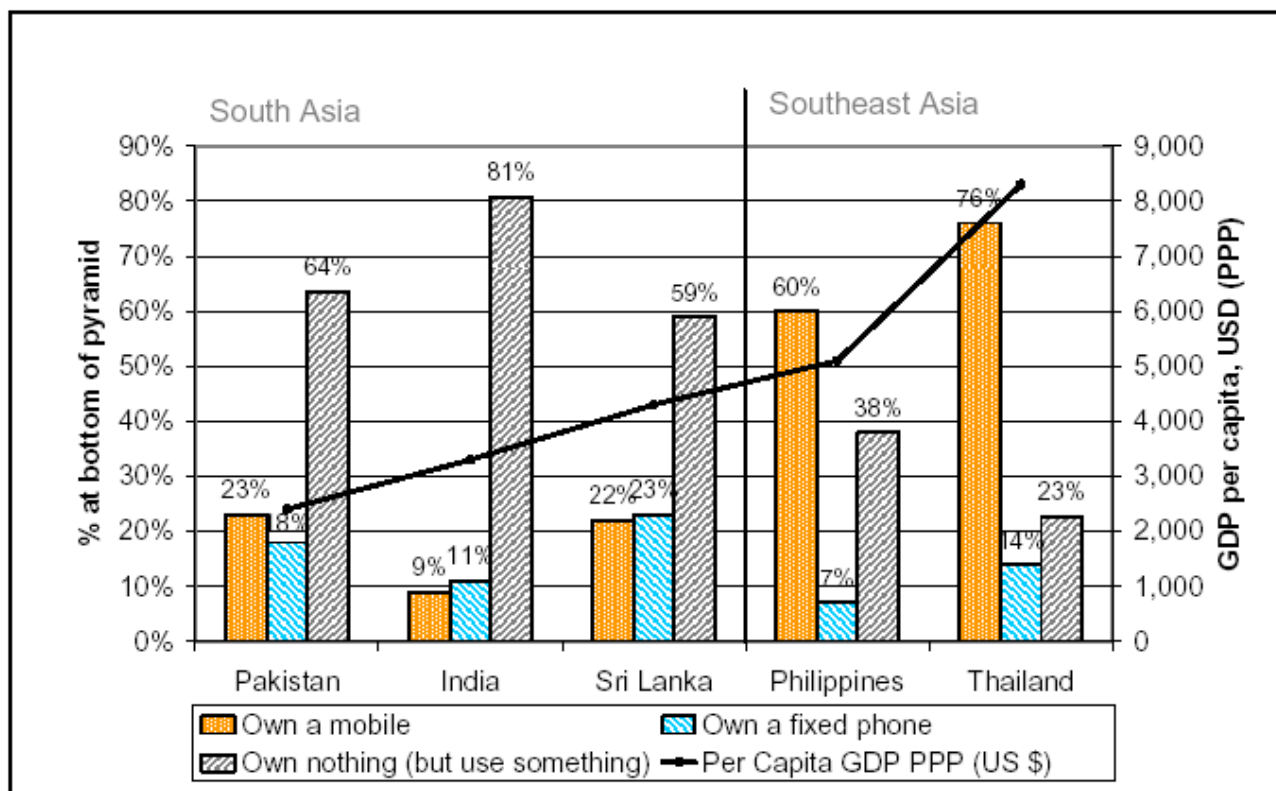
Figure 2: Ownership patterns at the BOP and national *Gross Domestic Product*

The current study seeks to ascertain quantifiable evidence at the household level in the BOP of such income benefits. We look at how direct access to telecom (or ownership) is perceived to increase efficiency of daily activities at the BOP and how telephone owners at the BOP see that as translating to either a greater income earning or cost savings, if at all. In order to capture this, owners of phones were asked to rate on a five-point scale, inter alia, the extent of the impact that direct access (that is ownership – either through a personal mobile phone or household fixed phone) has had on:
a) the efficiency of their daily activities; and
b) their ability to earn more using the phone or save a certain expense that would have been incurred without the phone.

Across the five countries, those at the BOP strongly perceive that the efficiency of their daily activities has 'somewhat improved' due to telephone ownership. There is no major variation in the individual country perception and the ratings are clustered around 4. This is very much an intuitive finding and we have been able to support it using data with a high level of confidence.

Efficiency of daily activities on a scale of 1-worsened), 2-slightly-woesened, s no-change, 4-slightly-improved, 5-improved:
    India (3.90)   Sri Lanka (3.98)   Pakistan (4.17)   Thailand (4.37)   Philippines (4.40)

The impact of direct access to telecom on the efficiency of daily activities (mean response)

In general we find that people value highly the contactability anytime, anywhere that (particularly) mobile communication allows. In fact, the contactability brought about through phones is one of the key reasons that are seen to be driving people to get their own connections. The ability to obtain information (any information) in an instant is also highly valued. Some interesting findings that emerged from the Pakistani qualitative studies, the only Muslim country where separation of men and women were relatively more pronounced, were that the males supported the notion that mobiles have reduced the dependence of females on the males in running general home errands.

When it comes to perceived economic benefits, there are mixed feelings at the BOP with the mean response ranging from 3.19 in Sri Lanka to 4.07 in the Philippines, as seen in Figure 4. Indians seem to be obtaining the most economic benefits from direct access with an increment of their perception score moving up from 3.90 for efficiency gains to 3.97 in ability to earn or save. On the other hand, Filipinos who perceive economic benefits at 4.07 however rates it lower than efficiency gains at 4.40... There appears to be a 'disconnect,' in people's perceptions between efficiency gains (for e.g. saving travel time and cost) and financial gains, which at the outset seems counter-intuitive. There are a number of possible reasons for this.

Efficiency of daily activities

Pakistan (4.17)
Thailand (4.37)
Sri Lanka (3.98)
Philippines (4.40)
India (3.90)

| 1 worsened | 2 slightly worsened | 3 no change | 4 somewhat improved | 5 improved |
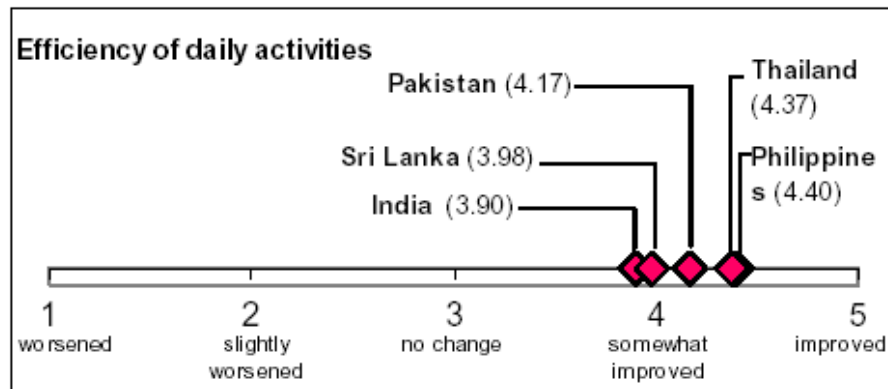
Figure 3: The impact of direct access to telecom on the efficiency of daily activities (mean response)

Ability to earn or save

Pakistan (3.80)
India (3.97)
Philippines (4.07)
Thailand (3.56)
Sri Lanka (3.19)

| 1 worsened | 2 slightly worsened | 3 no change | 4 somewhat improved | 5 improved |
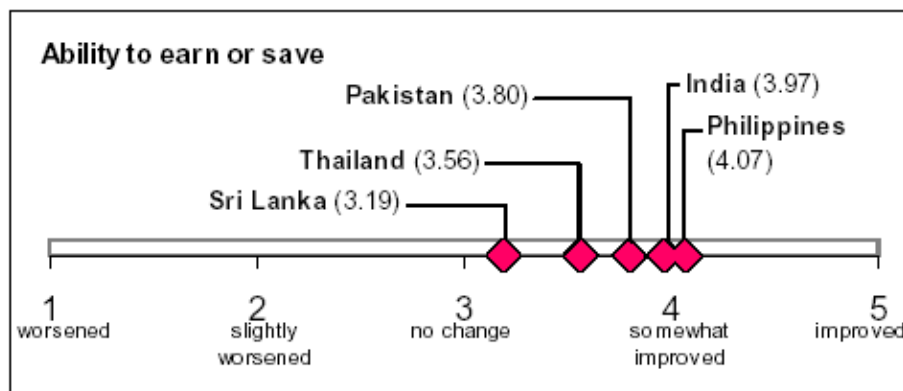
Figure 4: The impact of direct access to telecom on the ability to earn more using the phone or save a certain expense that would have been incurred without the phone (mean response)

Firstly, a reason for this finding that access to telecom is not necessarily seen as increasing the earning and cost saving potential is perhaps because people at the BOP do not use phones directly for business purposes (such as purchasing supplies, etc), as seen in the diary responses (Table 6 below), as well as in other studies (Zainudeen et al., 2005; Souter et. al, 2005). It appears that people prefer other modes for their business communication, for example, Souter et al. (2005) found that face-to-face communication is 'overwhelmingly' the preferred mode for specific information relating to farming, business, education, and political or government matters. Perhaps changing historical and cultural factors in the region placing importance of face-to-face contact for business purposes may take time even though the benefits of using the phone instead seem theoretically more beneficial.

Another reason for this finding could be the relative importance of a barter economy at the BOP, whereby there is a large degree of overlap between family/friends and business contacts. As a result, the lines between economic transactions and social communications become blurred. For example, it may be implicit that one's brother looks after you when times are hard and although your brother is effectively your insurer, one may not assign a positive economic value to a weekly call to 'keep in touch' with one's brother; instead, one may only see it for the direct cost that is incurred. This is evident in the vast majority who stated that having access to the phone has enhanced their family and social relations, discussed later in this section.

A third reason for the relatively lower perception of economic benefits vis-à-vis efficiency benefits due to telecom ownership could be high perceptions of the cost of service; this could be the case in Sri Lanka, where startlingly, a quarter of phone owners felt that having access to a telephone had in fact worsened their ability to increase their incomes or make savings. Here, phone owners may feel that the cost of service (may or may not be actual) is greater than the benefits gained, thus leaving a net cost. For instance in Sri Lanka, the worst performer on this count, it was found that perceptions of how much it costs to make a call were higher than in other countries. Moreover, Sri Lanka is the only country among the five not to have a Calling Party Pays (CPP) regime, in that in Sri Lanka receiving a call on a mobile phone also attracts a charge.

Notwithstanding the above we find that in India, Pakistan and the Philippines, for example, more than 60 percent of those engaged in agriculture feel that access to telecom improves both the efficiency of their daily activities as well as improving their ability to earn or save more. This goes to show that not only the cost, but also the availability of relevant information (for instance agricultural prices via phone and SMS etc.) perhaps plays an important role in translating efficiency gains in to financial gains. Furthermore, a reason for the 'disconnect' could be the mere fact that there is a limited group within society who make direct earnings by using a phone, i.e., those that sell minutes and those that use the phone to sell their product or service; these are the kinds that are most likely to see a connection between the telephone and their earnings, if any. The relevant point is that the efficiency gains that are created via greater access to telephony at the BOP are not necessarily seen as translating in to poverty alleviation through greater direct income generating potential.

Besides the above impacts, the study also considered the impacts of access to telecoms in enhancing family and social relations; status and also in acting in an emergency.
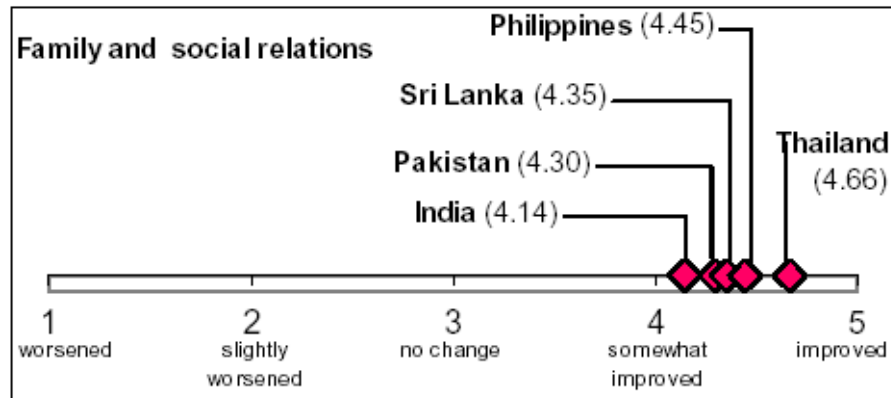
Figure 5: The impact of direct access to telecom on family and social relations (mean response)
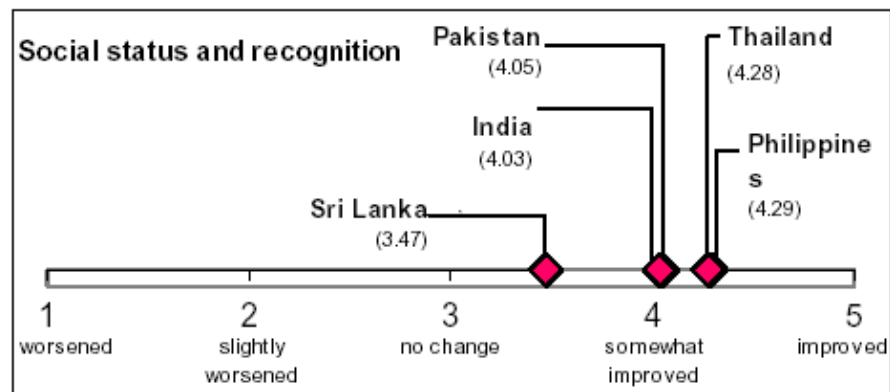
Figure 6: The impact of direct access to telecom on social status and recognition (mean response)

The biggest and most widespread impact of access to telephones at the BOP is in creating a sense of security; the ability to act in an emergency. The ability to contact someone or even get help in the vent of conflict, illness or death or even a broken bicycle (cited by participants in the qualitative studies) for example is an important benefit of access.
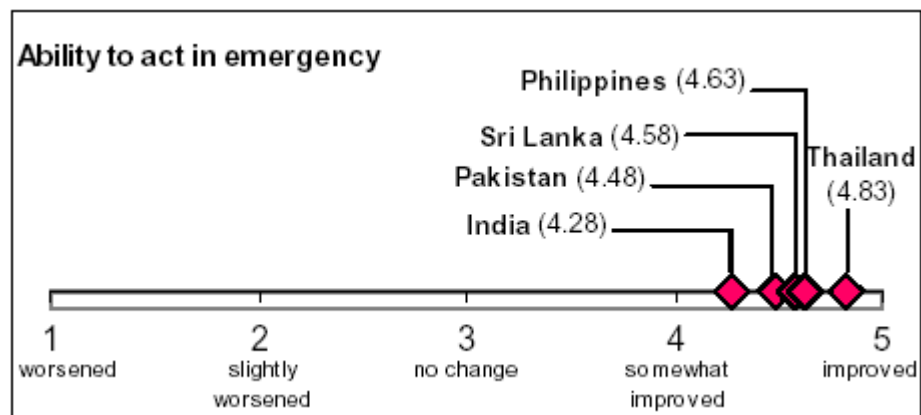
Teleuse at the Bottom of the Pyramid 2 (Teleuse@BOP2)

http://lirneasia.net/projects/2006-07/bop-teleuse/

Comment
Selected perspectives from these materials

Figure 1 – **Primary access mode (most frequently used) at the BOP (%)**
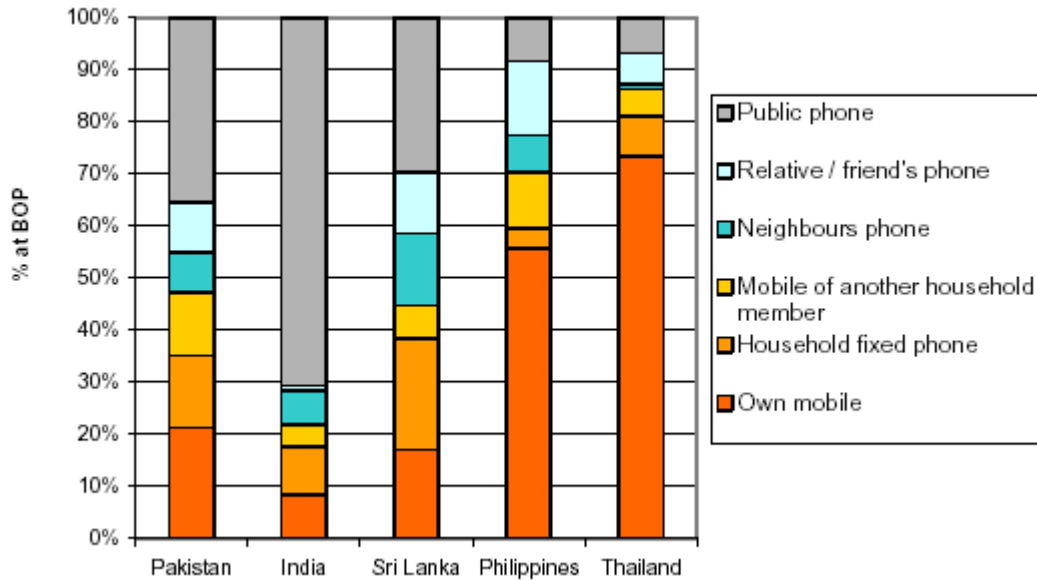
Table 7 – **Access to a phone at the BOP: Primary phone used by males versus females (%)**

		Pakistan	India	Sri Lanka	Philippines	Thailand
Fixed phone	Male	11	9	19	3	4
(household owned)	Female	16	10	23	4	12
Mobile phone	Male	30	12	22	56	76
(individually owned)	Female	11	5	12	55	70
Public access	Male	45	71	31	7	7
phones	Female	24	70	26	7	6
Other peoples'	Male	13	8	27	34	13
phones (other household members, neighbours, friends, relatives, workplace)	Female	48	16	39	33	12
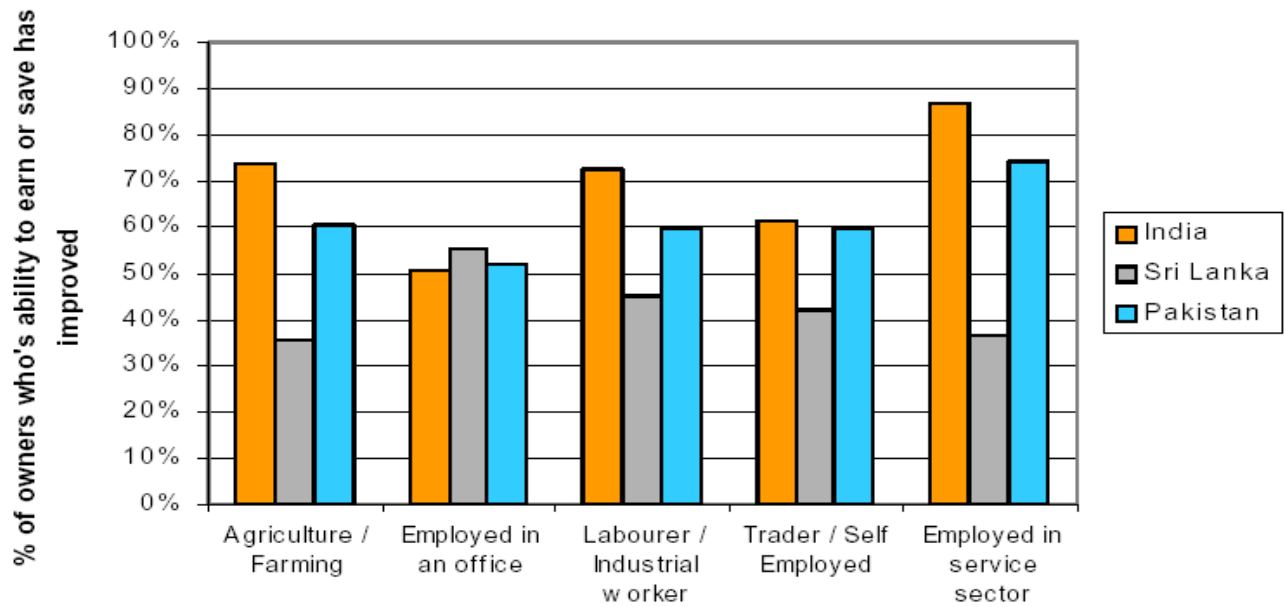
Table 3 – Projected ownership growth at the BOP

	South Asia			Southeast Asia	
	Pakistan	India	Sri Lanka	Philippines	Thailand
Plan to buy a phone between mid-2006 and mid-2008 (% of BOP)	53%	38%	53%	42%	38%
Projected horizontal growth (non-owners joining market), millions	26.0	79.7	1.3	6.5	1.3
Projected vertical growth (current owners getting additional connections), millions	7.3	3.6	0.3	11.9	2.8
Projected new connections at BOP, millions	**33.3**	**83.4**	**1.7**	**18.4**	**4.0**
Projected total new connections at the BOP across all five countries, millions					**140.7**

Affordability as big a problem for urban as rural

Cannot afford to own a phone
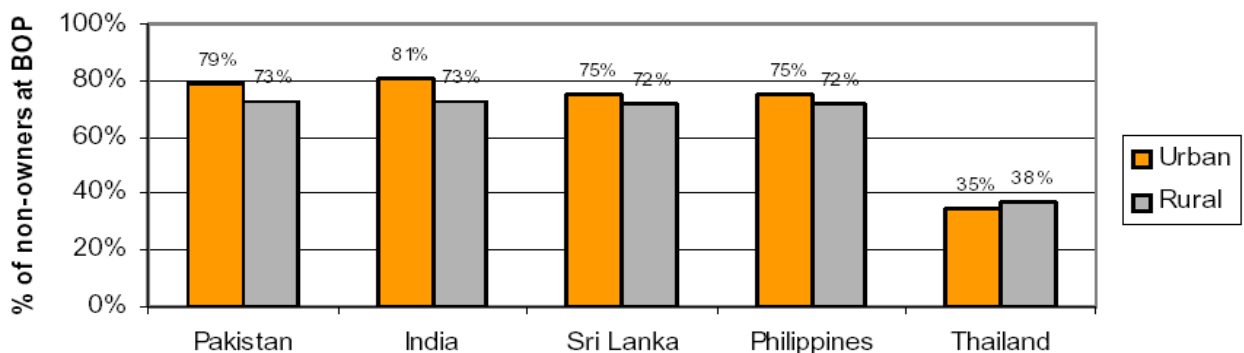
Those who plan to buy a new phone during next two years

% of non-owners at BOP

	Male	Female
Pakistan	64%	43%
India	39%	36%
Sri Lanka	70%	52%
Philiphines	43%	41%
Thailand	47%	28%
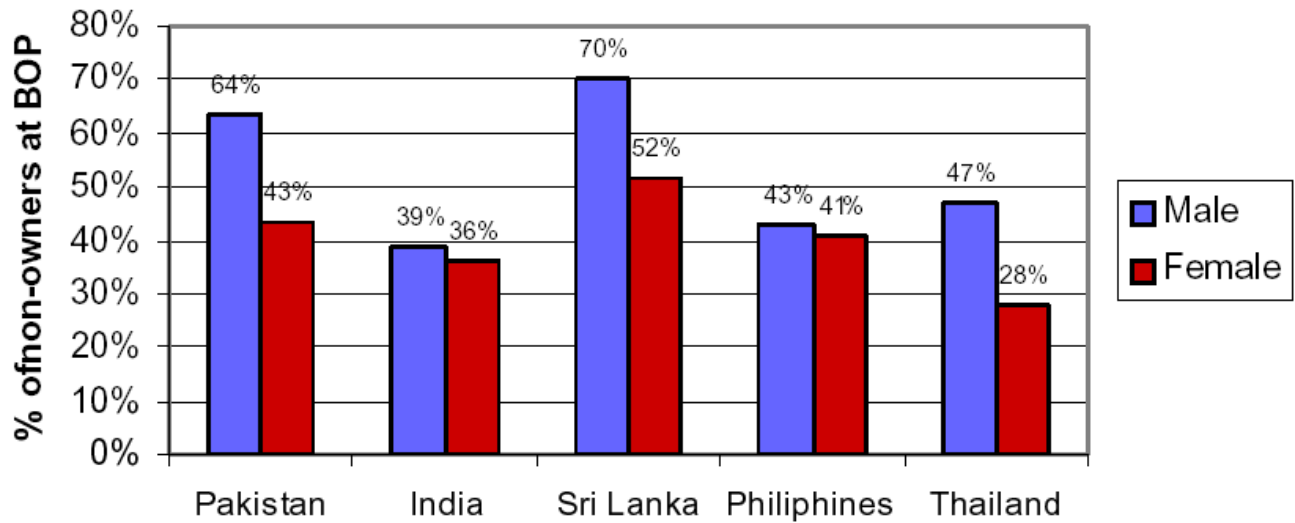
Income distribution of prospective owners

% of prospective owners

	USD151-500	USD51-150	Below USD50
Pakistan	9%	48%	27%
India	1%	44%	55%
Sri Lanka	9%	56%	35%
Philippines	28%	64%	5%
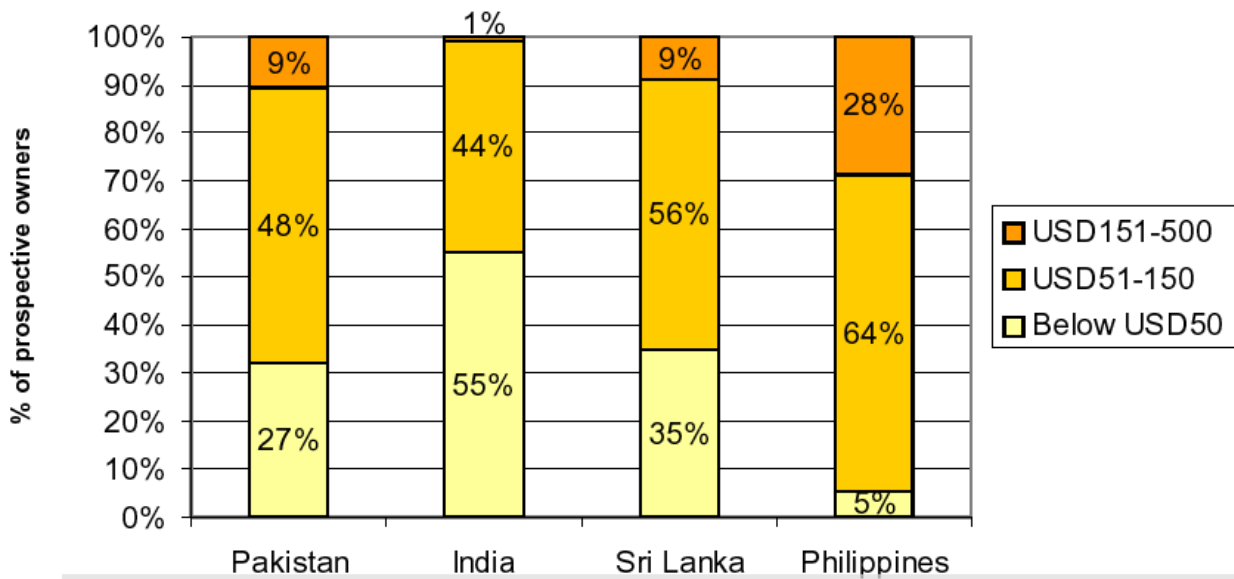
The addressable market does not stop at USD100 per month; it goes down further.

Internet use
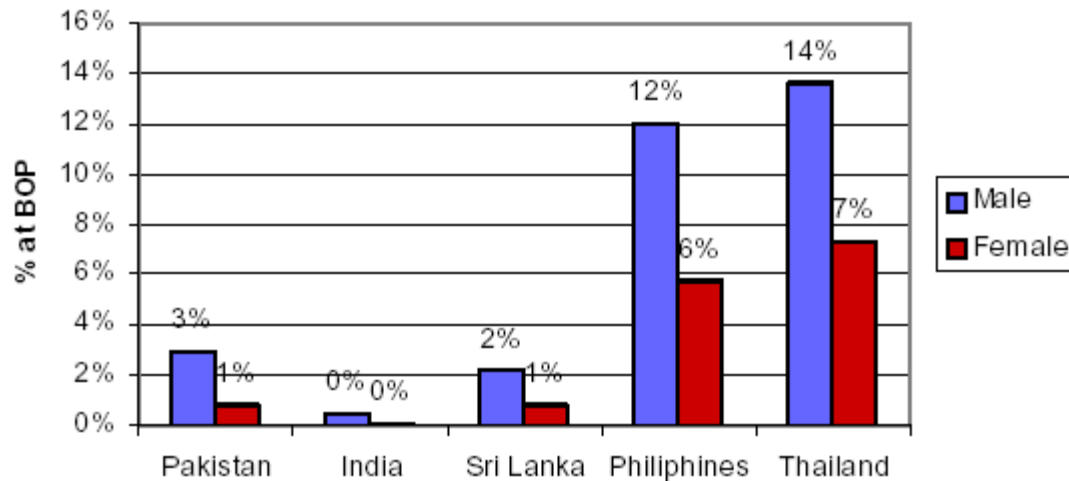
BOP in summary

- □ Almost everyone can afford to use a phone, but not to own one
- □ Benefits of ownership (direct access) are known
  - ■ Perceived as improving efficiency *and* income in India
  - ■ Phones are highly valued for emergency communication and keeping in touch
- □ High price expectations drive a cost-cutting culture
  - ■ BUT, this is not a bad thing: it seems to be driving **affordable access** at the bottom of the pyramid
- □ Next Billion: affordability is a key barrier
  - ■ 140m at the BOP in IN, PK, LK, PH, TH in next 2 years
  - ■ The addressable market does goes below USD100 a month
  - ■ Individual use is still very low; Internet far far away

What is to be done?

- □ Policy makers/regulators
  - ■ Sustain competitive conditions
    - □ India has lowest HHI concentration ratios
  - ■ Improve regulatory environment on all fronts
    - □ Universal service and spectrum management seen as most problematic by stakeholders responding to TRE questionnaire
  - ■ Encourage well-functioning second-hand market (e.g., Pakistan)
    - □ Exclude stolen sets by mandating equipment registration
  - ■ Rethink tax regimes: move away from taxing handsets
  - ■ Accelerate USO Fund disbursements and infrastructure sharing to increase rural coverage
  - ■ India can show the world how to do it

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Concluding remarks

This study finds that almost everyone at the bottom of the pyramid in Pakistan, India, Sri Lanka, Philippines and Thailand have access to telecommunication services without having to spend any significant amount of time or money in getting to a telephone. Another way of interpreting this finding is that there appears to be universal access at the BOP in these countries, bringing to the forefront the validity of the argument of the existence of any significant inequality in access.

However the gap between those who use telecom services and those who actually own a telecom device is extensive indicating a vast potential for greater ownership of telephones in the region. This potential could be as high as 150 million new connections in the next two years, given policy makers and operators could make such connections and use thereafter affordable.

Telephone ownership is perceived to provide a much higher benefit in providing a sense of security in terms of acting in an emergency and in maintaining social relationships than benefiting financially though the potential for greater income earning ability and saving costs at the BOP.

High prices, both perceived and actual (due to use of commercial and other people's phones) appear to be a considerable hindrance for users at the BOP, preventing phone owners (and in the same spirit, probably non-owning users) from availing of net benefits of access.

Another equally or even more important issue is the inability at the BOP to clearly identify the link between efficiency gains and its transmission in to potential for greater income generation and/or cost saving. For instance, users at the BOP do not seem to see how instant access to important information might be helpful in making decisions that could enhance one's earning capacity or how gaining an hour (otherwise spent personally conveying a message by foot) could help reduce transactions costs. Telecom operators perhaps could change such perceptions through marketing campaigns and drawing attention to the fact that saving an hour could contribute to one's income, directly or indirectly. These two issues will have to be tackled by both policy makers and telephone operators alike using their own comparative advantages to arrive at a win-win solution for all: fight poverty through growth and run profitable telecommunication companies.

Further investigation into this area could help understand the dynamics of the relationship between telecom access and income at the household level. Telephones alone will never be a silver bullet that will bring the hundreds of millions of people out of poverty in the emerging Asian region, but the almost-universal access will most certainly aid in that process together with other supporting policies.

Leveraging mobile voice success into broadband

Rohan Samarajiva, in Expanding Horizons, 4/2008, Affordable Mobility Through Innovation and Easy Market Access
http://expandinghorizons.nokia.com/

South Asia has shown the world how to connect millions at the Bottom of the Pyramid (BOP) to mobile networks, pioneering new business models that rest less on Average Revenue per User

(ARPU) than on maximizing revenue-yielding minutes. Can this success be replicated with the more complex and challenging task of connecting the millions at the BOP to the Internet? This is the question that will be discussed in this presentation.

Why focus on the BOP? Because it is the hardest problem. If the mobile operators stayed with the model of serving the Top of the Pyramid (TOP) that they first adopted in the 1990s, South Asia would not be a success story in any segment. Unit costs would not have fallen as much as they have; use would not have grown as much as it did; and the operators would be niche players unable to mobilize the massive investments that they now can. And for sure, their profitability would be much lower than it is now. Because they tried to solve the BOP problem, they also succeeded in doing exceptionally well at the TOP.

The current situation with Internet and broadband is far from satisfactory, as shown by LIRNEasia data. Few at the BOP use the Internet and even those who have heard of it are a minority. The challenge is a big one. If we reconceptualize the problem as one of allowing more people the opportunity to use the multiple functionalities of the Internet meta-medium, the task becomes more tractable.

What lessons can be learned from the success story of South Asian mobile voice? One is to allow people to buy what they want when they want, while keeping transaction costs low. This is the essence of sachet marketing first tried out in fast moving consumer goods (FMCG) markets and is an integral element of selling to the BOP. In the mobile voice markets, this was implemented through prepaid, and especially through mechanisms such as chota recharge. The currently dominant all-you-can-eat, flat-rate pricing schemes for broadband would have to be replaced or supplemented by more BOP-friendly schemes. The question is whether pricing should be based on time or data volumes. Another is to unbundle the Internet, allowing users to access what functionalities they want rather than the full bundle. Given the multiple services that constitute the Internet and their differing quality requirements, this is a complex task.

A key lesson from the mobile voice experience is that prices must be lowered. Low prices and the needed pace of investment cannot be sustained without lowering costs radically. This affected quality in the voice market, but not to the extent of making voice services unusable or unattractive. LIRNEasia research shows that currently, the quality problem in broadband is centered on the international segment, not the local access network. Mirroring offers one way of reducing the costs of international connectivity, though regional mirroring is not a practical solution unless intra-regional links are considerably improved.

If quality adequate for purpose can be provided at low prices there is no reason why the mobile-voice success story cannot be replicated in broadband.

Research ICT Africa (RIA)

Towards the African e-Index: ICT access and usage in 16 African Countries, 2006

Abstract

This paper integrates the findings of a series of research projects undertaken by Research ICT Africa! (RIA!) that seek to contribute to evidence-based ICT policy formulation on the continent. The project, Towards an African e-Index, arose out of the need not only to fill some of the data gaps that existed on the continent in relation to ICT indicators, but more specifically to develop tools to assess the regulatory impact and policy outcomes of telecommunications reform against actual sector performance. What these supply-and demand-side studies have demonstrated is that across the continent, even where there was overall sector growth, the sector performance has been sub-optimal: for the most part, the primary national policy objectives of delivering affordable telecomms access have not been met.

The supply-side analysis, undertaken through the sector performance review, shows that mobile telephony is addressing the gap between those who have voice services and those who do not. However, the divide between those who are able to access the Internet and the range of enhanced services that have become necessary for effective citizenry and consumer participation, and those who cannot, has widened. The high cost of communications not only constrains individual communication, but also inflates the input cost to business, negatively affecting national and regional economies.
The demand-side household and individual access and usage survey provides insights into the continued marginalisation of large numbers of Africans even from basic communications services and confirms the sub-optimal use of communications services due to the high cost of access to services. The value attached to accessing and utilising communications is evident in the considerable portion of household income spent on communications and the multiple strategies used by individuals to maintain communication access according to their cash flow and the prices of alternatives. The willingness-to-pay modeling suggests that relatively small reductions in the cost of equipment and services would result in increased uptake and usage, with a significant growth in revenues for operators.

The outcomes of these supply- and demand-side surveys are further considered in the context of a telecommunications regulatory environment perception survey of sector stakeholders in each of the countries. The generally poor perception of the policy and regulatory environment across the countries surveyed confirms the negative impact of market structures and institutional arrangements on sector development as a result of constrained competition, market dominance and anti-competitive practices and ineffectual regulation.

To understand how Africans are using ICT services, the second demand-side survey of ICT access and usage by over about 23,000 individuals and households across 17 African countries was conducted during 2007 and 2008. This followed on the 2004 survey of ten African countries, when data was collected from rural, urban and metropolitan areas providing the first disaggregated ICT data in the public domain. Again the disaggregated data includes gender, age, education and limited household income data. The survey was supplemented by focus group studies in five countries, which focused specifically on gender issues. A rich picture emerged of ICT access and usage and the reasons for people's marginalisation from services (see www.researchICTafrica.net).

Introduction

Across the African continent information communication technologies (ICT) continue to be hailed as the drivers of economic growth and development. However, despite the success of mobile communications in the last decade, there is limited and uneven evidence of its contribution to growth and development, as there is for OECD economies. One of the reasons for this is that the necessary reform of telecommunications markets, essential to the development and incorporation of ICTs into the economy, has been very uneven, producing mixed outcomes.

Despite rhetorical and sometimes even legal commitments to securing the development of the sector through private sector participation, the introduction of competition has been limited and many markets have not been fundamentally restructured to realise the positive outcomes for consumers and users associated with competitive markets. As a result, despite the exponential growth of mobile services, performance has been sub-optimal: the critical mass of about 40% penetration at which the positive network effects associated with economic growth kick in, has not been reached in most markets.

This is not to suggest that there is no market failure, but what is often attributed to markets' not working is, in fact, failure to establish working markets. Across the globe, even in mature markets, governments or their specialised agencies are regulating markets to ensure competitiveness and delivery. While the private sector is increasingly recognised as the key driver of economic growth, effective regulation is acknowledged as necessary, not only to ensure fair competition and economic efficiency, but also to respond to market failure, and to address issues of equity and inclusion.

This should be even more so the case of African countries where markets are highly imperfect: dominant operators extract monopoly rents; duopolists and oligopolists engage in price matching rather than competition, mostly unchecked by regulatory adjustment of their behaviour. This, together with institutional arrangements that often permit political interference or capricious behaviour by regulators, heightens regulatory risk and is not conducive to the long-term investment required to build modern, networked economies…

While large numbers of the people continue to be excluded from access to services, others are excluded from usage by the cost of services and, as services become more complex, by the absence of the necessary skills. While expanding mobile services have improved access to voice services, the surveys reveal a multiple communication strategy where individuals used different services, fixed and mobile, public and private, according to available resources. For example, people with mobile phones often make use of public pay phones, if they are available, because low denomination calls can be made rather than purchasing bulk airtime. The Internet was of limited use in this communications strategy for a number of reasons: perceptions of its unreliability due to poor network quality, limited bandwidth and high costs…

TABLE 1: Internet access and usage (RIA 2007/2008)

	Households with working Internet connection	Citizens 16 year of age or older using the Internet
South Africa	4.8%	15.0%
Namibia	3.3%	8.8%
Kenya	2.2%	15.0%
Cameroon	1.2%	13.0%
Mozambique	0.9%	1.0%
CDI	0.5%	6.7%
Ghana	0.3%	5.6%

Botswana	0.1%	5.8%
Ethiopia	0.1%	0.7%
Benin	0.1%	8.8%
Uganda	0.0%	2.4%
Burkina Faso	0.0%	4.3%

3 Telecommunications Access & Pricing
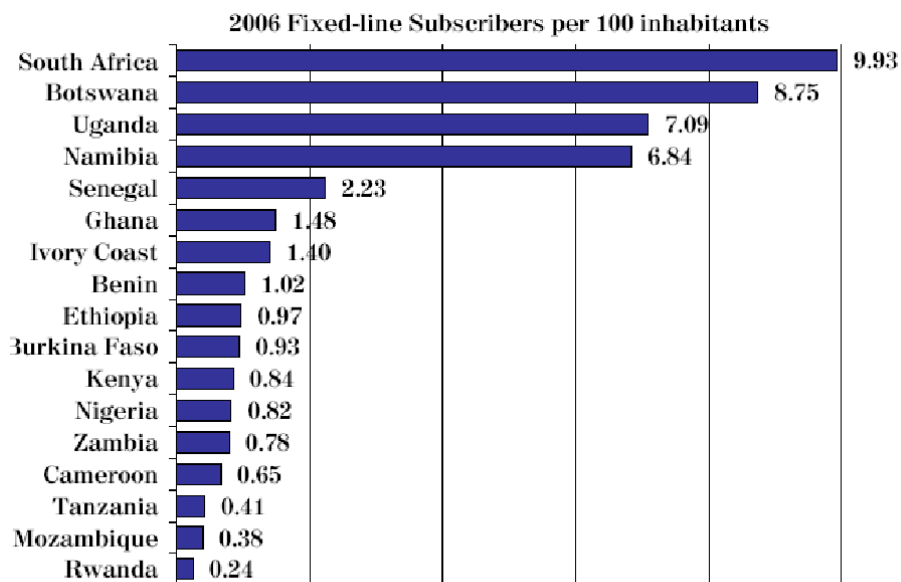
FIGURE 2: ᵃFixed-line Teledensity

The table below indicates both which countries have rebalanced or are moving towards rebalancing tariffs, on the one hand, and which are still cross-subsidizing local calls charges with either national or, more commonly, international call prices. Pricing in Botswana, Namibia and South Africa, which have the highest teledensities of the countries surveyed, is probably the closest to being cost-based, as a certain amount of profits are being reinvested in network extension, digitisation of networks and the introduction of new technologies.

TABLE 2: Cost and average expenditure of fixed line telephony in US$ using implied PPP conversion rates

PPP	Cost of a local 1 minute call (peak rate)	Cost of a national 1 minute call (peak rate)	Cost of a 3 minute call to US (peak rate)	Average fixed line Expenditure	Comments
Benin	0.09	0.26	3.16	41.65	Rebalanced
Botswana	0.13	0.34	3.01	19.00	Rebalanced
Burkina Faso	0.46	1.05	11.68	65.35	High cross-subsidisation/ high call charges
Cameroon	0.21	0.30	3.84	44.59	Rebalancing
Côte d'Ivoire	0.21	0.21	1.59	32.67	Rebalanced
Ethiopia	0.02	0.86	20.70	40.97	High cross-subsidisation
Ghana	0.25	0.25	4.74	75.70	Rebalancing
Kenya	0.21	0.28	4.65	56.57	Rebalancing
Mozambique	0.49	0.49	4.35	87.39	High cost of all calls
Namibia	0.16	0.35	6.28	105.20	Cross-subsidisation
Rwanda	0.39	0.66	16.45		High cross-subsidisation
Senegal	0.15	0.61	2.27		Rebalanced
South Africa	0.19	0.29	1.29	111.74	Rebalanced
Tanzania	0.26	0.26	5.25		Rebalancing
Uganda	0.48	0.52	7.69	135.07	Cross subsidisation/ high call charges
Zambia	0.07	0.20	6.97		High cross subsidation.

Mobile Access: Botswana's and South Africa's penetration rates for mobile stand far above the other countries surveyed, with South Africa topping the list with nearly 70% mobile teledensity and three operators in the mobile market, of which two have nearly 90% of the market. With a substantially smaller population, Botswana is second, with historically only two operators…

However, it is likely that actual mobile penetration is significantly lower than indicated by operators. Difficulties with definitions of 'subscribers', 'active subscribers', and 'SIM cards sold', make subscriber numbers very unreliable, particularly in traditional measures of per 100 of the population.

2006 Mobile Subscribers per 100 inhabitants

South Africa	68.15
Botswana	57.54
Cameroon	27.51
Namibia	26.86
Kenya	19.05
Nigeria	16.88
Mozambique	14.97
Tanzania	14.55
Senegal	14.49
Ghana	12.59
Benin	11.31
Zambia	9.30
Ivory Coast	8.22
Uganda	6.73
Burkina Faso	5.17
Rwanda	2.94
Ethiopia	1.15
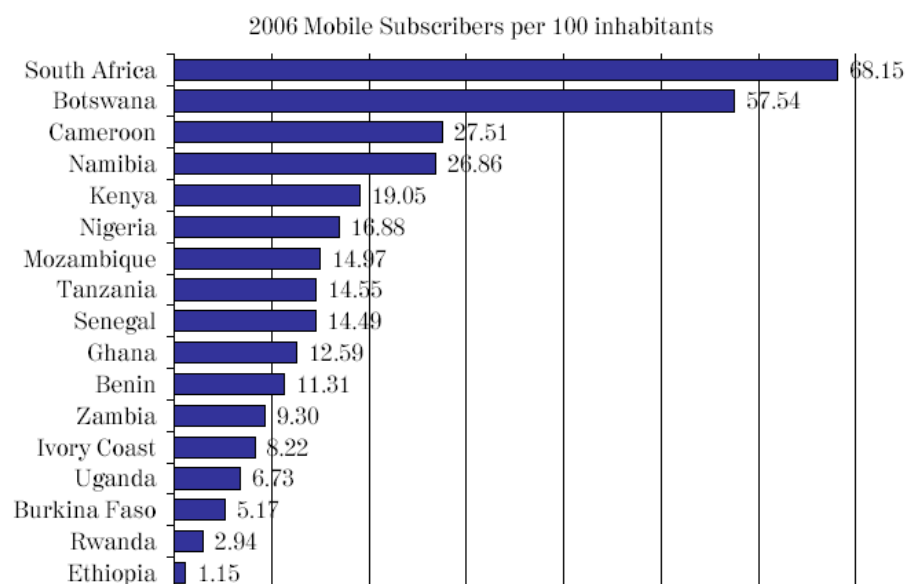
FIGURE 3: Mobile Teledensity[a]

Pricing

Fixed-lines have the benefit that pricing is fairly transparent. In contrast, there are so many options available in mobile that comparisons are difficult. Basket methodologies are useful in a complex environment because they enable comparisons across multiple countries and multiple packages. However, there is no internationally recognised, developing country mobile basket. The only basket methodology that is commonly used is from the OECD.

With the exception of Uganda, most East African countries score quite well on the low-usage basket.

TABLE 4: Comparison of three OECD mobile pricing baskets

PPP	Low User	Medium User	High User
Uganda	36.22	72.61	147.32
Mozambique	32.36	66.84	143.59
Ghana	30.84	62.15	135.06
Rwanda	30.49	61.66	132.02
Burkina Faso	29.20	60.30	127.69
Namibia	27.52	58.48	119.55
South Africa	27.22	56.16	117.64
Kenya	20.53	42.72	92.03
Nigeria	19.99	41.25	88.98
Botswana	18.43	40.10	87.57
Cameroon	18.40	39.42	86.08
Senegal	18.37	36.49	72.83
Côte d'Ivoire	17.89	35.92	72.67
Benin	16.25	33.93	72.55
Tanzania	14.33	30.34	69.39
Ethiopia	13.26	29.75	65.75
Zambia	11.57	24.42	54.31

In terms of the findings on non-users' ***willingness to pay*** for mobile services, Table 3 below suggests that relatively small reductions in the cost of equipment and services would result in increased uptake and usage, with a significant growth in revenues for operators. A reduction of mobile tariffs is also likely to permit the entry of current non-users and increased usage of services.

TABLE 5: Willingness to pay for mobile telecommunications – non users and users US$ nominal

	How much would you be willing and able to spend monthly on a mobile phone for calls and SMS?	What would you be willing /and able to pay for a handset?	If you were to buy a new phone, how much would you expect it to cost you? This is inclusive of the hand set and the connection?
South Africa	3.49	14.25	26.90
Cote d' Ivoire	4.66	19.82	20.27
Namibia	2.91	12.80	13.79
Nigeria	4.68	3.10	10.93
Ghana	9.86	12.59	14.96
Kenya	3.42	14.90	22.31
Botswana	3.68	15.68	26.58
Benin	2.66	7.02	9.33
Cameroon	2.81	10.53	13.49
Mozambique	0.59	0.63	12.53
Burkina Faso	2.79	8.08	10.34
Uganda	0.48	0.04	13.97
Ethiopia	0.63	2.36	20.94

■ Suppose the cost of using your phone came down by half
□ Suppose the cost of using your phone doubled

Uganda
South Africa
Namibia
Mozambique
Kenya
Ghana
Ethiopia
Cote d'Ivoire
Cameroon
Burkina Faso
Botswana
Benin

| reduce my usage by more than half | reduce my usage by half | reduce my usage by some amount | not change my usage | increase my usage by some amount | double my usage | more than double my usage |

FIGURE 4: Price Elasticity[a]

Despite the widespread access to mobile phones in those countries where ***public phones*** are reasonably well provisioned, public phones continue to be a major form of communications access. This is so even for people who own mobile phones or have an active SIM card.

TABLE 6: Mobile and Public access and usage

	Average expenditure US$ ppp	Have you used any PUBLIC PHONES during the past three months?		
		All (16+)	16+ people without mobile or active Sim card	16+ people with mobile or active Sim card
Benin	0.68	16.2%	13.3%	23.0%
Botswana	1.75	27.4%	34.7%	22.4%
Burkina Faso	2.17	29.0%	24.9%	39.7%
Cameroon	3.27	44.1%	36.4%	57.5%
Cote d Ivoire	0.11	0.8%	0.2%	1.5%
Ethiopia	0.55	14.7%	14.5%	20.9%
Ghana	1.08	6.0%	9.7%	3.5%
Kenya	0.86	24.1%	34.2%	14.8%
Mozambique	1.26	2.7%	2.4%	3.8%
Namibia	2.27	14.5%	14.0%	15.1%
South Africa	4.80	42.2%	43.8%	41.1%
Uganda	4.16	39.5%	38.9%	42.1%

A major input into business communications is the cost of leased lines. They are a critical input because they have several crucial features:

- Retail end-to-end leased lines are permanent connections that allow end users to connect disparate locations.

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- They provide dedicated capacity; that is, capacity on leased lines is exclusively allocated to a particular end user.
- Leased lines capacity is symmetric. This means that leased lines can carry data at a similar rate in both directions between sites.

OECD Leased Lines Comparison between Kenya & South Africa

2005	South Africa	OECD	%	2006	Kenya	OECD	%
	3,228,250	1,506,886	214		3,222,488	1,549,938	208

Interconnection

The price of international bandwidth remains untenably high. In many African countries, even with the opening up of international gateways, there is only one economically feasible source of high-quality bandwidth, which today is the SAT-3/SAFE undersea cable. It was built by, and is operated through, a closed consortium of African incumbents and international operators who have exclusive rights to the landing stations in their countries. Club consortium practices of this kind have come under fire from multi-stakeholder continental initiatives that have demonstrated the access and cost benefits of non-exclusive, open-access regimes for African countries. There have been calls to regulate these landing rights as "bottlenecks" or "essential" facilities. This attention has also highlighted the arbitrariness of the costing of this essential facility for African countries at the national level, as well as discrepancies in the charges across different portions of the net work. A price survey of African countries that use SAT-3 for their international bandwidth showed that South Africa's Telkom is charging up to 800% more than other countries for 1 Mbps per month.

Departure from average: Different Fixed to Mobile interconnect rates in Africa
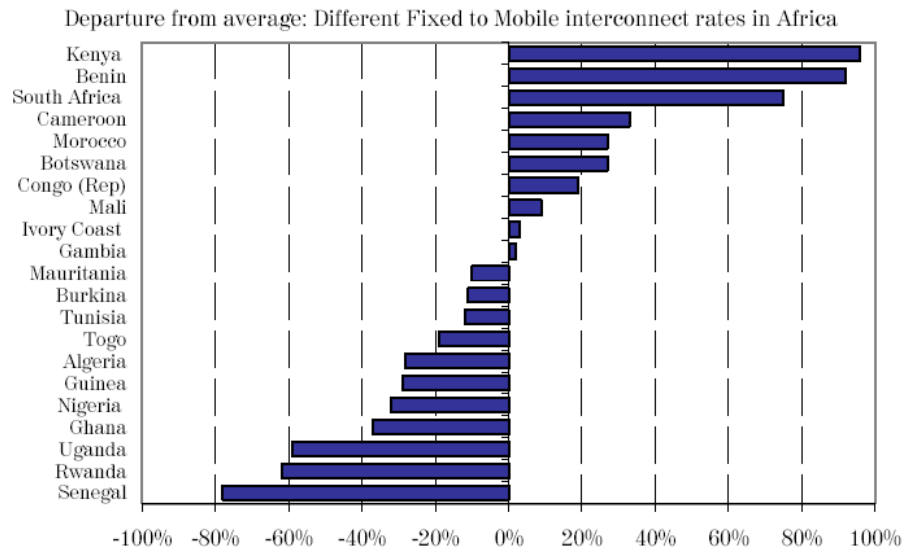
FIGURE 6: Deviation from average interconnect rates in Africa

Telecom Regulatory Environment (TRE)

A policy and regulatory perception analysis drawing on the Telecommunication Regulatory Environment (TRE) methodology developed by LIRNEasia seeks to capture perceptions of the efficacy of the regulatory environment by collating the opinion of sector stakeholders. The dimensions of the

survey are based on the Reference Paper of the General Agreement on Trade in Services (GATS) Fourth Protocol. These include:

- competitive safeguards (market entry and anti-competitive measures);
- interconnection;
- licensing;
- allocation of scarce resources; and

- universal services;
- independent regulation;
- tariff regulation.

With the shift from public to private investment in the ICT sector globally, the conditions in the telecommunications sector for investment provide a good indicator of the effectiveness of the policy and regulatory environment and also show whether countries have filled one of the necessary conditions for the development and expansion of the sector.

The interplay between policy and regulation and between the different categories is evident in an assessment of the first category, market entry, which seeks to capture the overall reform concept of markets shifting from monopoly to competitive markets. The market structure in a particular country will be determined by the policy – the number and kind of players are allowed in the market. The regulator can only do what the law permits but the way in which it does this can determine investor confidence. In a perfect market players would be able to enter, and exit, the market freely. Because of the assumptions of natural monopoly in at least certain elements of the network, that has not happened historically in infrastructure industries. Despite new lower cost technologies making the economic duplication of the network possible, and global trends towards the liberalisation of markets, in most countries in Africa, entry into the market has continued to be restricted, sometimes to the incumbent monopolist only.

Most countries on the continent, however, followed the global trend of liberalisation of their markets, though often the lag in doing so meant the investment appetite was not present. This was due either to changing global economic conditions, the absorption of capital by earlier liberalisation of the markets, or the very small markets for relatively costly services in low-income countries. While all of these factors will be significant on a case-by-case basis, the single common factor that is likely to attract or repel foreign investment in particular, is regulatory risk.

FIGURE 7: TRE scores across countries

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Conclusions and Recommendations

The excitement about the extension of telecommunications networks and services in countries across the continent over the last few years, particularly in the area of mobile telephony, should be tempered by the fact that these have not been optimal. While gains have clearly been made, this review of the telecommunications sector performance across 16 African countries suggests that national polic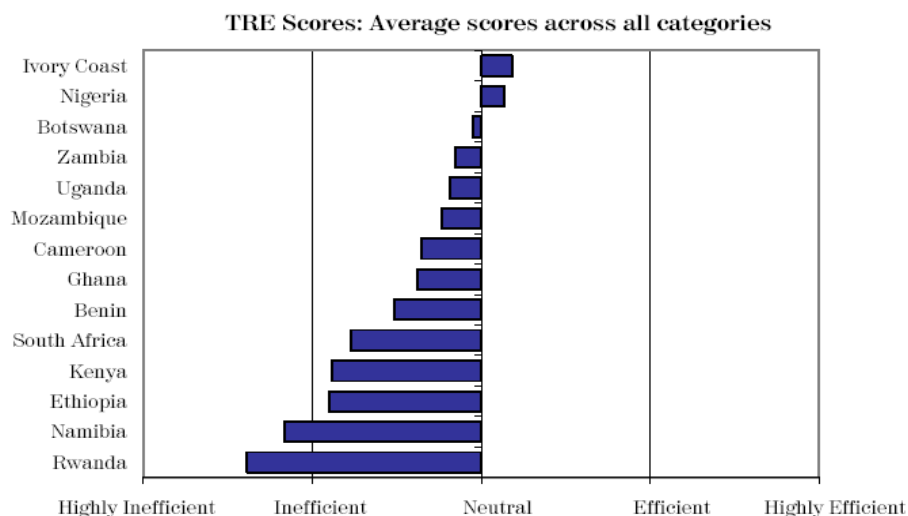y objectives of pervasive and affordable ICT services are often undermined by many countries' own policies and practices, market structures and institutional arrangements.

While Africa may have the highest growth rate in mobile telephony, this is off a very low base. Large numbers of Africans' continue not to have permanent access to basic telephony, never mind the enhanced ICT services required for effective participation in the economy and society. Retail and wholesale prices across the continent continue to inhibit the uptake of services and their usage by consumers. Many jurisdictions continue to be characterised by administrative processes that are not transparent and participatory, and institutional arrangements that constrain the autonomy of regulatory agencies and induce executive determinations. Together with the lack of capacity in regulatory agencies to regulate effectively, this has created, in many countries surveyed, telecommunication environments not conducive to the significant investment necessary to network extension and the competition needed to drive down prices and extend services…

- Create conditions conducive to investment by developing transparent and accountable institutions and certain but flexible policy frameworks.
- Optimise all available expertise and local knowledge through participatory policy processes.
- Enhance the stability and certainty in the sector through creating institutional arrangements that separate functions, are transparent in their procedure and publicly accountable for their actions.
- Establish regulatory agencies with the necessary autonomy and resources to regulate effectively within a clear implementation framework.
- Open markets to competition; they appear to go further in delivering a range of affordable services to consumers than protectionist market strategies.
- To be effective however, they require barriers to entry to be removed and conditions for fair competition to be created. These include cost-based interconnection and access to facilities of incumbents, prevention of the abuse of market dominance and access to spectrum and numbers.
- Develop and implement dedicated human capital strategies to build the competency and capacity of the regulator, to enable market efficiency and deal with market failure.
- With the dynamic shifts in technology, the negative impact of policy lags can be overcome with service-neutral licensing that allows operators and service providers to develop organically and seamlessly to offer new services.
- Develop open-access regimes that will encourage the optimal use of available spectrum and facilities and encourage entrepreneurship and innovation.

Towards Evidence-based Policy in Africa: Access & Usage across 17 countries

Alison Gillwald, Research ICT Africa!, ITS, Montreal, 25- 27June 2008

DIRSI – Latin America and the Caribbean

Mobile Opportunities: Poverty and Mobile Telephony in Latin America and the Caribbean

Hernán Galperin, Judith Mariscal: DIRSI, November 2007
http://www.dirsi.net/files/regional/REGIONAL_FINAL_english.pdf

Over 7,000 face-to-face interviews were conducted with individuals aged 13 to 70 residing in low income households in the following countries: Argentina, Brazil, Colombia, Jamaica, Mexico, Peru, and Trinidad and Tobago. A probabilistic sample was drawn using maps from existing georeferenced data provided by the national statistics office of each country. Individual respondents were randomly selected from each household. The goal was to obtain a representative (and statistically independent) sample of low income residents of urban areas in each country, although in one case (Jamaica), semi-rural areas were also included.

Conclusion

The goal of this report was to contribute to the discussion on how access to mobile telephony
contributes to improving the livelihoods of the poor in Latin America and the Caribbean –what we call mobile opportunities. Our results show that mobile telephony is highly valued by the poor as a tool for strengthening social ties and for increased personal security, and that it is beginning to prove useful for enhancing business and employment opportunities.

Overall, the survey results suggest that the acquisition of mobile phones by the poor has an economic impact reflected mainly in improved social capital variables such as the strengthening of trust networks and better coordination of informal job markets. Given their limited access to traditional fixed telephony, the poor attribute a significant improvement in quality of life to mobile access.

Demand for mobile services at the bottom of the income pyramid appears to be rather inelastic with respect to tariff variations. The significant level of expenditure on mobile handsets and services found among these low-income populations is also consistent with the numerous benefits perceived by users. Nonetheless, there are still barriers that discourage the poor from acquiring mobile phones. In countries like Mexico, Brazil and Peru, a majority of the poor still cannot afford a mobile phone, although many rely on informal resellers and family or friends to make or receive calls. Those who can afford their own mobile phone make little use of voice and other services, tightly controlling their expenditure and frequently relying on public payphones for outgoing calls.

These findings reveal the continued need to develop innovative business models that extend the market frontier for mobile telephony. They also highlight the urgent need to rethink public policies that are premised on the mobile phone as a luxury good. For the poor, mobile telephony has long been the most cost-effective and accessible alternative. Since affordability is the most significant barrier to extending the reach of mobile services, as well as the range of services offered to the poor, priority should be placed on policies aimed at reducing tariffs. Enhancing competition through increased spectrum allocation, reducing taxation levels, and implementing number portability are among the initiatives worth considering. Tariff reductions need not penalize operators. Our results show ample room for win-win initiatives that increase overall traffic and create new commercial opportunities for operators and third-party service providers, ranging from simple information to more complex transaction services.

Along these lines, our results also reveal that users are rarely taking full advantage of the services offered by the mobile platform. Text messaging is the only service beyond voice that is rapidly being adopted. Many of the applications that could most benefit the poor, such as m-banking and m-government, are still in their infancy in the region.

Taking advantage of the poverty-reduction opportunities created by the widespread adoption of mobile phones among the poor will require a concerted effort between market actors and governments. As users advance along the technological learning curve, and handset prices continue to drop, these mobile opportunities should continue to increase.

Key results

Our results show that the exponential growth in the mobile telephony market in Latin America and the Caribbean has had a significant impact on telephony access opportunities for the poor. With the exception of Mexico, the majority of respondents in the countries studied had used a mobile phone in the past three months, regardless of whether or not they actually owned one (see Figure 1). Interestingly, the level of shared ownership was relatively low: in most cases, users own their own handset and service. The notable exceptions are Colombia and Peru, where a healthy service resale market in urban areas (with very competitive tariffs) reduces ownership incentives.

Figure 1
Mobile usage and ownership (% of total)

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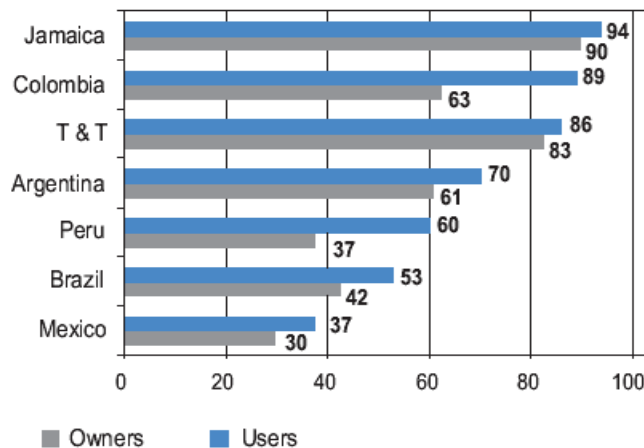
Figure 2
Prepaid plans (% of total)
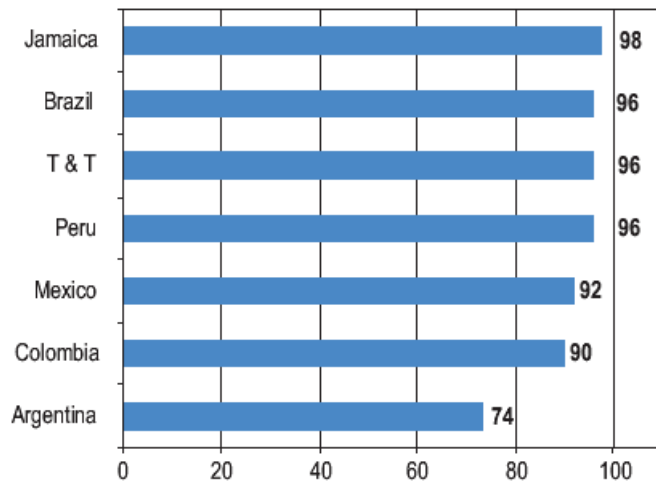
Figure 3
Reasons for opting for prepaid mobile service (in %)
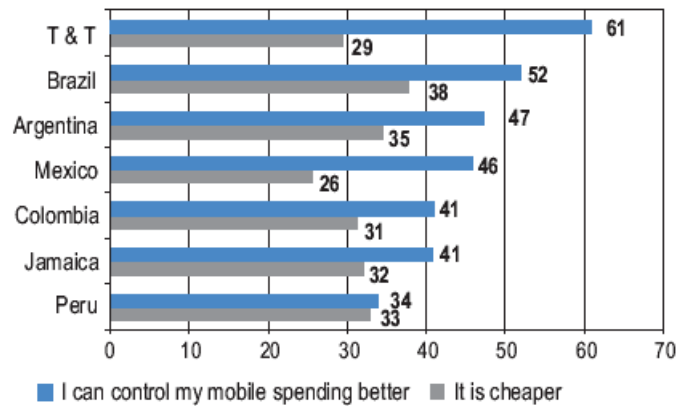
In addition to making a very limited number of outgoing calls, the poor utilize other cost-control strategies that involve so-called 'beeping,' or simply not making outgoing calls for a period of time. In fact, in most of the countries studied, over a third of respondents had not made a single outgoing call in the week preceding the survey (see Figure 9).

Figure 9
Most common cost-reduction strategies (% of users)
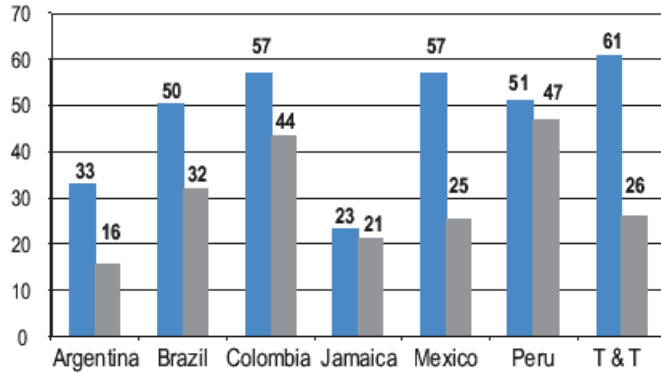
Our results reveal that the poor represent a significant market for mobile operators, with higher than expected average per capita expenditure. As shown in Figure 10, average monthly spending on mobile telephony services in Latin America ranges from USD 6.1 in Colombia to USD 15.7 in Mexico, while in Caribbean nations expenditure levels are considerably higher.

Figure 10
Average monthly spending on mobile telephony (USD)
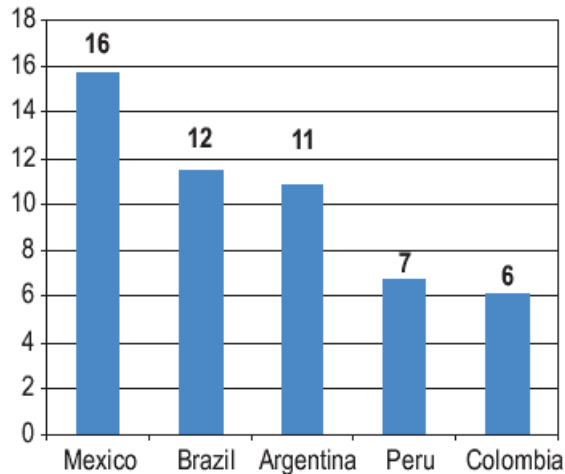
In most markets, the current structure of tariffs creates incentives for intensive use of SMS as a cost-control strategy. As shown in Figure 16, the volume of SMS usage is significantly higher than the volume of voice calls, particularly in markets with high SMS adoption rates, such as Argentina.

Figure 16
Total outgoing SMS per week (average and median)

Figure 16
Total outgoing SMS per week (average and median)
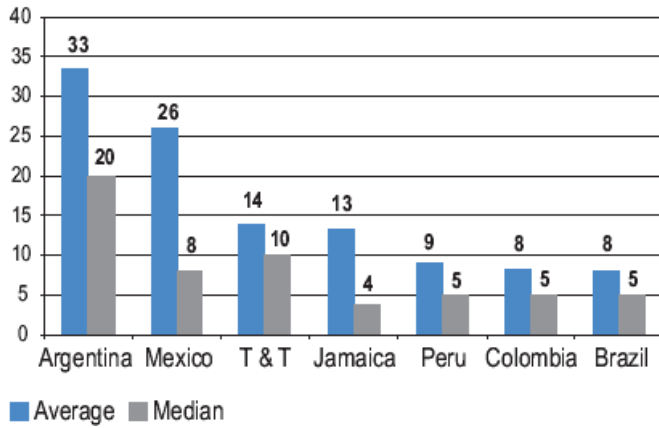
Aside from text messaging and voice services, low-income users make little use of mobile telephony services. In the more developed mobile markets such as Jamaica and Trinidad and Tobago, there is some usage related to downloading ringtones and participating in radio/TV games, but the use of more sophisticated services such as banking and government services is practically non-existent. This represents an interesting opportunity for the delivery of information and transaction services by the government as well as market actors, given the relatively high level of penetration of this transaction platform among the poor…

As mentioned, the main perceived benefit of mobile use among the poor is improved communication with family and friends. This is consistent with the fact that most mobile calls are made to or received from friends and family, followed by work-related calls, as illustrated by Figures 17 and 18.

Figure 17
Destination of outgoing calls (in %)

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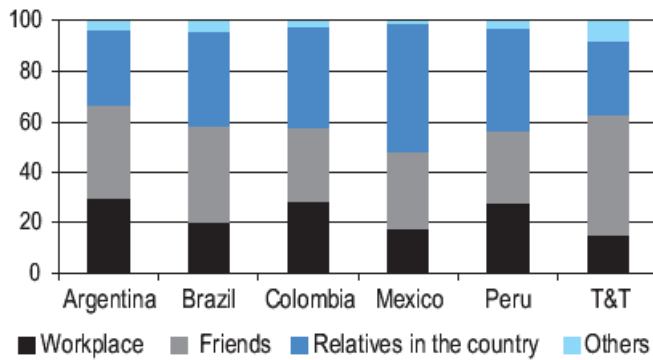
Figure 18
Origin of incoming calls (in %)
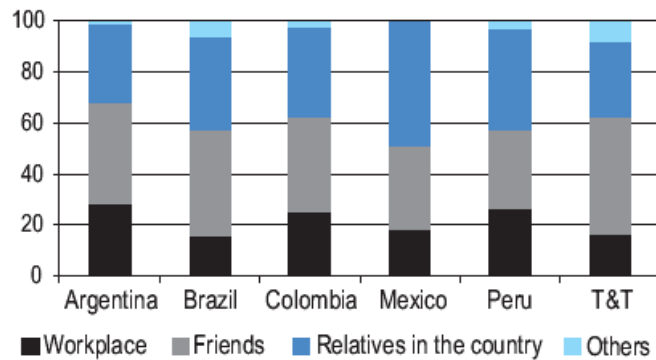
In other words, as illustrated by Figure 19, the main value associated with mobile phones is the strengthening of existing ties, although increased personal security (in emergencies, for example) is also frequently mentioned as a major benefit. Increased business opportunities also users. In the case of Mexico and Peru, it is interesting to note that those who use mobile phones for work-related reasons tend to have higher call volumes. Overall, our results suggest that the economic impact of mobile adoption by the poor is mediated by social capital variables such as the strengthening of trust networks and improved coordination of informal job markets.

Figure 19
Perceived benefits associated with mobile use (in %)

Mexico

Category	Value
Family	48
Friends	29
Emergencies	40
Work	27

Peru

Category	Value
Family	52
Friends	30
Emergencies	14
Work	26

Trinidad and Tobago

Category	Value
Family	73
Friends	73
Emergencies	56
Work	49
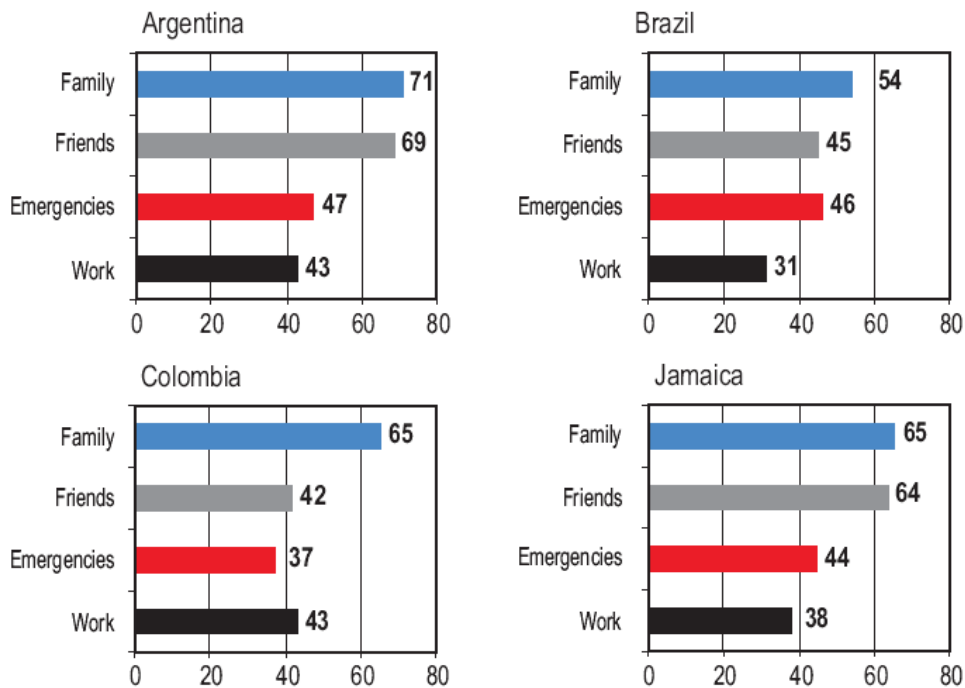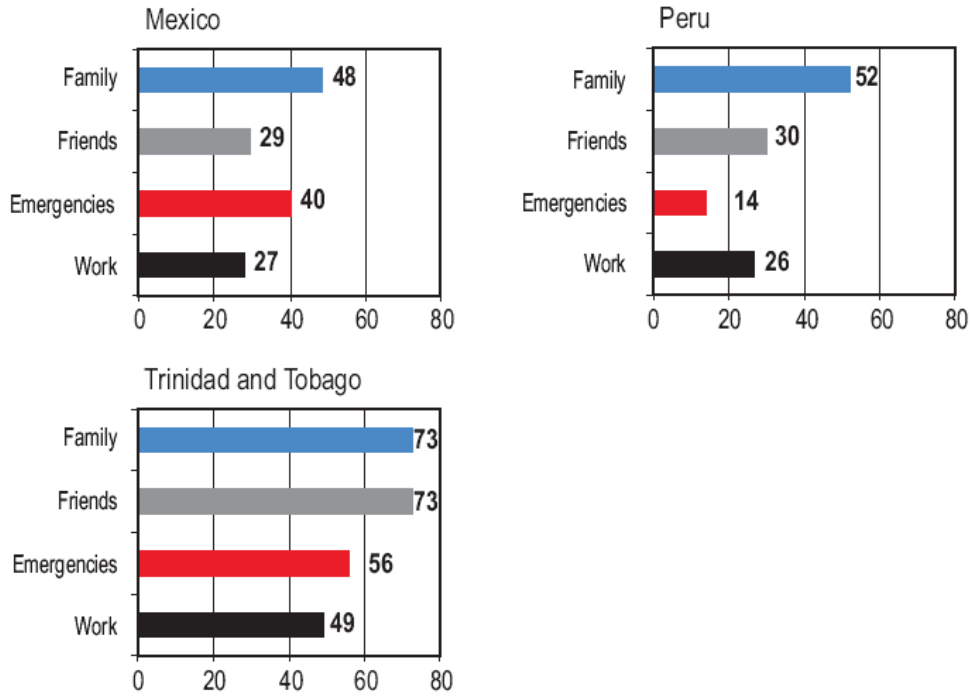
Finally, our results revealed that beyond mobile networks, the poor have limited access to other communication platforms (see Figure 20). With the notable exception of Colombia, most respondents lack fixed telephony services in their homes, confirming the unequal distribution of traditional fixed networks as compared with new mobile telephony networks.

Figure 20
Mobile and fixed telephony ownership (in %)

Country	Mobile owners	Fixed owners
T & T	96	37
Jamaica	96	31
Argentina	87	43
Brazil	81	38
Mexico	80	39
Colombia	70	63
Peru	62	15
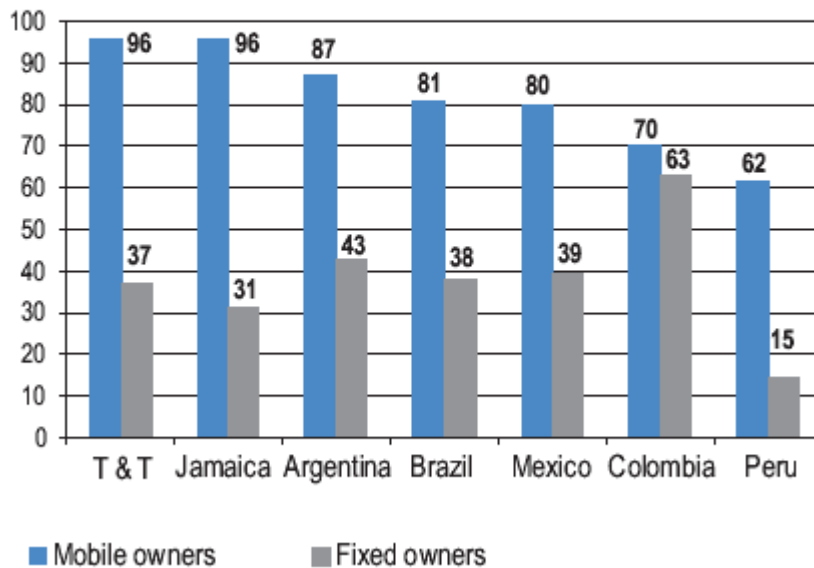
A similar pattern is found with respect to internet access. With the exception of Peru, the poor seem relatively uninterested in the internet, although usage tends to rise among the younger population. Interestingly, the factors that explain the lack of internet usage by the poor are only partly related to affordability or infrastructure availability, since in most urban areas access is widespread via public internet centres (such as cyber cafés), which offer relatively inexpensive hourly access (at least compared with perminute mobile tariffs). Our results reveal that the poor simply perceive no benefit in using the internet, with the exception of a small percentage of youth who consider it useful for school purposes and for keeping in touch with friends. This represents a red flag for policymakers who promote universal access policies and who frequently focus on internet/PC shared-access programs. For the poor, the mobile phone has become a much more important and familiar platform than the internet.

Our results also show that public phones –often overshadowed by other priorities in universal access programs such as telecentres– continue to play a significant role for the poor, often as a complement to mobile services (see Figure 21). Cost, convenience and simply the lack of other options are the reasons most often mentioned by the poor for the continued use of public phones (see Figure 22), despite the increased availability of and access to mobile telephony.

Figure 21
Use of public telephony in the last month (in %)

Public telephones or non-specialized commercial establishments
Commercial establishments specialized in telephone service
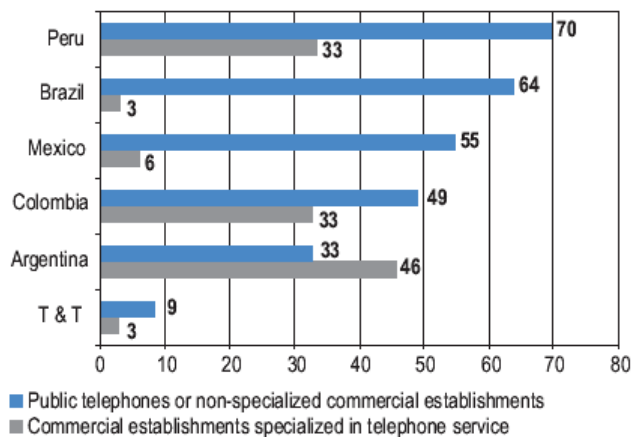
Figure 22
Reason for using a public payphone (in %)

Lower cost Easy access Privacy Lack of other options Other
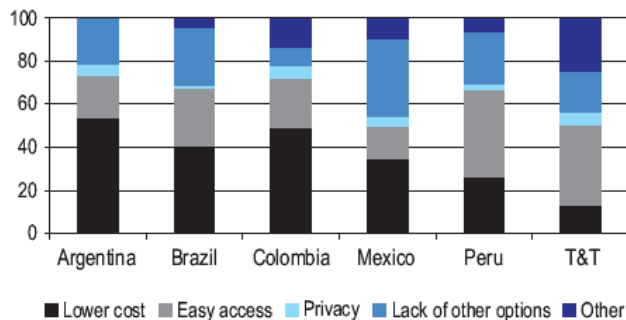
Mobile Opportunities: Background Papers

http://www.dirsi.net/english/index.php?option=com_content&task=view&id=86&Itemid=69

As part of the research project "Mobile Opportunities: Poverty and Telephony Access in Latin America and the Caribbean", DIRSI presents its background papers. Our background research has identified the importance of mobile access to the poor, its process of growth as well as a series of regulatory and market barriers for increased mobile telephony access and use by the poor. Yet empirical studies of the social and economic implications of mobile use in the region based on demand analysis are rare.

Affordability of Mobile Phone Service in Latin America

Roxana Barrantes, Hernán Galperin, Aileen Agüero and Andrea Molinari. This research aims at contributing to the discussion about the regulating tools that might improve the access to telephone services by the lower income segments through the analysis of the costs and alternatives these segments have to meet in order to acquire said services, as well as of the level of expenditure these services represent in the consumption budget of the poor.

Mobile Use/Adoption by Micro, Small and Medium Enterprises in Latin America and the Caribbean

Antonio Junqueira Botelho and Alex da Silva Alves (Brasil). The main objective of this paper is to review existing data on mobile use and adoption by MSMEs available in the LAC region and elsewhere in the developing world, to summarize findings and to suggest research areas and strategies necessary for a better understanding on the importance of mobile telephony for increasing creation and competitiveness (and, consequently, social quality conditions) of LAC MSMEs, particularly those operating in the informal sector and at the bottom of the pyramid.

Genderstanding Mobile Telephony. Women, Men and their Use of the Cellular Phones in the Caribbean

Hopeton S. Dunn and Leith Dunn (Jamaica). The objective of the project is to provide a baseline study of how men and women use mobile communication devices in the Caribbean within the contexts of rural and urban settings and across different age ranges.

Pro Poor Mobile Capabilities: Service Offering in Latin America and the Caribbean

Kim I. Mallalieu (Trinidad y Tobago). This paper establishes the background for analytical and empirical examinations of mobile opportunities and service capabilities in Latin America and the Caribbean (LAC). The analytical and empirical studies will form the basis of a regional assessment and, ultimately, to recommendations for meaningful pro-poor policy, regulatory and project interventions in the region.

Market Structure and Penetration in the Latin American Mobile Sector

Judith Mariscal (México). The objective in this paper is twofold. On the one hand, it seeks to analyse the process of consolidation that the region experiences today in the mobile market and on the other, identify the impact this market concentration has had on mobile penetration. The ultimate objective behind this analysis is to understand how the trend in market structure may impact the use of mobiles by low income sectors of the population in Latin America.

Contribución de la regulación al crecimiento de la telefonía móvil en América Latina

Jorge Dussán Hitscherich (Colombia). Este estudio analiza el marco regulatorio de la telefonía móvil como un elemento determinante del cambio producido, haciendo énfasis en los aspectos que contribuyen a mejorar las condiciones de conectividad de la población más pobre.

Comment
Following are perspectives from the above studies

Figure 1 - Fixed, Mobile and Internet subscribers in all countries (per 100 people)

Source: World Bank, 2006.
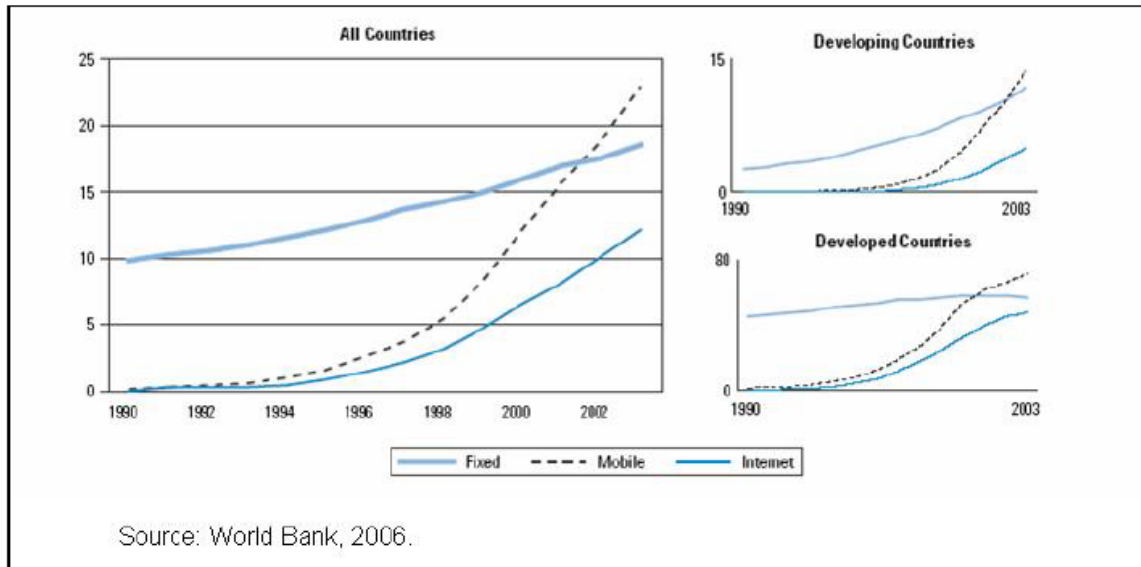
Figure 2 - Telephone Access by Region, 2000 and 2004 (per 1,000 people)

Source: World Bank, 2006.

Chart 1

Annual average growth rate in mobile subscribers, 1999-2004

Mobile subscribers as % of total
telephone subscribers, 2004

Region	Growth rate (%)	Mobile % of total
Oceania	20.1	59.9
Americas	21.9	54.8
World	28.5	58.9
Europe	25.4	63.1
Asia	34.3	56.8
Africa	58.2	74.3

Source: International Telecommunication Union

Penetration of technology, by region, 2004

	Mainlines	Cellular	Internet users
North	61	58	62
Central	16	32	12
South	20	33	11
Caribbean	12	26	10

Source: International Telecommunication Union

Table 5: **Mobile Telephony, basic information, 2005**

Country	Users (Million)	Penetration (%)	Prepaid (%)	ARPU (US $)	Prepaid Introduction	CPP Introduction
Argentina	25	57.27	70	13.7	1998	1997
Bolivia	2	26.37	85	12.5	1997	1996
Brazil	92	46.25	80	11.7	1998	1994
Chile	12	67.79	82	13.3	1998	1997
Colombia	28	47.92	81	12.6	1996	1994
El Salvador	2.5	35.05	82	17.9	1998	1999
Ecuador	8	47.22	87	12.8	1996	1998
Guatemala	5	25.02	90	14.3	1998	1999
Honduras	2	17.79	86	15.2	1998	2000
México	51	44.34	91	18.3	1993	1999
Nicaragua	1.2	21.77	92	15.9	1999	1998
Panama	1.7	41.88	90	33.3		1997
Paraguay	1.5	30.64	83	10.0	1997	1997
Peru	7	19.96	80	16.9	1997	1996
Uruguay	0.8	18.51	83	11.3	1998	1995
Venezuela	16	46.71	92	20.2	1997	1991

Source: Telecom Data

Graph 1: **Average penetration fixed and mobile in Latin America, 1990 - 2005**
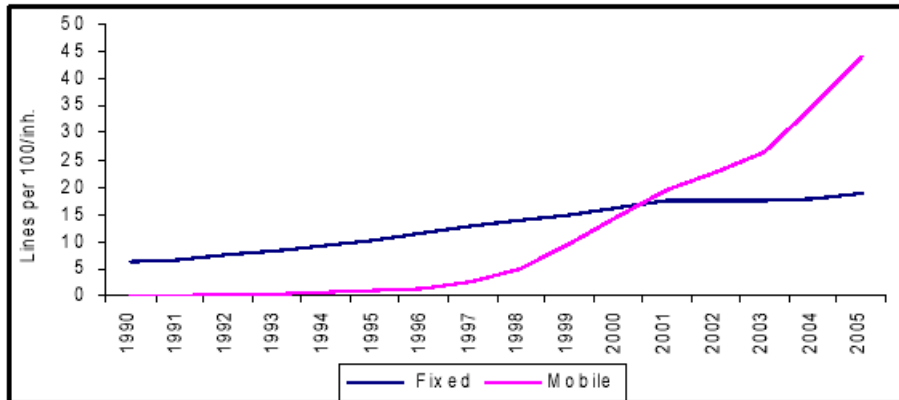
Source: Telecom CIDE based on ITU (2005, 2006)

Graph 7: **Prepaid vs. Postpaid**
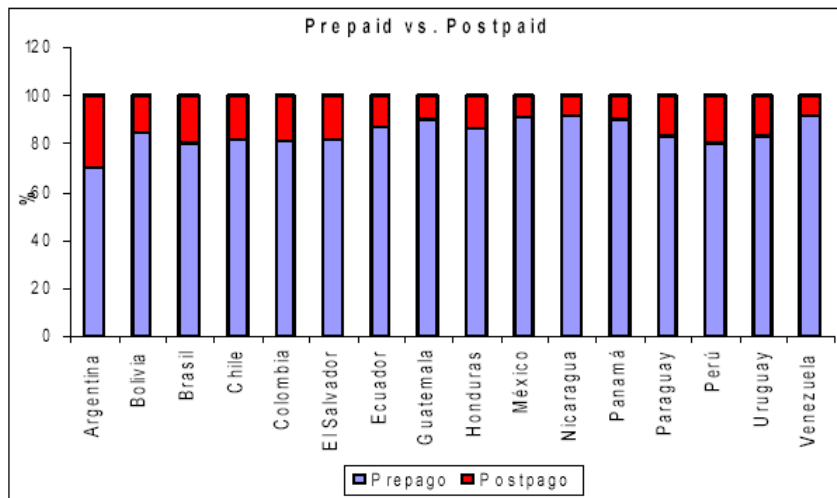
Source: Telecom CIDE

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Countries	Females	Males
Antigua and Barbuda	-	-
Bahamas	68	80
Barbados	62	75
Belize	37	79
Dominica	60	75
Grenada	55	76
Guyana	40	85
Jamaica	57	73
Montserrat	-	-
St Kitts and Nevis	-	-
St Lucia	63	76
St. Vincent and the Grenadines	-	-
Suriname	34	62
Trinidad and Tobago	46	75

Figure 4.1: **Share of monthly GDP per capita represented by the pre-paid, low volume consumption basket (current US dollars)**
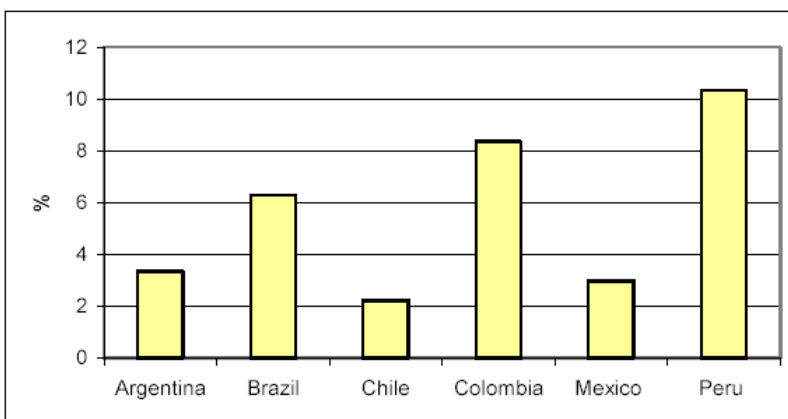
Figure 4.4: **Share of the poverty line income represented by the pre-paid, low volume basket (current US dollars)**

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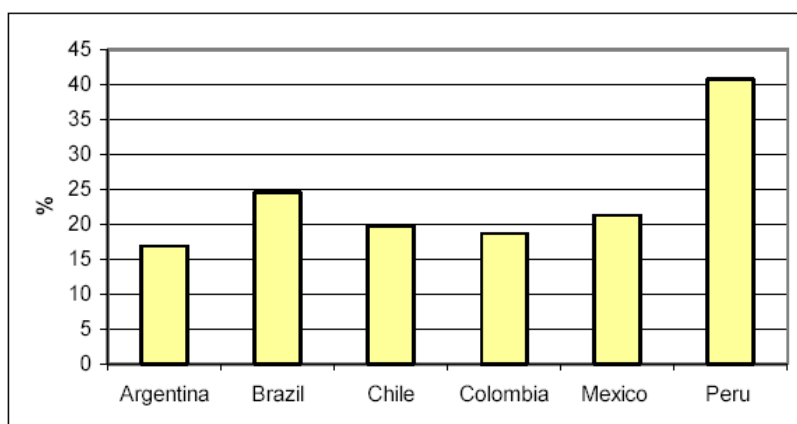
Figure 3.1: Monthly cost of the pre-paid, low volume mobile phone service basket (current US dollars) and mobile teledensity
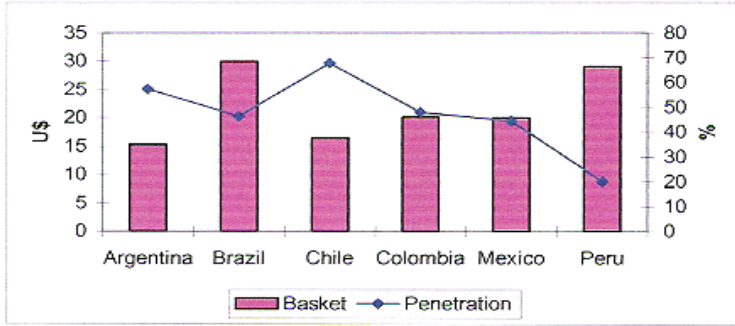
Source: Own calculations.

Table 3.3: Per second billing effect on the cost of the pre-paid low volume basket (in current US dollars)

Country	With per second billing	Actual	Per second billing effect
Argentina	$12.96	$15.28	$2.32
Brazil	$29.99	$29.99	$0.00
Chile	$16.42	$16.42	$0.00
Colombia	$15.84	$20.12	$4.28
Mexico	$18.63	$20.02	$1.39
Peru	$29.07	$29.07	$0.00

Source: Own calculations.

Table 3.4 Micro-prepay and billing per second saving effects

Country	In current US dollars	As a % of poverty line
Argentina	$4.53	5.0%
Brazil	$0.92	0.8%
Chile	$2.70	3.2%
Colombia	$6.67	6.2%
Mexico	$5.48	5.8%
Peru	$2.24	3.1%

Mobile banking, financial and other transactions

The Innovative Use of Mobile Applications in the Philippines – Lessons For Africa

September 2007 Shawn Mendes, Erwin Alampay, Edwin Soriano and Cheryll Soriano, September 2007, Sida
http://www.sida.se/sida/jsp/sida.jsp?d=118&a=33306&language=en_US

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The potential of m-Commerce

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    Cellular/mobile coverage
    Internet access
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    Prepaid cards
    Summary of factors leading to increase in telecommunications in the Philippines
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    The future for m-Commerce in Africa?
    An African pioneer? .

References .
Government official documents.
Interviews
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Appendix 2 – Comparison of mobile service in the Philippines .

The potential of m-Commerce

The explosive growth of mobile phones offers an opportunity to extend banking and other services to millions of "unbanked" and un-served. By the end of 2007, 60 per cent of the world's three billion mobile users will live in developing countries and hundreds of millions of them will not have access to banking and other services...

Today, Smart Money is used between e-load dealers and their retailers as it allows retailers to buy mobile phone loads from their retailers without needing to meet face-to-face. It was estimated that at the end of 2006, 20 per cent or 5 million of PLDT's total prepaid customers, were registered Smart Money Users (Proenza, 2007: 6). Smart Money transactions among these users averaged US$ 257,200 per day in 2006 In addition, US$28 9 million in remittances through "Smart Padala" were recorded for the same year...

G-Cash is also used as a wholesale payment facility. As of 31 December 2006, G-Cash handled an average monthly transaction value of PHP 5 67 billion (US$123 million) and the registered user base of G-cash stood at 500,813 (Globe Annual Report 2006). Registering for G-Cash is less cumbersome than registering for Smart Money G-Cash allows registration through a mobile phone and the subscriber only has to submit registration information17 to "2882," and then go to any partner merchant to exchange money for G-Cash.

3. Conclusions and lessons for Africa

Given all the information presented on the preceding pages, the key question remains what can other developing countries, especially those in Africa, learn from the Philippine experience? The Philippines is not the only developing country with the availability of m-Banking. In fact, there are already m-Banking services, or "pilots," in African countries such as the Democratic Republic of the Congo (CelPay), Kenya (M-PESA), South Africa (MTN MobileBanking and WIZZIT) and Zambia (CelPay). However, the Philippines has the most well developed m-Banking system and two major, and quite different, examples in G-Cash and Smart Money.

According to Castells 'specific conditions foster technological innovation… (and) the reproduction of such conditions is cultural and institutional, as much as economic and technological' (2000:37) These are caveats in any attempt to export lessons learned from the Philippine experience. As such, replicating the success of SMS applications in the Philippines may require similar market conditions to those found in the Philippines.

The most important lesson from the Philippines is that it is possible to increase access to mobile phones, not only for the wealthiest in society but also for the poorer segments of the society. Crucial to the Philippines' success in this regard, were appropriate regulatory policies that allowed for competition in the telecommunication industry, coupled with market innovations that made the technologies, such as mobile phones, more affordable' and the process of getting a line less restrictive. These forces are now well advanced in many countries in Africa, illustrated by the dramatic increases in mobile coverage and density in Tables 12 and 13, below. It is therefore concluded that this is not an insurmountable barrier for many of Sida's partner countries in Africa.

Micro-Payment Systems and Their Application to Mobile Networks: An Assessment of Mobile-Enabled Financial Services in the Philippines

infoDev, 2006
http://www.infodev.org/en/Publication.43.html

The proliferation of mobile communications in developing countries has the potential to bring a wide range of financial services to an entirely new customer base, according to a new report commissioned by infoDev in partnership with the International Finance Corporation (IFC) and the GSM Association. The report, which focuses on the use of mobiles for micro-payments in the Philippines, found that mobile-enabled financial services, or m-Banking, can address a major service gap in developing countries that is critical to their social and economic development.

In many developing countries, particularly in rural areas, access to financial services is limited. A large proportion of the population are excluded from formal banking systems and make payments entirely using cash, which is far less secure and flexible than electronic payment mechanisms. However, in the Philippines, 3.5 million people are using a service that allows them to transfer money over the two major mobile networks operated by SMART Communications and Globe Telecom.

The experience in the Philippines shows that mobile-enabled financial services has the capability to bring advantages to all stakeholders:

- For users: an opportunity to become engaged in the formal banking sector, to facilitate and reduce the costs of remittances, and to enable financial transactions without the costs and risks associated with the use of cash, including theft and travel to pay in person;
- For operators: a significant increase in text messaging revenues and a large drop in customer churn
- For consumers: m-commerce is more secure and flexible than cash, allowing consumers to make payments remotely
- For banks: an increase in their customer reach and the added cash float available to the bank
- For retailers: added business opportunities through the sale of prepaid account credits
- For micro-finance institutions: the ability to advance funds into remote areas and have regular repayments that do not significantly inconvenience the user
- For service industries and utilities: the ability to get payments electronically from a significant portion of the overall population

... Without doubt, the largest and arguably most successful m-Commerce applications are to be found in the Philippines with over 3.5 million m-Commerce users on the two major networks. In discussion with the two networks, it was identified that the key success factors for that market included the ability to load prepaid airtime credits as well as the ability to transfer both cash and airtime credits between customers. Coupled with these were the low values set by the operator for such prepaid top-ups or credit transfers. Typical top-ups of US$ 47 to 57 cents were allowed by the networks (equivalent to around four to five minutes of calls) while transfers between customers of both cash and airtime credits were permitted as low as US$ 4 cents.

... While there were no quantifiable figures available on system costs, various estimates placed a likely cost in the range of US$5 million to US$10 million with an expectation that an m-Commerce system

could be profitable with as few as 25,000 users connected but that would depend on the overall investment and service operating costs.

m-Banking: a Knowledge Map

infoDev, 2006
www.infodev.org/en/Document.169.pdf

Executive Summary

1. The use of a mobile phone to conduct payment and banking transactions (m-banking) is at an early stage in a number of developing countries. Because m-banking uses the existing rapidly expanding mobile phone infrastructure, it has the potential to be deployed rapidly and affordably to expand access to financial services among unbanked people. Donors are increasing expressing an interest in whether, and if so, how they can support the realization of this potential.

2. The case for donors to support m-banking rests on the causal chain linking generally improved access to financial services to the reduction of vulnerability and creation of opportunity for poor households. Although m-banking is one channel in the wider domain of e-banking, there are reasons to single it out for focus—especially because mobile phone usage has reached critical mass numbers in countries with few banked individuals.

3. There is little hard evidence yet of unbanked people being served on any scale by existing mbanking services, in part because most models are very recent; however, there is reason to believe that 'transformational' models have considerable potential for m-banking to broaden access.

4. While m-banking as an additional channel for banked customers is likely to be rolled out anyway, transformational models which target unbanked customers face particular obstacles. In Africa, current pioneers of m-banking report barriers to rollout in areas such as uncertainties over speed and nature of customer adoption, and regulatory barriers.

5. The sector as a whole has three main areas of need:

   a. More successful transformational models which have reached financial sustainability, to create a suitable demonstration effect.
   b. Systematic information collection and knowledge dissemination to guide potential entrants and policy makers by filling in the gaps identified by the knowledge map in Annex A. The map reflects a field at an early stage—with accelerating volume of reports of launches and new technology, but little systematic knowledge and indeed, little credible or accessible knowledge at all outside of a few chosen models or countries.

   c. An enabling policy and regulatory environment which has sufficient openness and certainty to allow new models to startup and grow.

6. There are a range of current or prospective donor supported programs with activities which may touch on m-banking from different perspectives, and with differing geographic coverage (country level, regional and international). None currently has an exclusive focus on knowledge creation in the area of transformational m-banking.

7. There are two broad donor strategies to take:

a. Direct support to new transformational models: this requires substantial funding and expertise to assess which to support; and may be amenable to more of a 'challenge fund' approach whereby grant funds are allocated competitively. Large telcos and banks are less likely to be fund constrained; but may be more amenable to indirect support which persuades them that there is a viable case to enter.

b. Indirect support, to create and disseminate useful knowledge about the sector to potential participants and to policy makers; and to improve the enabling environment through technical assistance and support to regulators.

8. Using the criteria of potential impact, additivity and short gestation period, the report proposes the strategy of indirect support and identifies four potential projects for donor to support:

a. Studies of customer adoption across different models;
b. Establishment of a web portal as a resource centre and dissemination point;
c. Country environment reviews which may lead to requests from regulators for technical assistance to bring about changes;
d. Sponsoring a commercial conference to provide focus for dissemination of work done.

LIRNEasia, Teleuse@BOP3

http://lirneasia.net/projects/2008-2010/bop-teleuse-3/

Comment
Following are a few selected perspectives from the rich results of this work, concerning m-banking and other services. The picture is one of small current usage at the BOP, but some awareness and considerable willingness to try services among the small numbers who are aware.

Awareness of services available on phones and computers (% of BOP teleusers)
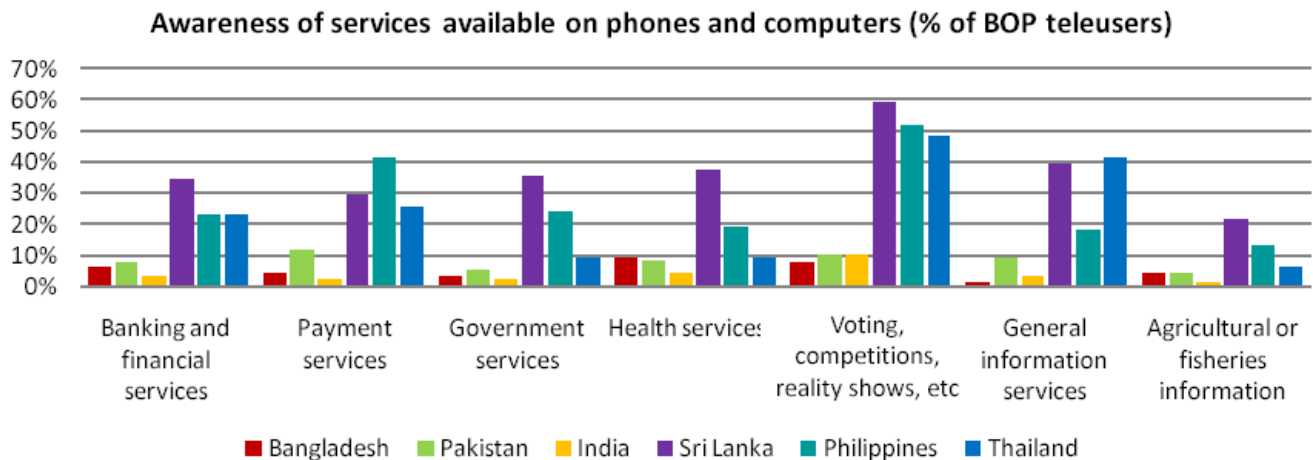
What the BOP does with mobile phones

	B'desh	Pakistan	India	S' Lanka	Ph'pines	T'land
			% of BOP mobile owners			
Taking phone calls	100%	100%	99%	100%	89%	100%
Receiving phone calls	100%	100%	98%	100%	99%	100%
Sending/receiving 'missed calls'	94%	84%	84%	73%	86%	39%
Sending/receiving SMS (text messages)	32%	47%	33%	52%	100%	53%
Sending/receiving MMS (picture messages)	1%	4%	4%	6%	13%	4%
Sending/receiving emails	0%	0%	1%	0%	0%	1%
Browsing the Internet	0%	1%	1%	2%	0%	2%
Taking photos /video clips	4%	2%	1%	8%	4%	18%
To play games (individual)	13%	18%	7%	21%	14%	17%
To play games (interactive)	1%	1%	1%	1%	3%	1%
To listen to the radio	0%	7%	3%	12%	5%	22%
To listen to music (files which you have downloaded or been sent by others, not radio)	4%	5%	3%	7%	3%	22%
To share content that you have created (E.g. ringtones, wallpapers, pictures, games and video clips)	1%	2%	2%	6%	5%	3%
To send or receive or download or upload other content (E.g., ringtones, wallpapers, pictures, games and video clips)	0%	2%	3%	8%	10%	9%
As an organizer (keep appointments, reminders, alarm and clock)	1%	7%	8%	4%	9%	14%
To check my bill / credit balance	11%	40%	25%	50%	3%	39%

	BD		PAK		IND		SL		PHIL		THAI	
	Regularly	Not regularly	Regularly	Not regularly	Regularly	Not regularly	Regularly	Not regularly	Regularly	Not regularly	Regularly	Not regularly
Banking and financial services						1%		2%		1%		3%
Payment services								3%	2%	3%	1%	4%
Government services								2%		2%		
Health services	1%					1%		8%		1%		2%
Voting, competitions, reality shows, etc						1%	1%	5%		7%	1%	8%
General information services	1%		1%					3%		2%	5%	11%
Agricultural or fisheries information								1%				

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Who among the aware are willing to use money transfer services and govt services via a mobile?

Willingness to try sending or receiving money (% of BOP teleusers who are currently unaware of such services)

Legend:
- I dont need to use this service
- No
- Not Sure
- Yes

	Bangladesh	Pakistan	India	Sri Lanka	Philippines
I dont need to use this service	21	41	41	39	2
No	14	31	30	18	45
Not Sure	22	20	18	6	15
Yes	43	9	11	37	38
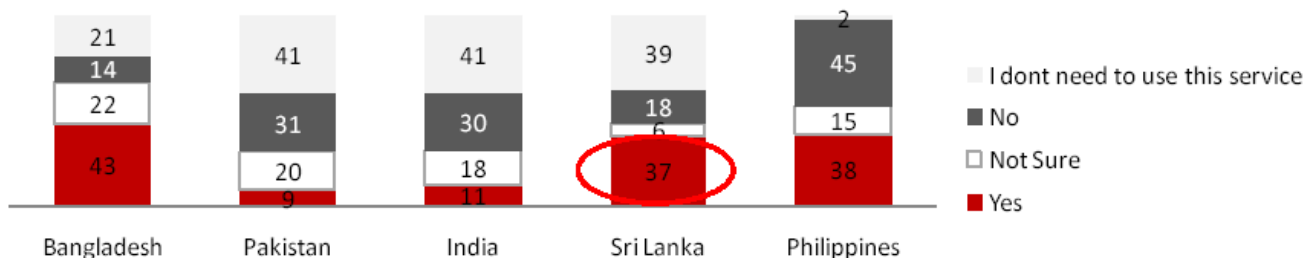
Willingness to try accessing government services (% of BOP teleusers who are currently unaware of such services)

Legend:
- I dont need to use this service
- No
- Not Sure
- Yes

	Bangladesh	Pakistan	India	Sri Lanka	Philippines
I dont need to use this service	27	48	41	47	3
No	22	30	33	20	44
Not Sure	20	16	16	4	15
Yes	31	6	9	29	37
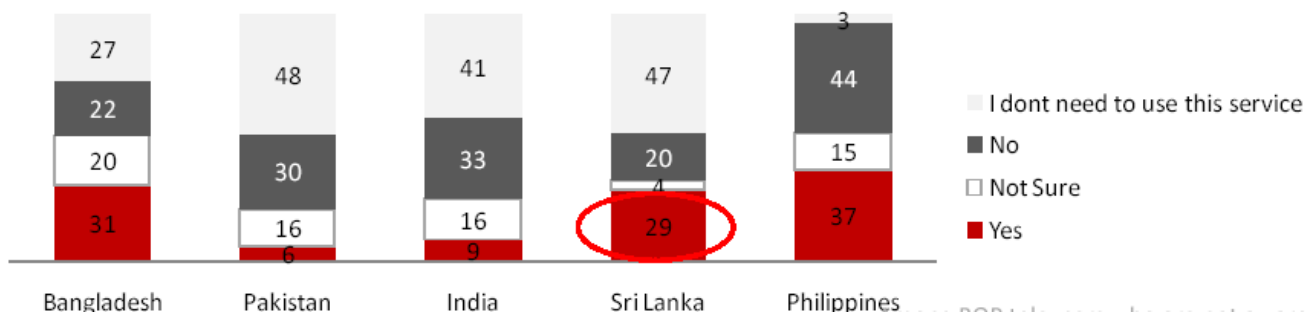
Industry and Other Research

ITU estimates over 60 per cent penetration driven mainly by BRIC economies
http://web20.telecomtv.com/pages/?newsid=43953&id=9645a575-ac27-48a0-a8d3-71798a97d026&page=1

Geneva, 25 September 2008 - ITU Secretary-General Hamadoun Touré announced in New York that worldwide mobile cellular subscribers are likely to reach the 4 billion mark before the end of this year.

Dr Touré was speaking at the high-level events on the Millennium Development Goals (MDGs) in New York, where he also participated in UN Private Sector Forums addressing the global food crisis and the role of technological innovation in meeting the MDGs.

The MDGs were adopted following the United Nations Millennium Declaration by UN Member states in 2000, representing an international commitment to eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality, reduce child mortality, improve maternal health,

combat epidemics such as HIV/AIDS and malaria, ensure environmental sustainability, and develop a global partnership for development that would include making available the benefits of information and communication technologies. ICTs have been recognized as an important tool to achieve the MDGs.

Since the turn of the century, the growth of mobile cellular subscribers has been impressive, with year-on-year growth averaging 24 per cent between 2000 and 2008. While in 2000, mobile penetration stood at only 12 per cent, it surpassed the 50 per cent mark by early 2008. It is estimated to reach about 61 per cent by the end of 2008. "The fact that 4 billion subscribers have been registered worldwide indicates that it is technically feasible to connect the world to the benefits of ICT and that it is a viable business opportunity," said Dr Touré. "Clearly, ICTs have the potential to act as catalysts to achieve the 2015 targets of the MDGs."

While the data shows impressive growth, ITU stresses that the figures need to be carefully interpreted. Although in theory a 61 per cent penetration rate suggests that at least every second person could be using a mobile phone, this is not necessarily the case. In fact, the statistics reflect the number of subscriptions, not persons. Double counting takes place when people have multiple subscriptions. Also, operators' methods for counting active prepaid subscribers vary and often inflate the actual number of people that use a mobile phone.

On the other hand, some subscribers, particularly in developing countries, share their mobile phone with others. This has often been cited as the success story of Grameen Phone in rural Bangladesh, for instance. ITU further highlights that despite high growth rates in the mobile sector, major differences in mobile penetration rates remain between regions and within countries.

The impressive growth in the number of mobile cellular subscribers is mainly due to developments in some of the world's largest markets. The BRIC economies of Brazil, Russia, India and China are expected to have an increasingly important impact in terms of population, resources and global GDP share. These economies alone are expected to account for over 1.3 billion mobile subscribers by the end of 2008.

China surpassed the 600 million mark by mid-2008, representing by far the world's largest mobile market. India had some 296 million mobile subscribers by end July 2008 but with a relatively low penetration rate of about 20 per cent, India offers great potential for growth. Market liberalization has played a key role in spreading mobile telephony by driving competition and bringing down prices. India's mobile operators increasingly compete for low-income customers and Average-Revenue-Per-User in India has reached around USD 7, one of the lowest in the world.

ITU recently published two regional reports which indicate how mobile telephony is changing peoples' lives. Apart from providing communication services to previously unconnected areas, mobile applications have opened the doors to innovations such as m-commerce to access pricing information for rural farmers and the use of mobile phones to pay for goods and services. While mobile broadband subscribers remain concentrated in the developed world, a number of developing countries, including Indonesia, the Maldives, the Philippines and Sri Lanka in Asia-Pacific have launched 3 G networks.

Broadband uptake enables a range of socially desirable and valuable online services, specifically targeting the MDGs in areas such as e-government, e-education and e-health. The use of broadband

technologies can help overcome many of the basic development challenges faced by developing countries.

ITU TELECOM AFRICA focuses on a continent at a crossroads

http://www.itu.int/newsroom/press_releases/2008/10.html

Africa marks unprecedented growth in mobile sector

Growth in Africa's mobile sector has defied all predictions. Africa remains the region with the highest annual growth rate in mobile subscribers and added no less than 65 million new subscribers during 2007. At the beginning of 2008, there were over a quarter of a billion mobile subscribers on the continent. Mobile penetration has risen from just one in 50 people at the beginning of this century to almost one third of the population today. Mobile subscribers are also now more evenly distributed. In 2000, South Africa accounted for over half of all Africa's mobile subscribers, but by 2007, almost 85 per cent were in other countries. Mobile success, driven largely by competition, is also spawning new services such as micro-payment prepaid recharging, single rate inter-regional roaming and the uptake of m-commerce applications.

Mobile subscribers and penetration in Africa
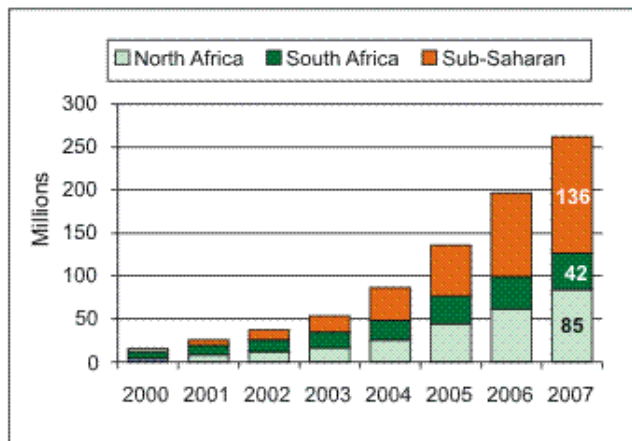
Source: World Telecommunication/ICT Indicators Database.
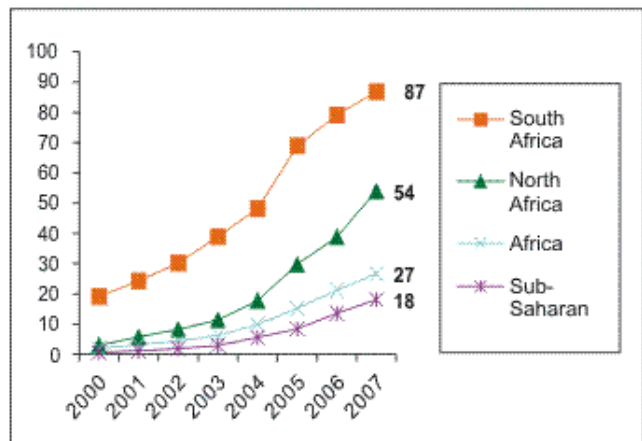
Source: World Telecommunication/ICT Indicators Database.

High prices, low usage… Africa's broadband market needs a boost

While mobile services have become more accessible and affordable, Internet access has generally not. It is estimated that there were some 50 million Internet users in Africa in 2007, translating into around one person among twenty. Over half of the region's Internet users are estimated to be located in North African countries and South Africa. In Sub Saharan Africa, only three per cent of the population is online. The scarcity of international Internet bandwidth and lack of Internet Exchange Points (IXPs) drives up prices. Africa, the poorest region in the world, has the most expensive Internet prices. The

average monthly Internet subscription is almost USD 50 in Africa, close to 70 per cent of average per capita income.
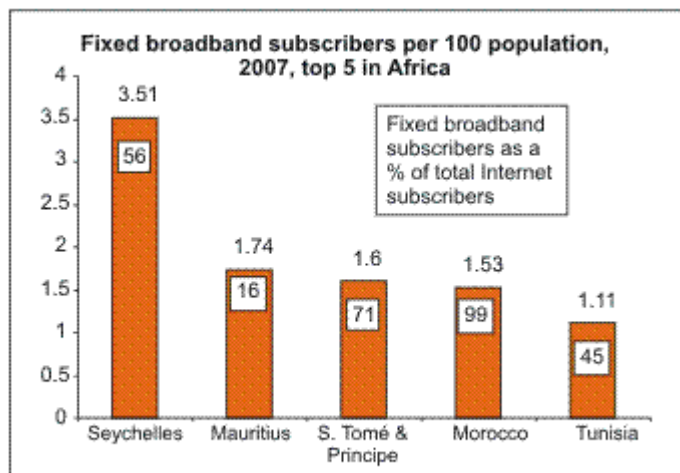
Source: World Telecommunication/ICT Indicators Database.

Broadband penetration is low across the continent. There were around two million fixed broadband subscribers in Africa in 2007, less than a quarter of the population of metropolitan Lagos, the former capital of Nigeria. Only five African countries had a broadband penetration of more than one per 100 inhabitants in 2007. In comparison, the average broadband penetration in OECD countries was 18.8 in June 2007 and the lowest ranked country was Mexico, with a penetration of 4.6, or some 38 times more than the average for Africa. Fixed broadband access is mostly limited to urban centres. The low availability, poor condition and lack of competition in the public switched telephone network market constrains the deployment of fixed broadband access.

Broadband prices remain very high compared to income levels although average prices for Africa disguise significant underlying variability. Morocco, for example, has not only one of the highest broadband penetration rates in Africa, but also the lowest broadband prices, at USD 18 per month for a 256 kbps package. Broadband has proven so popular in Morocco that by the end of 2007, over 95 per cent of all Internet subscribers had a high-speed connection.

The future is wireless…

If broadband is to become more prevalent in Africa, it is likely to be through wireless technologies such as third generation (3G) mobile and WiMAX. In Mauritius and South Africa, 3G subscribers already outnumber fixed broadband subscribers. South Africa had 1.8 million 3G subscribers in September 2007 compared to 335 000 ADSL connections. Vodacom of South Africa reported that over 10 per cent of its 3G subscribers used data cards for connections to laptops, reflecting the popularity of 3G as a broadband access method. WiMAX is moving from an experimental testing phase to commercial deployment in a number of African countries. The spread of high-speed wireless technologies will intensify broadband competition in Africa. There is evidence that broadband pricing in Africa is lower in countries that have deployed *both* fixed and wireless broadband technology.

… and public access

The provision of voice telephony through public payphones is prevalent in some African countries. Liberalization of payphone markets has led to a proliferation of entrepreneurs reselling phone service. Take Togo for example, where about one quarter of fixed telephone lines are connected to private telephone cabins. The mobile boom has also created a large informal market reselling mobile airtime. This type of public access needs to be intensified for Internet access. Levels of home computer ownership and Internet subscription are extremely low in Africa and will remain so for years to come. Higher levels of ICT access will only be achieved through public facilities such as Internet cafés and schools. Practical programmes are needed to dramatically boost access through public facilities, including the full liberalization of public access licensing procedures to facilitate the creation of entrepreneur-operated facilities. This should be linked to e-government programmes in order to ensure that citizens can electronically interact with their governments.

Incentives for renewable energy

A serious impediment to the development of ICT markets in Africa is the lack of electricity. Energy shortages and power failures raise costs, as operators must maintain their own generators. Governments could consider offering tax rebates to offset the high costs of energy for telecommunication operators. Import duty waivers and tax reductions could be extended to local companies supplying renewable power and equipment to mobile operators. Private-public partnerships between utilities and telecommunication operators could also address specific energy needs.

At a crossroads

As the end of the first decade of the new millennium approaches, Africa stands at a crossroads, with ICT policy makers faced with important choices. While the mobile sector has grown tremendously, sustaining this momentum and expanding access in areas where Africa is lagging behind such as Internet and broadband, will not come easy. Getting more users on board would mean targeting lower income segments of the population. These potential customers are highly sensitive to price and small changes can have a big impact.

Bringing down prices will be key in expanding access to more Africans. Governments can do their share by reducing taxes, interconnection rates and regulatory costs. Deeper liberalization such as the abolition of remaining exclusivities on market entry, the reduction of license fees and simplification and transparency of licensing procedures can help to increase competition and lower costs. Infrastructure sharing is particularly relevant in a region that needs both investment in ICT facilities and lower prices. It is therefore logical to minimize duplication and share facilities where practical. Regulators can help by creating a trusting environment among operators and developing policies that promote infrastructure sharing.

ITU's Asia-Pacific Telecommunication and ICT Indicators Report focuses on broadband connectivity: Too much or too little?

Asia-Pacific region leads high-speed Internet connectivity, but wide divide prevails
http://www.itu.int/newsroom/press_releases/2008/25.html

While some Asia-Pacific economies are world leaders in information and communication technologies (ICT) where broadband access is ultra-high speed, affordable and close to ubiquitous, in most of the region's poorer countries Internet access remains limited and predominantly low-speed. The Report finds evidence that ICTs and broadband uptake foster growth and development, but the question remains as to the optimal speed that should be targeted in view of limited resources.

Asia-Pacific: a region of superlatives

Asia-Pacific is a region of superlatives when it comes to ICTs. By early 2008, the total number of telephone subscribers had passed the two billion mark.

Figure 1: Distribution of ICTs by world regions, 2007
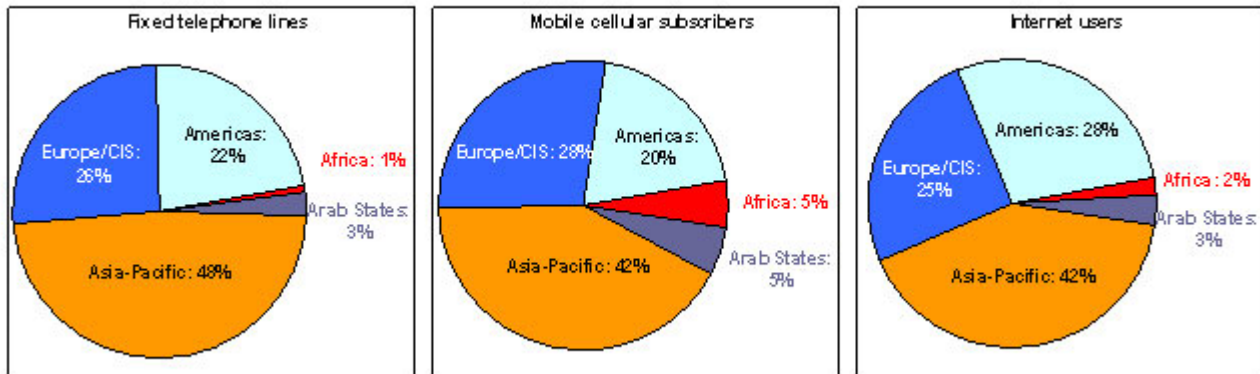
Source: ITU World Telecommunication/ICT Indicators database

The region is home to almost half the world's fixed telephone subscribers. It has 42 per cent of the world's Internet users, and with 1.4 billion mobile cellular subscribers, it also has the largest mobile phone market share (Figure 1).

By mid-2008, China and India alone had over 600 and 280 million mobile cellular subscribers, respectively, representing close to a quarter of the world's total. Average annual mobile growth over the last five years is close to 30 per cent, and with mobile penetration approaching 40 per cent, almost two out of five inhabitants in the region enjoy the benefits of mobile telephony today. Non-voice applications via mobile phones are increasing rapidly and now account for more than one quarter of the region's main operators' mobile revenues. Text messaging — or SMS — is the predominant non-voice, mobile application. Filipinos send a staggering 650 text messages per subscriber per month, the highest in the world. SMS has emerged as a significant alternative to computer-based e-mail in the region's low and lower-middle income economies. The Report finds that other mobile data applications, such as cash transfers and online purchases are creating new business opportunities in poor countries.

Asia-Pacific is a global broadband leader

The area in which the region really stands out is the uptake of advanced Internet technologies, especially **broadband** Internet access. The Asia-Pacific region is the world's largest broadband market with a 39 per cent share of the world's total at the end of 2007. In terms of broadband access, Asia-

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Pacific has made remarkable progress in the past few years, with subscriber numbers growing almost Five-fold in five years: from 27 million at the beginning of 2003 to 133 million at the start of 2008.

Figure 2: Percentage of households with fixed broadband Top ten economies 2007

Macao, China — 64
Sweden — 67
Norway — 67
Taiwan, China — 69
HK, China — 70
Denmark — 70
Singapore — 71
Netherlands — 74
Iceland — 76
Korea (Rep.) — 79
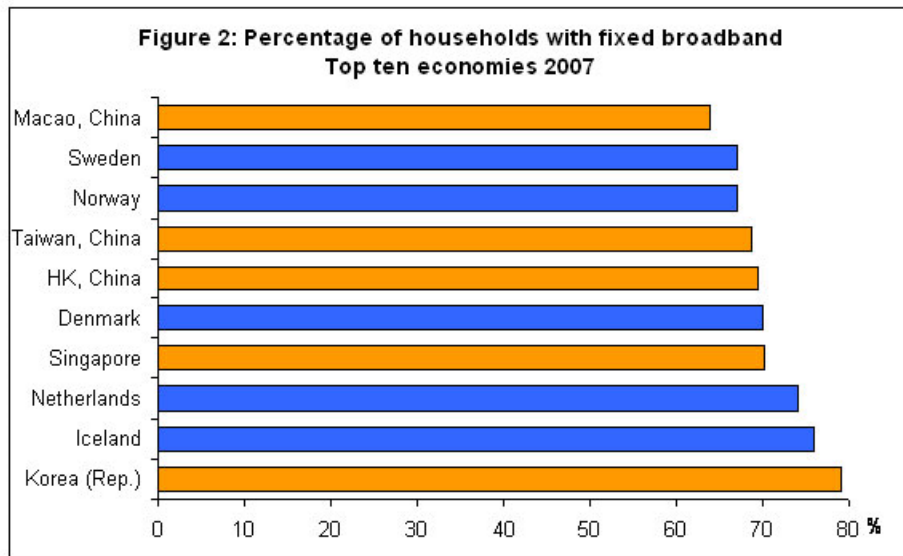
Source: ITU World Telecommunication/ICT Indicators database

In the region's high-income economies, ubiquitous access is progressing through a competitive race to provide ever faster fixed broadband access. Operators in Hong Kong (China) and Japan have launched one-Gigabits per second (Gbps) broadband and triple-play services aimed at the residential market, featuring applications such as Internet telephony and television. The Republic of Korea leads the world in terms of the percentage of households with fixed broadband access, and no less than five economies in the top ten are from Asia-Pacific (Figure 2). The Republic of Korea, Hong Kong (China), and Japan also lead the world in terms of the proportion of households with fibre optic connections, essential for supporting the next generation of ultra-high speed Internet applications.

These high-income economies are also leaders in terms of third generation (3G) mobile cellular deployment. Fixed and mobile broadband technologies complement each other and users enjoy continuous high-speed Internet access. In Singapore, a ubiquitous Internet access plan combining unlimited 8 Megabits per second (Mbps) fixed broadband, 2 Mbps mobile broadband and access at some 800 Wi-Fi hotspots is available for just USD 35 per month.

Not everyone lives the ultimate high-speed Internet access experience. At the other extreme, in most of the region's low and lower-middle income economies, high-speed Internet access is limited to urban areas at best, typically expensive, and often not available at all. The regional broadband divide is striking, with poor economies having a close-to-zero broadband penetration, compared to that of rich economies where one in four persons is a broadband subscriber (Figure 3).

The gap in available broadband speeds between rich and poor countries is as wide as broadband penetration. In Japan, the Republic of Korea and Hong Kong

Figure 3: Fixed broadband Internet subscribers per 100 inhabitants, 2007
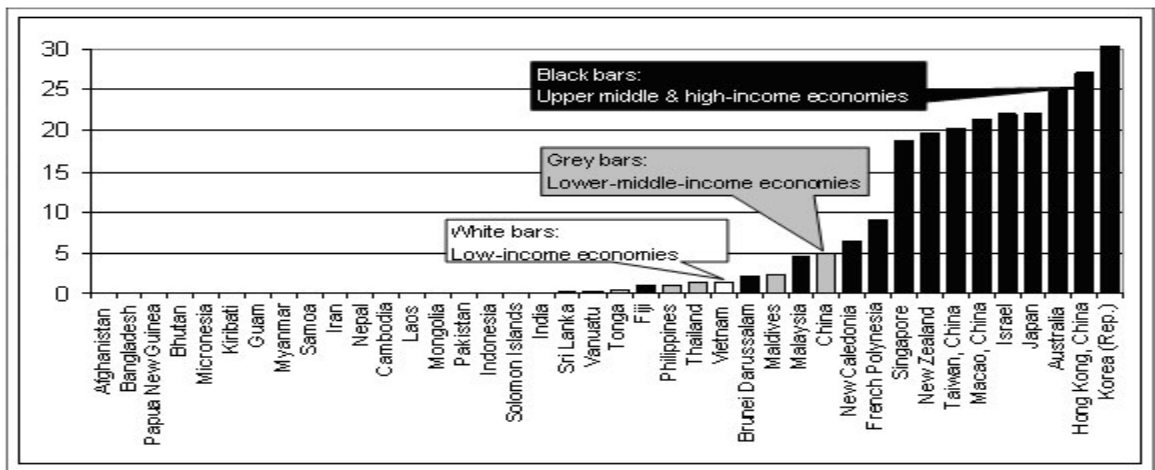
Source: ITU World Telecommunication/ICT Indicators database

(China), the minimum advertised broadband speed is faster than the maximum broadband speed in Cambodia, Tonga, Laos and Bangladesh.

While in low and lower-middle income economies mobile phones have become a substitute for the shortage of fixed lines, they are not yet fulfilling the potential of broadband access. By the end of 2007, only Indonesia, the Maldives, the Philippines and Sri Lanka had commercially deployed WCDMA networks. The region's two largest mobile markets, China and India, have yet to launch mobile broadband. By the end of 2007, there were over 120 million mobile broadband subscribers in the region (Figure 4), but almost all (97 per cent) were in high income economies.

While the region's high-income economies are pushing the frontier of broadband bandwidth to a point where applications have yet to catch up, many Asia-Pacific developing economies are bandwidth starved, inhibiting the development of their information societies.

Figure 4: Mobile cellular broadband subscribers in Asia-Pacific
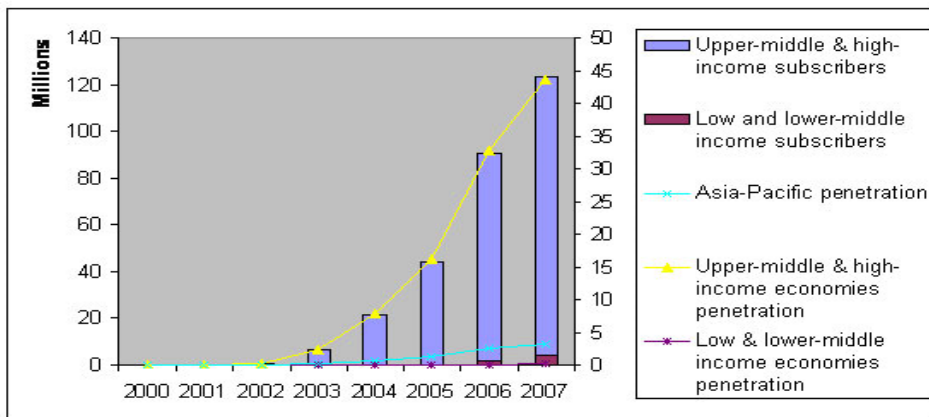
Source: ITU World Telecommunication/ICT Indicators database

The ITU Report argues that broadband uptake enables a range of socially desirable and valuable online services in areas such as government, education and health. The use of broadband technologies can help overcome many of the basic development challenges faced by poor countries. The Report provides a number of examples where broadband connectivity has acted as a catalyst for development. These include the provision of education through distance learning in the Solomon Islands, the creation of jobs through business incubators for women in China, and the supply of communication services for disaster management in Myanmar.

The level of economic development plays a key role in broadband uptake since substantive investments are necessary to deploy high-speed infrastructure. However, the Report identifies a number of obstacles that policy-makers must address to overcome the broadband gap. Governments must recognize its importance and formulate concrete broadband policies and targets, while providing incentives for achieving them. Broadband prices could be reduced by encouraging new operators to enter the markets. Stimulating competition, liberalizing the building blocks necessary to develop a broadband business, and opening up the way for new technologies — including 3G and WiMAX — are important success factors to ensure higher broadband penetration.

Asia-Pacific Telecommunication/ICT Indicators 2008

The Asia-Pacific Telecommunication/ICT Indicators 2008 Report is an invaluable information tool to inform and guide policy-makers, investors, analysts and other observers of the region's telecommunications landscape. It contains an extensive overview of key sector developments, and includes a number of recommendations to sustain growth and deepen access to ICTs in the region.
Besides the analytical section, the Report includes 20 regional tables covering key telecommunication/ICT indicators (2006/2007 data), 43 individual country pages with a five year profile from 2003-2007, and a directory of telecommunication ministries, regulators and operators in the region.

The use of missed calls at the bottom of the pyramid

www.freedomofexpression.org.uk/files/Salazar_teleuse_civil_society.ppt

Hit me with a missed call: The use of missed calls at the bottom of the pyramid
Nirmali Sivapragasam, Ayesha Zainudeen and Dimuthu Ratnadiwakara

'Missed calling' is an innovative method of telecommunication, being increasingly used among the 3+ billion mobile users that exist today. Supported by caller identification facilities and in-built address books that most mobile phones come equipped with, this practice is, in every sense, a user-driver 'innovation', aiding many at the bottom of the economic pyramid (or BOP) enjoy the benefits of access to telecom, at little or no cost.

This article draws on findings from a five-country, 8600+ sample study conducted in 2006,mainly among the BOP in South and Southeast Asia, to assess the extent to which the use of missed calls is a

cost-saving strategy. Contradictory to much of the existing literature this article finds that the practice is as popular among non-BOP mobile owners as with BOP mobile owners.

The paper also explores the positive, and potentially negative, economic implications of such a phenomenon on both users at the BOP and service providers alike. Using available data, an attempt is made to quantify potential savings users at the BOP could enjoy through the use of missed calls, estimating that mobile owners at the BOP can enjoy savings of up to 10 percent of their monthly mobile expenditure. In light of the costs to network operators associated with the practice, policy recommendations which aim to reduce the negative impacts are made.

Use of 'missed calls' to minimise communication costs
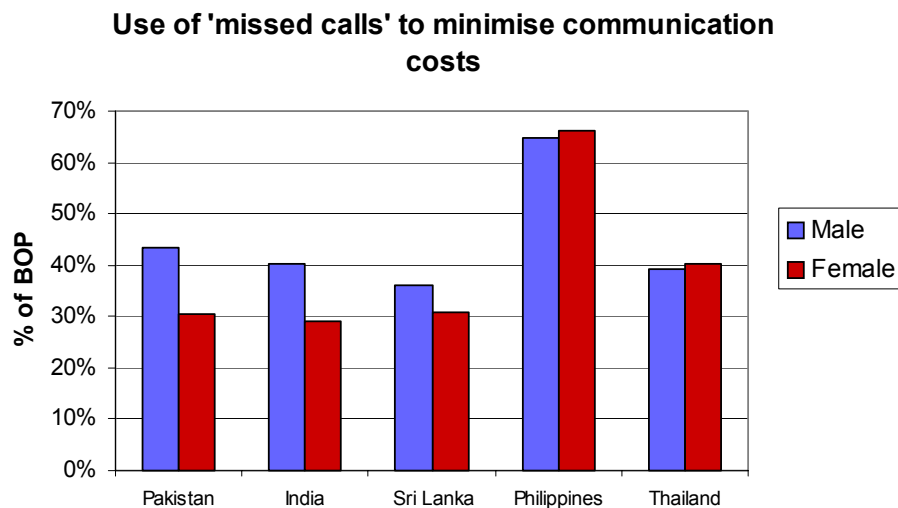
Mobile phone lifeline for world's poor

By Tatum Anderson, Delhi; BBC News, February, 2007
http://news.bbc.co.uk/1/hi/business/6339671.stm

Mobile phones are seen as practical as well as fashionable. While consumers around the world demand sleek black and silver mobile phones, villagers in rural India buy brightly-coloured handsets in gold, reds and pinks. Mobile phones are as much a fashion statement here as in the trendy bars of Europe.

That Indian villagers are beginning to buy mobile phones is indicative of an explosive growth in mobile services in countries where the poorest people live. Of the one million people who become new mobile phone subscribers every day, about 85% live in emerging markets, according to the mobile phone industry body, the GSMA.

Not just fashionable

But there is growing evidence that mobile phones are more than a fashion accessory and can transform the lives of the people who are able to access them. The most obvious anecdotal evidence can be seen all over the developing world. From Kampala to Mombasa, handset sellers are plying their trade - some based in small kiosks, others sheltering from the blazing sunshine under large, colourful umbrellas.

An enormous number of people, including taxi drivers and tradesmen, now rely on mobile phones to run their small businesses - well over 80% in Egypt and South Africa alone, according to a report by the UN's Conference on Trade and Development (UNCTAD).

The mobile phone boom has transformed ordinary people into micro-entrepreneurs.

One of the most famous examples of mobile phone entrepreneurship is the Village Phone Programme in Bangladesh. Run by a sister firm of the 2006 Nobel Peace Prize-winning Grameen Bank, it enables local women to earn an income from renting mobile phones to fellow villagers. The scheme, which has been broadened out to Uganda and Rwanda, could reach India this year.

Meanwhile, some farmers are able to receive better prices for their crops because they have access to information on market prices, primarily via mobile phones. And new technology from Bharti Telesoft, is allowing the local villagers to sell mobile phone time to the poor in even smaller units - through prepay top-ups that are done through phone-to-phone links rather than using cards.

Business platform

TradeNet, a Ghana-based trading platform, is one of the number of projects allowing farmers to access prices and offers from traders by mobile phone.

Accompanying the growing number of anecdotes suggesting that mobile phones can change lives are studies which confirm the link between mobile phones and growing economic prosperity. The mobile can be an agent of development - not just something that is only for the affluent, Ben Soppitt, director of strategic initiatives at the GSMA.

A ground-breaking study led by an expert from the London Business School in 2005 concluded that an increase of 10 mobile phones per 100 people in African developing countries would increase GDP growth by 0.6%. The mobile phone industry, which has turned its attention to the remaining three billion people on the planet without mobile phones, has also sponsored a great number of studies aimed at proving that mobile phones can promote development. One of these studies, carried out by consultancy Deloitte, says the increase in GDP today could be as much as 1.2%.

"The mobile can be an agent of development - not just something that is only for the affluent, along the same lines as imported Mercedes and Johnnie Walker Red Label," says Ben Soppitt, director of strategic initiatives at the GSMA.

Family link

Beyond job creation, mobile phones transform lives for many by presenting a way to communicate regularly with family members for the first time. Almost 100 million Chinese migrant workers rely on mobile phones to talk to the families they have left behind in rural areas.

They also enable people to save time and money by allowing them to make inquiries by phone instead of travelling long distances. Now new ways to improve lives are being considered by operators and international donors.

It is thought that mobile phones could become virtual bank accounts, being used to send, receive and save money. M-banking, as it is known, might help to serve the three billion people who currently have no access to financial services, according to the World Bank.

"Most of those three billion people don't have a safe place to save money. What ultimately gets people out poverty, and prevents them from being vulnerable to crises, is when they have a nest egg to fall back on", says Gautam Ivatury, head of technology at Consultative Group to Assist the Poor (CGAP), a division of the World Bank that is promoting m-banking service trials from Mongolia to Pakistan.

CGAP is helping the development of services that will allow workers to send money to support their families in rural areas, by mobile phone. Payments, or remittances, are already widespread. But since few of those receiving them have bank accounts, they have to pay a sizeable proportion to money transfer companies to pick up the money.

Money transfer

There are even problems when workers take the money directly to their families. Mr Ivatury says many Zimbabweans working in South Africa lose as much as half the amount they take home to their families in bribes at security checkpoints. M-banking would allow them to send money safely from their mobile phones to those of their families, who would be able to redeem cash from mobile airtime sellers where they live.

Already a Vodafone affiliate, mobile operator Safaricom, has tested a service called M-PESA in Kenya with various partners, including the UK's Department for International Development (DFID). India's largest mobile operator, Bharti Airtel, has also trialled a similar scheme in a Himalayan village, with the help of State Bank of India.

However, access to such services will be limited as long as mobile networks fail to reach many rural areas - and as long as mobile phones and services are far too expensive for many in urban areas, as well as rural ones. Sridhar Pai, founder of Indian telecoms consultancy Tonse Telecom, believes there is a huge untapped market in India alone.

"There are 880 million potential subscribers resident in rural and semi-urban locations. If penetration has to start entering these locations, it might make sense to have an incredibly competitive price package for these folks," he said.

The world's poor use mobile phones for banking

Vodafone; *developments*, UK
http://www.developments.org.uk/articles/the-worlds-poor-use-mobile-phones-for-banking/

The number of mobile subscribers in developing countries grew more than five-fold between 2000 and 2005, reaching more than 1.4 billion.

Mobile phone banking is more valued among the poor and can be more affordable than traditional banking. So says a new report into the socio-economic impact of mobile phones in developing markets commissioned by the Vodaphone Group. It reveals that a third of people in South Africa and Botswana who do not have bank accounts either own a mobile phone or have access to one. And in Egypt, "Airtime Transfer services" have begun to create commercial opportunities for small-time dealers and resellers of airtime, providing a viable and flexible business opportunity for a wide range of micro-entrepreneurs.

Among the key social findings in Economic Empowerment through Mobile are that mobile technology and the Airtime Transfer services support social networks through reinforcing existing relationships, and enabling airtime to be redistributed across family or friends. And Airtime Transfer services have given women more independence.

Vodafone worked in partnership with The Consultative Group to Assist the Poor (CGAP) and World Resource Institute (WRI) to research the impact of mobile phones in enabling economic transactions. "Financial services help poor people increase household incomes, build assets, and become less vulnerable to crises," said Guatam Ivatury, Microfinance Specialist with CGAP. "Mobile phones have tremendous potential to deliver these financial services to billions of low-income people who otherwise would not have the opportunity to save or improve their financial literacy using a traditional bank."

The number of mobile subscribers in developing countries grew more than five-fold between 2000 and 2005, reaching more than 1.4 billion. And because they can be used to conduct many banking transactions anywhere, anytime, low-income people no longer need to travel to distant bank branches. Mobile banking transactions also cost far less to process than a transaction at an ATM or branch, so banks can make a profit handling even small money transfers and payments. There is widespread potential to use cellphone banking as a vehicle to expand access to financial services in the poorer markets, where people traditionally have less access to these services. The research suggests that cellphone banking makes it more comfortable and convenient for poorer people to use financial services.

More information - www.vodafone.com

DFID's support to mobile phone banking (m-banking) for the poor

DFID News, 8 May 2007 (Updated 12 February 2008)
http://www.dfid.gov.uk/news/files/mobile-banking.asp

Transferring Kenyan Shillings using a mobile phone; DFID supports m-banking as a means of tackling the barriers that prevent poor people from accessing financial services. DFID has led the way among donors in working to ensure that m-banking includes and benefits the poor.

In 2005, DFID led a participatory process in Kenya and South Africa, working with regulators and mobile banking providers to map out what an enabling environment for mobile banking would look like and the issues that needed to be addressed. This culminated in a report - The Enabling Environment for Mobile Banking in (Africapdf 399 kb). The report led to increased regulator and donor attention towards m-banking and continues to be central to discussions by regulators, donors and the private sector in both developed and developing countries.

Given the increased interest in mobile banking, in 2006 DFID produced a report - Mobile Banking - knowledge map & possible donor support (strategiespdf 279 kb) - which set out where public support is required and how it can best be coordinated in order to catalyse the sector in a way that includes the poor. The report, which was widely consulted on by other donors, has served to catalyse donor interest and has led to greater coordination in donor support for m-banking.

In 2007, DFID partnered with the Consultative Group to Assist the Poor (CGAP) and the GSM Association to conduct diagnostic reviews of the regulatory environment for m-banking and other forms of branchless banking in seven countries. The resulting focus note - Regulating Transformational Branchless Banking: Mobile Phones and Other Technology to Increase Access to Finance (pdf 442 kb) - is designed to assist policy-makers in developing appropriate regulation that allows innovation but protects consumers. Read more about ***regulating mobile phone banking***.

Deconstructing Collective Behavior: The Case Of Early Mobile Phone Use Among Poor Youth In Bangladesh

Wong, Lip Soon; allacademic
http://www.allacademic.com/meta/p_mla_apa_research_citation/2/3/8/9/1/p238919_index.html

This paper considers the role that the mobile phone plays in the poor youth's social life. As millions of poor youth in the developing countries connect together through the use of the mobile phone, their unconnected life transforms into one full of interaction enjoyment with others. What really makes them glad to use the mobile phone? What are the social experiences that make the use of the mobile phone worthwhile? I argue that these two questions can be better understood by examining the collective behavior of the poor youth in learning, sharing and experimenting with new technology, especially in the early stage of being a non-user to becoming a new user of the mobile phone. This paper takes on the Seymour Paper's constructionism viewpoint and adapts this viewpoint to examine collective learning, sharing and experimenting as agents of change, and the mobile phone as a mechanism of change. The paper seeks to examine the collective-mediated learning, sharing and experimenting within the emergent pattern of reciprocal sociality through two case studies. It concludes that by examining collective-mediated and reciprocal sociality influence, the adoption, usage and experience of the mobile phone among the poor youth can better be understood.

Cell - The Social Change

Published by Saad Khan August 30, 2008
http://telecompk.net/2008/08/30/cell-the-social-change/

Cellular revolution has taken Pakistan by storm. As the mobile density in Pakistan is reaching 56%, it's high time that we discuss the prospects of cell phone-based social revolution in Pakistan. Mobile phones are increasingly being used as a social tool across the globe - as a weapon for the eradication of poverty and disease and as a sustainable option.

Pakistani cellular companies are also trying to catch on with this growing 'cellular activism' frenzy. It's true that cellular companies have limited scope of action as far as brining social change is concerned still almost all the mobile companies of Pakistan are doing some kind of social uplift projects. Telenor, for instance, has launched a farmers' uplift scheme - TeleKisan - besides the apna PCO and other schemes. Similarly, other cellular companies are also conducting some activities in the avenues of social uplift.

The responsibility, however, lies on the nonprofit sector and not just with the telcos. Non-profit organizations (NPOs) are the engines of social change in the developing countries. Mobile phones can be used as a foot soldier for social change if their use is extended beyond communications. NPOs can team up with the cellular companies to help providing technical knowledge to the farmers (National Rural Support Program is collaborating with Telenor in this case) or they can forge alliances with the medical community to provide free medical advice to those living in far off areas with limited resources. Some African nations are already making it big in what can be termed as cellular farming. The role of mobile phones in fighting against HIV/AIDS has already been discussed in one of our earlier posts.

Asia is not lagging behind as well. The success of Grameen in mobilizing people through 'mobiles' is known to all of us. Other networks like LIRNEasia are also doing commendable job in changing people's lives by the use of cellular technology. International donor agencies are also eager to work with such organizations like LIRNEasia. In fact they are financing the whole project.

Microcredit organizations, as discussed above, are rapidly adopting cellular technology to enhance their footprint. Mobile phones are yet to be used for micro financing in Pakistan though there are endless possibilities. To narrate an interesting fact, many small entrepreneurs, including women, have themselves understood the magic of cellular technology in expanding their businesses. They do face the shortage/availability of funds due to lack of financing but the cell phones are surely helping them in getting out of the tentacles of poverty.

Corporate sector too has a major role to play. Instead of simply doling out a few millions in charity, local corporate giants, along with the multinational conglomerates, should come forward with new ideas of using cellular technology for poverty alleviation. It's ironic to note that when the whole world is eyeing profitability at the bottom of the pyramid by using cell phones, Pakistani corporate sector is still reluctant to accept the change. Cellular technology is ruling the roost so isn't it the time to 'cell' the social change.

ICT Policy and Regulation

LIRNEasia Policy Projects

http://lirneasia.net/projects/

   * Book: ICT INFRASTRUCTURE IN EMERGING ASIA
   * Rapid Response Program
   * 2008-2010
      o Evaluating a Real-Time Biosurveillance Program (RTBP): A Pilot Project
      o Indicators, continued
         + Banded Forbearance
         + Benchmarks
         + Broadband Benchmarking QoSE 2.0
         + NRA Website Survey: Asia-Pacific 2008
         + Telecom Regulatory Environment (TRE) assessment
      o Mobile2.0@BOP
         + Mobile 2.0: Horizontal aspects
            # Issuance of Licences
            # Mobile Number Portability
            # New Conception of Frequency use
            # Spectrum Allocation and Refarming
            # Telco and banking regulations
         + Mobile 2.0: Vertical aspects
            # Agricultural applications
            # Freedom of Expression in Dissemination of Mobile Content
            # M-government services
            # M-payments
            # Mobiles for disaster warning
            # Mobiles, payment and logistics
            # Mobile value-added services
      o Teleuse at the Bottom of the Pyramid 3 (Teleuse@BOP3)

Telecom Regulatory Environment (TRE) assessment: Methodology and implementation results from five emerging economies

Rohan Samarajiva, Helani Galpaya, Divakar Goswami, Dimuthu Ratnadiwakara with contributions from Payal Malik, Joseph Wilson, Lorraine Carlos Salazar, Malathy Knight John
http://lirneasia.net/projects/2008-2010/indicators-continued/telecom-regulatory-environment/

The desired objective of telecom policy reform and regulation is improved sector performance, measured in four dimensions: connectivity, price, quality of service and choice.

Investment is a necessary condition for sector performance.

Risk is the primary determinant in making the investment decision – higher the risk, higher the expected rate of return. At the point of investment, investors consider risks associated with three environments:

  * Macro-level or country
  * Market or commercial, and
  * Regulatory

The macro-level or country risk is defined as factors that may affect the entire economy, such as inflation and foreign exchange risk, as well as overall political stability. Commercial risk is comprised of factors such as demand, effect of substitutable products and services, and performance of competitors. Regulatory risk is a term of art, defined by Spiller and Levy (1994) to refer to risk emanating from government action, including but not limited to the actions of the actual sector-specific regulatory agency with authority over the industry in question.

Risk is partially a matter of objective analysis - an investor can calculate an expected rate of return on a new investment based on factors within his control and assumptions based on factors outside his control. However, risk is, to a great extent, also matter of perception. Macro-level/Country Risk and as Regulator Risk are both difficult to measure objectively. But at a minimum a subjective measure of both Country Risk and Regulatory Risk is a necessity in making the investment.

The scope here is the regulatory environment within which telecom operators and potential new entrant's function , that is, a subset of the overall Regulatory Risk environment here described as the "Telecom Regulatory Environment" (TRE) that includes only the telecom-specific aspects. This manual presents a tool to measure the TRE in a country.

The TRE tool presented here is a measure of perception that is affected by a number of different factors. For example, the context of the investment (new vs. incremental) and nature of the telecom sub-sector (mobile vs. fixed) will affect the perception of the TRE.

The TRE has many uses: it is a diagnostic instrument for assessing the performance of the laws affecting the telecom sector and the various government entities responsible for implementation. If the scores are low in one aspect against another, it may be that the regulatory performance needs to be improved. If the performance considered satisfactory, it may also be possible that the problem is the communication of the regulatory actions. If the latter conclusion is reached, the appropriate action would be to improve the way the agency communicates its actions. The TRE can also be used as a tool for investors to assess regulatory risk in a country . Particularly for investors facing investment opportunities in the telecom sectors of more than one country, the TRE can provide a ranking of the countries in terms of telecom-specific regulatory risk.

The original TRE instrument was designed to assess regulatory effects on investment (Samarajiva & Dokeniya, 2005). It asked stakeholders to assess the telecom regulatory environment across five dimensions (market entry, allocation of scarce resources, interconnection, regulation of anti-competitive practices and universal service obligation) for the fixed and mobile sectors. The dimensions were adapted from the Reference Paper of the Fourth Protocol of the General Agreement on Trade in Service. A dimension for Tariff Regulation was added. The Reference Paper also refers

to the Independence of the Regulator, but this was left out of the dimensions selected because it is seen as a process variable different from the other outcome variables. The initial TRE surveys (the pilots as well as the 2006 implementation across 6 countries) therefore had a total number of 12 items (6 in each sector) that required a response. Learning from the 2006 survey, and in keeping with the changing nature of the telecom sector, new dimensions and new sectors have been added, as we discuss below.

The TRE asks senior level stakeholders to assess the Telecom Regulatory Environment in a country across a number of dimensions. It makes considerable effort to be parsimonious in the questions because the ideal respondents are senior managers, including CEOs of operators. A lengthy questionnaire runs the risk of it being passed down to others to complete.

The respondents are asked to rate the quality of the regulatory environment for each dimension on a Likert scale ranging from 1 (highly ineffective) to 5 (highly effective). So the respondent has to select a score (1, 2, 3, 4 or 5) and simply circle it (or click, in the case of a web-based survey). Posing questions in this format ensures that responses can be easily analyzed without losing any qualitative information as often occurs when using open ended questions.

The TRE instrument is administered at the same time in six countries by a team of researchers. Each instrument is accompanied by a short narrative statement describing each of the dimensions, using language from the Reference Paper as much as possible, and a bland summary of significant telecom policy and regulatory actions taken within the previous 12 months. The survey is accompanied by a cover letter stating that participation would be voluntary and that respondent confidentiality was guaranteed. Questionnaires are sent to large number respondents from agreed-upon categories. Follow-up emails, phone calls and are made to ensure a high response rate.

While the TRE Scores themselves are the most direct output of a TRE study, more meaningful analysis is done by analyzing the TRE scores in light of actual sector performance indicators for a particular country…

Figure 1: TRE - market entry (fixed and mobile)
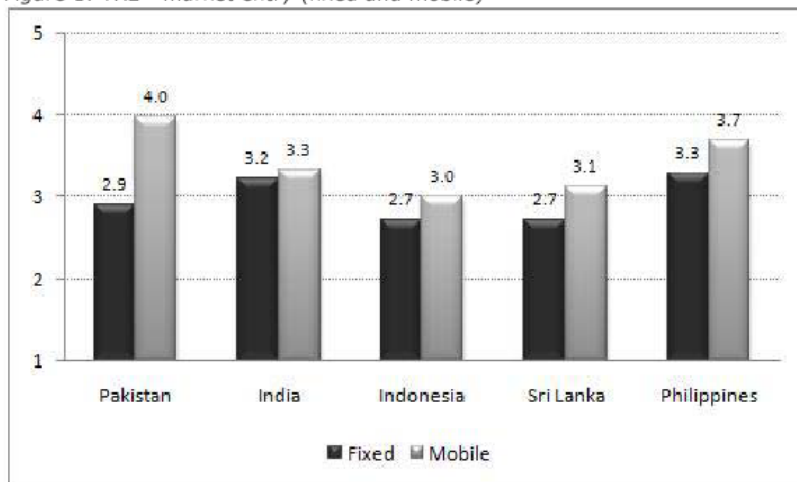
Source: Research team

Figure 2: TRE - scarce resources (fixed and mobile)
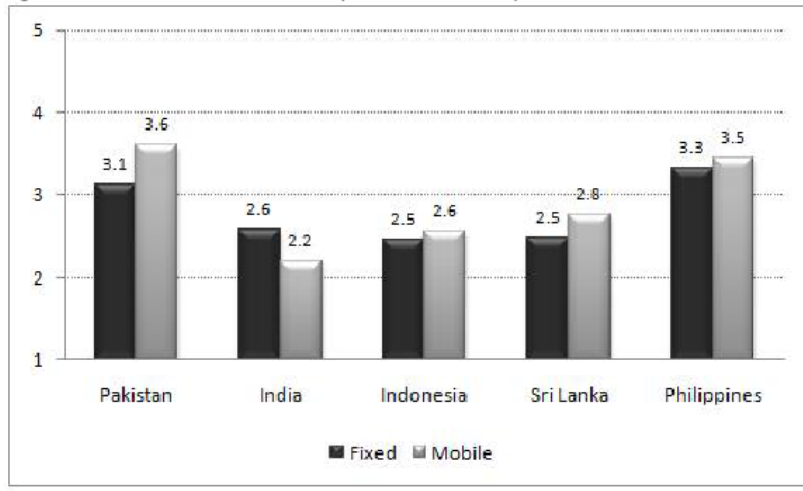
Figure 3: TRE – Interconnection (fixed and mobile)
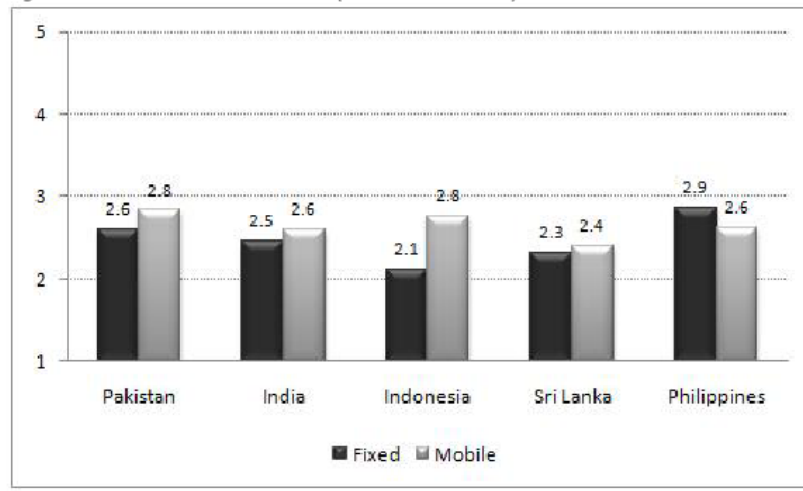
Figure 4: TRE – Price/Tariff Regulation (fixed and mobile)

Source: Research team

135

Figure 5: TRE – Anti-competitive practices (fixed and mobile)
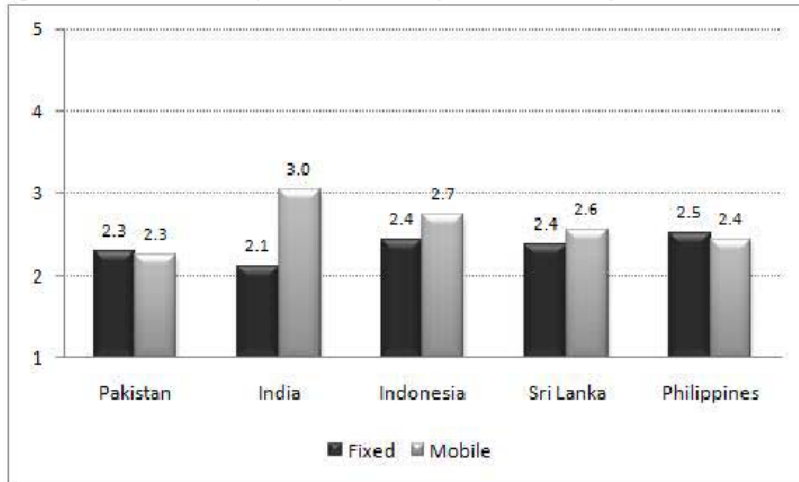
Figure 6: TRE – Universal service (fixed and mobile)
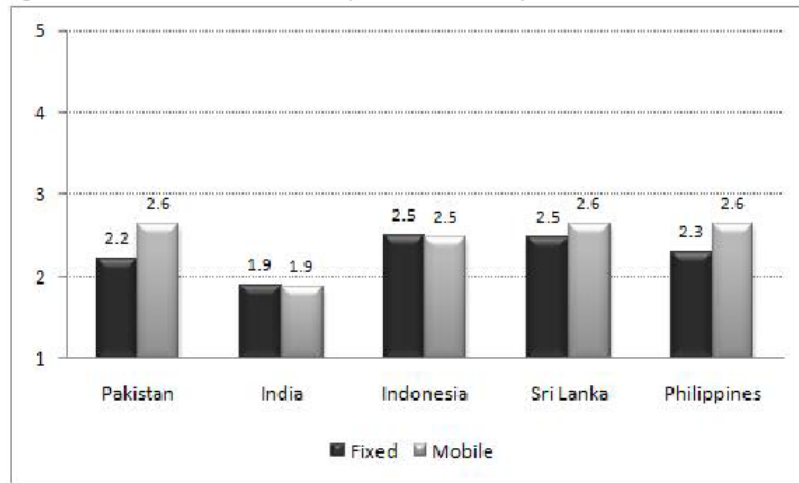
Figure 7: Aggregate TRE comparisons (fixed and mobile)
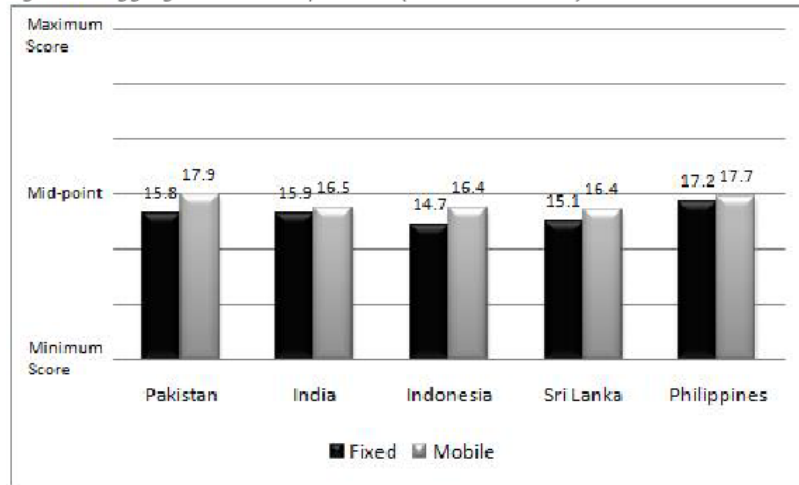
Benchmarking Asia Pacific National Telecom Regulatory Authority Websites

Lara Alawattegama and Chanuka Wattegama, June 2008' LIRNEasia
http://lirneasia.net/wp-content/uploads/2008/09/benchmarking-national-telecom-regulatory-authority-websites-40.pdf

Abstract:

A National Regulatory Authority (NRA) in telecommunication, like any other government organization, uses its website not only to deliver citizen services but also to improve the transparency and effectiveness of its functions. This study benchmarks the way NRAs use their websites to improve their overarching regulatory objectives. The Survey evaluates how well NRAs achieve this objective in the eyes of telecom operators, investors, consumers, researchers and the general public. Each website is awarded marks for the availability of information and features that are useful to the regulator's stakeholders. A total of 32 websites were evaluated from the 62 Asia Pacific economies. The results are presented individually as well as under different country clusters. The objective of the Survey was to provide a benchmark methodology that can be used to assess NRA websites across a region. It does not attempt to create positive or negative images of the respective NRA websites but rather reports the quality of the website in comparison with its regional partners. LIRNEasia hopes this will be a tool to encourage NRAs to improve their websites so as to serve their stakeholders better. The results of the Survey will be a useful tool for regulators to improve their websites…

Dialogue: Regulatory Frameworks for Improving Access

L I R N E . N E T - Learning Initiatives on Reforms for Network Economies, October, 2007
http://lirne.net/2007/10/dialogue-on-regulatory-frameworks-for-improving-access/

What key actions could telecom and ICT regulators undertake to promote access to infrastructure at local, international and regional levels?

This dialogue is being undertaken in preparation for the "Regulatory Frameworks for Improving Access" workshop co-hosted by the Association for Progressive Communications (APC), the Canadian International Development Research Centre (IDRC), and Learning Initiatives on Reforms for Network Economies (LIRNE.NET), and at this year's Internet Governance Forum. The workshop will explore the key regulatory issues and imperatives in promoting equitable deployment and affordable access to internet (communications) infrastructure at local, national, regional and global levels.

Rigorous rulings breathe life into paralysed sector

http://lirne.net/

Alison Gillwald, director of the Research ICT Africa (RIA!) network, in her article published in South Africa's Business Day, reports on the significance and implications of the most recent ruling

by the Pretoria High Court denying the Communications Minister's application for an urgent interdict to prevent South Africa regulatory authority (ICASA) from issuing certain licences.

"While those who would finally be able to enter the market unconstrained have been rubbing their hands in glee at these rulings — and those who thought they had got in through the flawed licensing process and closed the door behind them gnashed their teeth — not much has been said about the significance of Judge Norman Davis's carefully reasoned judgment reasserting a sound institutional and administrative basis for a sector so long paralysed by indecision."

Learning Initiatives on Reforms for Networking Economies

http://lirne.net/

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- Closing of the MRP (Telecommunications) programme
- Call for papers: Infrastructure Regulation: What works, Why, and How do we know?
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- LIRNEasia Executive Director elected to ICA Board

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<u>Telecommunications Regulation ToolKit</u>

<u>World Bank</u>
<u>http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/ORGANIZATION/EXTSDNET
WORK/0,,contentMDK:20535925~menuPK:3168905~pagePK:64159605~piPK:64157667~theSiteP
K:3167628,00.html</u>

Provides regulators with a practical guide to methods used to regulate telecommunications, focusing on best practices in licensing, interconnection, pricing and universal service obligations.

1. Overview of telecommunications regulation
2. Licensing telecommunications services
3. Interconnection
4. Price regulation
5. Competition policy
6. Universal services
7. Appendices

1. Overview of telecommunications regulation

Regulatory objectives
  The successful transformation of monopolistic telecommunications markets into competitive ones requires regulatory intervention. Over time, the need for regulatory intervention should diminish.
Regulatory organizations
  The role and options of a regulatory authority are described, including a discussion of the main features of regulatory (independence, funding) and the advantages and disadvantages of multi-sector regulators. Various international telecoms institutions, such as the International Telecommunications Union (ITU), play an important role in telecommunications regulation and useful references are provided.
The regulatory process
  Describes the challenges for the regulatory decision-making process, and suggests approaches to help regulators achieve the hallmarks of good decision-making, including: transparency, objectivity, professionalism, efficiency and independence.
Principles for effective regulation
  The main principles include: to introduce competition and to minimize regulatory intervention after competition is established.

2. Licensing telecommunications services

Introduction

A telecommunications license authorizes an entity to provide telecommunications services or operate telecommunications facilities, and generally defines the terms and conditions of such authorization. The section discusses WTO and EU licensing rules and objectives. This section describes three approaches to licensing: individual operator licenses; general authorizations; and no licensing requirements (i.e., open entry).

Licensing process

Five common types of licensing processes are discussed, including: licensing incumbent operators, licensing new entrants, general authorizations, spectrum licenses, and spectrum auctions, lotteries and comparative evaluation processes. Good practices will help ensure the success of a licensing process.

Licensing practices

A roadmap for good practice: transparency, public consultation, license fees, balancing of certainty and flexibility, and distinguishing licensing from procurement. The section also addresses the requirements of special arrangements such as concessions and build-operate-transfer arrangements (BOTs), the need to define service areas, and qualification and selection criteria.

Contents of licenses

Provides examples of contents of licenses depending on local

3. Interconnection

Interconnection principles

With the liberalization of telecommunications markets, effective interconnection arrangements (connection with neighboring operators) have become key to the operations of an increasingly wide range of services (long distance, mobile, etc.). This section stresses the importance of interconnection, and describes the main interconnection principles.

Interconnection procedures

This section discusses interconnection arrangements, the role of the regulator, dispute resolution, and "ex ante" regulatory guidance.

Financial terms of interconnection

There are several approaches to structure interconnection charges, and these are presented here. One section focuses specifically on internet and mobile interconnection.

Technical and operational conditions

The technical and operational conditions of interconnection include: the provision and treatment of information, unbundling, sharing of infrastructure and collocation, network access, and quality of service.

4. Price regulation

Introduction

This section refers to the objectives of price regulation, i.e., financial sustainability, efficiency, and equity objectives, and provides an introduction to rate balancing, the adjustment of price levels for different services to more closely reflect the costs of providing each service.

Approaches to price regulation

There are various approaches to price regulation, including discretionary price setting, rate-of-return regulation, and different types of ROR-incentive regulation. The analysis considers how well the three approaches achieve the broad objectives of price regulation.

Price-cap regulation

This section introduces the basic formula for price cap regulation and how to calculate price-cap variables, such as inflation and the productivity factor. It discusses the inflation factor, the productivity factor, capped and non-capped services, service baskets, individual service pricing restrictions, duration and review of price cap plans.

Price-cap variations

Price-cap variations are discussed, including the inclusion of a factor that reflects an "exogenous" variable (the exogenous factor), a factor that reflects the standard of quality of services, or that ensures different treatment for new services (to promote them).

Appendices:

OECD rate balancing

This appendix provides an overview of the OECD tariff comparison methodology and recent analysis of rate rebalancing trends in the OECD member countries.

Welfare benefits of rate balancing

This appendix provides an overview of the potential benefits to public welfare that may be expected from rate rebalancing.

5. Competition policy

General principles

Competition serves the public interest by inducing suppliers to become more efficient and to offer a greater choice of products and services at lower price. The main objectives of government intervention are to respond to market failures, to limit abuse of market power and to improve economic efficiency.

Basic concepts of competition policy

This section discusses the concept of market power and its effect, and potential barriers to entry.

Remedies for anti-competitive conduct

There are various forms of anti-competitive conduct (abuse of dominance) but equally there are various possible remedies. The section addresses: refusal to supply essential facilities, cross-subsidization, vertical price squeezing, predatory pricing, misuse of information and other restrictive arrangements. Each sub section sets out a specific remedy.

Mergers, acquisitions and other corporate combinations

The basic rational for merger control is that it is better to prevent firms from gaining excessive market power than to attempt to regulate abuses of their market power once such power arises. This section discusses merger analysis and merger remedies.

6. Universal services

Universal service and universal access

The principle objective of universality is to expand and maintain availability of affordable telecommunications services to the public.

Defining universality: what to fund?

Different countries use different approaches. This section looks at the funding of universal service in industrialized as well as developing and transitional economies.

Implementing universality: how to fund it? This section outlines the criteria for selecting universality mechanisms. It then looks at mechanisms used to implement universality policies, including service obligations, cross subsidies, access deficit charges (ADCs) and universality funds and compares the various options.

Universality funds   Universality funds are designed to meet universality goals by subsidizing specific initiatives to extend or maintain services or access. This section looks at sources of funds, and at criteria for determining the amount of subsidy.

Appendix: Universality case studies Universality case studies: Chile, Peru, European Commission, Spain, CEE (Central and Eastern Europe) and CIS (Commonwealth of Independent States) countries, Canada, US, South Africa, Australia, Asia.

7. Appendices

WTO regulation reference paper
    The WTO regulation reference paper is part of the Agreement on Basic Telecommunications, which came into effect in 1998. In the whole handbook, this reference paper is considered as the basic international telecommunications act.

The economics of telecommunications prices and costs
    This appendix sets out in graphic form the distinctions between various concepts of costs, everything from LRIC and TSLRIC/LRAIC to FDC/FAC and Stand-alone costs, and then illustrates the practical application by a regulator.

Policies for equitable access

Lishan Adam, for the Association for Progressive Communications
http://www.apc.org/en/system/files/APC_EquitableAccess_policies_IssuePaper_20080730_0.pdf

Executive summary

Considerable changes have been made in the way people access information and communications technologies (ICTs), especially after the introduction of the internet and mobile phones. More people have access to ICTs than ever before, but still the majority of the population is on the wrong side of the communications revolution.

The provision of universal and affordable access is a key challenge for today's ICT policymakers in developing societies. But despite pressure from multilateral and bilateral donor agencies on governments to privatise monopolies and liberalise markets, and the formulation of broad-based ICT policies by states, progress toward universal access to ICTs has been very slow. State-run telecommunications systems have often not functioned very effectively, failing to provide access to the broader public. Although liberalising the mobile sector has improved access to communication services dramatically, cellular communication tariffs remained high. The cost of mobile handsets was also high for the majority of the poor to purchase and use them.

Regulatory frameworks in developing countries have not been effective, largely due to institutional arrangements that seldom provide regulators with autonomy, independence and legitimacy. It has been difficult to formulate, implement and enforce effective universal service strategies due to a lack of specialist expertise, and the inability of the regulators to challenge powerful incumbents and operators. Where available, universal access funds were not disbursed efficiently. Policies that promote pluralistic content have also not been successful due to strong government and private sector interests in the media.

There is a growing interest in backbone infrastructure and submarine cables in the developing world, particularly in Africa, although the political, economic and regulatory differences in most countries pose major challenges for meaningful cross-border interconnection and policy harmonisation.

This issue paper is one of a series of four on aspects of equitable access to infrastructure commissioned by the Association for Progressive Communications (APC). It argues that well-balanced public policy is a precondition for addressing the universal access gap. It discusses the issues at stake, strategies that have been undertaken, and interventions needed to make equitable access a reality in developing societies.

APC Africa ICT Policy Monitor

http://africa.rights.apc.org/en-about-monitor.shtml

The APC Africa ICT Policy Monitor's primary goal project is to enable African civil society organisations to engage in information and communication technologies (ICT) policy development to promote an Information Society based on social justice and human rights. The ultimate aim being that governments and policy makers recognise that access to and the use of ICTs is a basic human right.

The project, initiated in late 2001, continues to research, collect, interpret, produce and disseminate ICT policy information; build the awareness and capacity of civil society to understand these issues; and assist civil society organisations to formulate their interests in ICT policy and to support their lobbying and advocating for policies that promote a just information society.

The ICT Policy Monitor project goals and objectives are implemented in a similar way to related APC internet rights projects already underway in Latin America and Europe, to build civil society awareness of ICT policy issues in the context of other basic human rights, and to provide a means to monitor and engage ICT policy issues in the interests of social justice and human development.

The objectives of the ICT Policy Monitor in Africa

- To develop an information resource for civil society organisations that wish to be active in ICT policy. This involves researching and analysing ICT policy from a civil society perspective including running and updating the monitor websites as a clearinghouse for relevant information. The product team also produces a regular newsletter (Chakula) to disseminate this information.
- To raise awareness in civil society organisation of ICT policy issues. This includes actively seeking out civil society organisations (in non-ICT fields) and creating awareness on ICTs and their work as well as running email lists for discussion on these issues and making interventions in civil society conferences and workshops to promote ICT policy issues.
- To empower civil society organisations (CSOs) to develop ICT policy that meets their needs, and to encourage them to lobby for an information society that builds social justice and human rights, at national, regional and global level. This work continued through publications using a framework for CSO ICT policy and supporting CSOs to use it and linking CSOs active in

developing ICT policy. The project team is also building a network of national ICT policy activists to increase the impact at regional level and in the WSIS process.

Collaboration The project team also works in collaboration with other organizations and partnerships working on related project activities such as running civil society training workshops on internet policy. The APC is also the lead component implementer for the CATIA project component 1C - Africa-Led Advocacy on ICT Policy Reform - on ICT policy advocacy for a well-informed, lively and inclusive policy debates across Africa, shaping the local policy environment.

Technological Convergence and Regulation: Challenges Facing Developing Countries

Jérôme Bezzina & Bernard Sanchez (editors), 2005
http://www.infodev.org/en/Publication.1.html

This special publication of "Communication and Strategies", the Journal of IDATE, was co-sponsored by infoDev as a contribution to the debate in the second phase of the World Summit on the Information Society. It offers a wide range of innovative thinking on the topic of convergence and its impact on regulation.

The ICT sector has undergone some dramatic changes in recent years, triggered by the development of new technologies and the convergence of existing ones, leading to a merging of markets and services. These developments affect traditional policy strategies, raising the question of how to deal with growing pressure to adopt converged regulatory regimes and how to successfully realize the potential of alternative network infrastructures. Over the past few decades these dramatic technological advances have coincided with a first wave of reform in developing countries, which has had a positive impact. However, this positive impact was largely accidental, resulting from a combination of internal and external pressures to open telecom markets and the transfer of GSM technology, which had achieved economies of scale from deployments in more mature markets. With digitization, all media become translatable into each other and escape from their traditional means of transmission: convergence relates to the merging of separate fields. What is primarily conceived of as convergence relates to technology, but in a secondary sense, a number of other fields come into play, including services, markets, related player configurations (industry alliances and mergers) and regulation.

A primary question in designing this special issue of "Communications and Strategies" was the need to understand how, in a fast moving technological environment, effective policy and regulatory policies may be developed to fully leverage the opportunities created by rapid technological changes. The purpose of this issue is therefore to initiate the development of an intellectual framework, and gather innovative content that explores issues related to new technologies and regulation policies. This is intended to help key players in regulation to keep track of new technologies and enable them to respond to new innovations "just in time" by adjusting regulatory frameworks and legislation.

Convergence in ICT services: Emerging regulatory responses to multiple play

Rajendra Singh and Siddhartha Raja, June 2008, World Bank Global Information and Communication Technologies Department
http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOL OGIES/Resources/Convergence_in_ICT_services_Emerging_regulatory_responses_to_multiple_play .pdf

'Multiple play in the information and communication technology (ICT) sector refers to the provision of multiple services—such as voice telephony, broadcasting, and Internet access—by one operator over a single communications network, typically telephone or cable television. This offers numerous potential benefits to customers, including lower prices, better services, and more choices among service providers. It enables new business models and opportunities for increased competition and reduced costs. However, regulation is subject to complex challenges in the face of multiple play. This report focuses on regulatory responses, typically by telecommunications regulators, to market-driven multiple play over broadband networks. It also examines how regulators can remove obstacles to multiple play. It describes experiences and responses from around the world, with the goal of deriving principles for best practice—enabling countries to devise responses suited to their situations—without being prescriptive or offering a universal solution.'

Managing the Radio Spectrum: Framework for Reform in Developing Countries

Björn Wellenius, Isabel Neto, The World Bank, Global Information and Communication Technologies Department, 2008
http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOL OGIES/Resources/282822-1208273252769/Managing_the_Radio_Spectrum.pdf

Bringing management of the radio spectrum closer to markets is long overdue. The radio spectrum is a major component of the infrastructure that underpins the information society. Spectrum management, however, has not kept up with major changes in technology, business practice, and economic policy that have taken place worldwide during the last two decades. For many years traditional government administration of the spectrum worked reasonably well, but more recently it has led to growing technical and economic inefficiencies as well as obstacles to technological innovation. Two alternative approaches to spectrum management are being tried in several countries, one driven by the market (tradable spectrum rights) and another driven by technology innovation (spectrum commons). This paper discusses the basic features, advantages and limitations, scope of application, and requirements for implementation of these three approaches. The paper then discusses how these approaches can be made to work under conditions that typically prevail in developing countries, including weak rule of law, limited markets, and constrained fiscal space. Although spectrum reform strategies for individual countries must be developed case by case, several broadly applicable strategic options are outlined.

The paper proposes a phased approach to addressing spectrum reform in a country. It ends by discussing aspects of institutional design, managing the transition, and addressing high-level changes such as the transition to digital television, the path to third-generation mobile services, launching of wireless fixed broadband services, and releasing military spectrum. The paper is extensively annotated and referenced.

Building Local Capacity for ICT Policy and Regulation: A Needs Assessment and Gap Analysis for Africa, the Caribbean, and the Pacific - Supply Analysis

infoDev, 2008: Summary Report Prepared by Kerry McNamara (infoDev)
http://ict.developmentgateway.org/Community-Content.7836+M54013e7ff72.0.html

Report prepared by:
RIA! - Lishan Adam, Steve Esselaar, Mandla Msimang, Olivier Nana Nzepa, F F Tusubira
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Project Coordination - Alison Gillwald, LINK Centre, University of the Witwatersrand

Preface

This report arose from a desire on the part of several infoDev donors for a comprehensive overview of the current state of, and need for, capacity-building programs for ICT policy and regulation in Africa, the Caribbean and the Pacific. Many bilateral and international institutions have active programs of support for policy and regulatory capacity building in these regions; yet there is a growing sense that these efforts are not well coordinated and that not enough is known about their impact on policy and regulation, and their sustainability. This study was designed, therefore, to provide, for each region:

 i. a systematic survey of the current supply of ICT policy and regulatory capacity building efforts (Phase I);
 ii. an assessment, based on extensive consultation with a range of stakeholders, of the most pressing needs for ICT policy and regulatory capacity building, i.e. the demand side (Phase II);
 iii. an analysis of, and recommendations for filling, the gaps between existing efforts and the needs of each region (Phase III).

This report discusses only Phase I and offers a comprehensive inventory of existing ICT policy and regulatory capacity building initiatives and institutions.

Afghanistan, Draft Information and Communication Technologies (ICT) Policy Paper

United Nations Development Programme, Country Office for Afghanistan and Government of Afghanistan, Ministry of Communications
http://ict.developmentgateway.org/uploads/media/ict/afghanistan_ictpolicy.pdf

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4. ICTs, Capabilities, Freedoms & Human Development

Broader Views of Wellbeing and Poverty; Capabilities and Freedoms, Rights, Happiness

Comment
> *This is a brief section to introduce the widening of perspective on poverty and wellbeing, which have also become much more widely accepted over the past decade and more.*

<u>Textbook Project: Development and Freedom</u>

<u>An Introduction to the Theory and Practice of Human Development</u>
<u>HDCA Textbook convened by Séverine Deneulin</u>
<u>http://www.ophi.org.uk/subindex.php?id=teachingTextbook</u>

Chap 1   Why Do Concepts Matter? – Sabina Alkire and Séverine Deneulin
Chap 2   Introducing the Human Development and Capability Approach - Sabina Alkire and
          Séverine Deneulin
Chap 3   Development Ideas - Séverine Deneulin
Chap 4   Economic Growth and Human Flourishing – Randy Spence
Chap 5   Equality and Justice – Ingrid Robeyns
Chap 6   Poverty and Inequality Measurement – James Foster
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Chap 10 Culture and Religion – Séverine Deneulin
Chap 11 Human Development Policy Analysis – Randy Spence and Séverine Deneulin
Chap 12 Policy Case Studies – edited by Séverine Deneulin

* Gender	* Environment	* Public Health
* Conflict and Security	* Employment	* Population

People first

To some, the idea that concern for people should come first in social and economic processes appears as a plain truism. It may seem obvious but development has long been sought and assessed in economic terms, with a particular focus on the annual growth of income per capita, instead of the consequences of this growth for people's lives. The overwhelming focus on growth persists today.

Economic growth is clearly a necessary component of development in most circumstances, although the rate of growth required might be debated. Yet often economic growth is put forward as the dominant normative framework for development, and other activities (positive or negative) are justified insofar as they foster growth. In this section we critically examine several 'beliefs' about economic growth – these beliefs are briefly introduced here and will be discussed in further details in subsequent chapters, especially chapter 4. It may seem obvious but economic progress has long been sought and measured by focusing on annual growth of income per capita instead of human flourishing…

Consider first an approach to economic development, in which the objective is to achieve and sustain high rates of economic growth. The overwhelming priority is economic growth. In this situation, the unit of analysis is evident: the economy. This may be the national economy, or the economy of a particular region or sector. The currency of assessment is clearly monetary - income. Trade-offs, such as between environment protection and employment creation, are in many cases resolved by market prices and exchange rates. Examples of success include China and India.

Now consider an approach to economic development in which the objective is to expand what people are able to do and be – what might be called, people's real freedoms. It puts people first. In this view, a healthy economy is one in which people are more free to enjoy a long healthy life, a good education, a meaningful job, family life, democratic debate, and so on. Notice two shifts: First, in this approach, the analysis shifts from the economy to the person. Second, the currency of assessment shifts from money to the things people can do and be in their lives, now and in the future.

In reality, both perspectives are less extreme than these examples. Those who focus on people's lives still are vitally concerned with growth, macroeconomic stability, and many other means to improve people's lives. And for the 'growth' approach, what is far more commonly held is an assumption that if growth is achieved, then other things (nutrition, education, good jobs) will take care of themselves. Thus in practice what is required for holistic development is to realize economic growth. In 1991, the World Development Report of the World Bank, which outlined the 'market-friendly' approach to development that drove its work through the 1990s, still sketched the goal of development in rather broad terms:

Economic development is defined in this Report as a sustainable increase in living standards that encompass material consumption, education, health and environmental protection. Development in a broader sense is understood to include other important and related attributes as well, notably more equality of opportunity, and political freedom and civil liberties. The overall goal of development is therefore to increase the economic, political, and civil rights of all people across gender, ethnic groups, religions, races, regions, and countries. This goal has not changed substantially since the early 1950s, when most of the developing world emerged from colonialism (WDR 1991, p. 31). But whether the differences concern the 'objective' of development, or the 'assumptions' regarding growth, clearly divergent points of view exist and shape development thinking and action.

In this chapter, we will learn about the second, people-focused approach to development, which we call human development. Human development has been pioneered by different people under different names and times. A focus on people's freedoms appears with ubuntu in Southern Africa, with Liberation Theology in Latin American and beyond, with Swaraj in Gandhi's thought, and with many

other ethical approaches to development. It is equally applicable in developed and developing countries. One of the leading voices is the economist and philosopher, Amartya Sen. In addition to writing on human development, he articulated the capability approach, which provides the philosophical foundation of human development…

Box 2.3 Human development: focusing on well-being and agency (By Amartya Sen, from Foreword to Readings in Human Development edited by S. Fukuda-Parr and A.K. Shiva Kumar)

The perspective of human development incorporates the need to remove the hindrances that people face through the efforts and initiatives of people themselves. The claim is not only that human lives can go very much better and be much richer in terms of wellbeing and freedom, but also that human agency can deliberately bring about radical change through improving societal organization and commitment. These are indeed the two central ides that give cogency to the focus on human development. That focus relates, on one side, to a clearer comprehension of how – and in what ways – human lives can go much better, and on the other, to a fuller understanding of how this betterment can be brought about through a strengthening of human agency. I shall call them, respectively, 'the evaluative aspect' and 'the agency aspect' of human development.

Box 2.5 The Key Terms of the Capability Approach

<u>Functionings</u>: 'the various things a person may value doing or being' (Sen, 1999: 75)

<u>Capability</u>:　　'the various combinations of functionings (beings and doings) that the person can achieve. Capability is, thus, a set of vectors of functionings, reflecting the person's freedom to lead one type of life or another...to choose from possible livings.' (Sen, 1992:40)

<u>Agency</u>:　　the ability to pursue goals that one values and has reason to value…

For economists and those who are accustomed to the language of space, it may be of interest to observe that that 'there is no difference as far as the space is concerned between focusing on functionings or on capabilities. A functioning combination is a point in such a space, whereas capability is a set of such points' (Sen 1992, p. 50).

The notion of capability is also closely related to that of freedom. Sen defines freedom as 'the real opportunity that we have to accomplish what we value' (1992, p. 31). Freedom, he argues, has two aspects, the opportunity and process aspect. The opportunity aspect pays attention 'to the ability of a person to achieve those things that she has reason to value', and the process aspect pays attention to 'the freedom involved in the process itself' (2002, p. 10). The notion of capability refers to the opportunity aspect of freedom (2004, p. 332), while the notion of agency, which is explained below, refers to the personal process aspect of freedom…

Much conventional economics is based on a utilitarian approach. It assumes that the most desirable action is the one that increases people's psychological happiness or desire-fulfillment the most. This view has made a tremendous comeback in recent times, drawing on new data on happiness and life satisfaction. For example Richard Layard (2005) thoughtfully examines how our entire economic system would evolve if our steady and enduring purpose were to maximize a nation's *happiness,* instead of their income.

That sounds good as everyone wants to be happy. Happiness seems to invite a deeper reflection upon our material goals and values. It helps people see these goals from a different perspective. Sen and others writing in the capability approach consider happiness to be 'a momentous achievement' to be celebrated. But when you look beyond the headline more deeply into the ideas, some concerns continue to arise.

First and most centrally, our mental utility may not track in any predictable fashion the things we really value. A poor devout widow may become serenely reconciled with her circumstances, but that does not mean she would not value having warm socks and pain medication for her arthritis. Alternatively, a middle-aged man may become a hospice volunteer following the death of his mother, because he wishes to share with others the peace that he found during his mother's terminal illness. In doing so, he often shares the pain and tragedy of others' lives, so his 'happiness' is lower than if he did not do hospice work. But he would not wish for any other kind of life.

Second, happiness levels may obscure significant deprivations. Sen notes that people whose deprivations deserve systematic attention may quite often not be utility-deprived. 'Consider a cripple…. Suppose that he is no worse off than others in utility terms despite his physical handicap because of certain other utility features. This could be because he has a jolly disposition. Or because he has a low aspiration level and his heart leaps up whenever he sees a rainbow in the sky. Or because he is religious and feels that he will be rewarded in after-life, or cheerfully accepts what he takes to be just penalty for misdeeds in a past incarnation. The important point is that despite his marginal utility disadvantage, he has no longer a total utility deprivation.' (Sen, 1979, 'Equality of What' p 217). Hence his happiness rating would not give very good guidance as to the requirements of addressing his deprivations.

Third, our self-reported utility may be biased by information and social circumstances. As Sen pointed out in 2002 (British Medical Journal), the state of Kerala in India which had near universal education, and life expectancy of 74, had by far the highest self-reported morbidity in India. In contrast, Bihar, one of the poorest states with a life expectancy below 60, had the lowest rate of self-reported morbidity. The objectively 'healthy' state was subjectively 'health-poor' and vice versa. How do we understand this? It seems that the low self-reported morbidity in Bihar occurred because people had less ability to assess their health situation, and less hope of doing anything to remedy it. So subjective data, whether on happiness, or morbidity, is to some extent conditioned by our circumstances.

Many other approaches to development focus instead upon cultivating different kinds of resources. These may be assets, property rights, or basic needs such as housing, foodstuffs, clothing, sanitation, and so on. These approaches recognize the fundamental importance of commodities and material good to our well-being in the short and long term. They identify valid connections between resources and capabilities, and argue that to expand capabilities and sustain these expansions requires certain resources. In many cases these analyses are utterly apt, and will form, as we shall see, an integral component of the human development approaches.

Yet fundamentally, it is still important to observe that measuring resources is different from measuring functionings, and that we will inadvertently make mistakes if we try to give everyone the same resources…

While the capability approach offers a clearer picture of well-being, it is not a full fledged theory of justice (Sen, 1995, 2004a), in part because it includes no explicit method by which the importance of one capability can be measured against another. Nussbaum (1988, 1992, 1998, 2000, 2003) has attempted to move closer to such a theory by identifying a list of "central human capabilities" that she argues should be guaranteed to all people. A recent list contains more than thirty individual capabilities grouped into the following categories: life; bodily health; bodily integrity; senses, imagination, and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment. Whether a universal list should exist is a matter of some debate; Nussbaum (2003) argues that the capability approach is powerless without it, while Sen (2004b) has noted the difficulties in and consequences of endorsing such a list.

Happiness: Lessons from a New Science

Richard Layard, Penguin Books, 2005

Preface
PART ONE The Problem

   1   What's the problem?
   2   What is happiness?
   3   Are we getting happier?
   4   If you're so rich, why aren't you happy?
   5   So what does make us happy?
   6   What's going wrong?
   7   Can we pursue a common good?

PART TWO What Can Be Done?

   8   The Greatest Happiness: Is that the goal?
   9   Does economics have a clue?
   10 How can we tame the rat race?
   11 Can we afford to be secure?
   12 Can mind control mood?
   13 Do drugs help?
   14 Conclusions for today's world

The big seven factors affecting happiness

Family Relationships	Financial situation	Work	Personal freedom
Community and Friends	Health	Personal values	

Comment:

'Happiness,' while intuitively appealing, does have some flaws as an overall goal. Very poor people, in terms of functionings and resources, may be happy. Slaves may be happy. At the same time, happiness research and approaches in countries shed light on this concept of 'subjective wellbeing.'

Happiness (or subjective well-being) also presents a challenge for the capability approach, considering its agency component. The degree of contentedness / happiness of someone will greatly shape their perspective of doings or beings that they value. This means that questions like the following are very challenging: would you rather be a person who is happy with less capabilities or less happy with more capabilities? While happiness may not be a good overall goal, it certainly shapes the nature of the overall goal, through its shaping of the perspective of the individual of the things they value.

Some further insights, from a reading of Layard would include:

- *Happiness is reasonably measured today by asking the right questions, and monitoring physical/brain activity.*
- *On average, people in individualistic countries – e.g. USA, UK - are not as happy and have not been getting happier over the past few decades.*
- *People care about relative income or material prosperity as much or more than absolute; social comparison is important.*
- *Humans are deeply social beings – a perspective which resonates with the demand for communications among people and particularly 'poor' people:*

and now back to the Textbook on the Capability Approach (Ch. 2)…

One of the central features of Sen's capability approach is its refrain from taking a particular position regarding the valuable capabilities that should be promoted through public policy. As noted earlier, the development process should be assessed according to the extent to which it expands the 'capabilities that people have reason to choose and value'. The choice of relevant capabilities has to be related to the underlying social concerns and values within a particular society. It is the public reasoning in each society which is to determine which capabilities are valuable to promote. There is no single easy way out of the problem of valuing the freedoms that people have reason to choose and value. Sen recognizes that 'there is no escape from the problem of evaluation in selecting a class of functionings – and in the corresponding description of capabilities' (1992: 44)…

Sen has no objection to Nussbaum's project of eliminating the incompleteness of his approach, but he fears that this might become 'the only route' and 'may be tremendously over specified' (1993: 47). His objections are not concerned with listing important capabilities, but with fixing one pre-determined list at the theoretical level. Doing so, he argues, would be 'to deny the possibility of fruitful participation on what should be included and why' (Sen, 2004: 77). He advocates that lists of valuable capabilities should be context-dependent. The key questions to keep in mind when selecting capabilities are: 1) which capabilities do the people who will enjoy them value (and attach a high priority to); 2) which capabilities are relevant to the policy, project, or institution…

Chapter 4 Economic Growth and Human Flourishing

The chapter is divided in three major parts. Part I reviews how economic growth has been treated in the history of economic thought. As we will illustrate, there are very divergent views among economists

and others about the role of economic growth in promoting human flourishing. Part II discusses various economic growth theories which have seen the light since the 1950s and are called upon today to support economic growth. As we will see, considerations of what constitutes economic growth and human flourishing, what factors cause or facilitate each, and how the two are related differ according to ideological positions, theories, and experiences of different societies.

Factors of growth: reprise

There are many, and the number increases as the view is expanded from economic growth (GDP per capita) to inclusive or equitable growth, to growth of individual wellbeing in its many dimensions. A short list of factors flagged above, both causal or fundamental and enabling:

- savings & investment – a basic mechanism, micro-credit and foreign investment included ;
- technological change – developed locally and imported;
- innovation system – education, ideas, entrepreneurship, collaborating institutions, financing & incentives, innovation/application in commercial, non-profit & public sectors;
- human development - health and education in particular;
- export development - leveraging foreign demand, technology, knowledge and education;
- efficiency - in domestic market and public sectors, in achieving growth and other objectives (dimensions of wellbeing);
- external and internal trade and finance as 'free' as possible / manageable;
- labour mobility, movement to higher productivity employment over time, gender equality;
- efficient infrastructure and public goods/services provision, competition policy, redistribution and social protection, support of bottom-up or BoP innovation / growth / development activity;
- stability – peace, effective governance, steady/adept macroeconomic policy, light/enabling and effective law and regulation – a capable and quick learning/adjusting development strategy operation;
- institution building and change – both organizations and knowledge bases - private, non-profit and public sectors, including processes of informed public discourse;
- better understanding of situations (wellbeing) and behaviour of individuals and groups;
- from the global community – global public goods – arms reduction, financial management and stability, global environmental management and protection, progressive and coherent economic policy, effective peacekeeping and development cooperation or assistance.

It is much easier to list key ingredients than to prioritize them in any society's actual circumstances, or suggest how to proceed with the recipe when some or many ingredients are missing.[6] Difficult challenges arise on how a growth and development process can be started where it not in progress, balance and timing of focus on material and other dimensions of growth, sustaining sufficient political and social consensus, sequencing in its many dimensions.[7] The external environment may be hostile rather than supportive – current success on all the global public goods just listed is quite limited.

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[6] The Commission on Growth and Development is tackling this matter directly, through study and interaction among leaders of advanced and failed or stalled countries: http://www.growthcommission.org/

[7] Sequencing of trade and financial 'liberalization' are much analyzed, but sequencing also involves a more pervasive, micro and ongoing set of timing questions under (severe) resource constraints – privatization and competition policy, development different sectors/areas of comparative advantage and growth potential, focus on BoP development, education priorities, health care and services priorities.

The Missing Dimensions of Poverty

Sabina Alkire and OPHI team (Queen Elizabeth House, Oxford)
http://www.ophi.org.uk/subindex.php?id=workshop0

Human Development is the process of expanding the freedoms that people value and have reason to value. This requires, in turn, systematic information on valuable freedoms. The well-known measure of human development, the HDI or Human Development Index, includes income, longevity, and education – yet it is widely agreed that human development extends beyond these domains. Multidimensional poverty analyses identify a number of relevant dimensions and indicators of poverty. However, a lack of sound, internationally comparable data at the individual/household level in key domains creates a critical bottleneck for studies of human development and multidimensional poverty.

The work described here was presented the launch workshop of the Oxford Poverty and Human Development Initiative (OPHI), which took place 29-30 May 2007 at the University of Oxford (www.ophi.org.uk) and at the Centre for Human and Economic Development Studies (CHEDS), 3-4 November 2007, University of Beijing. The Oxford workshop, entitled "Missing Dimensions of Poverty Data," provided the occasion to engage in the first part of a broader research agenda, which seeks to devise a new framework for multidimensional poverty reduction grounded in the capability approach and related ideas.

To spark debate, we identified five areas for which insufficient data exist:

- ***Employment***, particularly informal employment, with special attention as to quality;
- ***Empowerment, or agency***: the ability to advance goals one values and has reason to value;
- ***Physical safety***, focusing on security from violence to property and person, as well as perceived violence;
- ***The ability to go about without shame***, to emphasize the importance of dignity, respect and freedom from humiliation;
- ***Psychological and subjective wellbeing***, to emphasize meaning, its determinants, and satisfaction.

The first four of these are dimensions of poverty. We do not strictly consider psychological and subjective wellbeing to be a dimension of poverty as there is doubt, which we share, over the extent to which people who are lacking in this dimension might be considered poor, and as to its policy relevance. At the same time, it does appear to be an important aspect meriting future study and thus a 'missing dimension' of data.

This article describes the rationale for focusing upon the problem of missing data and specifically upon expanding the range of questions asked in internationally-comparable and nationally-representative surveys – particularly in developing countries where the need is greatest both because of more poverty and less existing data. It then justifies the choice of the five aforementioned dimensions, and briefly introduces each.

The Growth Report: Strategies For Sustained Growth And Inclusive Development

Commission on Sustained Growth and Inclusive Development
http://www.growthcommission.org/index.php?option=com_content&task=view&id=96&Itemid=169

Growth is not an end in itself. But it makes it possible to achieve other important objectives of individuals and societies. It can spare people en masse from poverty and drudgery. Nothing else ever has. It also creates the resources to support health care, education, and the other Millennium Development Goals to which the world has committed itself. In short, we take the view that growth is a necessary, if not sufficient, condition for broader development, enlarging the scope for individuals to be productive and creative…

Telecommunications infrastructure (and the pricing of services) is of particular importance. Telecommunications plays a variety of crucial roles in the public and private sector. It can aid education, transparency initiatives, and the delivery of government services. It can also raise productivity by disseminating price information to farmers, fishermen, and other producers. Telecommunications promotes widespread access to financial services. It also enables trade in services (a rapidly growing area of commerce) and links to global supply chains…

The policies we explore fall into several loose categories: accumulation; innovation; stabilization; allocation; and inclusion. The first set of policies on the list falls into the category of "accumulation." It includes strong public investment, which helps the economy to accumulate the infrastructure and skills it needs to grow quickly. The next group of measures promotes "innovation" and "imitation." They help an economy to learn to do new things—venturing into unfamiliar export industries for example—and to do things in new ways.

In any successful period of growth, relative prices have a lot of work to do, attracting investment into certain industries, deterring it from others. Thus, the third set of policies concerns the "allocation" of capital and especially, labor. They allow prices to guide resources and resources to respond to prices. This microeconomics cannot unfold if it is rudely interrupted by debt crises or wild fluctuations in the general price level. The fourth group of policies therefore ensures the "stabilization" of the macroeconomy, safeguarding against slumps, insolvency, and runaway inflation.

We also recommend a set of policies to promote "inclusion." The commissioners prize equity and equality of opportunity for their own sake. But they also recognize that if a growth strategy brings all classes and regions of a society along with it, no group will seek to derail it.

Capabilities, External Capabilities and ICTs

External Capabilities

James E. Foster, Vanderbilt University, Christopher Handy, Cornell University
http://www.ophi.org.uk/pubs/OPHI_WP8.pdf

Abstract: The capability approach of Amartya Sen evaluates well-being in terms of an individual's achievements and abilities to function. The traditional view of capabilities is that they are discernable as part of an individual's own set of characteristics, or as part of a package of socially provided services. We argue that individuals also have access to a broad array of capabilities through their family, friends and other persons with whom they have relationships. We introduce the concept of "external capabilities", which are defined as those abilities to function that are conferred by direct connection or relationship with another person. Several examples are provided, and we distinguish between our new concept and other existing notions of capabilities originating in groups. The perspective of external capabilities can be especially valuable in formulating development policies or understanding how existing policies work. As an illustration of this, we show how information and communications technologies (ICT) can enhance development by augmenting external capabilities.

The capability approach evaluates well-being in terms of a person's ability to achieve certain outcomes, doings, and beings, which are collectively called functionings. It measures human development by freedom, which is "the 'capabilities' of people to lead the kind of lives they value" (Sen, 1999, p. 18). The development process is seen as one of expanding capabilities, or giving individuals the freedom to realize more and better functionings…

Although the capability approach is a general framework for evaluating well-being, it has found the most traction in the literature on human and economic development. This is due in part to its multidimensional focus, which easily accommodates the synergies inherent in development processes. For example, two capabilities commonly identified within the approach are the abilities to achieve health and be well educated. Levy (1991) and others have described in detail the synergistic relationship between nutrition, health, and education – namely, undernourished children have trouble learning, and the less educated find good health difficult to attain – and this conforms well to the capability framework. As another example, consider Anand and Ravallion (1993), who show that poverty alleviation and public spending on health care explain the entire effect of economic growth on raising life expectancy in poor countries.

Whereas a traditional economic approach would tend to focus on income growth, studies informed by the capability approach will also investigate the pathway from growth to individual well-being…

This paper introduces the notion of "external capabilities" to describe cases in which a person is able to achieve additional functionings through a direct connection with another person. The standard conception of capabilities already allows an individual's social environment to impact his or her capabilities, and acknowledges the role of institutions and policies in the creation of capabilities. But it makes little use of the fact that the individual's relationships can also matter greatly in this regard. So when the capability approach is used as a tool for analyzing policy, it is likely to catch, for example, a person's expansion in capabilities from becoming literate, but likely to miss the next step, wherein the person's literacy can enhance the capabilities of family and friends. Our goal is to recognize this important class of capabilities.

The paper proceeds as follows. The first section provides an overview of the capability approach. The second introduces the notion of external capabilities and explains its role within the capability approach. The third section contrasts external capabilities with existing forms of group capabilities and shows that the two concepts are very different. A final section summarizes and presents some suggestions for future research…

Two further themes of the capability approach merit special mention. The first is the need to distinguish between the means and the ends of development. The means are production, income, and social and environmental factors that determine or form the inputs for capabilities. The ends are capabilities and achieved functionings. Of course, some ends are also instrumentally important to development—that is, they double as means. Participation in the political process is both a matter of freedom (an end) and a way to influence policy (a means). A friendship may be both intrinsically valuable and a vehicle for further capabilities. And many capabilities feed back into higher income, which is then an input for more capabilities. The second theme is the role of choice in the capability approach. Choice over functionings is viewed as being intrinsically valuable, and Sen recognizes the value of both well-being achievement, which is best represented by functionings, and well-being freedom, which is best represented by the scope and quality of achievable functionings in the capability set.

External capabilities

External capabilities are abilities to function that depend on direct human relationships. Specifically, they depend on an individual's access to the capabilities of another person. They frequently require some coordinated action within personal relationships: again, it is more than a single person going to the market to buy food, and more than simply accepting government provision. But the relationships on which they depend are also very often informal: they happen outside group and organizational structures, and in fact often work best when fewer people are involved. Within this framework, the farmer whose friend has an internet connection has the external capability of access to crop prices through this friendship—specifically, through a direct relationship with someone who has the capability of access to this information. And the child has the external capability of better health through the capabilities of its mother…

The range of external capabilities can be dramatically amplified by information and communications technology (ICT). One way ICT does this is by enhancing connections between people. For example, The Economist recently reported that fishermen in India are using mobile phones to guide their friends to areas where the fishing is best, and to the landing spots where markets prices are currently most favorable. At the same time, ICT can augment a person's individual capabilities by providing access to information, and this can expand the external capabilities of that person's friends and family. A second report noted that fishermen are now using the internet to retrieve weather forecasts and satellite images of fish shoals; it is likely that this information is being shared across existing social networks. ICT advances individual capabilities and makes them easier to share as external capabilities.

Another fascinating example of external capabilities and ICT is Kiva, a nonprofit that allows a person in an industrialized country to extend credit to an entrepreneur in the developing world through the internet, using a credit card, PayPal, or a checking account. Funds are sent to local microcredit partners and then disbursed to qualified borrowers, and the lender gets updates on the status of the small business using the money. The initial effect for an entrepreneur in the developing world is access to credit through a relationship with another individual—an external capability. If well used, the loan will grow the business and the entrepreneur may have easier access to traditional sources of credit, which is a more individual capability. The loan will also enable her to gain business experience and increase earnings potential—a synergistic expansion of other individual capabilities…

A common denominator of the various notions of group capabilities mentioned above is that they arise when people organize to create capabilities that none of them would have otherwise. This provides one key distinction between group capabilities and external capabilities. Consider again the example of the two farmers. The second farmer, who learns of crop prices from his internet-connected friend, does not gain this capability through a well defined group that was formed for the purpose of generating it. Instead, he receives it from a friend who has access and is willing to share. Moreover, the first farmer will have the capability of accessing the internet and knowing crop prices regardless of whether he shares the resulting information with his friend. This contrasts with the other central characteristic of group capabilities—they exist or perish with the group. The notion of external capabilities is fundamentally different from previously defined concepts of group capabilities.

Conclusion

This paper has introduced the notion of external capabilities and discussed some issues arising from the concept; many others remain to be explored. One potentially import task is to identify likely dimensions for external capabilities. Which types of capabilities are especially well-suited to be shared along social networks in this way, and which forms are not? It may be that skills (such as literacy) are readily shared, while higher order capabilities (such as reasoning) are not; or more nuanced understandings may be needed to answer this question.

A second issue concerns the persons and relationships associated with external capabilities. Are certain types of people better providers of external capabilities? If so, then for which types of capabilities? Answers to these questions may help in the design of development policies.

A third area for investigation concerns the dynamic implications of external capabilities. External capabilities may be viewed as imperfect substitutes for their more reliable and permanent counterparts, and this can influence investment in future capabilities. On one hand, the presence of an external capability can be a helpful coping mechanism that eases the pressure of a capability deprivation, providing an interim solution while a person builds individual capabilities. On the other hand, this coping mechanism may discourage the very investments that would reverse the capability deprivation that the external capability addressed. Determining which effect would hold in a given situation could be very useful in policymaking. In particular, it would be interesting to explore whether external capabilities might be an important part of a prospective plan for enhancing capabilities, such as through the use of ICT.

The capability approach has proven valuable in conceptualizing and evaluating wellbeing, and creating policies that promote development. It recognizes that human well-being is multidimensional and that progress in development involves synergies across those varied dimensions. But as currently presented the capability approach often misses the impact an individual's relationships have on his or her capabilities. In other words, while it succeeds in capturing synergies across dimensions, it fails to recognize important synergies across people. Our concept of external capabilities remedies this by specifically focusing on the capabilities enjoyed through social networks. It augments the considerable power of the capability approach to provide insight about well-being and craft policies that make use of that insight.

Comment

More thinking is would appear to be needed to move from an external capability concept, enhanced by ICTS, to a broad notion of capability expansion due to infrastructure.

Textbook Project: Development and Freedom, An Introduction to the Theory and Practice of Human Development

HDCA Textbook convened by Séverine Deneulin
http://www.ophi.org.uk/subindex.php?id=teachingTextbook

Chapter 11   Human Development Policy Analysis
Randy Spence and Séverine Deneulin

Information and Communications Technologies: Policy and Regulation

In the mid 1990s, most countries had public telecom utilities – the incumbents - and fixed-line telephones were the only story. Privatization of incumbents and bringing more private competitors – telecom providers – into the market began in the 1960s in the U.S., and has been a major trend since the 1980s. Privatizations were pushed hard by the World Bank and the Washington Consensus in many developing countries, without much thought to competition, resulting initially in many private monopolies. Proponents of these international policies argue with some justification that privatizations had to happen in many countries to break the patterns of vested interests and inefficiency surrounding incumbents.

But the lack of competition with the new privatized monopolies meant in practice that the stagnation in growth of fixed lines continued, and continues to the present. In a large number of developing countries, there has been no recent growth, or indeed shrinkage, in fixed-line connectivity at exactly the time when the Internet was becoming prominent in more advanced countries; the story was changing dramatically. By contrast, mobile phone providers were many, and escaped being trapped in vested interests and weak or poor regulators in a large majority of countries. Mobile connectivity expanded rapidly since the 1990s, and particularly in this decade, it has extended to the 'bottom of the pyramid' (BoP) through low-cost handsets (under $20) and business plans based on large volume with very low margins. This has enabled many other services and activities and has been important in many other ways in expanding political freedoms and empowerment. Here are some examples of the impact of ICT in several sectors, enabled and assisted by low-cost communications:

Market based services and activities:

- Finance: (micro-) credit, banking, (micro-) insurance, remittances, other legal & financial services;
- Trade: getting market information, advertising/marketing/selling goods or services;
- Agriculture and fisheries: reducing middle margins, selling directly to multiple markets
- Employment: learning of jobs, getting jobs, making jobs better (e.g. drivers);
- Personal and other services: arranging household services (e.g. childcare – family and other);
- Skills: farming know-how, other employment or income related skills, other life skills.

Civil activities and public services:

- Understanding: knowledge of government agencies and services, knowledge of rights;
- Organization and action to increase political and civil service transparency and performance;
- Health: receiving tele-health services or medical/health information, arranging medical care;
- Education: distance learning courses, receiving other useful information;
- Security: contacting police, family or friends in emergencies;
- Disaster warning and relief: advanced warning, getting relief and rebuilding assistance.

Other impacts and benefits:

- Dignity and empowerment: mobilizing support, expressing views in communities or politics;
- Family and social relations, sense of value or opportunities, music and entertainment.

In short, ICTs enable or facilitate expansion of economic, political and social activity, and there is argument and initial evidence that the communication they make possible is instrumental in the building up of capabilities and functionings. The main job of public policy is to expand access and lower its cost, with special attention in most countries to universal service mechanisms for those left out by market activity. More specifically, the broad functions of ICT/telecommunications regulators are allocating spectrum, ensuring low-cost interconnectivity among providers, ensuring competition in the market, facilitating cost reduction and organizing universal service mechanisms. As all these functions are typically political, regulators are given independence from politicians in many countries, and governed by processes involving stakeholders.

The universal service mechanism is typically a small charge on all traffic to subsidize extension of access to unconnected and low-volume users – with a preference for lowest-cost bids and community participation in allocating the often-considerable universal service funds. Country experiences are mixed, with major successes few. The currently large wave of expansion of mobile connectivity in the world and in the Bottom of the Pyramid, by low-cost private providers, may mean that universal services charges can be more finely targeted.

Regulators are now more regularly assessed using quantitative and qualitative data, and this comparative cross-country policy analysis has helped policy analysts and advocates bring pressure on countries performing poorly. At this moment, for example, Pakistan leads South Asia in terms of its Telecom Regulatory Environment, and other comparisons around the World are both important and sometimes surprising.

ICTs and Human Development & Capabilities

James Foster and Randy Spence, April, 2008

ICTs appear to enhance all types of capabilities mentioned above and while research exists that casts light on some aspects of these impacts, a more direct look at the impact of ICTs under this lens has not been done. Such an analysis could be quite valuable in understanding and enhancing relationships between ICT development and policy on one side, and capabilities, functionings, freedoms, growth, development and poverty reduction on the other.

Our research will primarily concern poorer places – in the 'bottom of the pyramid' or 'BoP'. However, there is also merit in casting a wide enough net to facilitate good comparisons between better and worse off people and communities. Note that this notion of 'better and worse off' itself depends on how one measures the relative positions of groups and people. For simplicity we will often use income or wealth as our proxy indicator, although a capability-based indicator would be more accurate if data were available.

There are many ongoing projects to understand and evaluate ICT impacts in poor communities. One prominent example is LIRNEAsia and its regional partners in Latin America and Africa, who have been undertaking quantitative and qualitative analyses of these impacts for some time. Their methodology combines data with example to describe the lessons learned. Perspectives obtained from this research include:

- a relatively high use of mobiles in the BoP, reaching 15-20% in some cases
- a very wide variety of uses for the technology including:
  - a high effective demand for social communication using this technology
  - a growing array of economic services is becoming available on mobiles, such as: arranging microfinance and other forms of finance; obtaining insurance; and other retail banking services; marketing and distribution (e.g., farmers and fishers connecting directly with markets to cut out the middle); employment services for getting or improving jobs (e.g., drivers, casual workers)
  - networking by mobile to improve personal security (illustrated by the abrupt jump in demand for mobile phones in Iraq);
  - an important array of public and public-private/non-profit services, especially in telehealth and distance education;
- a range of additional and other positive impacts through external and group capabilities as sketched above.

In short, while concomitant negative outcomes cannot be ruled out, mobile phones appear to be enabling the introduction and expansion of a quite full range of services in the BoP along with a likely transformative set of changes in capabilities, functionings and freedoms.

There is a good knowledge base on the broad view of how this is taking place – massive reductions in transactions costs, especially in connecting people to markets. But how does capability enhancement happen in specific cases involving individuals, relationships, groups, markets, local and national governments? Can technology or practice be improved to enable better capability and system building and, if so, what are policy and investment implications?

Research Approaches

A suggested approach is to look at impacts of ICTs on all kinds of capabilities, with some special attention to external capabilities because they are typically ignored in the usual individual or group/system/institution perspectives.

As noted by Handy and Foster, it may be useful to think of external capabilities having two main types of impacts. "The first type includes access to information and easier or cheaper access to goods and services that can be delivered over a network. This type of benefit lets the individual do more intensively what he or she is already doing, so it tends to *augment individual capabilities*. For example, ICT may provide things such as entertainment, access to information, and the ability to pay bills online or by mobile phone. The second type of benefits corresponds to ICT's power to *connect people to one*

another. This tends to augment external capabilities, because the individual is able to do new things through enhanced connectivity and communication. Examples include communicating with family and knowing a friend or development worker who can relay online information about agricultural techniques or health care. Such benefits arguably make up a larger portion of ICT's potential in developing countries than in more developed ones."

As a hypothesis, mobiles – and all the communications capabilities they enable – underpin the introduction and expansion of many economic services by creating something of economic value to cover their cost. They do this by increasing individual, external and group capabilities.

- Individual capabilities may be most relevant to more 'private' services; banking, insurance, trade and distribution, employment services.
- But there may be substantial spillovers even here among consumers and beneficiaries through external capabilities. The person who gets market information or arranges microcredit via a friend gets the same type of benefit as the friend, but via the external capabilities that arise from the relationship and the friend's individual capabilities. There may also be spillovers from individual-to-group capabilities, or group-to-external capabilities, or via other pathways.
- Spillovers might also enable more efficient production via specialization: you get the market information, I help you with the next harvest. It would be interesting to research the prevalence of reciprocal capability sharing involving ICTs.

Mobiles serve in other ways to increase wellbeing – ways not typically associated with increased access to markets. For example, poor people with access to mobile phones use them very frequently to contact family members, allowing them to avoid prohibitive travel costs associated with familial obligations. Another example that is being seen with increasing frequency is the impact of mobiles on personal security. People with mobiles can call family and friends to get help quickly and to identify attackers; the attackers know this too, and so the impact on security can be both direct and preventive. Cameras in mobiles may be especially important here.

Both these examples are ones of enhanced external capabilities, and of non market sources of wellbeing. In another light, they are examples of what the Oxford Poverty and Human Development Initiative has called 'missing dimensions of well-being or poverty' (e.g., dignity/shame, security, empowerment) because they along with psychological well-being (happiness) also matter highly to people but are only starting to be consistently measured and targeted as matters of policy.

> IDRC through PAN currently supports the Community Based Monitoring System (CBMS) system of the Philippines where communities monitor their well-being in 14 dimensions of income, employment, health, education, security. Communities, Mayors, Provincial Governors and national agencies demonstrate dramatic success in some/many indicators through much better aiming of local government expenditures, better allocation of provincial and national expenditures and services, much more transparency and accountability of governments and empowerment of communities and civil society organizations. One of the key features of CBMS is the GIS mapping of the indicators for every municipality, and ability to share maps on the Internet. Pride and competition are part of the result, and there is little policy makers like less than unfavourable comparison with their neighbours. If one were to look at ICTs as enhancing this governance-building 'local revolution,' how does this happen in terms of the enhanced capabilities of individuals, relationships and groups?

It may be useful to think in terms of the following matrix, where examples are provided but no complete listing has been attempted.

| IMPACT IN | IMPACT VIA | | |
Sector, service, or activity	individual capabilities	external capabilities	group capabilities
market based services and activities			
- (micro)credit	- obtaining loans	- same - via relations - pooled borrowings	- microcredit agencies (service delivery)
- banking	- telephone banking	- same - via relations - family accounts	- banks service delivery
- micro(insurance)	- obtaining insurance	- same - via relations	- (micro) insurers
- remittances	- sending/receiving remittances	- same - via relations - pooled insurances	- community services?
- oth. legal/financial	- arranging contracts	- same - via relations	- group contracts
- trade	- getting market info.	- same - via relations	- traders, trade SMEs
- marketing	- 'advertising'	- same - via relations	- product producers
- distribution	- scheduling	- same - via relations	- distributors
- employment	- calls to work (drivers construction workers..	- same – via relations	- employers of occasional workers
- personal & other	- arranging childcare, cleaning etc	- same – via relations - swaps	- service providers - service SMEs
- agriculture	- farming know-how	- same – via relations	- community supported agric
non-profit services and civil activities			
- accountability, verification etc.	- knowing rights, performance etc	- same – via relations	- (local) governments - civil activism
- political engagement	- knowing issues, people, parties	- same – via relations	- (community) interest groups
- credit, banking, insurance, trade, distribution much as above but with NGO business models			
public/govt. services and activities			
- health	- telehealth of many kinds	- med/health info. from relations	- providers in BoP
- education	- distance learning (primary)	- parent learning from students	- schools, trainers
- law, justice,	- contacting police	- same – via relations - police operations	- community security - police/law agencies
- economic policy and management	- understanding public policies, services	- same – via relations	- policy design and process institutions
- culture/music	- music/entertainment distribution	- receive via relations	- musician/artist groups
other areas of wellbeing/freedoms			
- security	- personal security (violence, theft)	- intervention & prevention via relations	- intervention & prevent. via groups/networks
- disaster warning	- advanced warning	- same – via relations	- national warning systems
- disaster mgmt and rebuilding	- receive instructions	- same – via relations	- mgmt & reconstruction/ rehabilitation institutions
- dignity/shame	- receive support	- same – via relations	- civil development groups
- empowerment	- express/register views	- same – via relations	- political/social fora
- quality of work	- vehicle drivers – ease/ /income/quality of life	- same – via relations	- taxi, vehicle pools/fleets
- psych. wellbeing	- connection to family	- same via friends	- practitioners/institutions

Two other papers that explore the ICT-Capability link:

Inequality of What? Social Exclusion in the e-Society as Capability Deprivation

Yingquin Zheng and Geoff Walsham, Information Systems and innovation Group, Department of Management, LSE, 2007
http://is2.lse.ac.uk/wp/pdf/WP167.PDF

Exploring the Capability Approach for E-Development

Yingquin Zheng, Information Systems and innovation Group, Department of Management, LSE, 2007
http://is2.lse.ac.uk/wp/pdf/WP157.PDF

Gender Research in Africa into ICTs for Empowerment (GRACE)

http://www.grace-network.net/

African Women and ICTs: Investigating Technology, Gender and Empowerment

Edited by Ineke Buskens and Anne Webb, Zed Books, forthcoming March 2009

The revolution in information and communication technologies (lCTs) has vast implications For the developing world, but what tangible benefits has it brought, when issues of social inclusion and exclusion, particularly in the developing world, r main at large? In addition, the Gender digital divide is growing in the developing world, particularly in Africa- so what does ICT mean to African women?

African Women and lCTs explores the ways in which women in Africa utilize lCTs to facilitate their empowerment; whether through the mobile village phone business, through internet use, or through new career and ICT employment opportunities. Based on the outcome of an extensive research project, this timely book features chapters based on original primary field research undertaken by academics a d activists who have investigated situations within their own communities and countries. The discussion includes such i sues as the notion of lCTs for empowerment and as agents of change, ICTs in the fight against gender-based violence, and how ICTs could be used to re-conceptualize public and private spaces.

ICT policy is currently being made and implemented all over Africa, but the authors argue That this is happening mostly in the absence of clear knowledge about the ways gender inequality and lCTs are impacting each other and that by becoming alert to a gender dimension in ICT developments at an early stage of the information revolution, we may be able to prevent greater scaled undesirable effects in the future.

Acknowledgements
Introduction   Ineke Buskens and Anne Webb

1. Doing research with women for the purpose of transformation
   Ineke Buskens

PART 1: ICT tools: Access and Use

2. Women's use of information and communication technologies in Mozambique: A tool for empowerment?
   Gertrudes Macueve, Judite Mandlate, Lucia Ginger, Polly Gaster and Esselina Macome
3. Considering ICT use when energy access is not secured: A case study from rural South Africa
   Jocelyn Muller
4. Women's use of cell phones to meet their communication needs – A study of rural women from northern Nigeria
   Kazanka Comfort and John Dada
5. Egyptian women artisans facing the demands of modern markets: Caught between a rock and a hard place
   Leila Hassanin

PART 2: Female Only ICT Spaces: Perceptions and Practices

6. When a gender-blind access policy results in discrimination: Realities and perceptions of female students at the University of Zimbabwe
   Buhle Mbambo-Thata, Elizabeth Mlambo, Precious Mwatsiya
7. An alternative public space for women: The potential of ICTs
   Leila Hassanin
8. Using ICTs to act on hope and commitment: The fight against gender violence in Morocco
   Amina Tafnout and Aatifa Timjerdine
9. The names in your address book: Are mobile phone networks effective in advocating for women's rights in Zambia?
   Kiss Abrahams

PART 3: Using ICTs: Making Life Better?

10. Mobile phones in a time of modernity: The quest for increased self sufficiency amongst women fishmonger and fish processors in Dakar
    Ibou Sane and Mamadou Balla Traore
11. Women entrepreneurs in Nairobi: Examining and contextualizing women's choices
    Alice Wanjira Munyua
12. Internet use among women entrepreneurs in the textile sector in Douala, Cameroon: self-taught and independent
    Gisele Yitamben and Elise Tchinda
13. ICTs as an agent of change: A case of grassroots women entrepreneurs in Uganda
    Susan Bakesha, Angela Nakafeero and Dorothy Okello
14. The mobile pay phone business: A vehicle for rural women's empowerment in Uganda
    Grace Bantebya-Kyomuhendo

PART 4: Creating New Realities
15. Professional women empowered to succeed in Kenya's ICT sector
    Okwach Abagi, Olive Sifuna, Salome Awuor Omamo

Epilogue

Ineke Buskens and Anne Webb

The relationship between women, their empowerment and the use of ICTs in Africa is complex and there seem to be no simple summaries or solutions. Women's access to and use of ICTs cannot be understood in isolation of their gender positions and identities and how these positions and identities interact with their political economic situation. Even women's struggles to overcome the limitations of their positions and identities through the use of ICTs have to be understood from within this context and likewise their victories in overcoming such. Certain issues have become very clear:

- That we have to realize ICTs in and of themselves do not empower, that it is the use of them which can be empowering or not. For there to be sustainable change and 'real empowerment', women have to be the agents of their own processes, in charge of and in control of their environment, and in charge of and in control of their process of change and empowerment. That is why women's agency is key and it is the key.

- That a woman using ICTs is not only an individual act, it is a process that involves all the contexts that are affected by this act. As women are participating in various contexts simultaneously, and many of these contexts are grounded in gender inequality, women's processes of change and empowerment will impact these contexts directly and immediately and may evoke fights, disruptions, and even lead to chaos. Sometimes the dynamics within these contexts are not apparent; the effects only become clear when somebody changes something. Hence women themselves will be best able to decide to what degree they can push their existing ceilings, they have to be the agents of their own development and empowerment. This is not to say that women cannot be challenged on their preferences when these preferences are an expression of having adapted to limitations, injustices and untenable situations. Even then, a woman's choices, even when they are not conscious, have to be understood first.

- That women contribute immediately to their environment and share their gains, even at the level where they have the fewest options because of general deprivation of basic necessities (such as electricity). This finding is coherent with general predictions that women's empowerment is one of the major mediators for social and economic change (Sen 1999).

It may, for the majority of African women, still be a long walk to freedom, to the type of self determination that women in Africa want to have, a self determination that only they can define, using ICTs to enhance their lives and the lives of those they love. Their journeys cannot be seen and understood in isolation of the power of the global market economy and the pervasive gender images, and without recognizing the immense inner strength they are drawing from. And that is what the authors who contribute to this book have tried to accomplish: to make women's choices visible and

understandable, and to show how women's power is not always the most obvious, their choices not always in line with economic priorities but immensely rational when understood against women's triple responsibilities and their own priorities. And the way women use ICTs reveals often exactly where they are at on their journey towards empowerment.

It is against the background of this complex web of adversities, that the marvel of what women in Africa have accomplished in relation to ICTs becomes clear layer after layer. It is also very apparent that ICTs are touching and influencing the lives of women in even the most rural settings. But as the meaning and relevance of 'access' is shown to be highly varied and in many cases constrained by patriarchy, the importance of confronting gender inequality in the Information Society cannot be overestimated. As described by Mitter, 'it is the same age old rationale: women's inferior status in the society gives them unequal access to all resources including to ICTs' (2005). The potential of ICTs to enhance our human lives in an equitable society is tremendous. Yet for this to occur the rapid spread and pervasiveness of these technologies need to be regulated in the interests of pursuing the development of a non-discriminatory society, and to be accompanied by efforts to reduce regional and North-South disparities.

Enhancing women's access to and use of ICTs requires therefore a transformation of people's mind-sets and knowledge of the world that has been shaped by gender inequality, and more particularly, by male domination. The male perspective which has shaped African societies and the role of women in the labour market and in the domestic sphere is a key variable of empowerment and disempowerment in the ICT sector.

With the rapid changes in technologies, the question of sustainability also arises in relation to the type of society that is being perpetuated, now with the assistance of these new means of communication. The digital divide with its North – South dimension and its gender dimension reflects the skewedness of our economic model. Crucial contributions by people from the South and by women globally are rendered invisible and thus unrewarded and unacknowledged. Furthermore, not only are the technologies themselves raising health and environmental concerns, but we are realizing more and more that our planet is under threat because of our shortsighted attachment to an unsustainable economy (UNEP/GRID-Arendal 2006).

As ICTs increase the sense of being globally interconnected as a species inhabiting this planet together, perhaps this recognition will enable us to make a stand to prevent ICTs from creating new spaces of exclusion, and thus poverty and isolation, within countries and between countries. And that is actually, what the authors contributing to this book, in all their diversity stand for.

We want to recognize the challenge engaged by the authors. Maintaining a reflexive attitude, can be very demanding and anxiety provoking for researchers because of the element of self directed critical awareness that is part of all reflection. Furthermore, reflection of this nature inevitably stimulates change in the researchers which, even when welcomed, can become stressful in itself.

Hence the crucial importance of those willing to take on such a journey: in the quest for defining the parameters of the knowledge construction processes that define Africa, its ICT future and the empowerment of its women, not only are women's truths at stake but also the potential to create new realities.

Human Development and Capability Association Studies

Exploring the Link between ICTs, Decentralization and the Well-being of Indigenous Communities - Evidence from Bolivia

Gigler, Björn-Sören, 2006-08-28.
www.capabilityapproach.com/PubList.php?pubtype=manuscript

This case study investigates under which conditions ICTs can play a role in fostering the empowerment of indigenous communities to fully participate in the decision-making processes of local governments. The analysis using empirical evidence from rural communities in Bolivia focuses hereby on the following key questions: i) to what extent can ICTs contribute to improving the efficiency and efficacy of local government? ii) does ICTs have the potential to make local governments more transparent and responsive to the needs of indigenous communities and iii) can ICTs support the core objectives of the Bolivian Law of Popular Participation to strengthen the role of local government in public-policy making and the implementation of development programs?

The Role of ICTs in the Decentralization Process
In the literature on ICTs and "e-government" many authors assert that ICTs play a key role in supporting decentralization processes and local economic development more generally by (i) enhancing the performance of local governments; (ii) increasing the access to information; (iii) improving the quality of services; and by (iv) facilitating the direct interaction between citizens and government official (Hanna, 1991; Berman and Weitzner, 1997; Wilson III, 1999; Negoroponte, 1995). Most of these authors have a positivistic view on ICTs and the link to development and thus recommend that governments take proactive steps in embracing the information society by providing a favorable enabling environment for ICTs and by financing specific national ICT programs.

On the other hand, a very different perspective on the potential impact of ICTs on development and decentralization is being taken by the social deterministic view (Castells, 1997; Gurstein 2003; Hewitt de Alcántara, 2001, Kling, 2000). This view stresses the notion that existing social structural inequalities determine the growing inequality between developed and developing countries and that ICTs exacerbate existing inequalities within developing countries through the unequal diffusion of technology.

Concerning the potential of ICTs ability to support decentralization and democratic processes this school argues that ICT project do not engender a transformation in the fundamental nature of political systems, since these projects are not democratizing the state-citizen communication processes itself and are not supported by an engaged civil society (Hacker, 1996; and Friedland, 1996).

The contextualized approach to ICTs underscores the importance of the socioeconomic and cultural context, without which it assumes it impossible to fully understand the potential effects of ICTs on development (Avgerou, 2001; Walsham, 1993 and 2001). In contradiction to the technologically or socially deterministic approach, this viewpoint does not assume a linear and casual relationship between technological innovation and development, but highlights the dynamic interrelationship

between the social context and information systems. Pratchett emphasizes that ICT projects have the potential to contribute to support local governments in the following three dimensions of their work: (i) enhance local democracy; (ii) promote public policy-making; and (iii) improve the quality of their service delivery (Pratchett, 1999). Based on a contextualized approach, he however demonstrates that local governments only make use of ICTs as an instrument to improve the delivery of services and neglect the use of ICT for other areas.

The project Enlared Municipal was implemented in two distinct phases… During its first phase, the project focused primarily on the development of an online central Portal for municipal government (www.enlared.org.bo), attempted to introduce a national bidding platform for Bolivia and provided technical support to the Mancomunidad of the Chiquitania for the development of an integrated management Information System for the 14 municipalities belonging to the Mancumidad of the Chiquitania… Based on the experiences from the first phase of the project, USAID decided to refocus the program and strengthened its partnership with Bolivia's national association of local governments- the Federación de Asociaciones Municipales de Bolivia (FAM). During this phase— from the beginning of September 2004 to the end of November 2005— the FAM assumed the responsibility of coordinating the project…

The Federation organized a competitive bidding process in mid-2004, which was won by the Swiss-funded program "Programa de Apoyo a la Democracia Municipal (PADEM)). The program focuses on providing capacity-building of municipal governments and community-based organizations such as indigenous organizations or women's organizations in order strengthen local participatory processes and to enhance the governance and social accountability of local governments. A key advantage of choosing this program as the implementing agency was its seven year experience in working with local governments on issues related to good governance, participation and empowerment…

Taking ICT to every Indian village: Opportunities and Challenge

Garai, Atanu, Shadrach, B., OneWorld South Asia, New Delhi, 2006-04-18
http://www.capabilityapproach.com/pubs/998ICT-Garia,Shadrach.pdf

A collection of four papers
What can ICT bring for the inhabitants of 600,000 Indian villages? How India is empowering the poor and marginalised citizens to participate in the emerging knowledge society? How will India provide voice to her millions of citizens? 'Taking ICT to every Indian village: Opportunities and challenges", attempts at answering such questions and exploring the complex interactions between ICT and society.
For the first time, a conscious effort has been made to bridge the gaps existing between research and practice – a matrix of development verticals, founded upon the principles of human development approach, tests and validates the planning, implementation and evaluation of ICT projects. An insightful analysis of rural India portrays the complexities of social, political and economic environment in which institutions and initiatives function and operate. Argumentative, analytical and thoughtful – the collection raises many questions for practitioners, policy makers, planners and researchers on the emerging ICTD paradigm in India. A whole new direction has emerged through this

discourse – making government, private sector and civil society leaders think on the social, economic and cultural consequences of taking ICTs to Indian villages.

Executive summary

In the first paper, "Processes and appropriation of ICT in human development in rural India: Bridging the research and practice gaps," the notions of ICT-enabled development is re-examined in the context of capabilities approach, laid down notably by Amartya Sen and Martha Nussbaum. The concept of human development as an assessment methodology for measuring development across the nations has significantly developed and refined by UNDP through a series of Human Development Reports. It is plausible that the developmental impact of ICT on society can be assessed using the human development measurement tools as well. Expanding human capabilities is seen as the prime goal of sustainable development, as noted by Dreze and Sen (2002),

"One way of seeing development is in terms of the expansion of real freedoms that the citizens enjoy to pursue the objectives they have reasons to value, and in this sense the expansion of human capability can be, broadly, seen as the central feature of the process of development." According to Sen and Anand (1994), longevity, infant/ child mortality, preventable morbidity, literacy, nourishment and personal liberty and freedom are the basic features of well-being that help in expanding the human capabilities. Various forms of ICTs - capturing, storage, processing, communication and display – infuse knowledge that helps in capabilities expansion. Knowledge is vital in meeting development goals, as experiences from various ICT-assisted initiatives suggest that it amplifies citizen's voices, promotes quality in health and education services, broadens livelihoods bases of the poor and marginalised. The diffusion of ICTs across India so far has so far been modest. The realisation that disproportionate geographical concentration of projects lead to greater disparity across the regions led to the formation of several nation-wide ICT initiatives.

Integrating a human development approach to such ICT initiatives is a precondition to the success of these projects. Rural India presents socially, culturally, economically and politically diverse environs wherein knowledge centres or knowledge gateways operate in. With an average population density of 324 people per km, rural India poses an attractive service population for knowledge centres – though the service provisioning is challenged by two major factors, income poverty and illiteracy, among many

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others. According to a recent estimate, the proportion of poor in the rural areas declines from 45.65 per cent in 1983 to 27.09 per cent in 1999-2000; similarly, the literacy level stands almost at 60%.

With decreasing infrastructural and operational costs, chances of projects becoming self-sustainable are greater. Experiences with projects like Information Village Research Project demonstrate that rural people can acquire ICT skills fast, even without having high-level of literacy. Building institutional linkages is an effective enabler in poverty reduction – as linkages in developmental interventions span across the horizons of social, cultural, economic and political entities and in this chain government structure at various levels functions in a seamless and interoperable fashion.

Paper 3 reviews a selection of projects based on 'capabilities approach'. The literature review suggests that the impact of ICT in developing countries is thus far concentrated on economic development and network expansion. Since independence, India has made tremendous progress in expanding the communications infrastructure of radio and television; nevertheless, the broad socio-economic impact of expansion in ICT sector has been lesser than expected. An alternative evaluation methodology is proposed on the foundation of capability approach to overcome such methodological drawbacks. Project evaluation indicators are developed based upon four criteria – a) local community's access to information from formal state, market and civil society organisations; b) local community's ability to process and evaluate information; c) capacity of local communities in assimilate information in their own lives and produce information for others and d) local community's ability to advocate for local knowledge in public spheres.

Projects demonstrate that they are lacking appropriate governance, human, services and technological capacities for delivering to local communities. A review of few projects – Akshaya, Bhoomi, Community Information Centre, Digital Gangetic Plain, e-Chaupal, rural e-Seva, Gyandoot, Information Village Research Project, n-Logue, Tarahaat – show relative project management strengths and weaknesses.

Despite the tremendous growth in telecommunication network, rural India is yet to witness a robust and seamless voice and data connectivity. Evolution of wireless network protocols provides an opportunity to create community-based, bottom-up internet infrastructure at the village levels. Prominent among such network standards is Wi-Fi. The issues of electricity and connectivity remain a challenge primarily for the government and the private sector who are in the process of rolling-out ICTs throughout the country. It is recommended that appropriate political, regulatory and governance mechanisms be created that facilitate growth of shared ICT infrastructure in local communities.

Other Related Research

Comment:
Many of the selections in the next two chapters also address issues from human development and capability perspectives or approaches, particularly for example the innovation literature, and open access initiatives, and the role of ICTs in enabling or supporting education, health and gender equality.

Beyond access to ICTs: Measuring capabilities in the information society

Erwin A. Alampay, University of the Philippines; International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2006, Vol. 2, Issue 3, http://www.ijedict.dec.uwi.edu/include/getdoc.php?id=1343&article=196&mode=pdf

Abstract

This article discusses some development paradigms linked to the idea of an information society and explains how information and communication technologies (ICTs) are seen as a means to development. The article also looks at the concept of a 'digital divide' and the universal access to ICT policies that are meant to address the problem. It elaborates on the limitations of how current policies address issues related to how people gain access to and use ICTs. Finally, the article proposes a model for applying Sen's capability approach to analyze access to ICTs impact on development.

ICTs, Human Capabilities, Innovation and the Bottom of the Pyramid

Randy Spence; Centre for Ethics and Technology, University of Delft, 2008
http://www.ethicsandtechnology.eu/images/uploads/Spence_ICTs_HumanCapabilities_BoP.pdf

1. Introduction
2. Mobiles@BoP - the Main Story
3. Mobiles, Capabilities and Human Development
4. Innovation System Perspectives
5. Innovation Challenges
6. Research Ideas…

3. ICTs, **Communications** and Increases in Wellbeing & Freedoms

Market based services and activities:

- Finance: (micro-) credit, banking, (micro-) insurance, remittances, other legal & financial services;
- Trade: getting market information, advertising/marketing/selling goods or services;
- Agriculture and fisheries: reducing middle margins, selling directly to multiple markets
- Employment: learning of jobs, getting jobs, making jobs better (e.g. drivers);
- Personal and other services: arranging household services (e.g. childcare – family and other);
- Skills: farming know-how, other employment or income related skills, other life skills.

Civil activities and public services:

- Understanding: knowledge of government agencies and services, knowledge of rights;
- Organization and action to increase political and civil service transparency and performance;
- Health: receiving tele-health services or medical/health information, arranging medical care;
- Education: distance learning courses, receiving other useful information;

- Security: contacting police, family or friends in emergencies;
- Disaster warning and relief: advanced warning, getting relief and rebuilding assistance.

Other impacts and benefits:

- Dignity and empowerment: mobilizing support, expressing views in communities or politics;
- Family and social relations, sense of value or opportunities, music and entertainment.

4. Innovation System Perspectives

- NIS include the science and technology research and innovation institutions of the market, non-profit and public sectors. How these develop and interact, where improvements are most needed and valuable, and how national approaches differ, are important areas of knowledge for all involved. With *a growing relative importance of innovation in and for the 'bottom of the pyramid' (BOP) in many countries*, how can systems work to support modern and grass-roots innovation and synergy among sectors and communities?

- *The components of traditional and modern knowledge streams in developing countries are often poorly linked*. Traditional knowledge activities are also usually disconnected from the formal organization of education and training. *More open and participatory modes of S&T decision-making* can cause intense debates between groups who hold different viewpoints and values, or who have different tolerances for risk and willingness to accept change.

Hypothesis, mobiles – and all the communications capabilities they enable – underpin the introduction and expansion of many economic and social services and benefits, by creating something of socioeconomic value to cover their cost. They do this in significant part by increasing individual, external and/or group capabilities.

"From Modernisation to Capabilities: Changing Views of ICTs in the Development Process"

By Paul Catherall - Richard Heeks: Talk at the Development Informatics Department, University of Manchester, February 2007; Information for Social Change
http://www.libr.org/isc/occasional_papers/ICTs.html

This talk was part of the International Development seminar series at Manchester University and discussed the changing ways in which information and communication technologies have been viewed within dominant paradigms of socio-economic development. The seminar described pervasive socio-economic models from an historical perspective, including structured economic approaches (the controlled economy) and the trend toward neoliberal and neoconservative approaches in recent decades. The seminar particularly mapped theories of personal freedom and ICTs, with reference to the work of Nobel Prize winner Amartya Sen, whose recent work on development-as-freedom presents a model for conceptualising the role of ICTs in international development.

Sen's works have involved the development a theory of social choice which illustrates the conflict between the results of democracy, personal freedom and welfare issues, this is illustrated in Sen's advocacy for ICT in developing economies but accompanying plea for caution to ensure ICT benefits society rather than simply benefiting particular industries or sectors of the economy. Sen's

publication Poverty and Famines: An Essay on Entitlement and Deprivation (1981) demonstrated that famine occurs not only from a lack of food, but also due to the inequalities of the economic system which is responsible for distributing food (i.e. through the market), this was partly inspired by Sen's personal experience of the Bengal famine of 1943, resulting in three million deaths. Sen has also contributed (through his writings on social freedom and poverty) to the 'Human Development Report' (UN Development Programme) which ranks countries on the basis of social and economic factors.

Similarly, Sen has also developed his concept of 'capability' in terms of civic rights and freedoms and the material or social factors involved in realising these civil rights, for example the right to education may be reduced by cultural, social and material inequalities whilst the right to vote may be hindered by lack of access to polling facilities or lack of education regarding the process; his article More Than 100 Million Women Are Missing particularly focused on the inequalities of women in the developing world, including inequalities of health care and wellbeing derived from social systems which favour men over women in these developing countries.

In addition to theoretical works in economics, Sen has influenced the development of self-help programmes to provide alternative work following loss of industries and food production in India and African countries.

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- More Than 100 Million Women Are Missing (Sen, A. in New York Review of Books, Volume 37, Number 20 · December 20, 1990, Online Resource Cited 03/02/07): http://ucatlas.ucsc.edu/gender/Sen100M.html
- Poverty and Famines: An Essay on Entitlement and Deprivation (Sen, A. 1981, Online Resource Cited 03/02/0): http://www.questia.com/PM.qst?a=o&d=85190755

Other Links

- Official Website of Amartya Sen : http://post.economics.harvard.edu/faculty/sen/sen.html
- Online Articles by Amartya Sen: http://www.nd.edu/~kmukhopa/cal300/sen/articles.htm
- Amartya Sen on the Nobel Prize Archive: http://almaz.com/nobel/economics/1998a.html

ICT Policies For Poverty Reduction And Human Development – Reassessment

James George; UNESCAP
www.unescap.org/rural/ICTEGMNov2003/Malaysia-JamesGeorge.doc

It is critical at the outset to acknowledge the complexities and the varied dimensions of poverty before one begin to contemplate any form of discussion on human development opportunities provided by the increasing capabilities of Information Communication Technology (ICT) to meet the needs of the poor. This paper takes a starting point from The Nepal Human Development Report 2001 on Poverty Reduction and Governance that has defined poverty and human development as follows:

'Poverty is a state of economic, social and psychological deprivation occurring among people or countries lacking sufficient ownership, control or access to resources to maintain minimal acceptable standards of living. It represents an exclusionary relationship where individuals or states are denied access to and adequate package of resources".

Human Development on the other hand, is defined as being centered with concerns of widening the range of choices for individuals and communities to pursue economic, social, cultural and political rights and needs by enhancing their capabilities to shape their lives as they wish. The full achievement of human development will theoretically enable them to live in dignity, a long and healthy life, to obtain education and further knowledge, to have control over key resources, to engage in a productive employment of his or her choice, and to participate effectively in activities of community and the state.

4.0 ICT Deployment And The Need For Strategic Intervention

The Big Picture Approach

Strategies should integrate economic, social, environmental and governance concerns within a comprehensive approach to development at the country level. The identification of and continued focus on both economic and social development goals is a key determinant of success. Focus areas are for the application of technology in pursuit of core development goals such as food security, better health and access to connectivity and access for all, building human capacity in technical education and training, enhancing healthcare and quantity of life, e-governance, e-competitiveness, e-entrepreneurship, and local content creation.

Strategic Intervention Frameworks

Providing strategic interventions which are properly conceived and implemented have the potential to create significant multiplier and network effects, leading to a 'development dynamic". The proposed framework to accelerate social and economic development should include five critically inter-related areas for strategic intervention:

a) Infrastructure - Deploying a core ICT network infrastructure, achieving ubiquity of access, and investing in strategically – focused capacity to support high development priorities;

b) Human Capacity - Building a critical mass of knowledge workers, increasing technical skills among users and strengthing local entrepreneurial and managerial capabilities;

c) Policy - Supporting a transparent and inclusive policy process, promoting a fair and open competition, and strengthening institutional capacity to implement and enforce policies;

d) Enterprise - Improving access to financial capital, facilitating access to global and local markets, enforcing appropriate tax and property rights regimes, enabling efficient business processes and stimulating domestic demand for ICT;

e) Content and Applications - Providing demand-driven information, which is relevant to the needs and conditions experienced by local people.

Prerequisites to Strategic Intervention

Prerequisites for the successful deployment of ICT in initiatives to reduce poverty, requires that there is a need not only to understand, in the context of local conditions, the critical relationships between

strategic interventions, but also to secure the participation and commitment of all key stakeholders – local communities, NGOs, governments, the private sector and multilateral organizations. Heads of governments should provide the necessary leadership to confront existing barriers and promote innovative solutions. National and international private industry should work closely together to adopt, adapt and develop technologies to meet the unique needs and challenges of the less fortunate. Civil society should be a critical player and help assure that ICT is used in a way that targets and addresses specific development goals and priorities. Through innovative vision and leadership, win-win situations can be created, thus aligning stake holder's critical objectives and unleashing the potential of new collaborative alliances and strategic compacts to harness the power of ICT for development. Proposed Strategic Areas of Intervention will include the following:

a) Awareness, advocacy and policy formulation - Decision makers at all levels must acquire sufficient knowledge about the information and knowledge revolution to formulate effective legal frameworks, national action plans and policies; to link ICT deployment with micro-finance and poverty reduction.

b) Connectivity., affordable and equitable access to telecommunication infrastructure, ICT hardware, software and networking facilities. - Telecom connectivity is typically provided via fixed landlines, fiber optic cables, satellite links or wireless connections. The satellite revolution holds considerable promise, particularly for developing countries, as theoretically every point on the globe can be reached instantaneously without expensive and protracted network constructions. Likewise, the wireless revolution is gathering steam. The "free PC" movement and the use of open systems are other important initiatives for facilitating access, as they reduce cost and thus barriers to entry.

c) Capacity and institution building - At the institutional level, effective regulatory bodies are needed to oversee the implementation of ICT related policies. At the human level, training especially for women and youths, must include basic computer literacy, web browsing skills, desktop publishing and email, networking, operation of servers and routers, website creation, data selection and interpretation, digital management, and general management and technical maintenance skills.

d) Local language content and cultural diversity - English dominates the web (80% of all websites are in English), as well as the digital content market, including CD-Roms. If ICT utilization are to be mainstreamed in the developing world, and local knowledge is to be shared, content in a digitized form must also appear in local languages. The creation of "knowledge broker" and solutions websites, i.e. one-stop shops with hyper-linked access to structured and pre-selected sites, would help reduce search time as well as usage costs.

e) Creative solutions to connect the unconnected - The local ICT industry should also be encouraged to become more responsive to the systems and hardware needs of the developing countries. Systematic efforts are also required to create a web of digital community telecentres especially in rural areas. They are conceived as platform and hub for various development applications, community training, capacity development, and web content creation in local languages.

f) Communications and Networking - The need to widen participation and involvement in decision making at all levels. This will help foster societal empowerment, good governance, transparency and accountability and stimulates networking at the national, regional, and global levels.

g) Funding - Immense resources are required to enable developing countries to partake in the information revolution and to become a level playing field actor in the global knowledge society. Realistically, this necessitates various approaches, in particular public-private partnerships. Sufficient funds are needed to launch and sustain a series of pilot projects to demonstrate the beneficial development impact of ICTs. If successful, this might then inform a change in domestic priorities and budget allocations.

ICTs for the Effective usage of Blue Ocean Strategy for Societal Development: An analysis with reference to the parameters of capability

Vinay Sharma1, Piyush Seth and Shujauddin Niyazi, 2007
http://www.iceg.net/2007/books/3/13_379_3.pdf

Abstract

This paper looks towards efficient usage of ICTs (Information and Communication Technology) so as to effectively use Blue Ocean Strategy at the grass root levels for enhancing the propulsion of societal development at large. The paper suggests that ICTs can be used as an efficient tool to develop uncontested markets, resulting in the rise of the Bottom of the Pyramid market levels along with the 'capability' (Sen, A., 2000), enhancement of the rural and the poor population for the overall societal development. The paper first proposes the parameters of capability found through empirical research and analysis and subsequently extends the proposition in lieu with Blue Ocean Strategy.

The Impact of Indian E-Government Initiatives: Issues of Poverty and Vulnerability Reduction, and Conflict

Rahul De', Indian Institute of Management Bangalore
http://www.apdip.net/projects/e-government/capblg/casestudies/India-De.pdf

Executive Summary

This paper considers seven e-government projects that have been implemented in India. Four are well known: Bhoomi, CARD, Gyandoot and eSeva, and three are relatively lesser known: Akshaya, Lokvani and SARI. Each project is an attempt by various state governments to use ICT for development, a goal that includes poverty reduction and improved access to government services.

These projects were selected because they addressed the needs of a large population, have sustained for a period of time, and have been used by a significant portion of the target population. Further, the projects were studied with a clear delineation of the issues pertaining to demand-side and supply-side stakeholders. The former are the consumers of the services of an e-government system and the latter are the main providers of the services (such as government departments).

The framework used for the analysis of the projects is based on an assessment of first- and second-order effects. First-order effects result from the immediate roll-out of e-government projects and second-order effects result from continued use of the system over a longer period of time. All the projects showed positive and significant first-order effects. For example, Bhoomi is used by about 800,000

people a month to access land records, eSeva has registered over 41 million transactions since inception, and even a small project like Lokvani has registered almost 30,000 transactions in a few months. Few of the projects have shown any significant second-order effects.

eSeva has had a small impact in terms of forcing participating departments to streamline their activities. A deeper analysis of the developmental impact of e-government systems is undertaken by using Amartya Sen's fundamental freedoms approach. This analysis was conducted for the Bhoomi project in particular, for which detailed data was available. The analysis shows that for landless and poor farmers and for women, a system such as Bhoomi has been of marginal relevance. Poor farmers are adversely affected by Bhoomi as it enables, for example, in the Bangalore periphery region, land sharks to identify and target them. Tenant farmers use records that are not covered by the Bhoomi system. Farmers do obtain some benefit from RTC certificates by being able to obtain credit and insurance, but a portfolio of applications is missing.

In the SARI, Gyandoot and Lokvani projects there is direct evidence of participation by women. Women used the Akshaya kiosks for computer literacy, and this is the highest recorded participation by women (65%). There is very little evidence of participation by dalits and other marginal groups in these projects.

Many projects experienced conflict and resistance at the time of implementation. Both demand and supply-side stakeholders resisted and contested the powerful e-government systems that disrupted their existing ways of working. Although this was overcome by the project managers, it left an impact on the outcome of the projects. It is evident from the analysis that the two most important capacity gaps are those of the digital divide and political participation. These gaps prevent the adequate participation of stakeholders and their ability to adapt to the changes introduced by the new systems.

Recommendations include: participatory approaches to requirements analysis and design of egovernment systems; experimentation with multiple designs and systems dispersed across diverse groups; government process re-engineering as demanded by target populations; participation by grassroots officials in the design and implementation of systems; and inter-departmental cooperation and coordination at the governmental level.

Dissertation Improvement Award: ICTs and Capabilities in the Kudumbashree Mission of Kerala

Abstract

This dissertation improvement project, funded by the Science and Society Program, will examine the influence of Kudumbashree, a government sponsored development initiative targeting women in Kerala, India. This research is of particular relevance to one of the most prominent current perspectives on development, Amartya Sen's capability approach, which focuses on the freedoms generated by commodities rather than commodities themselves. Specifically, this study examines two categories of

Kudumbashree programs -- information and communication technology (ICT) enterprises that offer services such as data entry and hardware assembly and rely to varying degrees on government support and traditional enterprises that offer services reflective of indigenous modes of production such as catering and craft production and compete on the open market. The central problem is whether these efforts differ in terms of social and economic outcomes and sustainability. Eighty face-to-face qualitative interviews are conducted in and around Thiruvananthapuram, the capital of Kerala, with Kudumbashree enterprise groups and individual group members as well as top Kudumbashree officials and community supporters of the organization. Observations of daily activities of each enterprise group also are made and their yearly financial reports are analyzed. The intellectual merit of this study lies in its aim to provide an assessment of two topics frequently addressed theoretically but seldom tested empirically: ICT development policy and capability enhancement. This research contributes to gender, technology, and development discourse as well as to the theoretical understanding of the capability approach. It has broader impacts on development practice by enhancing our understanding of the relationship between development policy and practice, including the strategies and tactics that show promise in cultivating and sustaining economic growth among poor women in developing areas.

5. ICTs, Innovation Systems, Open Access, Knowledge Economy / Society

Innovation Systems Perspectives

Comment: A 1997 OECD report on national innovation systems cites several definitions of these, including:

- *" .. the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies." (Freeman, 1987);*
- *" .. the elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge ... and are either located within or rooted inside the borders of a nation state." (Lundvall, 1992);*
- *"... a set of institutions whose interactions determine the innovative performance ... of national firms." (Nelson, 1993);*
- *" .. the national institutions, their incentive structures and their competencies, that determine the rate and direction of technological learning (or the volume and composition of change generating activities) in a country." (Patel and Pavitt, 1994).*

For reasons of history, economic structure and institutional development National Innovation Systems vary a great deal across countries.. The amount of R&D activities financed or performed by the private sector, by the higher education sector and by the public sector vary considerably across nations. Innovation Systems, of course, comprise much more than R&D expenditure and financing. Countries also differ considerably in institutions associated with the innovation process, tax measures and incentives, intellectual property laws, judiciary enforcement practices, degree of public-private cooperation in knowledge generation programs, and more.

IDRC: Innovation, Technology and Science Program Initiative Prospectus 2006-11

http://www.idrc.ca/uploads/user-S/11616331061ITS_Prospectus_English.pdf

> **Terminology**
>
> **Innovation.** For the purposes of the ITS program initiative, innovation is defined as the use of new ideas, technologies or ways of doing things, in a place where (or by people whom) they have not been used before.
>
> **Science and technology.** The term science and technology, as well as scientific and technical knowledge, refers to the full range of social, natural, medical and life sciences, as well as physical and engineering disciplines.
>
> **Policy-relevant research.** The term "policy-relevant" is used here to refer to the range of possible actions that could be generated with respect to the organization, behaviour and action of numerous organizations or individual actors implicated in innovation, science and technology, including government agencies, private sector firms, entrepreneurs, associations, non-government and civil society organizations, universities, legal institutions, international donor organizations etc.

There is a lot of recent and current thinking, research and experimentation on national innovation systems (NIS), which include the science and technology research and innovation institutions of the market, non-profit and public sectors. How these develop and interact, where most needed and valuable, and how national approaches differ, are important areas of knowledge for all involved. With a growing relative importance of innovation in and for the 'bottom of the pyramid' (BOP) in many countries, how can systems work to support modern and grass-roots innovation and synergy among sectors and communities?

These are some of the questions which motivated IDRC to initiate a study of NIS in six ASEAN countries in 2007.

An initial literature and desk study was done by Randy Spence, followed by meetings with policy makers and other thinkers in each country. These colleagues met in Singapore, September 10-11, discussed issues and findings, and decided to pursue some further areas of collaboration in national innovation policies and systems.

This work was initiated by IDRC's Regional Office for Southeast and East Asia (ASRO) and IDRC's Innovation, Policy and Science (IPS) Program Area and Innovation, Technology and Society (ITS) Program Initiative. The Prospectus for ITS situates the ASEAN initiative, starting with the terminology above and including the following excerpts[8]:

> The rationale for the new ITS program initiative is driven by a set of inter-related challenges that developing countries continue to face with respect to science, technology and society, including achieving effective interactions between key actors in innovation systems; creating and applying more effective and inter-linked STI policy frameworks and instrument choices; reducing stakeholder marginalization and inequity in STI policy decision-making; and narrowing technological access and learning gaps in relation to more developed countries.

> Objectives: 1) improving the understanding, capacity and inter-linkages of actors and organizations involved in developing country innovation systems; 2) contributing to the development of explicit and implicit S&T policies that support innovation systems in developing countries; and 3) enhancing socio-economic impact analysis, social inclusion and learning capabilities in support of innovation and the governance of new technologies

> Paterson et al. (2003) define a system of innovation as, "a set of functioning institutions, organizations and policies which interact constructively in the pursuit of a common set of social and economic goals and objectives, and which use the introduction of innovations as the key promoter of change." Interactions between the actors and organizations that comprise innovation systems can be technical, commercial, legal, social and financial, inasmuch as the goal of such interactions is the development, protection, financing or regulation of S&T to enhance sustainable forms of development.

> Analysis of innovation system stakeholders and functions has permitted rapid assessment and comparison, as well as the design of supportive policy interventions. Innovation system "mapping" efforts have also yielded useful analytical information accessible to policymakers and other actors in the system.

> The experience of certain Asian economies (e.g. South Korea, Taiwan) is often used to illustrate how S&T can lead to development, based on their transition from relative poverty to prosperity in the 1970-80s. The key lessons from these countries lie in the order and timing of different types of S&T activities (and the related set of institutional adjustments and policy instruments they put in place). Initially, all of these countries focused on importing scientific knowledge and technology from abroad, followed by efforts to copy and master it, and finally to make incremental improvements through improved design engineering and applied research. Other important factors which can be characterized as implicit S&T policies also contributed to their economic success, especially government investment in primary, secondary, technical and tertiary education, as well as

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[8] Please see http://www.idrc.ca/en/ev-104936-201-1-DO_TOPIC.html for the full Prospectus.

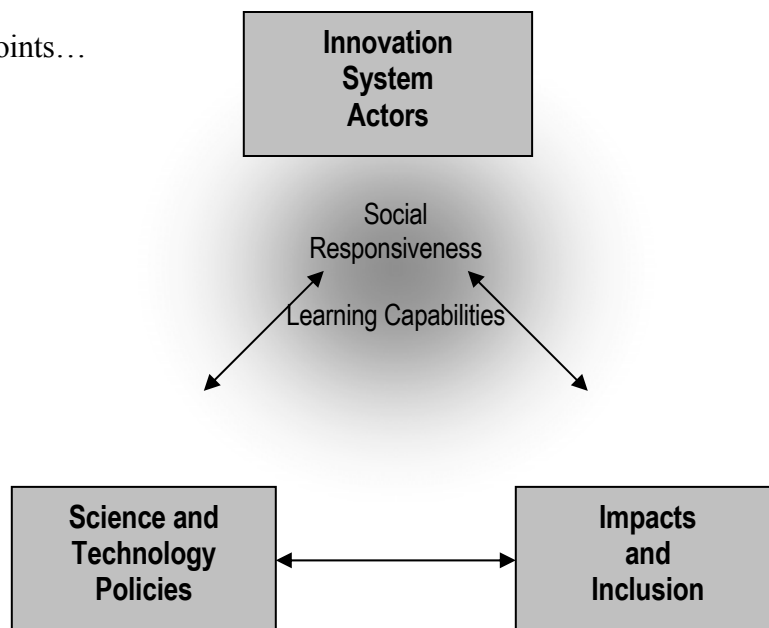industrial policies involving support for nascent industries followed by timed entry into global markets.

Analyses of innovation systems tend to focus on organizational and institutional components, network interactions and relationships, and socio-cultural dimensions (i.e. practices, rules and laws), as well as supporting policies. The business system is of particular importance in these studies, since this is where most knowledge is translated into goods and services and where economic wealth is mainly created. Companies and other business actors (e.g. farmers, traders, and entrepreneurs) are, therefore, among the most important elements in innovation systems and are increasingly so as levels of development rise.

It is now recognized that working with (and re-working) existing knowledge, rather than simply generating new knowledge through research, is a predominant activity in innovation (Arnold & Bell, 2001). Research can thus help identify if and where this is occurring in developing countries, as well as identifying opportunities for such reworking of knowledge to occur more naturally. Importantly, effective innovation is also not only a question of bringing about better connections between existing organizations and actors (e.g. between knowledge producers and knowledge users), it is also a matter of the suitability and orientation of existing innovation actors (individuals, organizations and their ideas), social-institutional behaviours (norms, laws), policy frameworks and policy instrument choices.

Finally, it is important to emphasize that the actors comprising innovation systems are not limited to scientific elites working in research organizations. People in banks, in companies, on farms, in business associations, and in non-government civil society organizations also contribute extensively to innovation (e.g. contributing tacit knowledge that comes from the application of their technical skills, advice and experience, while researchers working in formal research-based organizations supply codified knowledge in the form of scientific papers, data and reports). Non-experts also have an important role to play by determining acceptable levels of social risk related to the adoption or development of new technologies or in generating the social demand for political leadership in support of STI…

The components of traditional and modern knowledge streams in developing countries are often poorly linked. Traditional knowledge activities are also usually disconnected from the formal organization of education and training. More open and participatory modes of S&T decision-making can cause intense debates between groups who hold different viewpoints and values, or who have different tolerances for risk and willingness to accept change.

ITS Entry Points…

Innovation System Actors

Social Responsiveness

Learning Capabilities

Science and Technology Policies

Impacts and Inclusion

ITS Strategic Partnerships - Exploring Opportunities with Canadian Research Funding Organizations: We will remain open to proposals for new organizational arrangements that could contribute to capacity development with respect to particular innovation system capabilities that are either absent or very weakly developed in disadvantaged regions – particularly if such efforts can be pursued in partnership with other international funding agencies…

Another dilemma for STI policy in developing countries is the frequent divorce between efforts to foster innovation and those aimed at reducing social inequities (Sutz and Arocena, 2006). As noted earlier, investing in S&T capacity alone frequently does not solve deep-rooted problems related to poverty in developing countries, and can sometimes aggravate it. The need for policy-relevant and action research oriented towards the social responsiveness of innovation systems (i.e. the ability to link innovation and social policy objectives) has thus become increasingly more apparent. In the case of developing countries, these needs are particularly acute as society and decision-makers grapple with the social, legal, ethical, political, and economic implications of the so-called transformative technologies (i.e. biotechnology and genetic engineering, nanotechnology, and information and communication technologies).[9]

Science, Technology, and Innovation Capacity Building for Sustainable Growth and Poverty Reduction

Edited by Alfred Watkins and Michael Ehst, The World Bank, 2008

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[9] S&T policy in recent years has often placed emphasis on a small set of high-profile technologies in which current advances are particularly rapid and which are identified as especially "dynamic, pervasive or generic". Bell (2006) has noted that over-attention on these applications in developing countries may distract attention from other important forms of STI policy, capacity and investment efforts that may be more centrally important for, and perhaps far more pervasive in, large parts of society in poorer countries.

Research Councils and Support Organizations in Southeast Asia: A Report on Science, Technology & Innovation Systems in Indonesia, Vietnam, Philippines, Thailand, Malaysia & Singapore

Institutions, Issues, Collaboration, Technology/application issues
IDRC; Randy Spence and colleagues in S.E. Asia and IDRC, 2008
http://www.idrc.org.sg/uploads/user-
S/12289592651Research_Councils_Report_updated_25Nov08.pdf

…System issues of most common concern at the sub-regional or regional level were:

- innovation in and for the 'bottom of the pyramid'
- coordination among Government institutions
- low R&D and innovative culture in industry
- university roles, incentives, incubators
- IP management and services
- private-research-public institutional linkages
- innovation financing and venture capital
- international linkages and collaboration
- fostering a culture of innovation in society

And technologies most underlined included the following:

- ICT access, costs, usage/services
- new and alternative energies incl. biofuels
- agricultural biotechnologies
- medical biotechnologies & new medicines
- water management (many kinds)
- global warming and climate change
- nanotechnology

There was broad agreement at the Singapore meeting on the idea of an informal and flexible network of Councils with institutional backup, state of the art reviews of innovation systems, documenting

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experience and successes, and an underlying if not exclusive theme of innovation in/for the bottom of the pyramid.

Platform technologies were raised everywhere, with ICTs and biotechnology by far the most prominent. ICT priorities varied quite widely across countries; particular areas mentioned include:
- regulation and cost reduction;
- infrastructure;
- human resources development;
- universal access (models);
- software legalization, open source
- language localization;
- e-government
- e-learning
- mobility and mew media
- wireless technologies

Innovation Systems and Human Development

The Capability Approach and Human Development

Sabina Alkire, 13 September 2004
http://hdr.undp.org/en/media/Capabilities%20and%20Human%20Development,%20Sabina%20Alkire.ppt

Comment
These 2 slides provide useful background for following materials.

Sample lists of functionings – there are many!				
Finnis 1987: Basic Human Values	**Sen 1999:**	**Nussbaum 1998: Central Human Capabilities**	**Rawls 1993** *Political Liberalism*	**Doyal & Gough 1992: Intermediate Needs**
Bodily life – health vigour and safety Knowledge Skillful performance in work and play Friendship Practical reasonableness Self-integration Harmony with ultimate source of reality	political freedom economic facilities social opportunities transparency guarantees protective security	Life Bodily health Bodily integrity Senses, thought imagination, Emotions Practical reason Affiliation Other species Play Control over one's environment	**The basic liberties** freedom of movement, freedom of association freedom of occupational choice against a background of diverse opportunities powers and prerogatives of office positions of responsibility in political and economic institutions income and wealth the social bases of self respect	Nutritional food/water Protective housing Work Physical environment Health care Security in childhood Significant primary relationships Physical security Economic security Safe birth control/ childbearing Basic education
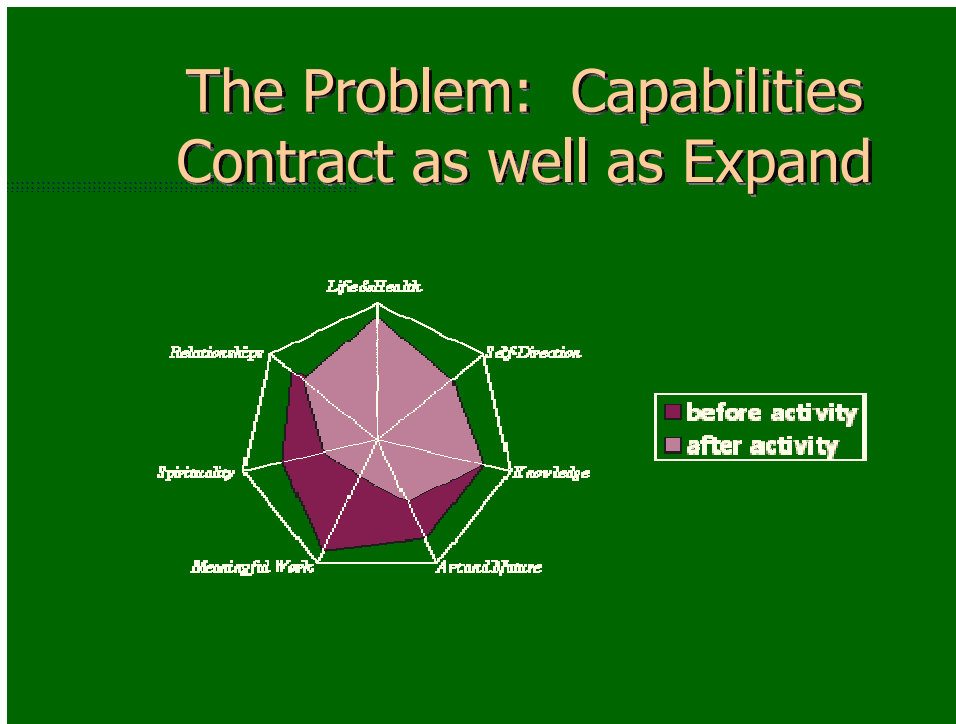
Product Innovation for Human Development; A Capability Approach

Ilse Oosterlaken, Jeroen van den Hoven, Prabhu Kandachar and Monto Mani, Delft: Delft University of Technology / Bangalore: Indian Institute of Science, March 2009
http://www.ethicsandtechnology.eu/index.php/projects/detail/877/ and
http://www.ethicsandtechnology.eu/images/uploads/Research_proposal_TechnologyHumanDevelopment_CapabilityApproach.pdf

Project description

Some influential theories of distributive justice, fairness and equality, like that of John Rawls, discuss fair distribution in terms of shares of primary goods available to people. The main criticism of philosopher and Nobel laureate in economics Amartya Sen of these views is that it is not the goods that are ultimately important, but what they allow us to do and be, the kind of lives they enable us to live. Giving everyone a laptop or some other piece of technology is no good in and by itself, according to Sen's approach. Some people will be able to make good use of it and increase their level of functioning, but others who are illiterate or do not have access to reliable power supply cannot possibly convert their possession of the technology into anything useful in their lives. Human functionings and capabilities are therefore at the centre of Sen's work, referred to as the 'capability approach'. Although it has been widely adopted in development thinking, hardly any work has been done on the interrelations between the capability approach and technology. This is remarkable, since technology by definition aims at expanding human capabilities. This project investigates how the capability approach can be utilized in (thinking about) technological innovation and engineering design. The context of application for this project is innovation for the so-called 'Base of the Pyramid' (BoP) or the poor in developing countries. Case studies are taken from three engineering

areas: ICTs, healthcare/medical technology and sustainable human settlements. A more detailed description of the project can be found in the following document:

Description of the proposed research

5.1 Societal relevance – Base-of-the-Pyramid innovation

Decades of traditional development aid have not solved the problems of the world's poor – including hunger, unemployment, disease, lack of shelter and education, gender inequity and environmental deterioration. New solutions are currently being explored, amongst others by the so-called 'Base of the (income) Pyramid' (BoP) movement. The central idea here is that entrepreneurial activity and making profit can go hand in hand with poverty reduction. This requires, says Prahalad (2004), innovation. While promising in many ways, some elements deserve further thought in order to realize its full potential to help reduce poverty:

- One omission in current BoP thinking is that insufficient attention is being paid to the engineering and design phase of innovation for the BoP (Thomas 2006; Kandachar and Halme 2007). Yet innovation scholars (Soete 2008) as well as development theorists (Leach and Scoones 2006) have argued for a 'new mode of innovation' for developing countries, one that is adaptive to local contexts, involves multistakeholder participation and is design-based - contrary to the traditional uniform, linear, natural science based innovation (with emphasis on international technology transfer).

- Another critique of BoP initiatives is that they focus too much on the reduction of income poverty, while they should aim more at the expansion of 'human capabilities' (Crabtree 2007). The 'capability approach' started as a criticism on welfare economics by Amartya Sen, but became an influential perspective on development. Development should – according to Nobel laureate Sen – aim at expanding people's human capabilities. Sen's work inspired – amongst others – the creation of the UN's Human Development Index. We should not measure a country's development solely in terms of GNP and likewise we should not judge innovation for the BoP solely in terms of income effects for the poor, but also in terms of effects on human capabilities. Innovative technology – e.g. ICTs, medical equipment, energy technology - is potentially a powerful tool for directly expanding human capabilities – but this requires appropriate innovation and design.

This research project will address these lacunas by using the capability approach as a critical conceptual framework for the assessment, design and evaluation of innovative technology for the global poor. Those who are responsible for the design and introduction of technology for developing countries need to think more about the way it affects the capabilities of the poor. Those who want to reduce global poverty need to think more about how technology can be deployed for expanding human capabilities. Although this may seem a straightforward idea, the implications still have to be traced all the way through.

5.2 Theoretical framework – the capability approach

Some influential theories of distributive justice, fairness and equality, like that of John Rawls, discuss fair distribution in terms of shares of primary goods available to people. The main criticism of economist Amartya Sen (1999) and philosopher Martha Nussbaum (2000) is that it is not the goods that are ultimately important, but the kind of lives they enable us to live, what they allow us to do and

be. Giving everyone a slice of bread of equal size may amount to an unfair distribution, since some people may need more food because they are recovering from an illness or because they are pregnant. Giving everyone a laptop or some other technology is no good either in or by itself. Some people will be able to make good use of it and increase their level of functioning, but others who are illiterate or do not have access to reliable power supply cannot convert possession of the technology into anything useful in their lives. Human functionings and capabilities are thus at the centre of Nussbaum's and Sen's thinking, referred to as the 'capability approach' (CA).

Capabilities have been described as "what people are effectively able to do and be" or the (positive) freedom that people have "to enjoy 'valuable beings and doings'", to lead the lives they have reason to value. These beings and doings are called 'functionings' by Sen. Examples of functionings are working, resting, being literate, being healthy, being part of a community, being able to travel and being confident. "The distinction between achieved functionings and capabilities", so Robeyns (2005) explains, "is between the realized and the effectively possible; in other words, between achievements on the one hand, and freedoms or valuable options from which one can choose on the other". According to Alkire (2005) one reason to focus on capabilities instead of functionings is that we value free choice and respect people's different conceptions of the good life. Two persons may have the same level of nutritional functioning: "A person who is fasting is in a state of under nutrition, which may seem very similar to a person who is starving. But in the one case, the fasting person could eat and chooses not to; whereas the starving person would eat if she could." The CA thus recognizes the importance of both 'well-being freedom' and 'agency freedom'. The latter acknowledges that people pursue not only their own well-being, but may also choose to pursue other ends (like the well-being of others or following moral norms).

Several aspects of the CA are discussed by authors. One debate is about which capabilities matter and who (how, when) is to decide about this. Whereas Nussbaum comes up with a concrete and – so she claims - universally applicable list of important capabilities, Sen has always refused to endorse a specific list of capabilities, or to set priorities among different capabilities. His reasons are that the proper list of capabilities may depend on purpose and context and should be a result of public reasoning and democratic deliberation. The question of 'operationalisation' has, understandably, received quite some attention. How do we expand people's capabilities?

5.3 Scientific relevance – technology & human capabilities

A large body of literature exist nowadays on the CA and it has inspired (policy) debates in many areas, e.g. in health care, nutrition, livelihoods, education and gender inequality (Alkire 2005, 2002; Comim, Qizilbash, and Alkire 2008; Robeyns 2006). There is, however, little work on the approach in relation to technology and design. This is remarkable, since technology by definition aims at expanding human capabilities. We feel that the interrelations between human capabilities and technology need to be addressed in order for the CA to realize its full potential as a practically relevant ethical theory concerned with improving the fate of the global poor in the century of high technology. Two of the applicants proposed this in a presentation at a workshop with Martha Nussbaum on December 15th 2008 (sheets at www.hse.fi/bop). She agreed that the theme 'technology, design and capabilities' should be further explored. Her suggestion was that TU Delft will organize one of the annual conferences of the Human Development and Capability Association on this topic.

5.4 Research questions

The central research questions are:

- How can the capability approach (CA) be applied to technology and innovation - especially in developing countries, with the purpose of improving the situation of the poor?
    1. How should the interrelations between technology and human capabilities be understood and explicated?
    2. How can the CA be utilized in methods and practices of engineering design, in view of technology for development?
    3. How can the CA be utilized in the methods and practices of assessment and evaluation of technology / innovation projects for development?
- How and in which sense would sound answers to A/B/C lead to improvement of our thinking and best practices of technology and development, compared to other approaches which are currently in use?

Three subprojects correspond to these three research questions. Project A is mainly of a theoretical / philosophical nature. Projects B and C are methodological projects in the area of engineering design and innovation. They are embedded in concrete case studies that will provide invaluable input for answering the research questions. Extensive usage will also be made of empirical research which is done by others in the area of technology and development (from disciplines such as cultural anthropology - e.g. Tenhunen 2008) and available meta-analyses.

5.5 Description subprojects

A - Theory: technology and human capabilities
Project A will address several more theoretical and philosophical issues, including:
Conceptual analysis and comparison of discourses (terms, concepts and background views) within a) the capability approach (CA) and b) technological innovation and engineering design.

- Applied ontology of the CA (human capabilities and functionings) in relation to the ontology of engineering (artefacts having functions, expressions e.g. "nuclear capability"). Regarding the analysis of engineering and engineering methodology the TU Delft philosophy department has already successfully conducted innovative and internationally acknowledged work (e.g. Vermaas and Houkes 2006; Houkes et al. 2002).
- Critical reflection on the interaction between technology and human capabilities. For example related to individual/collective/external capabilities (Foster and Handy 2008), complicated capability effects of technology (like long-term versus short term, expanding some while contracting others, well-being versus agency freedom, see also case examples)
- Tenability of claims of non-paternalism and neutrality towards the good life in the CA, considering the fact that many capabilities would not be possible without technology; within the philosophy of technology and within science and technology studies (STS) people have argued that technology is not neutral with respect to the good life.

B - Design application: 'capability sensitive design'
If we conceive of technologies in terms of their effect on the capabilities of people, the capability approach (CA) needs to be made an integral part of engineering design, both in terms of methodologies and general awareness. One of the applicants has labeled this 'capability sensitive

design' in an article introducing the approach to the design community and sketching a research agenda (Oosterlaken forthcoming). This project includes:

- The appropriateness - from the perspective of the CA - of existing design theory, methods and practice, e.g. value sensitive design (van den Hoven 2007), universal design and participatory design. Universal design, for example, seems to share some elements with the CA (Oosterlaken forthcoming).
- Special attention for participatory design, considering the 'inherent' link between the CA and participatory methods (Frediani) and the added value that the CA is expected to have here (Oosterlaken forthcoming). This also requires looking at 'capabilities to design' of the stakeholders (Dong 2008).
- The development and testing of improved or new design methodologies, based on the CA - with special emphasis on developing countries / the global poor.

C - Policy application: capability-technology assessment & evaluation

First attempts have already been made to apply the capability approach (CA) to the assessment and valuation (e.g. Gigler 2004; Murphy and Gardoni 2006; González, Aristizábal, and Diaz 2008) of projects concerning technology/innovation. This part of the project builds on that work and includes:

- Articulation of criteria for "appropriateness" – from the perspective of the CA - of existing methods and practices.
- Special attention for participation (e.g. Krämer and Belz 2008).
- The development and testing of improved or new assessment and evaluation methodologies, based on the CA - with special emphasis on developing countries / the global poor...

5.7 Embedding in technological cases

Since we would like to reach some conclusions about the applicability and added value of the capability approach (CA) for innovation and technology in general, abstracted from possible peculiarities in the application to a specific domain, case studies are conducted in a number of different engineering domains:

1. ICT

Due to the wide range of application, ICTs have the potential to contribute to many different human capabilities. Since expectations of the contribution to poverty reduction are often extremely high and perhaps unrealistic, critical reflection is expected to have added value (Zheng 2007; Selinger 2008). Moreover, the occasional publications on technology and the CA focus for a large part on ICT (e.g. Gigler 2004; Johnstone 2007; Zheng 2007). Finally, ICT and ethics is an area in which main applicant Van den Hoven is an internationally recognized expert.

2. Medical/healthcare technology Health is perhaps "the sector most in need of what could be called a bottom of the pyramid research re-prioritization" (Soete 2008). Moreover, this area is very relevant for the quality of life of the poor and for the millennium development goals. Finally, several design/BoP projects in the healthcare/medical sector have already been carried out by the Faculty of IDE (Kandachar et al. 2007). Co-applicant Kandachar recently received a substantive grant to continue his work in this area.

3. Sustainable human settlements

When we think of the 'real' BoP – the poorest of the poor – we find that many capability failures are connected to their living environment. Possibly interesting issues: short-term versus long-term capabilities (related to sustainability), agency (e.g. faked helplessness in Tsunami areas to increase aid received) and the role of adaptive preferences (related to awareness/exposure to urban lifestyles). The first attempts to connect the CA to this area - which includes building, sanitation and energy – have already been made (González, Aristizábal, and Diaz 2008). Co-applicant Mani has much experience in this area.

The project will use three main cases, one in each engineering area, which are relevant and interesting for all three PhD projects (although each PhD project also include other, minor cases). In the first two areas the research team proposes the following two cases:

1. Rural ICT telecentres

Ratan and Bailur (2007) critically discuss rural telecenters, which have received a lot of funding and support over the past years. These centers are generally seen as empowering, giving people access to all sorts of information (health information, job openings, etc) and by acting on that information people gain greater control over their lives. All sorts of capabilities can be expanded in this way. Yet", they say, "research on telecentres increasingly illustrates discrepancy between 'development' intentions and usage". People may also use the telecentres for other purposes, like entertainment. Money for development purposes is thus invested in ICT projects that seem questionable in terms of human capabilities expansion and the intentions of the NGOs, but it is the villagers themselves that make the decisions on how to spend their time and how to use the telecentres. 'Agency freedom' and 'well-being freedom' – concepts from Sen's version of the capability approach (CA) - clash here.

Although the CA offers conceptual tools for interpreting this situation, it is not immediately clear how we should evaluate it and proceed. We should not blindly accommodate the possibly 'adaptive' preferences of the villagers. Yet we should also not completely ignore the importance of agency freedom, even though this comes at the expense of well-being freedom. "The agency welfare debate", Raitan and Bailur argue, "gets even more complicated when it involves more than one individual." We should probably also acquire more insight into how the conversion from resources (ICT equipment and information) into capabilities and decisions takes place or is hindered into specific contexts and how these context influence deliberation of people on what to pursue. As Raitan and Bailur note, the context of uncertainty in which many poor live, may lead to different trade-offs between valuations of the present and the future: "We do not claim that people are not interested in their own welfare, but that this value is hard to see and turn into tangible welfare gains in ICTD projects, given the numerous factors that influence the translation of welfare information into welfare outcomes in developing country contexts today."

2. Ultrasound technology for rural India

The Faculty of Industrial Design Engineering (under guidance of Prof. Kandachar, together with Philips Healthcare) is currently planning an innovation project for the BoP with the aim of simplifying ultrasound equipment, so that uneducated rural health workers in India and in China will be able to operate it. Ultrasound images will be send to a regional/urban hospital with the help of ICT, where skilled doctors are able to interpret the images and give medical advice. In India there is,

however, an important technology; Ultrasound images disclose whether a foetus is a girl (often unwanted) or a boy. The technology has thus led to a large number of abortions on female foetuses.

Technology has complicated capability effects here. Positive for mother and child is preventing premature death and improving health. For individual families avoiding dowry by not having another daughter may lead to a better financial situation, which may contribute to improving different capabilities. On the negative side: sex-selection enabled by ultrasound technology may be another way to continue a culture that denigrates and discriminates women, which affects many capabilities of women negatively. The growing demographic gender imbalance also has as a consequence that many young boys/men will be unable to find a spouse and start of family, which affects capabilities in the area of emotions and affiliation (capabilities 5, 7 in Nussbaum's list).

Not only should we examine how technology and capabilities interact in this context, there is also a need to investigate how design may play a role as part of not only the problem, but also the solution. Gender-selective abortion is forbidden by Indian law, but it has proved very difficult to enforce this law. A 'capability sensitive design' solution may entail ultrasound technology being designed in such a way that images only show certain things (like the position of the foetus in the womb) and not others (like the genital areas of the foetus). Modern ICT and pattern recognition techniques might play a role here, automatically identifying genital areas in an image and blurring these (van den Hoven and Oosterlaken 2008)....

5.10 International orientation and collaboration

Firstly, the content of the research project itself is thoroughly internationally oriented, with its focus on developing countries. Secondly, the project is a joint effort of TU Delft and the Indian Institute of Science and all three PhD students are scheduled to spend some time abroad. Thirdly, the project has an internationally oriented valorization panel. Finally, the applicant's scientific network allows the project to draw upon internationally recognized experts in relevant areas. For example, the following researchers have expressed their interest in being involved in discussions concerning this project:

- Dr. Richard Goossens, Medisign (Product Development & Research in Health Care), Faculty of Industrial Design Engineering, TU Delft, the Netherlands (www.io.tudelft.nl/medisign)
- Prof. dr. B. Gurumoorthy, CPDM (Centre for Product Design & Manufacturing), Indian Institute of Science, India (http://cpdm.iisc.ernet.in/)
- Prof. Harishchandra Hebbar, Director 'Manipal Centre for Information Science' & BoP Chair, India (http://www.grassrootinnovations.org/BoP_engagements/harishchandra_hebbar.htm)
- Prof. dr. Melissa Leach, STEPS Centre (Social, Technological & Environmental Pathways to Sustainability), Institute of Development Studies, University of Sussex, UK (http://www.stepscentre.org/index.html)
- Dr. Evan Selinger, Department of Philosophy, Rochester Institute of Technology, USA (https://people.rit.edu/emsgsh/)
- Dr. Randy Spence, OPHI (Oxford Poverty & Human Development Initiative), University of Oxford, UK (www.ophi.org.uk)

Product innovation for human development: A capability approach to designing for the Bottom of the Pyramid

5. Technology as capability expansion

On an intuitive level adopting the capability approach immediately seems to be strongly compatible with recognizing and improving the contribution of technology and engineering products to development. After all, from a common sense point of view it seems that technology is supposed to increase the capabilities that we as human beings have. Just as the wheel enhanced our capability to transport heavy loads, more recently the computer enhanced our capabilities to make complex calculations. Technologies have grown more complex over time and are in an increasingly complex way intertwined with society, institutions, laws and procedures. However, ideally we still intend them to add to our capabilities to survive (such as in the case of medical equipment), to participate in public deliberation (such as in the case of ICT/internet applications that facilitate political discussion), etc. Nevertheless, this idea of making an explicit (theoretical) connection between the capability approach and technology and engineering has hardly received any attention in the literature.

Two explorative, agenda-setting articles appeared only recently (Johnstone 2007; Zheng 2007), both concerned with ICT. In connecting the capability approach with technology, Johnstone draws support from philosophers in the domain of cognitive science, where "technology is identified with tools and techniques by which we use the world to extend our powers", or more specifically "our thinking capabilities" in the case of ICT. The relevant functionings in the latter case are "calculation, thought, communication, expression and interaction". In addition to the direct technology-capability relationship, Johnstone points out that "the theoretical framework allows for technology to have an indirect effect [i.e. on capabilities] through its influence on the wider social and material environment." Zheng also sees multiple connections between technology and the capability approach. "The exploitation of commodities, such as technology", she writes, referring to the illustration of Robeyns in the previous paragraph, "certainly contributes to not only social conditions but also personal characteristics which would feedback to the conversion factors and decision making mechanisms."

The advantage that Johnstone sees of applying the capability approach in computer ethics is that "we can thus bring in the picture the kind of system-level effects that can be problematic in conventional ethical theory" – she characterizes the latter as agent/action centered. Zheng feels that the capability approach can offer a philosophical and conceptual foundation that can help to avoid some "existing or potential pitfalls in e-development", which she identifies as (1) "a simplistic correlation between ICT acquisition and diffusion and the improvement of people's well-being", (2) "an implicit assumption that ICT is intrinsically good and beneficial for human development, namely, it embodies a set of ultimately desirable functionings that are achievable in developing countries", (3) "the unquestioning pursuit of ICT diffusion across contexts, and a tendency to apply universal criteria on using ICT as developmental instruments" and (4) "a danger in e-development initiatives to perceive potential users as passive receivers of innovations, due to the fact that many technologies are transferred to the third world from contexts of more advanced economies" (Zheng 2007).

As obvious as making this connection between technology and capabilities may seem, philosophers working on the capability approach so far do not seem to have sufficiently realized the relevance of engineering and technology for capability expansion. For example, technology is not mentioned as a factor of relevance in figure 1, which is otherwise quite detailed. Neither does it figure on the list that Robeyns (2005) presents of inputs for capabilities (political practices, social institutions, habits, etc). True, a specific piece of technical equipment, namely a bicycle, is used by some authors to explain the approach (Sen 1983; Alkire 2005; Robeyns 2005):

"Take a bicycle. […] Having a bike gives a person the ability to move about in a certain way that he may not be able to do without the bike. So the transportation characteristic of the bike gives the person the capability of moving in a certain way. That capability may give the person utility or happiness if he seeks such movement or finds it pleasurable. So there is, as it were, a sequence from a commodity (in this case a bike), to characteristics (in this case, transportation), to capability to function (in this case, the ability to move), to utility (in this case, pleasure from moving)." (Sen 1983) However, the bicycle is just used as an example in explaining the focus of the capability approach and nothing more. Robeyns (2005) does say that the characteristics of the bicycle expand the owner's capability to move around. Yet she also states that:

"we are not interested in a bicycle because it is an object made from certain materials with a specific shape and colour, but because it can take us to places where we want to go, and in a faster way than if we were walking." (Robeyns, 2005, emphasis is ours)

Of course, the point that she would like to make is that what matters in the end is capability expansion and that the bicycle is only instrumentally important. On this, we tend to wholeheartedly agree with the capability approach. However, Robeyn's remark will still seem a little naive to philosophers of technology and explaining why – the purpose of section 1.7 - will take some time. But again, we discuss an example first...

Quick recap

In section 1 we started with a discussion of the contribution of technology to development, with Soete (2008) arguing that the design phase of technology based products is the central focal point in the 'new mode of innovation', in which the user context is considered to be very important. Inspired by

people like business scholar Prahalad (2004) there is also attention of the poorest people in developing countries – the so-called 'bottom of the pyramid' (BoP) - as potential customers or users of innovative products (section 2). However, the same section also voiced criticism on the BoP strategy (see Laundrum, 2007 for an overview) for not taking the interests of the poor sufficiently into consideration and not choosing the right focus for poverty reduction.

With respect to the latter, Crabtree (2007) proposed that BoP initiatives should not aim for reduction of income poverty, but rather for the expansion of human capabilities. We used section 3 for explaining what the capability approach – pioneered by philosophers Nussbaum (2006) and Sen (1999) – is about. The example of skin cream Fair and Lovely (Karnani, 2007) has been used to illustrate in section 4 how such a shift in perspective may make a difference in how one judges a product for users in developing countries. We then went on (section 5) to explain that intuitively there seems to be a very natural link between new technologies and expanding human capabilities, although only some very recent articles have recognised this (for example, Johnstone, 2007).

The case of mobile phone technology in poverty reduction initiatives in Bangladesh, as discussed by Selinger (2007), was used in section 6 to illustrate that, as empowering as new technologies may potentially be, there is also reason to be critical. In section 7 we made our concerns more concrete in explaining how the details of design are morally significant, using the work of Bijker (1995) to elaborate on a favourite example of capability theorists themselves for explaining their approach: the bicycle. It was proposed that what we need – analogous to the field of value sensitive design (Friedman, Kahn & Borning, 2001) - a new approach: 'capability sensitive design'. And this brings us – equipped with better understanding – back to what we started with: designing innovative engineering products for BoP users. There is obviously an important role to be played here by industrial design engineers...

9. Issues in capability sensitive design

Designing what – broadness of the task of industrial design engineers..

Moral responsibility of industrial design engineer in BoP context..

Differences and commonalities with other design philosophies..

Open Access / Access to Knowledge

Comment
> *The literature here is vast and important, as in other Chapters, and is covered very thinly, with some focus on knowledge important to the 'bottom of the pyramid' and particularly for human development. Some of the Overviews of Chapter 1, including the IDRC Openness Review, take a perspective to openness which might be covered by 'knowledge' and 'access' very broadly defined to include social, economic, legal and technological dimensions. The selections immediately below address open access from a broad perspective of principles and components. Little detail has been included, and many resources are missing, so this is a shallow first view. The subsequent section on Intellectual Property contains more detail and tries to flag areas where interests of poorer populations are particularly prominent.*

Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity

Lawrence Lessig, The Penguin Press, New York, 2004.
http://www.free-culture.cc/remixes/

Preface

At the end of his review of my first book, Code: And Other Laws of Cyberspace, David Pogue, a brilliant writer and author of countless technical and computer-related texts, wrote this:

"Unlike actual law, Internet software has no capacity to punish. It doesn't affect people who aren't online (and only a tiny minority of the world population is). And if you don't like the Internet's system, you can always flip off the modem." [1]

Pogue was skeptical of the core argument of the book—that software, or "code," functioned as a kind of law—and his review suggested the happy thought that if life in cyberspace got bad, we could always "drizzle, drazzle, druzzle, drome"-like simply flip a switch and be back home. Turn off the modem, unplug the computer, and any troubles that exist in /that/ space wouldn't "affect" us anymore.

Pogue might have been right in 1999—I'm skeptical, but maybe. But even if he was right then, the point is not right now: /Free Culture/ is about the troubles the Internet causes even after the modem is turned off. It is an argument about how the battles that now rage regarding life on-line have fundamentally affected "people who aren't online." There is no switch that will insulate us from the Internet's effect.

But unlike /Code/, the argument here is not much about the Internet itself. It is instead about the consequence of the Internet to a part of our tradition that is much more fundamental, and, as hard as this is for a geek-wanna-be to admit, much more important.

That tradition is the way our culture gets made. As I explain in the pages that follow, we come from a tradition of "free culture"—not "free" as in "free beer" (to borrow a phrase from the founder of the free-software movement [2]), but "free" as in "free speech," "free markets," "free trade," "free enterprise," "free will," and "free elections." A free culture supports and protects creators and innovators. It does this directly by granting intellectual property rights. But it does so indirectly by limiting the reach of those rights, to guarantee that follow-on creators and innovators remain /as free as possible/ from the control of the past. A free culture is not a culture without property, just as a

free market is not a market in which everything is free. The opposite of a free culture is a "permission culture"—a culture in which creators get to create only with the permission of the powerful, or of creators from the past.

If we understood this change, I believe we would resist it. Not "we" on the Left or "you" on the Right, but we who have no stake in the particular industries of culture that defined the twentieth century. Whether you are on the Left or the Right, if you are in this sense disinterested, then the story I tell here will trouble you. For the changes I describe affect values that both sides of our political culture deem fundamental.

We saw a glimpse of this bipartisan outrage in the early summer of 2003. As the FCC considered changes in media ownership rules that would relax limits on media concentration, an extraordinary coalition generated more than 700,000 letters to the FCC opposing the change. As William Safire described marching "uncomfortably alongside CodePink Women for Peace and the National Rifle Association, between liberal Olympia Snowe and conservative Ted Stevens," he formulated perhaps most simply just what was at stake: the concentration of power. And as he asked,

"Does that sound unconservative? Not to me. The concentration of power—political, corporate, media, cultural—should be anathema to conservatives. The diffusion of power through local control, thereby encouraging individual participation, is the essence of federalism and the greatest expression of democracy."

This idea is an element of the argument of /Free Culture/, though my focus is not just on the concentration of power produced by concentrations in ownership, but more importantly, if because less visibly, on the concentration of power produced by a radical change in the effective scope of the law. The law is changing; that change is altering the way our culture gets made; that change should worry you—whether or not you care about the Internet, and whether you're on Safire's left or on his right.

The inspiration for the title and for much of the argument of this book comes from the work of Richard Stallman and the Free Software Foundation. Indeed, as I reread Stallman's own work, especially the essays in /Free Software, Free Society/, I realize that all of the theoretical insights I develop here are insights Stallman described decades ago. One could thus well argue that this work is "merely" derivative.

I accept that criticism, if indeed it is a criticism. The work of a lawyer is always derivative, and I mean to do nothing more in this book than to remind a culture about a tradition that has always been its own. Like Stallman, I defend that tradition on the basis of values. Like Stallman, I believe those are the values of freedom. And like Stallman, I believe those are values of our past that will need to be defended in our future. A free culture has been our past, but it will only be our future if we change the path we are on right now.

Like Stallman's arguments for free software, an argument for free culture stumbles on a confusion that is hard to avoid, and even harder to understand. A free culture is not a culture without property; it is not a culture in which artists don't get paid. A culture without property, or in which creators can't get paid, is anarchy, not freedom. Anarchy is not what I advance here.

Instead, the free culture that I defend in this book is a balance between anarchy and control. A free culture, like a free market, is filled with property. It is filled with rules of property and contract that get enforced by the state. But just as a free market is perverted if its property becomes feudal, so too can a free culture be queered by extremism in the property rights that define it. That is what I fear about our culture today. It is against that extremism that this book is written…

Treaty On Access To Knowledge

Draft 9 May 2005
http://www.cptech.org/a2k/a2k_treaty_may9.pdf

Part 1 - Purposes, Objectives, Relationship to Other Treaties

Article 1-1 - Objectives
Article 1-2 - Nature and Scope of Obligations
Article 1-3, Relationship to Other Agreements

Part 2 – Governance

Article 2-1 - Conference of the Parties
Article 2-2 – Executive Board
Article 2-3 – Secretariat

Part 3 – Provisions Regarding Limitations and Exceptions to Copyright and Related Rights

Article 3-1 - General Limitations and Exceptions to Copyrights
Article 3-2 - Provisions Regarding Distance Education
Article 3-3 - The Rights of Persons with Disabilities
Article 3-4 - First Sale Doctrine for Library Use
Article 3-5 – Internet Service Providers
Article 3-6 – Digital Rights Management and Measures Regarding Circumvention of Technological
        Protection Measures
Article 3-7 – Non-Original or Creative Works
Article 3-8 – Orphan Works
Article 3-9 - [Retroactive] Extensions of Term of Protection for Copyright and Related Rights

Berlin Declaration: Open Access to Knowledge in the Sciences and Humanities

Max Plank Society, 20 - 22 Oct 2003, Berlin (over 240 scientific organizations signed by 2007)
http://oa.mpg.de/openaccess-berlin/berlindeclaration.html

Preface

The Internet has fundamentally changed the practical and economic realities of distributing scientific knowledge and cultural heritage. For the first time ever, the Internet now offers the chance to constitute a global and interactive representation of human knowledge, including cultural heritage and the guarantee of worldwide access.

We, the undersigned, feel obliged to address the challenges of the Internet as an emerging functional medium for distributing knowledge. Obviously, these developments will be able to significantly modify the nature of scientific publishing as well as the existing system of quality assurance.

In accordance with the spirit of the Declaration of the Budapest Open Access Initiative, the ECHO Charter and the Bethesda Statement on Open Access Publishing, we have drafted the Berlin Declaration to promote the Internet as a functional instrument for a global scientific knowledge base and human reflection and to specify measures which research policy makers, research institutions, funding agencies, libraries, archives and museums need to consider.

Goals

Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society. New possibilities of knowledge dissemination not only through the classical form but also and increasingly through the open access paradigm via the Internet have to be supported. We define open access as a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community.

In order to realize the vision of a global and accessible representation of knowledge, the future Web has to be sustainable, interactive, and transparent. Content and software tools must be openly accessible and compatible.

Definition of an Open Access Contribution

Establishing open access as a worthwhile procedure ideally requires the active commitment of each and every individual producer of scientific knowledge and holder of cultural heritage. Open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material.

Open access contributions must satisfy two conditions:

  1. The author(s) and right holder(s) of such contributions grant(s) to all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use.

2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in an appropriate standard electronic format is deposited (and thus published) in at least one online repository using suitable technical standards (such as the Open Archive definitions) that is supported and maintained by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, inter operability, and long-term archiving.

Supporting the Transition to the Electronic Open Access Paradigm

Our organizations are interested in the further promotion of the new open access paradigm to gain the most benefit for science and society. Therefore, we intend to make progress by:

- encouraging our researchers/grant recipients to publish their work according to the principles of the open access paradigm;
- encouraging the holders of cultural heritage to support open access by providing their resources on the Internet;
- developing means and ways to evaluate open access contributions and online-journals in order to maintain the standards of quality assurance and good scientific practice;
- advocating that open access publication be recognized in promotion and tenure evaluation; and
- advocating the intrinsic merit of contributions to an open access infrastructure by software tool development, content provision, metadata creation, or the publication of individual articles.

We realize that the process of moving to open access changes the dissemination of knowledge with respect to legal and financial aspects. Our organizations aim to find solutions that support further development of the existing legal and financial frameworks in order to facilitate optimal use and access.

Print version (English), (German), (French), (Spanish), (Italian), (Portuguese), (Polish), (Greek)

Governments, universities, research institutions, funding agencies, foundations, libraries, museums, archives, learned societies and professional associations who share the vision expressed in the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities are therefore invited to join the signatories that have already signed the Declaration.

Keynote Address by Jack Balkin - Lessons of the Network Neutrality debate for Access to Knowledge

Jack Balkin, Founding Director of the Information Society Project at Yale Law School, keynote address on the lessons of the Network Neutrality debate for Access to Knowledge, 2008
http://a2k3.org/2008/09/keynote-address-by-jack-balkin/

Below are Professor Balkin's full remarks, as prepared for delivery…

… The Access to Knowledge Movement arose in response to a previous mobilization by various industries in the developed countries that sought to lock in advantages for their business models at a moment when technology was rapidly changing. They did this in part by transforming international

trade law—an institution designed to promote the free flow of ideas and commerce—into a vehicle for protecting and expanding intellectual property rights and then imposing this new system on the nations of the developing world. A2K arose to highlight and contest these developments, which occurred below the radar screen without much public attention. The Access to Knowledge Movement began with far fewer influence and resources than powerful interests who transformed international trade law. It has been more successful than anyone could have imagined in such a short time, but precisely because of its success, it is now at a crossroads. Merely in the past three years, since the Yale Information Society Project began hosting these conferences, many parts of the movement have found common cause, and the movement has become more energized and more powerful. Government agencies and international bodies are starting to pay attention. Our presence here in Geneva today is ample evidence of that.

Many people in policy circles and international organizations, however, still have only a limited perspective on the movement. Some of them see it only as a movement about international intellectual property laws, and a few completely misunderstand it as an attempt to abolish or greatly weaken the protections of intellectual property. Neither of these is the case.

We can of course describe elements of the Access to Knowledge movement in terms of the movement for global intellectual property reform, but it is far more than that. Access to Knowledge is a claim about global justice in a world in which knowledge, information, knowledge creating tools, and knowledge embedded goods are increasingly determine wealth and power in society. It is a claim of global justice between the nations of the world, and between groups and individuals. It is a question of fair and humane policies for economic development. It is a question of human rights.

A few weeks back there was a very interesting development in the United States. Our Federal Communications Commission held that a broadband provider, Comcast, had illegally blocked a file sharing application, Bit Torrent. The FCC issued an order saying that blocking applications like Bit Torrent was not consistent with reasonable network management or the duties of a broadband provider. This decision, like many of the most important issues for Access to Knowledge, was highly technical. Moreover, it concerned the policies of a single nation state. It did not involve the construction of international human rights treaties, or indeed any international documents at all. That is important because many of the key issues of access to knowledge take place at the level of the nation state, or involve heavily technical questions of standards and architecture.

Nevertheless, that decision, no matter how technical or how parochial it may appear in this arena, is important because it is a first step on the way to a policy of network neutrality in one of the world's largest economies. In the United States, as in other countries, only a handful of firms control the broadband market; in fact, most people in the United States have only a choice between their local cable company or their local phone company. A network neutrality policy is important because it means that the people who control access to the Internet may not discriminate on the basis of the content or applications that flow through their channels.

This is a small first step, but it is a very important one. And I wanted to talk about what it means in the larger context of Access to Knowledge. I wanted to use this small but important victory to talk about the larger issues of A2K and the challenges it faces in its future.

You might think this a curious choice. It occurs in a very rich country, the United States. It does not concern essential medicines for the most desperate individuals in the Global South. It is not about the TRIPS agreement or the reform of patent law and the creation of alternative methods—like prizes. And yet, this story has important lessons for us.

First, this is an issue about innovation, and in particular, the decentralization of innovation. Without network neutrality, innovation on the Internet will be dominated by a handful of firms, who will be unlikely to welcome new techniques or applications that they or their business partners did not develop or hold the rights to. Opening up the Internet means decentralizing decisions about what kinds of new applications and new content to create. And decentralizing innovation means that more minds and more creativity are brought to bear on solving the world's problems, and increasing wealth and the world's resources. It's worth mentioning as well that this dispute was not simply one between big companies and little individuals. It was also a dispute between different kinds of businesses. Many firms actively support network neutrality because they do not want innovation tightly controlled by a few key players, but want a fair playing field for competition and innovation. They too want a decentralized and vibrant business climate that allows new businesses with new ideas to innovate without being shut out or blocked by incumbents. As we think about the future of Access to Knowledge, we must understand that many of the most innovative businesses in the world are already on our side.

Second, this is also a debate about participation. The goal of access to knowledge is not simply to put knowledge and knowledge goods in people's hands as if they were slices of cake and let them consume them so that nothing is left. Rather, the goal of access to knowledge is to let people all around the world participate in and contribute to the new knowledge economy on a more equal footing.

The goal of access to knowledge is premised on a few simple beliefs about human beings, taken as a whole. First, that the people of the world, taken as a whole, are enormously creative;

Second, that their creativity will emerge naturally when they are allowed to express it without suppression or hindrance;

Third, that the world is better off when we allow ordinary people to be free to learn, to innovate, and make and build new things, and share their work and their knowledge with others.

There are several billion people on this planet. Each is unique, each has intelligence, each has creativity, each has ability. If we want to make these people happier, healthier, and freer, we could do far worse than to open up all of the opportunities for them to use their intelligence and their creativity, to bring their collective intelligence to bear.

Third, this is a debate about control. Will control of the information society—of its powers and channels and conduits, its facilities and institutions—be concentrated in the hands of a few, or will it be dispersed in the hands of many? What good is a global society based on knowledge if most of the world remains without access to knowledge? What good is an economy based on information if only a few control the flow of information? At the end of the day, what do people from very different backgrounds and different values want in a rapidly changing world? They want control over their own lives so that they can take care of their families and be part of their own communities. The question of the information age is one of the oldest questions of politics raised in a new context: Will people be the masters of themselves or will they be under the control of others?

Fourth, this is a debate about the commons. The premise—and the promise—behind network neutrality is that the Internet could be a general purpose network for transporting information, knowledge, and applications: a general purpose utility that serves the public, and that allows people to communicate however and whenever they want—to create and distribute ideas, build businesses, and to work together.

The Internet in this sense is a commons, not in the sense that the hardware is commonly owned by us all, but in the sense that we can all make use of it and build on it for our own purposes. Through playing this role as a commons, The Internet allows us, collectively, to create a better world. The Internet as a commons is not, I repeat, not, a story about property held in common or the end of property. The Internet as a commons is full of private property rights—the cables, the servers, the transmitters, the individual computers. All of these are owned by individuals and firms.

The idea of an Internet commons is not the absence of property rights; it is the presence of freedom.

This insight offers an important lesson for us in thinking about the reform of intellectual property. Our point is that intellectual property is valuable precisely because it serves the causes of freedom and enlightenment. It is an engine of free expression and technological progress. But when it stifles expression, when it retards progress, it betrays the cause of human enlightenment and human dignity.

We do not dream of a world without property in ideas, without spurs to innovation, without incentives to create and contribute. We want people to build things and own things, and buy things and sell things and distribute them. A vibrant public domain helps us build. Open standards help us achieve. A balanced approach to intellectual property, sensitive to the needs of the global south, helps the countries of the world develop, share in, and contribute to the bounty of an information age.

We want more and better for everyone on this planet. But to achieve this, we need several different kinds of commons: a commons in an open Internet, a commons for innovation produced through open standards, and a commons for the advancement of knowledge through a public sphere that allows the free flow and spread of ideas. A commons is a space, a place, a phenomenon, in which each can live, each can plan, each can use. There is another name for such a phenomenon. It is freedom.

Fifth, this is a debate about the commons in a larger sense: not merely facilities like the Internet or institutions like the public domain. It is about the things we have in common—that we are all human beings possessed with individual human rights and living together on this small planet, and the beliefs and commitments we hold in common.

What is the great insight of the idea of Access to Knowledge? Is it the choice of the word "access"? No. There are many problems with this word, what it emphasizes, and what it leaves out. Is it the word "knowledge"? No. (Is it the word "to"? No.) The great insight of this movement is that it has helped bring together a wide variety of people who did not imagine that they were working on similar goals— dispersed, as they are, in their focus on health, science, movies, music, culture, telecommunications policy, innovation, fair competition, freedom of the press and transparency in governance.

The Access to Knowledge Movement has helped us see that all of us in this fight do have something in common, deeply in common, as our world transitions from an age of industrial capital to an age where wealth increasingly flows to and from information and the products of the mind

—in a world where power increasingly arises from control over knowledge, the conduits of knowledge, and the tools of knowledge

—in a world where liberty and equality increasingly depend on access to knowledge, to knowledge goods, and to tools for making knowledge goods.

What I ask of you today, as we begin this third annual conference on Access to Knowledge, is to remember, that as we struggle and debate with one another, as we agree and disagree, that even so we still hold something in common, something precious in common.

We work not simply for a commons in information, or a commons in Internet architecture, or a commons in open technical standards, or a commons in a vibrant public domain. We are also working for a commons of purpose—a common purpose, a common enterprise— to make the information age, the age of the Internet, the age of the products of the mind, finally the age when human beings realized not only how to be free but how to let others be free, when they collectively decided to open the privileges and opportunities and bounties of a robust economy of information technology to everyone on this planet.

The Idea of Access to Knowledge: Some long term trends and a tentative draft

Yochai Benkler, April 21st Transcript, Yale Law School, ISP Conference, April 21-23, 2006
http://research.yale.edu/isp/a2k/wiki/index.php/Yochai_Benkler,_April_21st_Transcript
and see Presentation at http://research.yale.edu/isp/wikiuploads/ybenklerpp.pdf

Yochai Benkler – Opening Remarks

When Joel was talking about useful knowledge, I thought to myself, I thought you were supposed to avoid useful knowledge as best as possible at the Yale Law School, if we could. But beyond that reference, I think one of the things one begins to see in looking at this panel and looking at this room is a recognition of how much useful knowledge there is in many places from many sources of insight and wisdom. And how grateful we are that all of you have come to participate and given generously of your time to come and participate in a conversation across disciplines, across sources of knowledge, and hopefully be able to come up with something more than a tentative draft of what the idea of access to knowledge will be like. And simply to say that as Eddan was much too kind to Jack and to me when he talked about intellectual leadership as opposed to actually identifying that this is all the work of the student fellows under Eddan's leadership in really trying to capture where all of you bring insight into this question.

But let me nonetheless offer a draft, since that is what I do. Three questions: Why now? Why care? What is to be done?

Why now? I suggest there are four long-term trends that combine as undergirding this moment of access to knowledge. The first is the long-term move from decolonization through self-determination

and self-sufficiency, the moment of the '60s and the '70stowards gradual acceptance globally of an integration into a global trade system as a basic necessity, if not desirable trend. A much longer trend, currently at different stages in different countries, is the move from rapid industrialization to rising capital intensity and financing being central to an information knowledge economy. The third is very different. It is the move from mass media and monopoly in telecoms towards more competitive media in telecoms areas and to the rise of the network information economy in the very recent past. And the fourth is the move from a moment at which communism and statism in all of their forms were considered widely to be acceptable alternatives to a moment at which there's gradual ascendance of human rights; the idea of human dignity and participatory politics as an accepted platform for conversation anywhere; and more recently, the extension of the idea of development as freedom. How do these four trends connect to each other and what do they have to do with access to knowledge?

The first two, the increasing integration into a global trade system and information knowledge economy, underlie the emergence of the global trade and IP system as a combined system. In particular, international trade and IP regime from the late Nineteenth Century through the Twentieth Century was a system of mutual recognition, like Berne and Paris among the major IP players. It was distinct from the trade system and it was not enforced as part of the trade system. In the 1970's we saw an effort to draft the development agenda on IP. Nationally we saw countries like India and Brazil withdrawing patents on pharmaceuticals. Internationally, WIPO for a while became a platform for development issues. But in response, we saw a shift in the early '80s and through the mid-'90s to incorporate IP into the international trade regime. This was central part of the GATT Uruguay round and the creation of the WIPO, and TRIPS was a major component. We saw as the information economy increased, it moved centrally into trade and we saw in 1995 the passage of TRIPS and the move to harmonize IP globally. WIPO to some extent responds by offering competing maximalist services to the IP exporters – not to be shoved aside. And what we've seen since '96 is a trend towards a playable international system, TRIPS, WIPO on the multi-lateral level, national and regional harmonization, like data base protection also happening, and finally, the emergence of bilateral FDA's to ratchet up above TRIPS.

The critical thing to recognize in terms of where the movement, this movement, is today is that all of this is relatively new. These are not hundreds of years worth of settlement. This is a product of a particular set of political moves from the last 20 years and it is subject to challenge as such. The major intellectual moves or the major strategic moves are the inclusion of IP in trade, the weaving of unilateral, bilateral, and multi-lateral mechanism, and at the idea level, a generalization or abstraction, from Pharma, Hollywood, Semi-conductors as being distinct industries to the idea of IP industries, from issues as being discrete policy concerns to the core issue being one of industrial policy in a global information economy for the major information exporters, and from the idea of the U.S. and Japan as primarily in competition with each other on this domain, information exporters as a block setting up a global trade and IP system.

The emerging counter movement of Access to Knowledge comes out of three of these four trends. The rise of the information knowledge economy and the greater importance it assigns to justice and freedom, the rise of network information economy or digitalization, and the rise of the idea of development as freedom. In the 1990s we saw the rise of the access to medicine movements supercharged by AIDS activism, ultimately succeeding in Doha for a certain moment and continuing the battle, and we have people from that movement here. The movements for information commons on the net and the internet freedom movement (encryption, privacy and speech) came together in the late '90s and through the

mid-'00's. Free and open source software emerges from a social practice to a political self-understanding. From the human genome project and the questions of patenting life forms and of university patenting, and from open access publishing, we began to see scientists understanding themselves as part of something like this movement. Digital inclusion and ICT's for development, spectrum commons, digitalization of libraries, altogether movements that ultimately feed into this broad concept of Access to Knowledge.

In the last two or three years, we've seen growing social practices of engagement, like Wikipedia, engaging more people in the actual practice of producing information. Movements like the creative commons that provided a focal point for international joining. Free and open software has radicalized politically around things like software patents and DRM regulations. We also saw things that Cecelia was talking about – the Brazil/Argentina initiative at the WIPO development agenda integrating development at the national level with all of these civil society movements. We begun to see commercial companies that understand themselves as being able to make money around these social practices, beginning to understand that they're not part of the IP industries, but they are perhaps part of the Access to Knowledge movement. The TACD conferences and the consumer organization conferences in the last couple of years have allowed the emergence of this concept and played an enormous role.

The major moves here are these: First, human development and justice are at the core. The various regulatory mechanisms, be they patent, copyright, trademark, or other exclusive rights, are at the periphery. Growth oriented policies are part of the story, but only part of the story. Second, diverse conditions require diverse responses. There is no single right harmonized answer worldwide. And third, we see the move from a coalition of diverse movements, like access to medicines or free software on a particular issue, to an understanding of the need to move to a global access to knowledge movement.

Why care? Justice and freedom. The combination of information knowledge economy, rise of network information society, and development of freedom identify access to knowledge as central to human development, both as freedom and as justice. Justice: the emergence of a global information economy means that more of what makes for human welfare and development depends on information, knowledge and culture. If we just look at the Human Development Index, at life expectancy, at literacy and at GDP per capita, we'll see that every single one of them is critically dependent on information inputs, for food security and medicines, for research and journals, for outcomes data, for books and teaching materials, for communications, libraries, academic centers. And we have known, as Joel discussed, for a long time, that growth is centrally connected to innovation and information anywhere. This is so particularly for latecomers who have to adopt best practices rather than paying for the price of being able to produce and innovate tomorrow.

As to freedom, we have seen the technological threshold conditions enable greater practical human agency, individual action, both commercial and noncommercial, and social sharing and exchange are emerging as major modalities of economy production, which, in turn, allow us to exercise greater individual autonomy and participate in an appreciably more participatory public sphere and in newly emerging practices of more participatory and critically self-reflective culture.

What then is to be done? Let me offer a tentative list.

Regulation of information production and exchange, like patents and copyrights is a central potential barrier to Access to Knowledge for all of these. Telecommunications, ICT policy, broadband, open spectrum, are necessary moves in assuring access the ability to participate in these practices. The battle over open standards in technology and regulation policy, which are under pressure from regulatory requirements to implement trusted systems or patents in standards, become a place where in technology the values of openness are being challenged. We have Helen here, who's done more in her work in the philosophy of the relationship between values and design than most anyone else. Educational materials and libraries. But no less important than that we focus on the legal mechanisms, we must focus on the possibilities for action within civil society, both in organized forms and in decentralized distributed practices using the very mechanisms that allow for the emergence of peer production as themselves ways of overcoming the barriers to Access to Knowledge.

We stand at the moment of opportunity. We have an opportunity to forge a practical, cultural and intellectual coalition at a moment of transformation. The stakes are high, the question is how should we be as free, equal, productive human beings in a global network information economy. And I hope that in the next three days we can spend our time learning from each other and teaching each other and becoming better friends as part of this kind of a social movement. Thank you.

The Open Society Institute

http://www.soros.org/about

Mission

The Open Society Institute works to build vibrant and tolerant democracies whose governments are accountable to their citizens. To achieve its mission, OSI seeks to shape public policies that assure greater fairness in political, legal, and economic systems and safeguard fundamental rights. On a local level, OSI implements a range of initiatives to advance justice, education, public health, and independent media. At the same time, OSI builds alliances across borders and continents on issues such as corruption and freedom of information. OSI places a high priority on protecting and improving the lives of people in marginalized communities…

George Soros is founder and chairman of the Open Society Institute and the Soros foundations network. He is also the chairman of Soros Fund Management LLC.

Intellectual Property

Comment
From broad to particular, there are many fields in which access to information clearly affect developing and poorer populations. IPRs Online and IP Watch are good places to start. Each has links to the many large field of IP law, negotiation and debate; some have an obvious relationship with ICTs, but all areas of intellectual property are affected by ICTs, and all are important in different ways to a wide range of populations poor in material and the other freedoms.

IPRs Online

http://www.iprsonline.org/

Resources	Human Rights*
General	Technology Transfer
Biotechnology*	TK (traditional knowledge)*
Competition	TRIPS (Trade Related Intellectual Property Measures)
Culture	WIPO (World Intellectual Property Organization)
Education*	
E-Information*	Legal Instruments
Biodiversity	International
Food*	Regional
FTAs (Free Trade Agreements)	Bilateral
GIs (Geographical Indications)	National
Health*	Model Laws
Investment	Model Provisions

(from) E-Information
2008   Conceiving an International Instrument on Limitations and Exceptions to Copyright, March 2008. Author: Bernt Hugenholtz and Ruth Okediji

2007   Developing a Positive Agenda on Copyright Issues for the ECOWAS for EPA Negotiations, May 2007. Author: Marisella Ouma

2006   The Proposed WIPO Treaty on the Protection of Broadcasting Organisations: Are New Rights Warranted and Will Developing Countries Benefit?, 2006. Authors: Viviana Munoz Tellez and Andrew Chege Waitara, South Centre

The International Copyright System: Limitations, Exceptions and Public Interest Considerations for Developing Countries in the Digital Environment, 2006. Author: Ruth Okediji/ UNCTAD-ICTSD

Circumventing Competition: The perverse consequences of the Digital Millennium Copyright Act, 2006. Author: Timothy B. Lee, Show-Me-Institute

2005   Education, IPRs and Fundamental Freedoms: The Right To Knowledge, 2005.
Author: Uma Suthersanen, Queen Mary Institute, University of London

(from)
2006   Intellectual Property, Education and Access to Knowledge in Southern Africa
Authors: Andrew Rens, Achala Prabhala and Dick Kawooya

2005   Education, IPRs and Fundamental Freedoms: The Right To Knowledge, 2005.
Author: Uma Suthersanen, Queen Mary Institute, University of London

Emerging Needs for Including Intellectual Property Education and Research in University Curricula, 2005. Author: Keith E. Maskus, Stanford Calderwood Professor of Economics, University of Colorado, Bolder, CO.

Risks and Opportunities for Access to Knowledge, 2005
Author: James Love

2004   Fostering access to education, research and dissemination of knowledge through copyright, 2004. Author: Ruth L. Okediji / UNCTAD-ICTSD.

IP Watch Home Page

http://ip-watch.org/index.php

Venues
- Bilateral/Regional Negotiations
- Developing Country Policy
- European Policy
- United Nations
- US Policy
- WHO (World Health Organization)
- WIPO
- WTO/TRIPS

- Education*
- Enforcement
- Human Rights
- Internet and Communications Technology*
- Lobbying
- Public Health
- Technical Cooperation/Technology Transfer
- Traditional and Indigenous Knowledge*

Themes
- Access to Knowledge*
- Biodiversity/Genetic resources/Biotech*
- Broadcasting*

IP Policies
- Copyright Policy
- Patent Policy
- Trademarks/Geographical Indications

Editorials/Opinions and Inside Views

14/01/2009: FAO Plant Treaty To Operationalise Benefit-Sharing Fund

26/12/2008: US IP Attachés Take Hard-Line Position On Overseas IP Enforcement
18/12/2008: Document From WIPO Details Strategy On IP, Climate Change
15/12/2008: Last-Minute Progress Made On Pandemic Flu; More Still To Come
11/12/2008: Generic Drug makers, Activists Praise Lamy; Gurry Defends 'Respect' For IP
10/12/2008: An Alternative Proposal For Enhancing Developing Country Access To Patented
        Medicines
05/12/2008: WTO: Progress On IP At Last; Consensus Still Uncertain
02/12/2008: Brazilian Draft Law Would Curb Expanded Patents On Pharmaceuticals
21/11/2008: IP In Biotechnology In Need Of A New Start, Experts Say
30/10/2008: Push Continues For TRIPS Biodiversity Amendment, Geographical Indications
        Extension
27/10/2008: New Arab Group Aims At Protecting Local Products With Geographical Origins
23/10/2008: Indigenous People Seek Recognition At WIPO Meeting On Their Rights
17/10/2008: New Text For Committee On Traditional Knowledge, Folklore, And Genetic Resources

09/10/2008: Intellectual Property And Access Can Co-Exist, US Rightsholders Say
26/09/2008: Biotech, Pharma Industries To Target IP Protection Legislation, Patent Reform
25/09/2008: WHO Asserts Global IP And Health Strategy Progressing But Offers Few Details
19/09/2008: New IP Model Proposed To Facilitate Technology Access in Developing Countries
29/08/2008: Experts Discuss The Role Of IP In Environmental Technology Transfer
07/08/2008: International Seed Treaty's Goals Of Biodiversity, Food Security Tough To Implement
31/07/2008: Abrupt End To Ministerial Leaves Questions On Future Of IP Issues At WTO…..

Intellectual Property: A Primer and Survey of IDRC Activities

R Spence and Jean Woo, 23 September, 2005
https://intranet.idrc.ca/en/ev-89855-201-1-DO_TOPIC.html

II. An Introduction: Resource Book on TRIPS
   a. Nature Of Obligations, Principles And Objectives
   b. Substantive Obligations
      i.   Copyright
      ii.   Trademarks, Geographical Indications and Industrial Designs
      iii. Patents
               Therapeutic, Surgical and Diagnostic Methods, and Compulsory Licensing
               Biotechnological Inventions: Genetic Resources, Plant Variety Protection,
                  Traditional Knowledge
   c. Intellectual Property Rights and Competition54
   d. Enforcement, Maintenance And Acquisition Of Rights
   e. Interpretation And Dispute Settlement And Prevention
   f. Transitional And Institutional Arrangements

III. Other IP Resources
   a. *General* - IP & Development, Poverty, Traditional Knowledge, Patents, Institutional Issue
   b. *International Architecture* – General, WTO/TRIPS, Bilateral Free Trade Agreements, WIPO
   c. *ICT Related* – Copyright, Internet, Software, Open Source, Education, Alternative IP Systems
   d. *Agriculture and Natural Resources* Related – General, TRIPS, Environment, Sui Generis Systems, Bio Piracy, Access and Benefit Sharing, Southern Capacity
   e. *Health, Social and Economic* Related – General, TRIPS/Doha, Neglected Diseases, Partnerships, Capacity Building, Investment, Human Rights
   f. *Biotech and New Technologies* Related – General, Poverty, GM Seeds, Africa, Partnerships, Bioprospecting and ABS, Biopharming, Technology Transfer, Science Commons

Annex   IDRC: Regional Dialogue on Intellectual Property Rights Innovation and Sustainable Development (Nov. 2004)
Annex   Summaries of IDRC Regional Biotech Consultations (2004 and, 2003)

Pan Asia Networking Prospectus, 2006-2011

…. Building evidence and promoting dialogue to inform policies that enable knowledge societies in Asia, will be supported by a program of research on two main issues: a) Research on telecommunications regulatory structures to ensure equitable access to connectivity, will draw on best practices (privatization, liberalization, deregulation, and independent regulators) to create affordable and effective telecommunication services that will provide a foundation for Asian knowledge societies; b) Appropriate policies to ensure access rights to knowledge in Asia, will address the development challenges that have arisen within the context of the growth of the Internet and the digital world vis-à-vis intellectual property rights and access to information.

Some specific research questions that could be focused on in the "Policies" theme include:

- What is the feasibility of the "Spectrum Commons" or "Open Spectrum" in less developed Asian countries? What are the new business models for community wireless networks?
- What types of reforms are needed in telecommunications regulations and policies for ensuring the poor and marginalized have access to ICTs? What are the most effective universal access strategies? What are the limits of deregulating telecommunications markets? What is more appropriate for achieving universal access: community access points such as telecentres, mobile telephony, or a mix of both?
- Which are the right indicators for understanding ICT access and usage in Asia?
- How should new technologies that show promise for including the digitally excluded, such as VOIP, Wimax, or WiFi, be regulated?
- How can we ensure research findings flow into the policy process? Where is it more appropriate for grass-roots approaches to advocate for change and where is it more appropriate for high-level experts to dialogue with policy-makers?
- What are the impacts of adhering to TRIPS rules with respect to innovation, access to knowledge, and economic growth in various digital domains (software development, e-commerce, access to digital educational content, etc.)? Who are the winners and losers when strict IPR regimes are enforced?
- The public domain and open access models of information creation: at odds with the intellectual property system or enabled by it? Are emerging business models for distributing intellectual property on-line an opportunity or threat to creating livelihoods in Asia?

ICT4D Americas Program Initiative, Description of the program for 2006-2011

….. IP rights and public goods: Intellectual property rights refer to patents, copyrights, trademarks, designs, etc.. New and innovative ways of treating property rights are emerging and increasingly challenging well-established economic and legal frameworks that have governed IP rights for decades in Western societies (where business is based on notions such as scarcity, exclusivity, and controlled access to products and/or services). The PI will promote applied research on the potential that open and free content, and services have for development, and on how they could benefit a large number of people through innovative business models. Along similar lines, ICT4D Americas will

analyze and promote studies aimed at building a better understanding of the potential that ICTs have for the development of public goods20 and new models associated with the production, diffusion, and consumption of digital goods.

- The sample research questions offered below provide a reference to the kind of research initiatives that ICT4D Americas would be interested in supporting in the e-economy pillar during the next programmatic period.
- How can ICTs contribute to overcome the challenges posed by the informal economy, youth insertion in the labor market, and unemployment in the region?
- How can e-commerce uses and related ICT applications contribute to improving the productivity and competitiveness of SMEs, in particular those operating in the informal economy?
- How can research and multi-sectoral processes be used to support a more effective integration of the economic activities of the informal economy into the formal one?
- Which public policies are the most adequate to promote the rise of new digital/creative industries and enhance entrepreneurship among the youth of countries in LAC?
- Which models and approaches to IP rights have been implemented in LAC and which ones should be further explored in order to address the challenges posed by increasing copyright constraints?
- Are emerging models of "open" ownership viable alternatives to address traditional problems of development? What changes in policies/regulations are necessary to promote the production of ICT goods and services as public goods to benefit the poor?

Network: The Digital Commons

Acacia Prospectus,2006-2011, IDRC. 2006
http://www.idrc.ca/en/ev-113431-201-1-DO_TOPIC.html

Globally a battle is being fought for control of digital intellectual property. As broadband network infrastructure expands around the world, the ability to infinitely replicate and share digital media is being exploited to share material whose distribution was previously tightly controlled. Software, music, and now movies and television shows are being widely distributed through peer-to-peer networks. While most of these works are copyrighted, peer-to-peer file trading is now the single fastest-growing consumer of international network capacity. Peer-to-peer traffic now rivals the total amount of traffic generated by regular Web surfing. Global media companies are struggling to cope with this and are attempting to introduce digital encoded restrictions to stop file-sharing. Most attempts to do this have turned out to be "finger-in-the-dike" efforts that have failed to stem the tide of sharing.

"The crucial issue for developing countries is getting the right balance between protecting copyright and ensuring adequate access to knowledge and knowledge-based products. It is the cost of access, and the interpretation of "fair use" or "fair dealing" exemptions that are particularly critical for developing countries, made more so by the extension of copyright to software and to digital material. These issues need to be addressed to ensure developing countries have access to important knowledge-based products as they seek to bring education to all, facilitate research, improve competitiveness, protect their cultural expressions and reduce poverty." (Commission on Intellectual Property Rights Final Report, Chapter 5, 2002).

On the other hand, alternative copyright schemes such as Open Source software and related licences as well as the more recent Creative Commons licences, thrive in the networked world, encouraging rather than restricting duplications and creating alternative markets and approaches.

As Africans bridge the digital divide, the need to deal strategically with digital intellectual property (IP) will become increasingly urgent. Will African countries find themselves in a de facto dependent relationship with industrialized countries in terms of licensing intellectual property? Are there alternatives? As African indigenous knowledge is increasingly digitized what mechanisms can be developed to protect African IP from exploitation?

Copyright rules, one of the key means to govern the ownership of information and knowledge, have important implications for access to computer software and huge impact on access to digital content. The World Intellectual Property Organization's (WIPO) two "Internet Treaties" entered into force in 2002. These treaties have extended copyright protection to areas that were previously not covered in the 1886 Berne Convention, such as software and databases. They have also prohibited the circumvention of technological measures (also known as Digital Rights Management tools) used by copyright holders. These new standards pose particular difficulties to developing countries by dramatically increasing the costs of access to digital content and reducing the possibility of fair use and fair dealing.

Acacia will support research on innovative models for the creation and use of content, as well as the production of knowledge-based products such as software. It will also support the development of researchers in this transdisciplinary area and especially the interests of lawyers, authors, librarians, academics, and artists, as well as entrepreneurs in stimulating the growth of alternative approaches to digital copyright.

Research questions to be considered over the next five years include:
- What new models for publishing academic and scientific journals, alternative IP licensing schemes (i.e., creative commons) are most appropriate for African development?
- What is the potential of intellectual property conservancies such as digital libraries and Open Access archives?
- What is the potential of Free and Open Source Software (FOSS) as an appropriate, relevant alternative to commercial software in developing countries?
- What is the impact of more rigid copyright rules (shrinking public domain) on access to educational and scientific resources?
- What is the impact of IP on constraining innovation and access to affordable technologies?
- Are there exemptions to existing copyright rules that would help better achieve public policy goals (especially the fair use/fair dealing exemptions)?
- What is the impact of new Digital Rights Management technologies on access to digital content?

Intellectual Property Rights and Research

IDRC: http://www.idrc.ca/en/ev-111377-201-1-DO_TOPIC.html

The Science and Technology (S&T) Policies thematic entry point aims at the creation of evidence to inform policy instrument choices. The intellectual property rights (IPRs) regime and how it reflects and balances international commitments with the goal of advancing the economic and social rights of citizens is a key national policy instrument. The global expansion of IPRs has influenced the setting of research priorities and increased the private ownership of research outputs. There is concern that IPRs may be obstacles to the development of local research capacities and to accessing research results vital to human development.

As IDRC was created in response to the research needs of developing countries, it is appropriate for its Innovation, Technology and Society (ITS) program to focus on the impacts of IPRs on research, as both encouraging and inhibiting innovation. ITS invites proposals under four relevant headings:

1- Limiting Patentability

As a general rule Article 27 of the World Trade Organization's agreement on trade-related aspects of intellectual property rights (TRIPS) requires patents to be available for any invention if it is new, inventive and capable of industrial application. However, States may exclude from patentability inventions needed to preserve l'ordre publique or morality, but only when it is necessary to prevent their commercial exploitation. This includes inventions that protect the life and health of humans, animals, and plants, and inventions needed to avoid serious prejudice to the environment. Article 27 also permits the unconditional exclusion from patenting of diagnostic, therapeutic and surgical methods, as well as higher forms of plants and animals and of biological processes for their production. Although plant varieties may also be excluded from patenting, there must be a sui generis intellectual property (IP) system to protect them if they are not patentable.

Possible research questions include: How has the flexibility to limit patenting been used and why? To what extent and why has it been negotiated away in Free Trade Agreements by developing countries? What has been the effect of limiting patentability on innovative research? What exclusions from patentability would best promote research aimed at fulfilling basic human rights such as the right to health and the right to food? How is the patenting of plant varieties affecting plant breeding? Are exemptions for researchers to use existing breeds to create new breeds sufficient to stimulate innovation?

2- Exempting Research

Article 30 of TRIPS permits exceptions to the exclusive rights of the patent-holder providing it is limited, does not prejudice the patent-holder's legitimate interests or conflict with its normal exploitation of the patent. This can include research on patented technology. It some countries it also includes research aimed at the early introduction of patented medicines.
The research exemption is articulated differently in different national legal systems. It can either be contained in a national statute or arise in the common law. Usually it applies to all categories of researchers, though in a few countries is limited to private or academic researchers. Many developing country laws characterize the exemption as being for experiment, others for scientific purposes, and some for education. Some countries specifically exclude commercial purposes. Others say it can be for technological purposes, which points to applied and perhaps eventually commercial use. It is the diversity of formulations that give rise to the suggestion that the research exemption is not formulated with sufficient breadth to take advantage of its potential as a spur to innovation.

Possible research questions include: What is the real impact of the research exemption on research in key sectors for developing countries? Is the productivity of international research networks being reduced by restrictive formulations of the research exemption in developed countries? How is the research exemption best expressed to promote innovation and development-related research and to what extent have developing countries used the exemption?

3-Accessing IP

There are certain categories of subject matter that play a crucial role in research. One such category is Platforms Technologies that form the base for a wide range of innovations. Another category is Research Tools, that is compositions or methods that are useful in conducting experiments. This includes such technologies as cell lines, cloning tools, transgenic animals and reagents. Many research tool patents can pre-empt large areas of medical research and lay down legal barriers to the development of a broad category of products. Negotiations to obtain their use can be time-consuming, expensive and sometimes unsuccessful. Licenses may contain "reach-through" provisions requiring royalties to be paid on products discovered through research tool use. Another key issue in accessing the knowledge contained in patents is the requirement to disclose the best mode for recreating the invention. There is a long-standing legal requirement that applications must sufficiently describe an invention to permit someone schooled in the art to replicate it. This is obviously important for researchers who want to learn from the patent.

There are a number of legal responses to assist in making IP available. An important one is the concept of compulsory licensing. Article 31 of TRIPS provides for States to grant a compulsory licence only where efforts have been unsuccessful to obtain one on reasonable commercial terms. Exceptions to this are cases of national emergency or other extreme urgency or in cases of public non-commercial use. Compulsory licensing is desirable to control high prices on such things as medicines and text books, to break anti-competitive behaviour, to ensure a market is sufficiently supplied, to ensure a patent is exploited, to address an emergency, to address issues relating to dependent patents, and to establish a research or industrial base.

The permissible exception to copyright is covered by Article 13 of TRIPS that limits it to special cases that do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the rights holder. This includes the "fair dealing" or "fair use" doctrine. The Berne Convention also permits developing countries to license educational materials on a bulk basis at affordable prices, and for translation into local languages.

Possible research questions include: Is the patenting of platform technologies preventing work on whole families of inventions? What measures can be taken to overcome that? What is the significance of the patents on research tools for use in sectors that are key for developing countries? What can be done to ensure their availability, especially to publicly funded organizations? How should the obligation to disclose the best method of using patented technology be most effectively enforced in low-income countries to yield significant research benefits? How can the right to a compulsory licence be most effectively and liberally framed to permit access to technology for research? How can limitations and exceptions under copyright law best be implemented and enforced in developing countries for teaching, educational and research purposes?

4-Fostering Collaboration

Mechanisms such as patent clearing-houses, patent pools and open source arrangements facilitate collaboration. They do so through granting common ownership rights or liberal licensing arrangements placing technologies in the public domain. A patent pool is an agreement between patent-holders to license their respective patents to one another or to third parties on a non-exclusive basis. It can be done directly or through an intermediary. Patent pools can be mandated by government or arranged by industry where patent thickets have developed rendering technological progress difficult. In general, patent pools can help integrate complementary technologies, reduce transaction costs, clear blocking positions, avoid costly litigation and promote dissemination.

Patent clearing-houses are special patent pools that cover a particularly broad range of technologies and are more likely to rely on a single entity to coordinate the administrative functions. They provide information about the patented technologies and often feature knowledgeable industry participants able to divide the patents into appropriate categories. They may also provide an arbitration mechanism for monitoring and enforcing contracts. Open source software involves the owner of the IPRs making the software including source code available on a non-fee basis. The licences must allow for modifications and enhancements to be made and provide that they will be equally available to the owner of the software and other licensees.

Possible research questions include: What low-margin research in developing countries would be promoted through the use of patent pools or open source arrangements? To what extent can patent pooling address some of the key challenges that IPRs may pose for development-related research such as in the health sector and in what circumstances should patent pooling be mandated by government to permit innovative research? What has been the impact of patent clearing-houses, how can developing countries best benefit from them, and what can be done to establish and sustain them? What is the real impact of open source on software research and development and how can it be promoted in appropriate cases?

Knowledge Economy / Society Perspectives

Development Gateway – Knowledge Economy

http://knowledge.developmentgateway.org/

About Knowledge Economy	Country Knowledge Strategies	Financing Innovation
Governance	Knowledge Management	Science and Technology
Indigenous Knowledge	Clusters	Technology Transfer
Innovation Systems	Knowledge-based Industries	Measuring the Knowledge Economy
Skilled Labor Migration	Innovation Policy	Research and Development
Intellectual Property Rights	Education and Training	E-Business
ICT Infrastructure	ICT Policy and Law	Country Assessments

ICTs, Globalisation and Poverty Reduction: Gender Dimensions of the Knowledge Society

Sophia Huyer; Gender Advisory Board; Gender, Science and Technology Gateway; UN Commission on Science and Technology for Development (UNCSTD)

http://gab.wigsat.org/   http://gab.wigsat.org/partII.doc

Despite the many barriers which prevent women from becoming full participants in the knowledge society, increasing evidence is emerging which indicates that ICTs can provide many opportunities for women to improve their income generation, levels of education, health, provide them with information and awareness concerning their public and private rights, and improve the wellbeing of themselves and their families.

As argued by the Expert Group Meeting convened by the United Nations Division for the Advancement of Women in November 2002, "when there is an enabling environment, ICT can provide diverse avenues for women's social, political and economic empowerment." Nevertheless, existing analysis indicates that women will not be equal participants in the knowledge society, even in areas or projects which address their concerns, unless they are actively consulted and strategies are designed to integrate them fully into ICT projects and the IT sector.

Introduction

Despite the many barriers which prevent women from becoming full participants in the knowledge society, increasing evidence is emerging which indicates that ICTs can provide many opportunities for women to improve their income generation, levels of education, health, provide them with information and awareness concerning their public and private rights, and improve the wellbeing of themselves and their families. As argued by the Expert Group Meeting convened by the United Nations Division for the Advancement of Women in November 2002, "when there is an enabling environment, ICT can provide diverse avenues for women's social, political and economic empowerment."

Nevertheless, existing analysis indicates that women will not be equal participants in the knowledge society, even in areas or projects which address their concerns, unless they are actively consulted and strategies are designed to integrate them fully into ICT projects and the IT sector. This involves:

• Creating an *enabling environment* which supports and encourages strategies to promote women's equal access to and opportunity to benefit from ICT projects, as well as creating a regulation and policy environment which supports women's use of ICTs
• Developing *content which speaks to women's concerns* and reflects their local knowledge, and which is of value for their daily lives, business enterprises, and family responsibilities (including information on health, agriculture/small-scale production, natural resources management and SMEs);
• Supporting increased *representation of women and* girls in scientific and technical education, and using ICTs to promote their increased participation in education at all levels;
• Promoting increased *employment in the IT* sector for women.
• Implementing *e-governance strategies which are accessible to women*; and promoting women's lobbying and advocacy activities.

eLAC- Strategy for the Information Society in Latin America and the Caribbean

http://www.eclac.org/socinfo/elac/default.asp?idioma=IN

eLAC is a regionally concerted strategy that conceives of Information and Communications Technologies (ICTs) as instruments for economic development and social inclusion. It is a strategy with a long-term vision (until 2015) in line with the Millennium Development Goals (MDGs) and those of the World Summit on the Information Society (WSIS), which is concentrated on short-term action plans with concrete qualitative and quantitative goals to be achieved:

The eLAC Action Plans aim to:

1) Act as a "metaplatform" for public-private action in order to coordinate the efforts of various sectors, with an end to generating synergies, avoiding the duplication of efforts, and strengthen regional projects, by means of cooperation and the exchange of best practices at a regional level.
2) Forge national strategies and initiatives in specific areas, establishing lines of action and defining indicators that illustrate the state of progress in the development of the information society.
3) Deepen knowledge on critical issues in order to support the definition, design, implementation and evaluation of policies.
4) Intermediate between the needs of the region's countries and the rhythm of global development, considering regional particularities within the context of the goals of the global community.

Policy Brief in ICT Applications in the Knowledge Economy

UNESCAP, No. 3, December 2007
http://www.unescap.org/icstd/pubs/policy_brief_on_ict_applications_3_dec07.pdf

'Many developing countries have begun initiatives to build the necessary ICT infrastructure in rural areas, including establishing ICT access points – also known as telecentres – which are community centres that provide public access to ICT in the form of telephones, computers and the Internet. The establishment of ICT access points poses numerous challenges, particularly for those located in extremely remote areas that are inaccessible by roads and/or have no power supply. This policy brief features appropriate policies drawn from the experience of successes and failures to promote the establishment of sustainable ICT access points for the economic and social development of rural communities.'

Policy Recommendations

ESCAP recommends six areas of policy intervention pertaining to the issues raised above:

1. ICT policies should continue to strengthen the focus on ICT for development. Policies and regulations related to incorporating the establishment of ICT access points into the country's national development plan should be further developed and implemented. Universal access to ICT services should be promoted and seen as a public good on a par with water, electricity and public health;
2. Public-private partnerships and community participation should be promoted in developing ICT infrastructure and establishing and operating ICT access points in rural areas. Through these partnerships, business models could be developed to make access to the ICT infrastructure more affordable;

3. Programmes to build capacity in rural communities on the use of ICT should be introduced. They should raise awareness of proven ICT initiatives that can meet the needs of rural and remote communities in the areas of health, education, business and government services;
4. An affordable environment for the development of ICT access points should be provided using tax relief, incentives and fee waivers for the import and use of ICT equipment. The liberalization of the telecommunication sector should be continued in order to create competition which would bring down the costs of the new and existing technologies to be deployed.
5. Research on new technologies should be promoted in areas such as alternative energy (which is efficient, reliable and affordable) and telecommunications (to provide long-range telecommunications that are reliable and robust, require little maintenance and have low energy consumption). Incentives such as funding should be provided for research on technologies used in urban areas that may be beneficial in rural settings. Given the importance of the social aspects of ICT access point sustainability, anthropological research should be carried out to understand fully the successes (and failures) of ICT access point development in the country's rural and remote areas;
6. An environment that encourages local content and service development and creation should be provided. Private investors should be brought into assist in this endeavour, and intellectual property, traditional knowledge and any revenue derived should be shared by both investors and the communities involved.

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Transforming government and empowering communities: the Sri Lankan experience with e-development

Nagy K. Hanna, The World Bank, 2008

This book focuses on the institutional innovations needed to lead the diffusion of the new information and communication technology (ICT) that can help transform developing economies into knowledge economies and information societies. This book draws on the experience of Sri Lanka to explore what is involved in moving from vision to implementation of a comprehensive e-development strategy-the e-Sri Lanka program. The focus is on building local e-leadership institutions to drive this process and leveraging ICT to transform government and empower communities through e-government and e-society. Finally, to allow sound selection and management of projects, particularly in a national context, it is critical that the program be free from pressure by government, private companies, or others that may seek to use the program to exercise their influence.

Towards Knowledge Society: A Handbook of Selected Initiatives in South Asia

Edited by Shah Md Ahsan Habib, D.Net, Bangladesh
http://ict.developmentgateway.org/Content-item-view.10976+M5f7b5c61797.0.html

Towards Knowledge Society: A Handbook of Selected Initiatives in South Asia
'South Asia is one of the most active grounds of ICT4D initiatives. In many instances, South Asia is the pioneer in generating creative ideas and seeing through their successful realization on the ground. The instances of successes and failures are often discussed in various seminars, workshops and other forums organized in different parts of the world, and available in numerous power point presentations and short write-ups. However, there is a severe dearth of detailed and structured information, and insights to the initiatives. Such a situation leads practitioners to replicating or picking certain elements of initiatives, failing to get adequate information about them; repeating same mistakes in implementing similar kind of initiatives, which were already tested elsewhere; and trying to re-invent wheel due to lack of information. The publication of this handbook is a step to meet such knowledge deficit and to share selected ICT4D initiatives of South Asia among practitioners, policy makers, development partners, academicians and students.'

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Part VI: Human Rights
-    Promoting Good Governance through Participatory Video, Bangladesh
Part VII: Promoting Entrepreneurship
-    Business Incubation Applying ICT, Pakistan
Part VIII: Gender in ICT
-    Women in Information Communication and Technology, Nepal
Part IX: Open Source
-    Bangladesh Open Source Network, Bangladesh

Models for Cyber Legislation in ESCWA member countries

U.N., New York, 2007
http://www.escwa.un.org/information/publications/edit/upload/ictd-07-8-e.pdf

'Technological development is an important economic issue for the ESCWA region. Countries with economies that are diversifying from their reliance on commodities, as well as developing countries, must pursue that issue proactively. Such issues as e-commerce and the development of a knowledge-based society depend heavily on technological enablers in order to develop properly.

To that end, there is a strong need for an appropriate legal foundation, generally referred to as cyber legislation. By definition, cyberspace is a virtual world that is wide and varied, one that encompasses such broad topics as personal data, electronic transactions, intellectual property and other related issues. That digital world, created by computers and communications tools, needs to be organized.'

COLLOQUIUM: The Impact of Cyber Criminality on the Economy of a Developing Nation

i-Vision Int.
http://www.ivission.net/events.htm

Cyber criminality, a phenomenon which is gaining grounds in almost all the continents today, has caused enormous loss and setbacks in the public and private sectors.

In a poor and heavily indebted country like Cameroon, where the average citizen lives below one (1) dollar per day, and the fact that the Internet is an indispensable instrument for development, it is high time to lay a solid foundation and backbone to resist and why not eradicate this flare.

Internet Governance Forum IGF

http://reclaiming-india.blogspot.com/2008/11/e-courts-in-india-must-shift-from-negp.html

This is the official Web site of the Intern et Governance Forum (IGF), run by the IGF Secretariat. Its purpose is to support the United Nations Secretary-General in carrying out the mandate from the World Summit on the Information Society (WSIS) with regard to convening a new forum for multi-stakeholder policy dialogue - the Internet Governance Forum (IGF). The site provides an interactive, collaborative space where all stakeholders can air their views and exchange ideas.

Accessibility
This Web site aims to promote the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C). It tries to meet the highest standards set by the W3C.

A How-to guide For IT Security in Government

Government Technology, 2008
http://media.govtech.net/GOVTECH_WEBSITE/RESOURCES/CASE_STUDIES/GT08_Symantec_Sec_Ref_4.pdf

Information on Seven Key Public-Sector Security Challenges
  • Network Access Control • Messaging Security • Mobile Security • Data Loss Prevention
  • Endpoint Security • Managed Security Services • IT Policy Compliance

The Future of the Internet and How to Stop It

by Jonathan Zittrain, Yale University Press; American Prospect
http://www.prospect.org/cs/articles?article=freedoms_future_online

The delirium and delusions that surrounded computing and the Internet in the 1990s have given way to a sentiment just as dangerous - complacency. It's not just that yesterday's wonders have so quickly become routine; most of us also take for granted the basic workings of the digital environment, including the freedom for experimentation that it affords. Countries like China may control the Internet, but in our society don't the free market and the open, untamed wilds of cyberspace make it nearly impossible to clamp down on innovation?

If that's what you think, you need to read Jonathan Zittrain's new book, The Future of the Internet and How to Stop It. A professor of law and Internet governance and regulation at Oxford, Zittrain is one of a group of technically literate legal scholars who have clarified what's at stake politically, economically, and culturally in choices about the architecture of the new media. The role of this group--others include Stanford's Lawrence Lessig and Harvard's Yochai Benkler--is itself noteworthy. They have become an important source of intellectual renewal in contemporary liberalism, showing how to translate constitutional principles and democratic values into the emerging digital world.

Zittrain's work neatly complements Lessig's and Benkler's. In his 1999 book, Code and Other Laws of Cyberspace, Lessig warned that the Internet might evolve from a technology of freedom into a technology of control, and in a recent second edition, Code Version 2.0, he points to Zittrain's work as spelling out how that could happen. Benkler's 2006 magnum opus, The Wealth of Networks, argues that the networked information economy and public sphere offer improved possibilities for realizing

such liberal values as personal autonomy, democratic participation, and a critical culture. The tenor of Zittrain's work is more pessimistic, but like Benkler, Zittrain favors approaches that "go light on law" and rely instead on the new technology's capacity for facilitating voluntary social coordination on an unprecedented scale.

For Zittrain, the very qualities that make the personal computer and the Internet so valuable are the source of their vulnerability and possible undoing. At the core of his thinking is a distinction between what he calls "generative" and "sterile" technologies. Generative technologies allow anyone to build upon them without permission, whereas sterile technologies are controlled by their manufacturer or owner. The generative/sterile distinction isn't exactly the same as the one between open-source and proprietary software. Microsoft's operating systems are proprietary, but in Zittrain's terms they're nonetheless generative because they can be built upon without Microsoft's approval.

"The PC revolution was launched with PCs that invited innovation by others. So too with the Internet," he writes. "Both were designed to accept any contribution that followed a basic set of rules (either coded for a particular operating system, or respecting the protocols of the Internet). Both overwhelmed their respective proprietary, non-generative competitors, such as the makers of stand-alone word processors and proprietary online services like CompuServe and AOL."

Zittrain's analysis illuminates why the triumph of the Internet over its well-financed proprietary rivals was so significant for creativity and innovation in the world. As he explains, the proprietary networks were not "user-programmable"; a computer connecting to CompuServe, for example, was configured as a dumb terminal and could exchange only data, not programs. That made the proprietary networks more secure but also slow to evolve--they had only the features that their owners decided would be profitable.

In contrast, the Internet has been open to innovation at every level, from its physical infrastructure to its logical layer (software), to its higher levels of content and social organization. Many contributions have come seemingly out of nowhere, from people without credentials or investors. For example, Trumpet Winsock, the original program that allowed PCs running Microsoft Windows to connect to the dial-up servers of Internet service providers, came from a hobbyist in Tasmania, Peter Tattam, who distributed the program as shareware. When the computer scientist Tim Berners-Lee created the html markup language that generated the Web, no network authority had chosen him to do it or gave its approval. These and other innovations were not planned; they were made independently and just spread. From its beginnings, the Internet was designed to permit computers to send and receive programs and to be run by other computers from a distance. This has been one source of both its versatility and its vulnerability. "On the Internet," Zittrain points out, "the channels of communication are also the channels of control."

The result has been, in Zittrain's phrase, a "generative trade-off." On the one hand, the combination of generative PCs linked together in a generative network has unleashed innovation and enabled the Internet to evolve new capacities and resources at an astonishing rate. The explosion of social media-- blogs, wikis, social news sites like Digg, Facebook and other social-networking sites, Flickr, YouTube, and so on--is just the latest wave in this process. On the other hand, a generative network of generative PCs has also been a fertile environment for new pathologies such as spam, viruses, and "malware."

Zittrain warns that this downside now threatens the entire generative system. Internet security incidents have been growing at a geometric rate, millions of poorly protected computers are connected by broadband in an always-on state, and computers can be infected merely by surfing a compromised Web site. Moreover, the early days of relatively innocent hacking are over; today there is "a business model"

for malware. The creators of bots--software robots that spread virally over the Net--can seize control of PCs and, unbeknownst to their owners, turn them into "zombies" awaiting further instructions. Millions of PCs, perhaps yours, are already acting as e-mail spammers, and the same techniques can be put to more serious purposes, such as coordinated attacks on commercial Web sites to extort money. As a result, skilfully designed viruses have become "valuable properties."

Zittrain writes that these proliferating troubles could well lead more people "to prefer security to generativity." The shift in sentiment could come through a gradual deterioration of confidence in the Internet (for example, through increased incidents of identity theft) or as a result of a catastrophic breakdown. To protect themselves, instead of buying devices with open platforms for unpremeditated uses, many people would increasingly opt for safe "information appliances," that is, devices like the iPhone whose software is centrally controlled and therefore more effectively guarded. And computers themselves may increasingly get locked down, as they already are in many companies, universities, and other organizations where network administrators control the programs that can be loaded on individual machines.

This shift could occur even if people don't make a conscious choice for greater security. The more people rely on cell phones rather than PCs as the platform for online communication, the more they will likely move from a generative to a sterile technological environment. And "cloud computing"--that is, using the PC essentially as a dumb terminal and relying on programs residing on giant servers run by companies such as Google--would also be a big step in this direction.

Besides inhibiting innovation, a sterile technological environment creates another risk for freedom. Even if the control remains in private hands, the more individual activity depends on programs controlled from a central point, the more amenable that system becomes to government surveillance and regulation.

The thrust of Zittrain's book is that the shift back toward sterile technology cannot be entirely avoided, though the dangers can be mitigated. Instead of relying wholly on formal governance institutions or commercial security vendors to make the Net secure, Zittrain has specific proposals and initiatives already under way to use generativity to solve the problems of generativity--"to empower rank-and-file users to contribute, rather than to impose security models that count on a handful of trusted people for control." For example, StopBadware.org, a project based at Harvard and Oxford, aggregates information about Web sites and programs that violate privacy and security guidelines (Google's search engine now throws up an alert about sites identified by StopBadware before someone clicks through). What's needed, Zittrain contends, is the equivalent of a Manhattan Project, but this time on a decentralized basis that engages people as participants, in the way that Wikipedia does.

Whether that's a practical cure, I don't know--and if there's a truly catastrophic event that spreads online, all bets are off. Richard Clarke, the anti-terrorism expert, refers to the potential for a "digital Pearl Harbor." Zittrain conjures up visions of malware changing the numbers around in spreadsheets, turning text files to gibberish, erasing hard drives, and producing major breakdowns in transportation, finance, and other realms. If such things happen on a massive scale, we will all prefer information appliances.

In the digital environment as in other areas, a framework of security is a prerequisite for freedom, but we also have to avoid getting stampeded by fear and alarmism into compromising freedoms that needn't be in danger. Zittrain wants us to understand that the freedom the Internet affords is far more precarious than we may have realized and that if we want to keep that freedom, we're going to need to evolve new

social capacities. It's a wake-up call (the bots are coming!) for a kind of civilian defence--part community watch, part high-tech volunteer militia. Ignore Zittrain's warnings, and we may prove his forecast right.

UNIDO, International Centre for Science and High Technology (ICS)

http://www.ics.trieste.it/Portal/Default.aspx
ICS aims at implementing a multi year programme on ICT for sustainable rural development, which should act as a hub within the network of UNIDO ongoing programmes and Technology Centres. ICS would give support in different terms e.g. by attracting requests and providing services and tools in the field of technology transfer, by training technicians and trainers and by giving visibility to new technologies, pilot plants and indigenous technologies. See for example "Telecentre management: a perspective on energy from renewable resources."

CyberVolunteers

http://cyber.icvolunteers.org/index.php

The CyberVolunteers Programme recruits, trains and coordinates volunteers with information and communication technology skills for development. Volunteers participate in local, regional and international projects for a period of several weeks or months, offering their skills in areas such as web or software development, system administration and content generation. The Programme values in particular South-South exchanges, but also includes South-North and North-South cooperation, with Projects in ten countries. It is implemented by ICVolunteers (www.icvolunteers.org), an international volunteer organization working with volunteers from many countries around the world. The CyberVolunteers Programme benefits from the patronage of UNESCO-Switzerland.

The Alternative Technology Movement: An Analysis of its Framing and Negotiation of Technology Development

Adrian Smith, SPRU, 2005
http://www.steps-centre.org/PDFs/Human%20Ecology%20Review_ASmith.pdf

Abstract.   Technology mediates our relations with one another and with nature. Modern environmentalism recognised this from its inception. Alternative Technology (AT) activists called for innovations that would pre-figure ecological society. This paper analyses AT advocacy of technology. Using the history of AT, two issues will be explored: 1) the relations between conceptualisations of environmental problems and the kinds of technology solution promoted; 2) the interplay and compromises environmentalists must make with other actors important in technological development. The paper concludes by reflecting upon how social actors advocate and construct technology. The AT experience highlights how technology fixes provide only temporary solutions to problems that are, fundamentally, questions about prioritising multiple social values that are always shifting and developing.

Initiatives to Provide Free Access to Scientific Publications

http://www.icgeb.trieste.it/~bsafesrv/library/publications/freeaccessscientpub.html

The International Centre for Genetic Engineering and Biotechnology makes this webpage available with descriptions and links to a large number of initiatives that make scientific journals available free to researchers in developing nations.

The World Technology Evaluation Center, Inc.

http://www.wtec.org/aboutus.htm

The World Technology Evaluation Center, Inc. has conducted more than 60 international technology assessments via expert review since 1989. Studies have covered many technologies including information technologies, healthcare technologies, manufacturing, and nanotechnologies. Receiving grants from a number of U.S. government agencies, WTEC was formerly a division of Loyola College in Maryland and is now a separate nonprofit research corporation. Many reports can be downloaded from the WTEC website.

- The World Technology Evaluation Center, Inc. is the nation's leading organization in conducting international technology assessments via expert review.
- WTEC division has conducted over 60 such studies since 1989.
- Panelists are some of the nation's leading experts. Past panelists include the Director of the NSF, Directors of the DOE Office of Science (2), the Chief of Naval Research, vice presidents of research for IBM, Bell Labs, and hundreds of other leading scientists.
- Sponsors include most of the Federal research agencies: NSF, ONR, DARPA, EPA, NIH, AHRQ, NASA, NIST, FDA, AFOSR, ARO, et al.
- Studies cover a wide range of technologies. Examples include information technologies, healthcare technologies, manufacturing, and nanotechnologies.
- Recently completed reports include brain-computer interfaces, catalysis, vaccine manufacturing, robotics, operations research for healthcare delivery systems, high-end computing in Japan, tissue engineering (published by Academic Press), spin electronics and molecular modeling (both published by Kluwer), biosensing, micromanufacturing, and systems biology (all published by Springer).
- WTEC also organizes workshops for Federal clients. Recent ones include metabolic engineering, stem cells applied to tissue engineering and regenerative medicine, systems biology, and molecular electronics.
- WTEC supports Federal agencies with onsite contractor personnel.
- Workshop proceedings and the full text of all final reports are posted at http://www.wtec.org/.
- WTEC was formerly a division of Loyola College in Maryland and is now a separate nonprofit research corporation -- an IRS 501 (c) (3) organization.
- WTEC has conducted international technology assessments under a series of umbrella grants from NSF that have passed peer review.
- WTEC is also on the GSA MOBIS schedule.
- Total contracting burden based on gross salaries is 70% compared to the usual 100% or more.

Technology, international consortia, and geographically dispersed research teams

Worldwide Universities Network, GlobalHigherEd
http://globalhighered.wordpress.com/2008/12/15/technology-international-consortia/

This article discusses the design of websites that facilitate international collaboration among universities. It combines text, videos, and links. By Kris Olds, GlobalHigherEd, December 15, 2008.

And MANY other resources and links at http://globalhighered.wordpress.com/

Science, Technology and Innovation Policy (STIP) Review of Angola; UNCTAD

http://www.unctad.org/Templates/webflyer.asp?docid=10729&intItemID=2068&lang=1

This is latest the STIP series, it strengthens UNCTAD´s support in country-level mechanisms, including within the framework of the Millennium Development Goals as called for by its Panel of Eminent Persons. The present work contributes to the global knowledge and experience in identifying policies and measures for integrating technology into national development strategies and in maximizing their impact towards the achievement of the MDGs, as well as in building innovation capabilities, developing absorptive capacity and infrastructure for technology transfer, and applying ICTs to development.

A New Millennium of Knowledge? The Arab Human Development Report on Building a Knowledge Society, Five Years On

Kristin M. Lord, Fellow, Foreign Policy, Saban Center for Middle East Policy, U.S. Relations with the Islamic World; The Brookings Institution, 2008
http://www.brookings.edu/papers/2008/04_arab_human_development_lord.aspx

Executive Summary

Building dynamic, innovative, and flexible economies that add value through the creative application of human initiative is now a central challenge of all societies. The challenge is particularly acute in the Arab world. As a group, these 22 countries lag other regions—and their own potential—in educational achievement, scientific advances, and economic growth. By all accounts, this situation is troubling. Arab countries, as diverse as they are, share a history of remarkable intellectual and scientific achievement. Their societies are brimming with young people who typically adapt easily and willingly to technological change. Yet, under-employment is high and human potential is under-tapped.

In 2003, the United Nations Development Programme published a widely read and controversial study that examined the region's progress in developing the knowledge, skills, and institutions rewarded in today's global economy. The study, entitled the Arab Human Development Report 2003: Building a Knowledge Society, presented a comprehensive explanation for the "knowledge deficit"

and equally comprehensive prescriptions for reform. These reforms, the report emphasized, must be driven by Arabs. But openness and deeper engagement with the world is essential.

This study assesses what has happened in the five years since the 2003 report was published, what successes towards building a knowledge society have been achieved, what work remains, and what has failed. It analyzes what has occurred in the last five years in terms of governance, education, science and technology, knowledge-based industry, and building a knowledge culture. Drawing on the insights of a distinguished group of experts, it then recommends tangible steps toward achieving the vision of a knowledge society in the coming five years.

Our conclusion is that Arab countries, as a group, have made significant progress in most of these areas, especially compared with their own history. Yet, other regions have advanced even faster and tremendous challenges— such as creating 100 million new jobs for the region's mushrooming youth population—loom ahead. The Arab world must reinvigorate its efforts or be left behind. Many new initiatives are underway, but it is too soon to assess their impact. Success, ultimately, will be judged by what is achieved, not by what is invested.

Arab societies have achieved success in some areas. Access to education improved markedly in the past several years. An Arab country surpassed the global average in 8th grade science scores for the first time; others show new commitment to assessment and change. New universities with global standards are enrolling students. Governments are investing more in research and development. Economic growth is robust across much of the region and high technology exports are rising. More oil wealth now stays in the region, invested in education, research, innovation, and productive industry. New philanthropy supports these ends.

Concerns remain. In countries across the Arab region, growing censorship threatens the development of a knowledge society. The quality of education lags and educational institutions inadequately prepare young people for jobs. Arab science and technology institutions are underfunded and still too weak. Knowledge-based industries suffer from an insufficient information and communication infrastructure, a high cost of doing business, and rigid labor markets. Intraregional trade trails other world regions. Arab societies still undervalue creativity and innovation. High levels of illiteracy endure.

To bridge the divide between the world's most developed knowledge societies and aspiring knowledge societies, mere progress is insufficient. As the 2003 Arab Human Development Report emphasized, a path of exponential growth is necessary in order to create a knowledge society—and widely enjoyed human development— in the Arab world. This future is possible. Arab societies contain vast human potential. They are vigorous with youth and vessels of a proud heritage of knowledge. Arabs can chart a new course and achieve a new Millennium of Knowledge. But this future will not come easily. Arabs must build this future with their own commitment and talents, supportive of each other, and engaged with the world.

Towards Knowledge Society: A Handbook of Selected Initiatives in South Asia

Edited by Shah Md Ahsan Habib, D.Net, Bangladesh
http://ict.developmentgateway.org/Content-item-view.10976+M5f7b5c61797.0.html

'South Asia is one of the most active grounds of ICT4D initiatives. In many instances, South Asia is the pioneer in generating creative ideas and seeing through their successful realization on the ground. The instances of successes and failures are often discussed in various seminars, workshops and other forums organized in different parts of the world, and available in numerous power point presentations and short write-ups. However, there is a severe dearth of detailed and structured information, and insights to the initiatives. Such a situation leads practitioners to replicating or picking certain elements of initiatives, failing to get adequate information about them; repeating same mistakes in implementing similar kind of initiatives, which were already tested elsewhere; and trying to re-invent wheel due to lack of information. The publication of this handbook is a step to meet such knowledge deficit and to share selected ICT4D initiatives of South Asia among practitioners, policy makers, development partners, academicians and students.'

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    Women in Information Communication and Technology, Nepal
Part IX: Open Source
    Bangladesh Open Source Network, Bangladesh

China and the Knowledge Economy: Challenges and Opportunities

Douglas Zhihua Zeng, Shuilin Wang, World Bank Policy Research Working Paper 4223, May 2007

Abstract

The rapid pace of economic growth in China has been unprecedented since the start of economic reforms in late 1970s. It has delivered higher incomes and made the largest single contribution to global poverty reduction. Measured by international poverty lines, from 1978-2004, the absolute poor population in rural areas has dropped from 250 million to 26.1 million. Such gains are very impressive and have been driven largely by a set of market-oriented institutional reforms, strong investment, and effective adoption and application of various knowledge and technologies, especially foreign ones through trade and foreign direct investment (FDI). While enjoying tremendous success, China also faces many challenges that have to be addressed in order to sustain its long-term development. These include weak institutions, low overall educational attainment, weak indigenous innovation capacity, poor linkages between research and development (R&D) and industries, etc. This paper is intended to provide an insightful analysis on some strengths, weaknesses, opportunities, and Challenges of China's knowledge economy in the areas of economic incentives and institutional regime, human capital, innovation system, and information infrastructure. Key words: China, knowledge economy, competitiveness, innovation, institutions, governance, education, strengths, weaknesses, opportunity, challenges.

6. ICTs and Poverty Reduction

ICTs for Poverty Alleviation - General

Development Gateway – ICT

http://ict.developmentgateway.org/

Blogs & Online Communities	Governance	National & Regional Projects/Programs
Conflict & Emergencies	Civil Society & NGO	Policy & Law
Business & Investment	Infrastructure and Access	Capacity Building & Training
Telecenters	Digital Divide	e-Commerce
Gender	Agriculture & Rural Devt	Education & Science
Environment & Energy	Health	Indigenous People
ICT for Poverty Alleviation	e-Government	Open Source Software
Radio	Wireless	World Summit on the Information
Society	Emerging Technologies	Offshoring and Outsourcing
GIS and Space Applications	Financing ICT4D	Aid Effectiveness
Disabled Persons	Leadership & Innovation	Volunteers
Children and Youth	Art and Culture	Employment & Labor
Urban Development	Project Management	Country Profiles and Strategies
ICT Governance & Institutions	Monitoring and Evaluation	International Cooperation
Internet	Local Content	Security & Privacy
Telecommunications	Partnerships	Online Media

Comment.

> *This is a rich array of perspectives related to wellbeing and poverty reduction, particularly as expanded from more narrowly economic into all areas of capabilities and freedoms. The excerpts below start with "ICT for Poverty Alleviation and pick up some selected further areas of interest to human development and economic growth. Excerpts show a combination survey and empirical research, case studies, lessons from (multiple) cases, and cover a very wide spectrum of:*
> - *ICT use by the poor in numerous sectors, services and ways*
> - *applications & programs designed to alleviate poverty (from management of safety net programs to cyber-volunteers)*
> - *connectivity (including telecentres), related policy and regulatory issues.*
>
> *The excerpts cover only a small fraction of materials available and do not include a large number of important Spanish-language resources.*

ICT Policies & Studies
The Communication Initiative Network

http://www.comminit.com/en/ictpolicies.html

by: Global, Latin America, Africa, Policy, Classifieds

- Agriculture
- Livelihoods
- Health
- Democracy and Governance
- Education
- Environment
- Country ICT4D Policies - incl Capacity Development
- Country ICT4D Policies - incl Rural Access and Connectivity
- Country ICT4D Policies - incl Content Development
- Country ICT4D Policies - Multi Stakeholder
- ICT4D Case Studies
- ICT4D Policy - Being Implemented
- ICT4D Policy - Adopted
- ICT4D - National Policies
- ICT4D Policy - In Formulation

ICT for Development Success Stories: Youth, Poverty and Gender
Global Knowledge Partnership, 2003

http://ict.developmentgateway.org/Community-Content.7836+M598a8412c07.0.html

The 100-page publication highlights initiatives that are using Information and Communication Technologies (ICTs) to make a real and meaningful difference in communities around the world, no matter how disadvantaged or isolated they may be. These stories on Youth, Poverty and Gender intend to provide snapshots of the learning process that accompanies the introduction and implementation of ICTs in a community development project.

Poverty Editorial

Tony Zeitoun Awards Success Stories
(1) El Correo del Agricultor — The farmer's mail ** winning entry
(2) Self Help Groups Show the Way ** winning entry
(3) THAMEL: Reducing the social, cultural and economic cost of immigration through the power of ICT ** winning entry
(4) I play, my Mom learns!
(5) Africancraft.com generating pride and publicity for Africa's artisans: a case study of weavers in Lesotho
(6) Emergent e-governance ecosystem development in Bellandur, Karnataka
(7) eShopAfrica.com — Hand Made in Africa
(8) Plan International: "I am a Child, but I have my Rights too!"
(9) Advent of information economy in remote parts of India
(10) Advancing Society... Connecting People
(11) ICT & Teacher Education: Rewiring the Minds
(12) One small step — a tale of cybermagic

Gender Editorial

Gender And ICT Awards Success Stories

A. Individual/Community-Based Initiative: Capacity Building Category
    (1) e Seva (e services) of West Godavari District, Andhra Pradesh, India **winning entry
    (2) Digital Divide
    (3) Community Reproductive Health Project (REPROSALUD)
    (4) MatMice: Free Homepages For Kids
    (5) Women's E-Business Support (WEBS)
    (6) Women's ICT Trainers Education Centre (WEC)

B. Individual/Community-Based Initiative: Advocacy/Networking Category
    (1) Nabanna **winning entry
    (2) ADA Network and Explore Training Project, Women in New Technologies
    (3) fem'LINKpacific: Media Initiatives for Women
    (4) Femmigration: Legal Agenda for Migrant Prostitutes and Trafficked Women
    (5) Modemmujer: Mexico's Only Electronic Communications Network
    (6) Giving Visibility to Invisible Work

C. Multi-Stakeholder Initiative: Global/Regional Category
    (1) Women Mayors' Link **winning entry
    (2) The Virtual Women's University (VIFU)
    (3) Cyber Institute for Women's Empowerment and Leadership
    (4) Achieving E-Quality in the IT Sector
    (5) FIRE: Feminista International Radio Endeavour
    (6) 'Where Women Want to Work' (www2wk)

D. Multi-Stakeholder Initiative: National/Local Category
    (1) Women's Experiences in Situations of Armed Conflict **winning entry
    (2) Computer Mania Day
    (3) Strengthening Cyberela Network
    (4) Digital Teaching Units for Gender in History
    (5) Economic Empowerment of Minority Muslim Women in India
    (6) Women to Web

Youth Editorial

Youth Award Success Stories - category winners
  Employment and Entrepreneurship
    (1) Digital Data Divide Cambodia ** overall prize winner
    (2) OrphanIT
  Children's Rights
    (1) Integrated Education and Capacity Building for Girls and Children
    (2) Children's Voice
  Culture
    (1) Living Heritage
  Education
    (1) Engineers Without Borders Scala Project
  Environment
    (1) ENO-Environment Online

Media
  (1) MatMice: Free Homepages for Kids
Human Rights And Peace Building
  (1) Rwanda Youth Rehabilitation Initiative
Rural Development
  (1) The Bridge: Suba Youth Training Programme
Health
  (1) The Impact of HIV/AIDS in Katutura

Youth Award Success Stories - finalists

  Employment and Entrepreneurship
    (1) Thai Ruralnet's Social Incubator Service
    (2) Economically Empowering Socially and Deprived Youth Of India By
Creating Employment Opportunities for Them in India's ICT Sector
  Children's Rights
    (1) Child Safety On The Internet
  Education
    (1) Strengthening And Empowering Low-Income Communities Through Digital Inclusion
    (2) Nairobits Digital Design School
    (3) Habitat Learning Centre
    (4) Kidlink
    (5) Nunga It
    (6) Paradigm Initiative Nigeria
  Culture
    (1) Friends And Flags
  Environment
    (1) Community-Led Environment Action Network (Clean India)
    (2) Ywat Project: Youth-Led Water Initiatives Database
  Media
    (1) Youth One - Edmonton's Online Youth Community
    (2) Nuff Stuff
    (3) Young Asia Tv (Yatv)
    (4) Vibewire.Net
    (5) Xfresh — Malaysia's Premiere Teen Community
  Human Rights And Peace Building
    (1) Child Soldiers Project
  Rural Development
    (1) Indiacalls — Using The Power of the Net to Promote Volunteering Among Youth in India
  Health
    (1) eSwathsya — Health in a Card

Using ICT in Capacity Building for Poverty Reduction in Asia: Lessons Learned from the Microfinance Training of Trainers Course

Sununtar Setboonsarng and Jiping Zhang, ADB Institute Discussion Paper No. 50, 2006
http://www.adbi.org/files/2006.06.dp50.microfinance.tot.pdf

This paper identifies key lessons learned in using ICT for capacity building based on two training of trainers courses organized by the Asian Development Bank Institute and their partners on Microfinance. The paper concludes that distance learning is an appropriate method for capacity building, particularly in areas underserved by conventional education systems. Following an introduction, Section II of the paper gives a brief overview of concepts related to distance learning, discusses the prospects and challenges, and highlights the key elements for a successful distance learning activity in developing countries. Section III gives an overview of the courses, while Section IV presents profile of participants of the second course. The main findings of the course evaluation are presented in Section IV.

National Information and Communication Infrastructure Best Practices and Lessons Learnt

Economic Commission for Africa, 2007
http://www.uneca.org/aisi/nici/documents/nici-book.pdf

'The NICI book summarizes ICT policy processes in countries including Rwanda, Ghana, Malawi and Nigeria and intends to help other countries chart their own ways to bringing ICTs to the service of their development.'

Information and Communication Technologies for Poverty Alleviation
e-Primers for the Information Economy, Society and Polity

Roger W. Harris, UNDP Asia Pacific Development Information Program (APDIP) 2004
www.apdip.net/publications/iespprimers

This e-primer provides case studies and lessons learned on the use of information and communication technologies in poverty alleviation programmes and projects. A poverty alleviation framework is presented as a guide to analyze the impact of the case studies.

Conclusion. Alleviating poverty with ICTs is not as straightforward as merely installing the technology, but it is not conceptually complex either. Provided a few relatively simple principles can be followed, it seems likely that widespread poverty alleviation can be achieved with ICTs. The main challenges are not actually in the technology; they lie in the coordination of a disparate set of local and national factors, each of which can derail efforts if not taken into account.

In summary, the following five principles emerge from the ICT for Poverty Alleviation Framework described above:

• Strategize for poverty alleviation, not for ICT
• Reform telecommunications through privatization, competition and independent regulation
• Promote public access: aggregate demand for sustainability (which is not only financial)
• Reform institutions to achieve transformational benefits
• Develop appropriate approaches for listening to the poor

As a crosscutting multidimensional approach to development, ICTs can stretch implementation energies to the full. They also challenge traditional approaches to development. But they promise

substantial improvements in the daily lives of millions of poor people. The framework for poverty alleviation is offered as a tool for guiding efforts towards achieving this potential. The framework allows for a full consideration of the range of relevant critical factors prior to embarking on implementation as well as for post-hoc reflections on outcomes. It represents a first effort, and it is acknowledged that other, similar tools exist. Through a combination and further synthesis of experiences and observations, the framework can become a practical tool for use by planners and policy-makers with general applicability in multiple contexts.

Digital Inclusion Projects In Developing Countries:

Shirin Madon, Nicolau Reinhard, Dewald Roode, Geoff Walsham
http://portal.unesco.org/ci/en/files/25684/11973000111e-gov.pdf/e-gov.pdf

Abstract. This paper concerns digital inclusion projects in developing countries and, in particular, focuses on processes of institutionalisation of such projects. Three case studies are described and analysed. The first is the Akshaya telecentre project in the state of Kerala in India. The second is a community-based ICT project in a town in a rural area of South Africa. The third is the efforts of various agencies on telecentre projects in the mega-city of São Paulo in Brazil. The cases are analysed through a simple theoretical schema derived from institutional theory. The analyses are used to derive four key processes of institutionalisation which are argued to be of relevance to all digital inclusion projects:

- getting symbolic acceptance by the community;
- stimulating valuable social activity in relevant social groups;
- generating linkage to viable revenue streams; and
- enrolling government support.

The paper concludes with some theoretical, methodological and policy implications.

Conclusions… In terms of methodology for such research work, it is important to note that in all three of the cases there was major change over time, and understanding of the projects would have been much more limited by a snapshot approach. Thus, we would suggest that longitudinal research is particularly appropriate for research on digital inclusion projects. This supports the more general argument in Walsham and Sahay (2006) that more longitudinal research is needed on issues such as the scalability and sustainability of ICT projects in developing countries.

With respect to policy implications, we would argue that our work shows a clear need to improve the practice of evaluating digital inclusion projects in developing countries. Rather than building a framework for evaluation which focuses solely on impact, we suggest the need for approaches which try to understand key institutionalisation processes over time, and which document these processes in some detail.

Empowering the Poor, Information and Communications Technology for Governance and Poverty Reduction, A Study of Rural Development Projects in India

Roger Harris and Rajesh Rajora, UNDP-APDIP 2006, Foreword by M.S. Swaminathan
http://www.apdip.net/publications/ict4d/EmpoweringThePoor.pdf

'This publication is the product of a research study that systematically analyzes 18 projects in India that use ICT for the benefit of poor people, and provides recommendations on how ICT can be applied to the massive, widespread and seemingly intractable problems of poverty. The intention of this research study was to understand what influences will determine the extent to which projects like these can be scaled up from what often appears to be a perpetual pilot syndrome; either to greater use within existing recipient beneficiaries (infusion) or among wider beneficiary populations (diffusion), or both.'

Analysing ICT applications for poverty reduction via micro-enterprise using the livelihoods framework

Richard Duncombe, Development Informatics Group, Institute for Development Policy and Management, University of Manchester
http://www.sed.manchester.ac.uk/idpm/research/publications/wp/di/documents/DIWkPpr27.pdf

This paper seeks to provide a contribution to theorizing ICT and development by applying a 'livelihoods approach' as a suitable framework of analysis, taking rural micro enterprise as an important potential area of ICT application in a developing country context. The livelihoods framework has been chosen because it employs, at its centre, a broad and systematic analysis of poverty. Rural micro enterprise has been selected as a topic for analysis because it represents a viable route out of poverty by providing increased and more diversified income streams for poor households. The paper highlights how information systems concepts can be integrated into the livelihoods framework in order to aid analysis. A country case study is presented to demonstrate how the framework can be applied, and some key questions are raised concerning the application of the framework as research tool.

Management information systems in social safety net programs : a look at accountability and control mechanisms

Cesar Baldeon, Maria D. Arribas-Baños, August 2008, World Bank
http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/09/11/000333038_20080911005057/Rendered/PDF/453110NWP0Box334053B01PUBLIC10SP00819.pdf

Abstract: This paper is intended to provide task managers and World Bank Group clients working on Social Safety Net (SSN) programs with practical and systematic ways to use information management practices to mitigate risks by strengthening control and accountability mechanisms. It lays out practices and options to consider in the design and implementation of the Management Information System (MIS), and how to evaluate and mitigate operational risks originating from running a MIS. The findings of the paper are based on the review of several Conditional Cash Transfer (CCT) programs in the Latin American Region and various World Bank publications on CCTs. The paper presents a framework for the implementation of MIS and cross-cutting information management systems that is based on industry standards and information management practices. This framework can be applied both to programs that make use of information and communications technology (ICT) and programs that are paper based. It includes examples of MIS practices that can

strengthen control and accountability mechanisms of SSN programs, and presents a roadmap for the design and implementation of an MIS in these programs. The application of the framework is illustrated through case studies from three fictitious countries. The paper concludes with some considerations and recommendations for task managers and government officials in charge of implementing CCTs and other safety nets program, and with a checklist for the implementation and monitoring of MIS.

ICT will ultimately bridge the digital and poverty divides

Adam Rogers, Head of Communications and Public Information, UNCDF, November 2006
http://www.uncdf.org/english/local_development/uploads/thematic/2006-11-ICT%20will%20ultimately%20bridge%20the%20digital%20and%20poverty.pdf

The contribution from ICT

Some people argue that increased Official Development Assistance (ODA) would be wasted on supporting ICT in developing countries, when the basic needs of so many are not being met. More than two billion people, for example, do not have access to electricity, or even to low cost essential medicines such as penicillin (UNDP, 2001).

However, developing countries would be worse off today if not for ICT. For example, ICTs are delivering vital knowledge to schools and hospitals; they are improving public and private services, and increasing transparency, productivity and participation in government. In the area of medicine, ICTs are improving the dissemination of public health information and facilitating public discourse and they are enabling remote consultation, diagnosis and treatment through tele-medicine (Chetley, 2006)

Many hitherto poor countries in the developing world, now among the so-called "emerging market economies" have harnessed ICT and in the process lifted millions of their people out of poverty. The impact of ICT on economic growth in five new EU member countries (Czech Republic, Hungary, Poland, Slovakia and Slovenia) was higher than the average for the former EU-15. Hence, ICT - through both capital deepening and Total Factor Productivity (TFP) growth in the ICT-producing sector - contributed to convergence of the level of income between those countries and the EU-15 (Piatkowski, 2004).

A recent World Bank study (2006) found that ICT is contributing to the advancement of economic growth and poverty reduction throughout the developing world. Firms in developing countries that use ICT grow faster, invest more, and are more productive and profitable than those that do not. The UN Development Programme (2001) reported that new ICTs are providing opportunities for political empowerment (such as the global email campaign that helped topple Philippine President Estrada), health networks, long distance learning, and job creation.

China recently overtook the United States as the world's leading ICT exporter and is also the sixth largest ICT market. It now imports electronic components while exporting computer and related equipment. The country is the world's largest mobile phone market, and the second largest PC market, with penetration in urban households roughly doubling every two years between 1997 and 2003 (OECD, 2006).

Considerable progress also has been made to bridge the digital divide in the world's poorest countries. Teledensity targets set by the Brussels Programme of Action for the Least Developed Countries have been met by 25 of the 50 LDCs (ITU, 2006). Access to telephones has more than doubled in the majority of LDCs since 2000 with some of them boosting connectivity by as much as 20 times. In many rural areas, over 80% of households make regular use of the telephone, whereas five years ago, the figure was less than 5% (Greenberg, 2005).

Regarding internet connectivity, access has increased and more interest is on deployment of broadband services in rural areas. By 2005, internet user penetration in LDCs caught up with fixed line penetration. A number of countries have reached penetration rates of around 5%, including Maldives (5.8%), Cape Verde and Togo (both 4.9%), and Senegal (4.6%) (OECD, 2006).

… the focus is on poverty alleviation and not on ICT itself (the task, not the tool);

- ICT components are kept simple, relevant, practical and local;
- ICT practitioners are involved in the design of ICT strategies;
- there is significant community involvement;
- new solutions are built on what is already in place;
- there is a focus on training to ensure success and sustainability; *and*
- there is a plan in place to replicate and scale up the project if it is successful.

There is no other option. The ICT sector is a growing segment of the global economy and developing countries need to harness the opportunities if they are to lift their people out of poverty. Furthermore, development assistance organizations should concentrate more of their efforts into supporting the ICT sector, keeping in mind the caveats mentioned above.

See also other articles from the Association for Progressive Communications, on APC News such as:

New generation of cell phones to address underdevelopment?
http://www.apc.org/en/news/new-generation-cell-phones-address-underdevelopmen (11/04/2007)

"IT spreads throughout society at all levels, and is not concentrated in the hands of a few"
http://www.apc.org/en/news/lowcost/asiapacific/it-spreads-throughout-society-all-levels-and-not-c
(03/17/2008)

Partnerships for e-Prosperity for the Poor (Pe-PP), 2004 - 2007

Government of the Republic of Indonesia, United Nations Development Programme
http://www.undp.or.id/archives/prodoc/ProDoc-Pe-PP.pdf

Partnerships for e-Prosperity for the Poor (Pe-PP) is designed to bring existing resources and knowledge together to assist and empower poor communities to utilise information and communication technologies (ICT) for their access to basic social services and economic activities, thus contributing to the achievement of the Millennium Development Goals.

Pe-PP pronounces like "pep" meaning "energy and high spirits", and it envisions poor communities empowered with access to information, actively communicate their needs and concerns, and help themselves improve their livelihoods. This project has the following objectives:

- To empower and mobilise poor communities for economic activities and accessing social services through better access to information and communication
- To forge strategic partnerships in bringing individual efforts together for the benefit of the poor communities
- To establish multi-purpose community development telecentres to provide shared access to information and communication to poor communities and to be a channel through which partners can bring services and opportunities
- To draw on and disseminate the best practices and lessons learned from the pilot projects in order to raise awareness of the applicability and potential of ICT for poverty reduction, thus contributing to the formulation of national / regional policy and replication of successful implementation of ICT for poverty reduction activities

BAPPENAS will assume the executing agency guided by a multi-stakeholder advisory board. Partners in implementation will include line ministries, local governments (PEMDA) and parliaments (DPRD), selected local Non Government Organizations (NGOs), Community Based Organizations (CBOs) and private sector organisations.

Poverty mapping project

Poverty Mapping is a joint initiative by FAO, UNEP and the CGIAR - and partners - dedicated to:
Poverty mapping
http://www.povertymap.net/

- analyse and map the spatial distribution of poverty
- produce and promote the use of poverty maps and show linkages between poverty and food insecurity, the environment and development
- promote the use of poverty maps in policy making and targeting assistance.

Implementing agencies of the (now closed) project, and owners in this web-site

- FIVIMS
- Poverty and Food Insecurity Mapping Project
- Environment and Natural Resources Service (SDRN)
- Food and Agriculture Organization of the UN
- UNEP
- International Center for Tropical Agriculture

With funding from the Government of Norway, three international organizations have come together to sharpen and enhance the use of state-of-the-art methodologies and tools for mapping poverty, food insecurity, and vulnerability. CIAT representing the CSI (Consortium on Spatial Information) of the CGIAR Centres (Consultative Group on International Agriculture Research), UNEP-GRID Arendal and FAO will jointly work on establishing a network of individuals and institutions active in mapping

poverty taking into consideration biophysical, environmental and socio-economic factors in an integrated manner.

Poverty Mapping is a joint venture that will be a model for effective collaboration on the ground amongst international organizations, in the common search for solutions to food insecurity and poverty in the world. It has the potential to contribute to the accelerated accomplishment of the World Food Summit's goal, which is to halve the number of undernourished by 2015, as well as to various poverty reduction initiatives that are gaining ground amongst donors. Being shown where and why there are large numbers poor people is an essential precondition to the start of the solution.

The three partners (CIAT, UNEP-GRID and FAO) have established a project Steering Committee and a Project Management Group to guide and manage the implementation of the Project. The Inter-Agency Working Group on FIVIMS (Food Insecurity and Vulnerability Information and Mapping System) will provide general oversight and will facilitate links with key international agencies, donors and NGOs involved in one way or another with the mapping of food insecurity and poverty. Agencies involved in mapping of food insecurity and poverty

Through the Inter-Agency Working Group on Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) the Poverty Mapping project is linked to a number of key international agencies involved in one way or another with the mapping of food insecurity and poverty IAWG-FIVIMS Members (November 1998).

For more information on other poverty mapping initiatives click here.
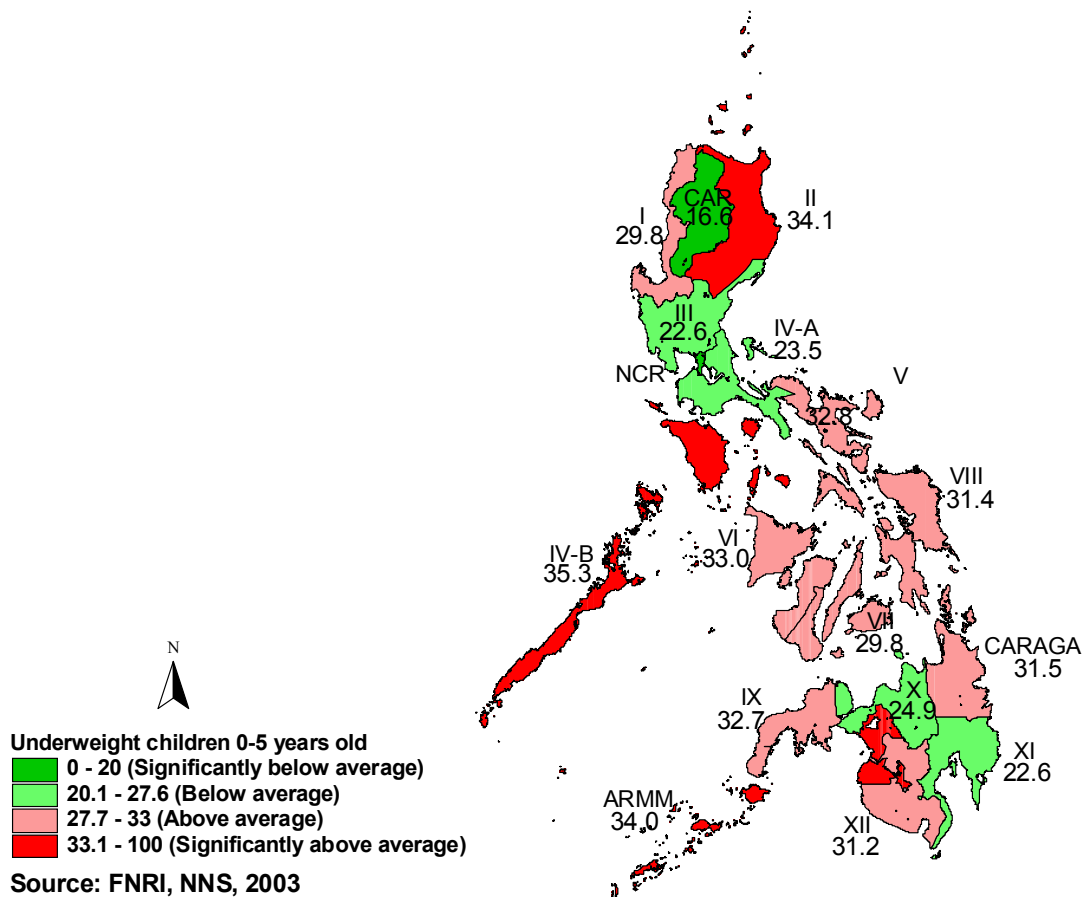

Community-Based Measurement and Monitoring of Poverty: The Philippine CBMS Experience

Celia M. Reyes; Senior Research Fellow, PIDS; Network Leader, CBMS International Network
www.ifpri.org/2020Chinaconference/day3/presentations/G2-4_CReyes.ppt

Comment
The following slides provide a brief introduction to Community Based Monitoring Systems (CBMS) being used in 15 countries, the most advanced being the Philippines. Data is collected every 2 or 3 years for the full population (all households and individuals) by community enumerators. Information is processed and used locally, empowering communities and influencing local government resource allocation. Information is also aggregated up, and used at district, province and national levels. GIS mapping of information provides clear pictures to all involved, from the village level to the provincial and national levels.

BASIC NEEDS			CORE INDICATORS
A.	Health	1	Proportion of child deaths aged 0-5 years old
		2	Proportion of women deaths due to pregnancy-related causes
B.	Nutrition	3	Proportion of malnourished children aged 0-5 years old
C.	Shelter	4	Proportion of households living in makeshift housing
		5	Proportion of households who are squatters
D.	Water and Sanitation	6	Proportion of households without access to safe water supply
		7	Proportion of households without access to sanitary toilet facilities
E.	Basic Education	8	Proportion of children 6-12 years old not attending elementary school
		9	Proportion of children 13-16 years old not attending high school
F.	Income	10	Proportion of household with income below the poverty threshold
		11	Proportion of households with income below the subsistence threshold
		12	Proportion of households who experienced food shortage
G.	Employment	13	Proportion of persons who are unemployed
H.	Peace and Order	14	Proportion of persons who were victims of crime

CAR 16.6
I 29.8
II 34.1
III 22.6
IV-A 23.5
NCR
V 32.8
VIII 31.4
IV-B 35.3
VI 33.0
VII 29.8
CARAGA 31.5
IX 32.7
X 24.9
XI 22.6
ARMM 34.0
XII 31.2

N

Underweight children 0-5 years old
- 0 - 20 (Significantly below average)
- 20.1 - 27.6 (Below average)
- 27.7 - 33 (Above average)
- 33.1 - 100 (Significantly above average)

Source: FNRI, NNS, 2003

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Santa Elena CBMS

HH with access to safe drinking water
- with access
- without access
- Purok , Poblacion
- Barangay , Santa Elena
- 2004 Water system project
- Before 2003 Water system project
- National Road
- Road Brgy

Prop of HH with access to safe water supply, Poblacion
- $0 <= n < 15$
- $15 <= n < 38.23$
- $38.23 <= n < 60$
- $60 <= n < 100$

Prop of HH with access to safe water supply, Santa Elena
- $0 <= n < 15$
- $15 <= n < 38.23$
- $38.23 <= n < 60$
- $60 <= n < 100$

UTM Zone 51 (Camarines Norte)

Scale 1:38173

0   400   800   1200   1600   metres

N

Education and Health

ICTs for Education: Impact and lessons learned from IICD-supported activities

http://www.iicd.org/files/icts-for-education.pdf

This impact study is part of a series of publications on the use of Information and Communication Technology (ICT) in various sectors in developing countries. It describes the experiences, achievements and lessons learned of the International Institute for Communication and Development (IICD) and its partners in using Information and Communication Technology (ICT) to enhance education through thirty-two projects and ICT policy processes over eight years in Jamaica, Bolivia, Zambia, Burkina Faso, Mali, Ghana, Tanzania and Uganda.

IICD's partners play a vital role in implementing, integrating and upscaling the projects. We would therefore like to thank all our partner organisations in the South who have worked with us to formulate and implement the projects and share the results. In addition, we would also like to thank our partners in the North who helped by funding the programme and sharing their knowledge, namely the Dutch Directorate-General for International Cooperation (DGIS), the United Kingdom Department for International Development (DFID), the Swiss Agency for Development Cooperation (SDC), the Catholic Organisation for Relief and Development (CORDAID), the Humanistic Institute for Development Cooperation (HIVOS), Cap Gemini, InterAccess, Atos Origin, KPN, Altran, Ordina, PSO, Global E-Schools Initiative and Warchild.

Information and Communication Technology in Education: A Curriculum for Schools and Programme of Teacher Development

UNESCO; Co-ordinator: Evgueni Khvilon
http://unesdoc.unesco.org/images/0012/001295/129538e.pdf

I. ICT And Education
    Aims And Purposes
    Information And Communication Technology
    Curriculum And Teacher Development
    Varying Conditions Across Countries
    Terminology

Ii. Modelling ICT Development
    A Continuum Of Approaches
    Stages Of Teaching And Learning
    A Curriculum Structure For Secondary Schools
    Professional Development Of Teachers

Iii. ICT Development At The School Level 21
    Approaches To ICT Development
    Characteristics Of Schools Related To ICT Development
    A Matrix For ICT Development In Schools
    Emerging Approach
    Applying Approach
    Infusing Approach
    Transforming Approach

Iv. ICT Curriculum For Secondary Students - ICT Literacy
    Application Of ICT In Subject Areas
    Infusing ICT Across The Curriculum
    ICT Specialization

V. Professional Development Of Teachers - ICT Development In Schools
    Developing ICT Skills And Knowledge
    Conducting Professional Development
    Further Points To Consider
    Applying ICT To Teachers' Subject Areas
    Teacher Competencies
    Organizing Teacher Development
    Further Points To Consider
    Infusing ICT To Improve Learning
    Teacher Competencies
    Organizing Teacher Development
    Further Points To Consider
    Supporting Infusion Of ICT In Schools
    Role Requirements For Support Teachers In ICT
    Organizing Teacher Development

Vi. A Blueprint For Curriculum And Teacher Development

Modelling ICT Development
Tracking ICT Development In Schools
A Blueprint For Curriculum
A Blueprint For Teacher Development
A Blueprint For Textbook Writers

General References
Appendices
Appendix A – ICT Literacy
Unit A1 – Basic Concepts Of ICT
Unit A2 – Using The Computer And Managing Files
Unit A3 – Word Processing
Unit A4 – Working With A Spreadsheet
Unit A5 – Working With A Database
Unit A6 – Composing Graphical (Re)Presentations
Unit A7 – Computers And Communication
Unit A8 – Social And Ethical Issues
Unit A9 – Jobs And/With ICT

Appendix B – Application Of ICT In Subject Areas
Unit S1 – ICT In Languages
Unit S2 – ICT In Natural Sciences
Unit S3 – ICT In Mathematics
Unit S4 – ICT In Social Sciences
Unit S5 – ICT In Art
Unit B1 – Measurement
Unit B2 – Modelling And Simulation

ICT In Education
A Curriculum And Programme Of Teacher Development
Unit B3 – Robots And Feedback Devices
Unit B4 – Statistics
Unit B5 – Creating Graphics
Unit B6 – Music
Unit E1 – Spreadsheet Design
Unit E2 – Database Design

Appendix C – Infusing ICT Across The Curriculum
Unit C1 – Encouragement To Reading
Unit C2 – Are We Becoming Genetically Modified?
Unit C3 – Antarctica 2000
Unit C4 – Multimedia And Languages
Unit C5 – The Parking Garage Problem
Unit C6 – The 1920s And Its Excesses
Unit C7 – Le Village Prologue
Unit C8 – Society's Problems

Appendix D – ICT Specialization

Specialization Preparation Module
    Unit SP1 – Introduction To Programming
    Unit SP2 – Top-Down Program Design
    General Specialization Module
    Unit GS1 – Foundations Of Programming And Software Development
    Unit GS2 – Advanced Elements Of Programming
Vocational Specialization Module
    Unit VS1 – Business Information Systems
    Unit VS2 – Process Control Systems
    Unit VS3 – Project Management

Survey of ICT and Education in Africa : A Summary Report, Based on 53 Country Surveys

By Glen Farrell and Shafika Isaacs. Published October 2007.
http://www.infodev.org/en/Publication.353.html

This project seeks to gather together in a single resource the most relevant and useful information on ICT in education activities in Africa.

Key questions:

- How are ICTs currently being used in the education sector in Africa, and what are the strategies and policies related to this use?
- What are the common challenges and constraints faced by African countries in this area?
- What is actually happening on the ground, and to what extent are donors involved?

Contents:

- ICT Policies for Education in Africa
- ICT Activities and Initiatives in Higher Education in Africa
- ICT Activities and Initiatives in Primary and Secondary Schools
- ICT Activities and Initiatives in Non-formal Education in Africa
- Gender Equity and ICT in Education in Africa
- Factors Enabling and Constraining ICT Use in Education in Africa
- ICT in Education in Africa: A Way Forward
- Regional ICT/Education Initiatives in Africa

This Summary Report is complemented by a companion volume, which features 53 Country Reports.

Education Management Information System: A Short Case Study of Nigeria

infoDev, Prepared by Cambridge Education, October 2006
www.infodev.org/en/Publication.503.html

Executive summary

Establishing effective working relationships between three management layers presents a significant challenge for EMIS development in Nigeria and, in common with other developing countries, there are issues of capacity and commitment. At state level, a systematic approach to educational planning, supported by EMIS, is now developing with a clearer role for the federal government in the support, coordination and monitoring of state-level EMIS. However, a lack of reliable baseline data constrains realistic targeting of indicators.

Structures and responsibilities for EMIS are complex, reflecting historical developments and more recent imperatives but improved synergy between existing agencies is being sought through a new national body. Due to a lack of resources, early EMIS work was incomplete and not sustained whilst later activity, with private sector implementation, gathered much data but developed little capacity. More recently, development of standardised software augurs well for state-level EMIS to provide comprehensive information in support of decentralized management.

Until recently, data collection issues have eroded stakeholder confidence but current developments are designed to improve data quality and utility although changes in school and cycle structure will pose significant data collection challenges. Data on population and finance are limited in quality and quantity. The evidence shows that EMIS data has not played a significant role in supporting the planning process at the Federal level. However, with the process of decentralization states are becoming more committed to supporting localised EMIS and some are using data to prepare education plans and develop their budgets. Nevertheless, decentralisation of EMIS has only been piloted in a small number of states and time will tell if this approach is sustainable across the country.

One of the important lessons from the experience of Nigeria is the important facilitation role that the Federal Ministry of Education is now playing to support the implementation of a common EMIS approach at the state level. This involves the development of a single software system in order to store and manage education data. States have also benefited from a comprehensive capacity building initiative to improve skills at the local level and to encourage data utilisation. In addition the Federal Ministry has helped establish a centralised depository to support the collection and amalgamation of all previous census data.

A new EMIS infrastructure, with web-based networks and appropriate software, is now well-developed and ready for adoption in an increasing number of states to improve information quality for stakeholders. Donors continue to fund most EMIS activity and challenges remain for hardware maintenance and energy supply in states lacking development partner inputs. States are becoming aware of the benefits of EMIS but there remains some doubt about government's commitment to open accountability.

Portal on Education Planning and Financing, UNESCO

http://cms.unescobkk.org/index.php?id=8163

The Portal on Education Planning and Financing is designed for professionals to share information and expertise on practices of implementing sector policies in:

(1) national contexts, related to ongoing reform of public sector management, at central and decentralized levels, and

(2) international contexts, related to the implementation of Education for All, Fast Track Initiatives, and the Millennium Development Goals.

The Portal focuses on modern approaches to education policy analysis and planning, medium-term expenditure frameworks (MTEF) and the financing of education expenditure to achieve national and localized human resource development objectives.

The Portal offers a range of practice-oriented information drawn from lessons learnt in concrete contexts. This information concerns modern planning techniques and medium-term planning and expenditure framework in country contexts; training materials and tools; briefing notes on technical topics; updates on recent research and a glossary.

Through this Portal, UNESCO shares the organization's long-standing experience and expertise gained in working with national and international partners on education policy analysis and planning, and results from more recent ongoing work on education financing and MTEF.

The Portal will be updated regularly. An important source of updates will be contributions from users of this Portal.

Themes

This part of the Portal contains information on approaches to education policy and financial planning, including approaches to education sector analysis, medium-term expenditure frameworks, financing of education and resource management.

The information is grouped into three themes:

- Education Policy, Planning and Budgeting
- This concerns the overall planning process, from policy setting to planning to plan implementation.
- Financial Planning
- This deals more specifically with medium-term finance planning, as part of the ongoing reform of public sector management.
- Education Financing and Budgeting
- This concerns specific aspects of resource allocation, cost sharing and expenditure management.

Acknowledgement

The development of this Portal would not be possible without the cooperation of several development partners whose expertise in the fields of education policy and planning, education financing as well as public expenditure reform have been widely recognized, such as:

- Asian Development Bank (ADB)
- Department for International Development (DFID), United Kingdom
- International Monetary Fund (IMF)
- Overseas Development Institute (ODI)

- Organization for Economic Co-operation and Development (OECD)
- World Bank (WB)

ICT for Education Policy-makers: From Vision to Action

http://web.worldbank.org/WBSITE/EXTERNAL/WBI/WBIPROGRAMS/EDUCATIONLP/0,,contentMDK:21901984~menuPK:460926~pagePK:64156158~piPK:64152884~theSitePK:460909,00.html

Information Communication Technology (ICT) is often perceived as a useful strategy to transform education systems and a means by which students can develop basic competencies and skills needed for a knowledge economy.

The main focus of this course is on how a country's education system and policy can be enriched through the applications of ICT. The course is organized to help policymakers to address the imperative that traditional, formal education systems are facing by raising awareness and understanding about essential elements of an effective application of ICT. The course will review ICT in relation to education policy, relevant strategies, and best practice. The exchange of first-hand experience of ICT use in education policy and its implementation would help policymakers grasp a systematic view in strengthening the competitiveness of their education systems by applying ICT more effectively.

PAN African Research Agenda on the Integration of ICTs

Educational Research Network for West Africa and Central Africa, IDRC, Université de Montréal

http://www.ernwaca.org/panaf/spip.php?rubrique2

PanAf Project Home
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- Online Repositories

IDRC   Université de Montréal   infoDev.org   SchoolNetAfrica   EDUSUD
MERLOT   GeSCI eLearning Africa   THOT

The following national partners (in alphabetical order) are participating in Phase I of the project:

- Cameroon: Département de Sciences de l'Education, Ecole Normale Supérieure, Université de Yaoundé I, Yaoundé;
- Congo: École Normale Supérieure, Brazzaville;
- Côte d'ivoire: École Normale Supérieure, Abidjan;
- The Gambia: Science and Technology Department of the University of the Gambia, Banjul;

- Ghana: University College of Education, Winneba, Ghana;
- Kenya: School of Continuing and Distance Education, University of Nairobi;
- Mali: Département des Sciences de l'Éducation, Institut Supérieur de Formation et de Recherche Appliquée (ISFRA), Bamako;
- Mozambique: Department of Evaluation and Research, National Institute for Education Development (INDE);
- Uganda: School of Adult Education and Communication Studies, Makerere University, Kampala;
- Central African Republic: École Normale Supérieure, Bangui;
- Senegal: Faculté des Sciences et Technologies de l'Éducation et de la Formation (FASTEF), Université Cheikh Anta Diop de Dakar (UCAD), Dakar.
- South Africa: School of Education, University of the Witwatersrand (Wits), Johannesburg;

Comment
Samples from 12-01-09 homepage

Equipment to support students with disabilities
- Tuesday 30 December 2008
- Praia, Cape Verde - The Ministry of Education and Higher Education of Cape Verde received on Monday from his counterpart of Portugal, a set of equipment to support students in special education centers , said official sources in Praia.
- The donation is part of a protocol signed between the two countries since 2007 and provides support from Portugal to the education sector in Cape Verde.
- As part of this support, the Secretaries of State for Education of Portugal, Walter Lemos, and Cape (...)

UN launches e-Learning initiative in over 160 developing countries
- Wednesday 17 December 2008
- A new UN e-Learning initiative, launched in Berlin in early December 2008, will offer developing countries opportunities to draw upon a rich array of training and capacity-building resources.
- Sixteen UN agencies, meeting at a forum organized by UN Environment Programme (UNEP) during the 14th International Conference on Technology Supported Learning and Training in Berlin, agreed to establish UNeLearn - a UN-wide network on technology supported learning to share information and expertise, (...)

E-festival: the 5th edition in Bamako
- Friday 5 December 2008
- The Malian Ministry of Communication and New Technologies organizes from 22 to 26 December at the International Conference Center in Bamako (CCIB) the 5th edition of "E-Festival", an important meeting of ICT competitions between schools in the country, PANA learned from the organizers.
- The program of this edition features training of students of first and second cycle of basic education, school children, ill-hearing and young graduates.
- Exhibition of equipment, ICT products and services, (...)

Google to map African data
- Tuesday 2 December 2008
- Google has developed applications to map educational statistics and natural resources in Africa for the benefit of the public and organizations providing basic services.
- A pilot project in East Africa replicates a similar project established in India, measuring achievement in education, said Aleem Walji, a global development officer at Google.org.
- In Uganda, for example, Google is working with the Bureau of Standards to record census data on the number of children existing in a particular (...)

Alcatel is committed in promoting ICTs: 80 platforms available to schools
- Saturday 29 November 2008
- Officials from the Ministry of Education are aware of the importance of integration of information and communication technologies (ICT)s in various stages of education. In this context, an agreement was signed last Monday with the operator Alcatel-Lucent. The partnership focuses on an educational program entitled "Knowledge for Dynamic Education".
- "This program is intended to promote, innovate and encourage economic development around information and communication technology in Morocco", said (...)

Worldwide Innovative Teachers Forum in Hong Kong : Senegalese Ousmane Diouf rewarded with Silver Medal
- Monday 17 November 2008
- Winner of the Africa Gold Medal, in May 2008, for the Innovative Teachers Forum in Accra in Ghana, the Senegalese Ousmane Diouf, Professor at EMC Diery Fall Bambey, has just been awarded the Silver Medal at the Worldwide Innovative WWITF Teachers Forum held in Hong Kong from 4 to 6 November 2008.
- As part of the global strategy of UNESCO to use information technology and communication (ICT) to improve education and social and economic development in the world, Microsoft today joined the (...)

The African Virtual University for quality education
- Friday 14 November 2008
- The Regional Conference on Higher Education in Africa (CRESA) held in Dakar from 10 to 14 Nov., stressed the need to create a space for African higher education, giving the example of the African Virtual University (AVU), represented by 53 centers in 30 countries all Francophone, Anglophone and Lusophone.
- The AVU, as his representative in Dakar Sidiki Traore noted, focuses on "Higher Education, Research and Innovation for Development in Africa".
- Founded in 1997 and with its headquarters in (...)

Microsoft provides 19 secondary schools with equipments in Cape Verde
- Friday 7 November 2008
- Praia, Cape Verde - A total of 19 secondary schools of Cape Verde will receive equipment and software tailored to specific needs of education, through a partnership between the Government of Praia and the multinational Microsoft, said here, on Friday, official sources in the capital of Cape Verde.

- The project is part of the "Unlimited Potential" programme created by the American multinational which aims, by this means, to help developing countries improve the education system to encourage (...)

Tanzania: ICT education project amid rural connectivity challenges

Aloyce Menda, iConnecT OnLine
http://www.iconnect-online.org/Documents/TanzaniaRuralAccessICT4DiConnectEng.pdf

'Tanzania is a rural country with 80% of population and 70% of able labour force living permanently outside urban areas as peasant farmers. Like most developing countries, the Tanzanian rural masses lack satisfactory social services. For rural connectivity to make a difference in the community, it must be hinged on a social sector that touches on the lives and provides content that is relevant, cost effective and essential to the livelihood of the community. Education is one of essential social services in rural Tanzania, which is deprived of quality infrastructure, human and financial resources. For instance, many rural schools lack tap water, electricity and basic telephone connections. This impedes the teacher and student's passion to utilize modern technologies necessary in teaching or for practical lessons. The modern Information & Communication Technologies (ICTs) are among the essential tools that most school administrations hesitate to acquire due to lack of electricity and telephone or high costs of connection.'

health

Improving Health, Connecting People: The Role of ICTs in the Health Sector of Developing Countries

Healthlink, May 2006
http://ict.developmentgateway.org/Content-item-view.10976+M50f37fd497d.0.html

Executive Summary

This paper provides a snapshot of the types of information and communication technology (ICT) interventions being used in the health sector, and the policy debates involving ICTs and health. The paper draws from the experiences of both the North and South, but with a focus on applicability in the South to identify the most effective and relevant uses of ICTs. It is aimed at policymakers, international donors, local practitioners, and others who are involved in the development or management of programs in the health sector in developing countries.

The paper describes the major constraints and challenges faced in using ICTs effectively in the health sector of developing countries. It draws out good practices for using ICTs in the health sector, identifies major players and stakeholders, and highlights priority needs and issues of relevance to policymakers. The paper also looks at emerging trends in technologies that are likely to shape ICT use in the health sector, and identifies gaps in knowledge. For the purposes of this paper, ICTs are defined as tools that facilitate communication and the processing and transmission of information by electronic means. This definition encompasses the full range of ICTs, from radio and television to telephones (fixed and mobile), computers, and the Internet.

This paper sees health as a complex interaction of biomedical, social, economic, and political determinants. It places the discussion of health firmly in the context of poverty and development debates. It pays particular attention to how ICTs can best be used to help achieve the Millennium Development Goals (MDGs), as part of poverty reduction strategies and in order to improve the health of the most poor and vulnerable people.

There has been considerable international discussion about the potential of ICTs to make major impacts in improving the health and well being of poor and marginalized populations, combating poverty, and encouraging sustainable development and governance. Used effectively ICTs have enormous potential as tools to increase information flows and the dissemination of evidence-based knowledge, and to empower citizens. However, despite all their potential, ICTs have not been widely used as tools to advance equitable health care access.

A critical mass of professional and community users of ICTs in health has not yet been reached in developing countries. Many of the approaches being used are still at a relatively new stage of implementation, with insufficient studies to establish their relevance, applicability or cost effectiveness (Martinez, et al, 2001). This makes it difficult for governments of developing countries to determine their investment priorities (Chandrasekhar and Ghosh, 2001). However, there are a number of pilot projects that have demonstrated improvements, such as a 50 percent reduction in mortality or 25-50 percent increases in productivity within the healthcare system (Greenberg, 2005).

The examples in this paper show that ICTs have clearly made an impact on health care. They have:

- improved dissemination of public health information and facilitated public discourse and dialogue around major public health threats;
- enabled remote consultation, diagnosis and treatment through telemedicine;
- facilitated collaboration and cooperation among health workers, including sharing of learning and training approaches;
- supported more effective health research and the dissemination and access to research findings;
- strengthened the ability to monitor the incidence of public health threats and respond in a more timely and effective manner; and
- improved the efficiency of administrative systems in health care facilities.

This translates into savings in lives and resources, and direct improvements in people's health. In Peru, Egypt and Uganda, effective use of ICTs has prevented avoidable maternal deaths. In South Africa, the use of mobile phones has enabled tuberculosis patients to receive timely reminders to take their medication. In Cambodia, Rwanda, South Africa, and Nicaragua, multimedia communication programs are increasing awareness of how community responses to HIV and AIDS can be strengthened. In Bangladesh and India, global satellite technology is helping to track outbreaks of epidemics and ensure that effective prevention and treatment methods can reach people in time.

Experience demonstrates that there is no single solution that will work in all settings. The complexity of choices of technologies, as well as the needs and demands of health systems suggests that the best way forward is to gradually introduce, test, and refine new technologies in those areas of health care where there is a reasonable expectation that ICTs can be effectively and efficiently used.

Some innovative leaps may also be possible as technology is evolving rapidly. Some of the trends identified in this paper that suggest new opportunities include wireless applications, increased use of mobile telephony, and combinations of technology working together. The paper concludes that opportunities do exist for the use of ICTs in the health sector of developing countries. However, a number of issues must be carefully considered in each intervention and setting:

- To what degree are the health sector structure and the national regulatory framework conducive to problem-oriented, interdisciplinary, rapid-response collaborative technical work and to implementing the political, regulatory, and managerial tasks required to address multifaceted and complex technological problems?
- Have the goals, action plans and potential outcomes and benefits been clearly defined?
- Are there mechanisms for coordinating action led by the public sector in a way that links public, private, and social efforts, and engages with diverse stakeholders to speed the development and use of priority ICT solutions?
- What progress has been made in telecommunication sector reform and expansion of affordable ICT access?
- Are data-related standards and a regulatory and legal framework in place?
- Are there mechanisms for developing the capacity of health workers, other intermediaries and community members to make the most effective use of the ICTs available and to develop content that is relevant, applicable, and culturally appropriate?
- What options exist to ensure continuity and sustainability of ICT projects and programs in terms of finance flows, public-private partnerships and building on existing information and communication channels and resources?

Seven broad conclusions can be drawn about the use of ICTs in the health sector. These conclusions should be applicable at all levels. Although they are expressed simply here, the complexity of putting them into practice is one of the biggest challenges in ensuring that the benefits are spread to the health system, health care workers, and the people who make use of the health system – the patients and citizens. The seven conclusions are:

1. Keep the technology simple, relevant, and local.
2. Build on what is there (and being used).
3. Involve users in the design (by demonstrating benefit).
4. Strengthen capacity to use, work with, and develop effective ICTs.
5. Introduce greater monitoring and evaluation, particularly participatory approaches.
6. Include communication strategies in the design of ICT projects.
7. Continue to research and share learning about what works, and what fails.

The paper also highlights several major areas where not enough is known and where further experimentation, research, and analysis are needed, including:

- moving from proof-of-concept to large-scale implementation in a range of different settings;
- evaluating the impact of the use of ICTs on health in a systematic and coherent way;
- sharing information and experience and coordinating efforts (at national, regional and international levels) around the use of ICTs in the health sector;
- strengthening the role of and building the capacity of intermediaries; • developing local content that is relevant, appropriate, and practical;

- strengthening organizational and national human resources, awareness, skills, and leadership to champion the further development of ICT use in the health sector;
- enabling the voices of those most affected by poor health to be heard, and
- implementing a range of standards and a regulatory and legal framework that is conducive to the development of a vibrant ICT sector that responds to and supports social development processes.

These questions help to set out an agenda for future action to enable ICTs to contribute to efforts to improve health, and to achieve health-related MDGs.

Mobile phones can help manage diseases

Source: The Lancet Infectious Diseases
SciDevNet December 2008
http://www.scidev.net/en/health/opinions/mobile-phones-can-help-manage-diseases-1.html

Mobile phones are reaching people across Africa more rapidly than anywhere else in the world, say Richard Lester and Sarah Karanja. And they can be used to help manage diseases such as HIV/AIDS, provide support during political crises and improve health services.

For example, a clinic in Pumwani, Kenya, is using mobile phones to send text messages to patients receiving anti-retroviral therapy (ART) so that nurses can enquire about, and respond to, patients' needs.

And when hundreds of thousands of people were displaced by the country's political crisis in 2008, mobile phones were used to connect ART patients with new drug dispensaries and offer them counselling.

Mobile phones are a cheap and instantaneous form of communication that can be used anywhere, say the authors. They suggest that this technology could improve adherence in other chronic and semi-chronic disease treatments, including tuberculosis and short-course malaria therapies.

mHealth in the Global South: Landscape Analysis

Vital Wave Consulting for Vodaphone Group Foundation and United Nations Foundation
http://www.vitalwaveconsulting.com/pdf/mHealth_in_the_Global_South_Landscape_Analysis.pdf

The phenomenal worldwide expansion of *mobile* communications provides opportunities for new services across many verticals, including health care, to reach vastly larger populations across the Global South. In the late 1990s, world health and development policy-makers identified information and communication technology (ICT) as an element of improving global health care. Now, almost 10 years later, health and development organizations are beginning to highlight mobile technologies as a particularly critical part of the solution to health needs. mHealth is not just an adjunct to other ICT enabled health services, but a technology whose unique characteristics can make it one of the driving forces in transforming health services, just as it has in other areas of society.

As in almost every other segment of life in the 21st century, mobile technology promises to bring to health services improved efficiencies (appointments, medication), greater outreach (the poor, rural populations, teens, homeless), and improved communication (between provider and clients).

This report provides foundational data and analysis of the current mHealth landscape. It helps the reader to understand mHealth's scope and implementation across developing regions, the health needs to which mHealth can be applied, and the mHealth applications that promise the best or broadest impact on heath care initiatives. It also examines critical success factors for making mHealth more widely available through sustainable implementations.

Part 1 examines the mHealth Landscape in the Global South, providing an overview of implementations, how and where they are manifesting, and the anticipated impact different types of mHealth services may have on individuals.

Part 2, Dynamics of mHealth Sustainability, consists of two value chain analyses for mHealth solutions. The first looks at the foundational value chain for simple text messaging. Further analysis examines the expanded value chain to accommodate more sophisticated solutions with two-way communications and clinical aspects to the service. The value chains depict various dimensions of delivery flow, such as financial flows and information ownership and movement. In doing so, the paper examines the current and potential sustainability of mHealth solutions through various strategies.

Part 3, Scaling mHealth Solutions, describes the critical success factors for scaling mHealth solutions to large geographies and populations. Through an analysis of current and planned mHealth services, Vital Wave Consulting offers a set of strategies to accelerate building mHealth scale.

Part 4 discusses the mHealth Evolution, anticipated services based on changing technologies and health care needs. Through this section the paper provides various scenarios for future requirements and opportunities in the mHealth space, allowing the reader to anticipate possible shifts in strategies for maximum mHealth impact in the coming years.

This report provides professionals from across sectors and industries with a holistic view of current and potential opportunities in mHealth. Data, insights and recommendations in this report can prepare value chain participants to create sustainable solutions to address critical health needs.

Telemedicine in the Eastern Cape using VoIP combined with a Store and Forward Approach

M Chetty, W Tucker, E Blake
http://pubs.cs.uct.ac.za/archive/00000202/01/Chetty.pdf

Abstract—Rural areas in South Africa have unique conditions such as remoteness and scarcity of reliable public facilities. Information and Communication Technologies (ICTs) introduced into these areas must be suitable for these conditions. Using a user-centred design approach based on Participatory Design and Action Research, we have developed a telemedicine application for a rural village in the Eastern Cape. This paper describes how we determined the requirements and design for the application and why we chose Voice over Internet Protocol (VoIP) combined with a store and forward approach to achieve our telemedicine goals. We present an overview of the methodology we

are using, describe the software application we have developed and mention several challenges we have faced to date. Finally we conclude that VoIP and store and forward technologies are appropriate to the South African rural situation.

A change in thinking: how do you make telemedicine work?

International Institute for Communication and Development (IICD), 2008
http://www.iicd.org/articles/telemedicine-ipath-tanzania/

To learn from each others' experiences and to provide input for the development of a national policy, telemedicine practitioners and other stakeholders from around Tanzania gathered for their second telemedicine platform meeting in Dar es Salaam on July 1st.

The use of telemedicine in Tanzania is relatively new. It's only in the past few years that telemedicine programmes have started appearing in different parts of the country. There now exists a solid base of institutions and organisations who are working with this technology, which has prompted those involved to come together and start digging out the lessons that may have been picked up so far. So what are these lessons? How does telemedicine improve health care? Who is practicing telemedicine and what are the barriers? How can telemedicine be practiced throughout the whole country? To learn from each others' experiences and to provide input for the development of a national policy, telemedicine practitioners and other stakeholders gathered for their second telemedicine platform meeting in Dar es Salaam on July 1st.

The UN Foundation - Vodafone Group Foundation Partnership

http://www.unfoundation.org/our-solutions/mobile-technology/technology-partnership.html

The UN Foundation partnership with the Vodafone Group Foundation (VGF) began operations in October 2005, with a £10 million commitment from VGF matched by £5 million from the UN Foundation to support UN causes. The Partnership seeks to leverage Vodafone's strengths – its mobile technology, global infrastructure, and capacity for mass consumer outreach – with the UN's scale, mission, and human capital. Its goal is to support activities and manage initiatives that use technology tools to help the UN address challenges more effectively and efficiently. It is currently engaged in three programs: Health Data Systems, Rapid Response Emergency Telecommunications, and Access to Communications (A publication series of studies that are intended to give governments, NGOs and the private sector research and recommendations on how to use technology and telecom tools to address challenges more effectively and efficiently.)

ICTs in the Health Sector in Ghana

John Yarney, iconnect online
http://www.iconnect-online.org/Documents/GhanaCapacityDevelopmentICT4DiConnectEng.pdf

Information management especially at the district level in Ghana's health delivery system remains thorny. John Yarney writes on how Ghana Ministry of Health has started an Information

Management programme for personnel to improve with its data gathering and other initiatives to improve capacity within its health sector.

HELP Resources - Health-Education-Livelihood-Participation

http://www.pngbuai.com/300socialsciences/self-help/HELP-Resources-Profile.html

Abstract: 'HELP is an acronym denoting our commitment to committing human and technical resources to achieve Health, Education, Livelihood and Participation for all. HELP Resources is a local NGO, with a focus on rural and grassroots communities. HELP Resources is well networked across Papua New Guinea, the Pacific Region and globally. HELP Resources acts locally and thinks globally. The goal and objectives of HELP Resources reflect the fundamental principles of Constitution of Papua New Guinea as well as PNG's current commitments to global development goals and conventions.

ICT Training to Improve Health Care of Rural Populations

Lutfor Rahman , Division for the Advancement of Women in Engineering and Geosciences (DAWEG)
http://www.mech.ubc.ca/~daweg/resources/rahman_ict_rural_health.html

Abstract: 'Information and Communication Technology (ICT) has seen tremendous unprecedented growth in the last decade. Its impact has been felt in almost all sectors. But the impact of ICT on health care is lagging behind in developing countries like Bangladesh. A training program in Bangladesh trained woman medical professionals to use ICT in their respective fields and in health care sectors. A survey identified their training needs. Training modules and materials were designed in the context of Bangladesh based on the need identification survey. The courses were held at the capital city, Dhaka and in two regional towns, Bogra and Rajshahi.

The main purpose of empowering the woman medical professionals with ICT is to benefit the people that they serve. Specifically, these women serve people who live in the islands and in the highlands of the remote areas. This paper explains how the lives of remote people, are saved by medical professionals with ICT training.'

Did you say cell phones for development? "Yes, technology can do anything, really, but people have to drive it"

Katherine Walraven for APCNews - Gender in the HIV/AIDS crisis
http://www.apc.org/en/news/lowcost/world/did-you-say-cell-phones-development-yes-technology

MAPUTO, MOZAMBIQUE, 26 April 2007

Considering the rapidly growing presence of cell phones in the developing world, interest in their role for advancing development goals is only natural. And, considering the demographic overlap between

those most affected by HIV/AIDS and cell phone users, it only makes sense that a major focus be put on how this low-cost technology can fight this deadly pandemic.

APC-member Women'sNet recently engaged in a UNICEF-driven speed assessment of fifteen projects that apply cell phones towards development objectives in Africa, with a particular focus on HIV/AIDS prevention, treatment and care.

Gender in the HIV/AIDS crisis and the digital divide

Women'sNet was asked to join the study because of the gendered nature of development issues in general, and of HIV/AIDS in particular. For biological, economic, and social reasons, women and girls are at the greatest risk of contracting the virus and consequently make up a mounting proportion of the global HIV/AIDS-infected population. Sally-Jean Shackleton of Women'sNet told APCNews that, among eighteen to twenty-four year olds in certain areas of South Africa, "one in four females among eighteen to twenty-four year olds is HIV+, compared to one in twelve males."

What is more, women face significant barriers to accessing and benefiting from information communication technologies (ICTs), and many ICT for development (ICT4D) projects and programmes fail to effectively consider the gendered nature of development issues and/or the digital divide. Women'sNet has incorporated gender concerns into its research for the rapid assessment, looking at how women and men use cell phones differently, women's levels of access, and whether gender is adequately incorporated into projects' design, implementation, and monitoring.

South Africa's use of low-cost technology

Women'sNet's research for the five-month study, which culminated at the end of April 2007, is focused on three projects in South Africa. These are:

- Fahamu's Umn Yango (meaning 'doorway' in isiZulu) project, which promotes the use of cell phones to access and report information related to violence against women, women's access to land, and HIV/AIDS in five rural villages in the province of KwaZulu Natal;
- Cell-Life's AfterCare project in Cape Town, which enables home-based care workers to use their cell phones to collect and transmit data on HIV/AIDS patients' well-being and adherence to anti-retroviral drug treatment (low levels of which contribute to mutations of the virus and drug-resistant strains);
- And, SimPill's award-winning Adherence System project, also in Cape Town, which uses a real-time management system to increase adherence to medications prescribed to treat chronic illnesses – particularly tuberculosis, which is a significant cause of death of people living with HIV.

While the projects are experiencing success in the collection and transmission of medical data and, to a lesser degree, health information management and drug adherence, most of the projects studied are having little to no impact on HIV/AIDS prevalence rates just yet. The pandemic "is complex, deep, and overwhelming, and it would take a lot more than these projects to make a dent," said Shackleton. This is especially true considering that "many projects seem to skid to a halt after being piloted."

Challenges

Shackleton identifies mismanagement as the factor that most constrains the potential of these projects. Those expected to benefit from the projects are not always consulted or otherwise engaged, funds are not always spent wisely, and there is often disconnect between beneficiaries, health professionals, technologists, and managers. For example, Shackleton explains, "health care workers who transmit data from their cell phones may not get feedback as to whether their input was useful – or received, and police officers who receive messages reporting violence against women may not be prepared to respond."

Another major constraint is crime. Although cell phones are a relatively low-cost technology, they still hold considerable value in poverty-stricken areas, and are commonly stolen. And, such theft is likely to rise as these devices adopt increasingly sophisticated functions. At the same time, however, the theft of a cell phone involves much less financial loss than that of a more costly device.

Despite the challenges that exist in using cellular technology in development projects, Shackleton maintains that it holds great potential, saying, "I think cell phones are the way to go. They are useful, relatively inexpensive tools for networking, decreasing travel time and cost – especially for rural residents, maintaining relationships, pursuing opportunities, making money, banking, reporting crime, accessing services, and managing patient care. The technology can do anything, really, but people have to drive it."

Copies of the rapid assessment report can be obtained by contacting Sally-Jean Shackleton at sallys@womensnet.org.za.

For more information on the projects mentioned here, visit the following websites.
Fahamu project   Cell-life project   SimPill project

Mobile Technology To Improve Health Service Delivery Within Government

http://ict.developmentgateway.org/Content-item-view.10976+M5a4aacdd990.0.html

The Dokoza system is an interactive real-time mobile system for fast-tracking & improving critical services. The system has been developed in SA for use initially in HIV/AIDS (specifically in respect of the roll-out of anti-retroviral therapy) and TB treatment, with the view to including other diseases. The system involves the use of SMS& cell phone technology for information management, transactional exchange & personal communication. The cell phone makes use of a regular issue SIM card across any existing cell phone network. by Jessie Dias-Alf | June 6, 2007.

EpiSurveyor: Collecting Vital Health Data Using Free Software Tools

Shareideas, Knowledge for Social Change, 2007
http://www.shareideas.org/index.php/EpiSurveyor:_Collecting_Vital_Health_Data_Using_Free_Software_Tools

With the help of EpiSurveyor, a collection of free, open-source software tools, health care workers in several African nations are collecting vital health information, particularly from those living in hard-

to-reach rural areas, via mobile communications.

Story   In many developing countries, public health data is collected by hand on paper, resulting in what can be significant delays in relaying vital information to health care practitioners and government authorities, who rely on such data to plan programs and respond effectively to health care needs.

Developed by DataDyne, a not-for-profit consulting group serving the data needs of governments, UN organizations, and NGOs, EpiSurveyor offers a collection of free, open-source software tools that enable health information to be collected on PDAs (personal digital assistants) or smartphones. EpiSurveyor was designed for epidemiological use and for planning, implementing, monitoring, and evaluating health projects and programs, but can be used for non-health applications as well.

With EpiSurveyer, a windows-based program, health care workers enter survey questions on a desktop or laptop. The resulting form is then published to any number of mobile devices, such as a PDA or smartphone. The mobile devices can then be taken into the field and used to record information. Afterward, the devices are synchronized with a desktop or laptop, with the ability to combine all of the data collected into a single table.

In June 2006 a partnership between DataDyne, the UN Foundation, the Vodafone Group Foundation, and World Health Organization was launched to support the fight against measles in Burkino Faso, Kenya, and Zambia. Through the program, health data officers in each country received training in how to use the EpiSurveyor tool via a Palm handheld computer to collect information from clinics, and then aggregate and analyze it nationally. By replacing paper-based processes, the countries' ministries of health have dramatically speeded up the rate at which vital information could be collected and the impact of current treatments assessed.

Based on the success of this three-country pilot, plans are underway to create new digital health systems for use in over 20 measles-affected countries in Africa, as well as to enable health care workers to use the technology to fight other diseases such as malaria. Funding for the development of EpiSurveyor was provided by the World Bank's infoDev program, the United Nations Foundation, the Vodafone Group Foundation, and by Dr. Joel Selanikio, co-founder of DataDyne.

How they did it   EpiSurveyor incorporates a Windows-based "Designer" program for creation of surveys and a Java-based "Engine" that lets surveys created in Designer be used to collect data in the field on a variety of mobile devices. Both programs require no technical background and are made to be as easy to use as a word-processor. EpiSurveyor was specifically designed for application in developing nations. The website, which allows free download of the software and associated

Technology used
Java-enabled mobile devices (e.g., Palm OS handheld computer)
EpiSurveyor open-source software
Related links

  * http://www.datadyne.org
  * http://www.unfoundation.org
  * http://www.vodafonefoundation.org
  * http://www.who.org

Fighting Avian Flu with Mobile Phones in Indonesia

From Shareideas, Mobile Knowledge for Social Change, 2007
http://www.shareideas.org/index.php/Fighting_Avian_Flu_with_Mobile_Phones_in_Indonesia

Voxiva's Healthwatch™ solution is being used in Indonesia to transmit data related to suspected cases of Avian Flu among birds from the field to health officials via mobile communications.
Contents

Story   More than 150 agricultural workers in three Indonesian provinces are being trained to use mobile phones to document suspected cases of Avian Flu among birds. The H5N1 virus is a major health concern in the country, which has led to the deaths of more than 70 people. In the past, it could take weeks or even months for Officials at the Ministry of Agriculture to receive vital information about suspected outbreaks and take appropriate action, for example, halting or redirecting bird shipments. Now, vital data will be transmitted – instantly – via mobile phone software to central health authorities who are able to pinpoint suspected cases and respond and offer feedback. The approach leverages Indonesia's cellular network, which covers over 90 percent of the nation's 220 million population.

The initiative is being made possible through Voxiva's HealthWatch™ solution, designed to monitor and manage infectious disease. Voxiva, which has operations in Asia, Africa, South America, and the United States, provides practical information solutions to health, government, and development organizations around the world. The Indonesian program is being funded with support from Microsoft, the U.S. Agency for International Development, Winrock International, and the GSM Association, a trade group representing cell phone service providers and manufacturers. Voxiva has worked with governments in Peru and Rwanda to create similar cell phone systems that enable healthcare workers to report outbreaks.

How they did it: The software used is written in Java programming language and so it can run on any compatible mobile phone. It enables workers in the field to input data and information, which is then transferred via a packet based mobile connection (GPRS) into a central database. If GPRS isn't available, the software is equipped with the ability to use SMS as a backup channel to transmit the information. Users are then able to send and receive alerts and in a future release will be able to download documents, training materials, and other information.

Technology used:
Software Platform   • J2ME (MIDP 2.0, CLDC 1.1 + JSR 75)
Transport protocols   • GPRS   • SMS
External links:
    * http://www.voxiva.com

See also other case studies from Shareideas including

Cell-Life: Using Mobile Technology to Prevent and Treat HIV/AIDS in South Africa

http://www.shareideas.org/index.php/Cell-
Life:_Using_Mobile_Technology_to_Prevent_and_Treat_HIV/AIDS_in_South_Africa

In South Africa, Cell-Life has developed open-source software solutions that enable medical professionals and caregivers to monitor patients receiving treatment for HIV/AIDS through transmitting vital information via mobile phone.

Providing HIV/AIDS Education Through Mobile Games

http://www.shareideas.org/index.php/Providing_HIV/AIDS_Education_Through_Mobile_Games

As part of its Freedom from HIV/AIDS project, ZMQ Software Systems designed four mobile games to educate the public about HIV/AIDS and prevention measures. The project was launched in India and is now expanding to Africa.

Mobile for Good: Connecting People to Information About Jobs and Health

http://www.shareideas.org/index.php/Mobile_for_Good:_Connecting_People_to_Information_About
_Jobs_and_Health

Through Mobile for Good, a social franchise, people in Kenya, and soon other African nations, subscribe to receive job listings and valuable health information.

Services, incomes, livelihoods

UNCTAD Information Economy Report 2007-2008

UNCTAD Secretariat, 2007
http://www.unctad.org/en/docs/sdteecb20071_en.pdf

Science and technology for development: the new paradigm of ICT
Download the Information Economy Report 07-08 as one file

Foreword and Overview
Introduction
Science and technology for development: the new paradigm of ICT
Chapter 1   Trends in ICT access and use
Chapter 2   The ICT producing sector and the emerging
Chapter 3   Measuring the impact of ICT on production
Chapter 4   ICT, e-business and innovation policies in developing countries
Chapter 5   E-banking and e-payments: implications for developing and transition economies
Chapter 6   Mobile telephony in Africa: cross-country comparison
Chapter 7   Promoting livelihoods through telecentres
Chapter 8   Harmonizing cyber legislation at the regional level: the case of ASEAN

The authors. The Information Economy Report is produced by the staff of the UNCTAD ICT and E-business Branch. The report provides an analysis of current themes and issues relevant for the information economy and focusing on the effect of ICT on trade, economic performance and development, and how these relate to developing countries' e-strategies.

India: The Impact of Mobile Phones

Nirmali Sivapragasam, January 20, 2009; LIRNEasia
http://lirneasia.net/2009/01/india-the-impact-of-mobile-phones/
.
A recent report of the same title, published by Vodafone and ICRIER, India, reveal that Indian states with high mobile penetration can be expected to grow faster than those states with lower mobile penetration rates, namely, 1.2% points for every 10% increase in the penetration rate.

The research also highlights the role of mobile along with complementary skills and other infrastructure, for the full realization of benefits of access to communications in agriculture and among SMEs. Importantly, telecommunications cannot be seen in isolation from other parts of the development process. In urban slums, the research reveals the importance of network effects, i.e. the value of mobiles increases if the social and economic milieu is also users of mobiles.

This report argues that a policy shift is necessary to sustain the progress towards a truly world-class telecommunications service that India and its citizens deserve. This will underpin India's competitiveness in the volatile global marketplace, and ensure that the benefits of growth are more widely shared as the economy grows and further integrates with global markets.

Read the full report here.

Enhancing The Livelihoods of the Rural Poor Through ICT: A Knowledge Map

Donor Review Report, Edited by: Kerry McNamara (infoDev), World Bank Working Paper No. 15, June, 2008
http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/11/26/000334955_20081126045422/Rendered/PDF/466260NWP0Box31nor0Review0Report111.pdf

Information and communication technologies (ICTs), appropriately adapted, help improve the livelihoods of poor individuals, families and communities in rural areas and increase their income opportunities, thereby improving their chances of escaping from persistent poverty. This Knowledge Map helps understand what we know, both from research and from experience in the field, and what do donor staff and their country counterparts most urgently need to know about these issues. In addition, it provides recommendations on the use and role of ICT in enhancing the livelihoods of the rural poor.

1. Purpose
2. Methodology

3. Results of the Survey

Telco and banking regulations

LIRNEasia
http://lirneasia.net/projects/2008-2010/mobile20bop/horizontal-aspects/telco-and-banking-regulations/

With the emergence of mobile operators offering mCommerce solutions and other operators implicitly entering the banking business, the line between the criteria used for telecom regulation and banking regulation is becoming increasingly blurred. For example, a pre-paid account that is used for subsequent payments to multiple vendors could be construed as a conventional checking account. If a post-paid customer is allowed to make payments for services other than telecom, it amounts to the mobile operator extending credit to the customer.

In some countries mobile operators have begun to offer m-payments in collaboration with banks, carefully demarcating the boundaries between functions subject to banking and telecom regulation. For example, Dialog Telecom Ltd., Sri Lanka's leading mobile operator and National Development Bank of Sri Lanka, have launched an mCommerce solution called eZ Pay; this solution is similar to a merchant accepting Visa or MasterCard credit/ debit cards for payments. In other cases, it appears that the mobile operators are implicitly entering the banking business.

The interface between the two forms of regulation, first flagged in the literature by former Dutch regulator Professor Jens Arnbak, needs to be explored and creative solutions evolved of the public interest is to be served. The research will identify the pros and cons of different regulatory regimes that are emerging in different contexts. Based on this analysis, policy recommendations for innovation-friendly regulatory arrangements will be developed.

M-payments

LIRNEasia
http://lirneasia.net/projects/2008-2010/mobile20bop/vertical-aspects/m-payments/

This subject has attracted considerable attention from researchers and development practitioners because of the interest in remittances and the roles they play in alleviating poverty. For instance, G-Cash and Smart Money, offered by the Philippines' two largest GSM companies, Globe and Smart, allow users to send and receive cash and make payments for a variety of goods and services. A similar program has been implemented in Kenya called M-PESA which allows users to load money onto their phones in shops and then send it via a text message to someone else. They can also withdraw the money at another location using a password, which in Kenya can be much safer than carrying cash.

LIRNEasia intends to explore in detail the case of the Philippines, examining different modes of m-payments and related financial transactions; a classification of the multiple forms of emergent m-payments with international examples; documentation of the growth of m-payments, distinguishing between international and intra-country m-payments; the regulatory problems that have been experienced and are likely to emerge; and the barriers to use by the BOP.

The business of hunger: ICT and Millennium Development Goals

Devinder Sharma, June 2005
http://www.zmag.org/znet/viewArticle/5964

The author highlights the fact that ICTs and related services are being increasingly pushed as a strategy for mitigating the effects of poverty on sustenance level farmers, with both private and public projects generating publicity and media attention. The author contends that these ICT interventions in rural areas need to be **monitored carefully** to ensure that they do not merely convert rural India into a market for hardware manufacturers, without actually addressing the realities of poverty and agricultural development.

ICTs, Transaction Costs & Traceability in Agricultural Markets

Project Team: Harsha de Silva, Helani Galpaya, Shamistra Soysa and Dimuthu Ratnadiwakara
http://lirneasia.net/projects/2006-07/icts-transaction-costs-traceability/

ICTs are not ends in themselves. People use ICTs to improve their life conditions, either in terms of providing supportive communication for loved ones or enhancing abilities to better coordinate and conduct economic activities. Economic theory suggests that existing markets, especially those in poor countries, are riddled with imperfections. It is postulated that ICTs can make markets more efficient by reducing transaction costs. This project seeks to examine the contribution that ICTs can make to improve the life conditions of small-scale farmers through the conduct of baseline studies, the implementation of two related pilot projects and their assessment.

This project consisted of two components: the establishment of baseline regarding ICT use and transaction costs in relation to farmers, collectors and traders participating in agricultural markets; an

assessment of the potential for improving farmer livelihoods through a last-mile traceability system enabled by ICTs also centered on the DDEC.

ICT use and transaction costs
In this study LIRNEasia looked at the information-related transaction costs of selected small-holder farmers who sell their produce at Sri Lanka's largest wholesale agriculture market and analyzed the potential reduction of these costs if they were to use ICT in obtaining such information.

In this regard, LIRNEasia is collaborating with a USAID-funded initiative called Govi Gnana Seva (GGS) or Farmer Knowledge Service specifically conceived to address the information asymmetry problem faced by rural farmers in Sri Lanka.

For this purpose LIRNEasia conducted a survey and gathered data on the four crops that are most traded in the DDEC. This survey used a structured questionnaire which contains questions relating to the entire agricultural value chain starting from the point of making the decision to grow the crop to the point of selling and receiving money.

This study revealed that information related transaction costs form a considerable share of the total costs incurred by these farmers. Therefore, it can be argued that simple mobile phones can significantly reduce currently expended costs to obtain information making markets more efficient. Such information can help farmers not only in deciding where and at what price to sell their produce, but also in reducing the high search costs associated with locating outlets that has (subsidized) fertilizer available for distribution on a given day. Overall, it is postulated that benefits to farmers can become much greater if a phone-based ICT platform could tie the selling decision with that of the decision to grow a particular produce while incorporating information needs of the farmer throughout the value chain.

The results of the study were first released at a Workshop on Transaction Costs and Traceability from 21 - 23 February 2008 at Kandalama Hotel, Sri Lanka.
Downloads   Papers

Using ICT to reduce transaction costs in agriculture through better communication: A case-study from Sri Lanka
Presentations

Presentations made at the Workshop of Transaction Costs and Traceability from 21 - 23 February 2008 at Kandalama Hotel, Sri Lanka.
1. Benefits of ICT applications to farmers with emphasis on transaction costs: experiences from India - Prof. Subhash Bhatnagar
2. Cost of information in agriculture markets - Dimuthu Ratnadiwakara
3. Using ICTs to create efficient agricultural markets - Dr. Harsha de Silva

Presentations made at the Public lecture on ICT's in Agriculture on 25th February 2008 in Colombo, Sri Lanka
1. Benefits from rural ICT applications in India: Reducing transaction costs and enhancing transparency? - Prof. Subhash Bhatnagar
2. Cost of Information - Ms. Helani Galpaya

3. Role of ICT in creating efficient agriculture market in Sri Lanka : a value-chain approach - Dr. Harsha de Silva

Improving farmer livelihoods through a last-mile traceability system enabled by ICTs

In general "farm-to-table" traceability in agriculture means the ability to trace and follow a given produce through all stages of production, processing and distribution. Traceability concerns are being addressed at both the national policy level as well as the private enterprise level in the developed world.

LIRNEasia's interest is in understanding how ICTs can be used to help poor farmers in emerging Asia integrate with the global food chain by adhering to traceability requirements and benefit from the otherwise unavailable and lucrative opportunities in the export market. LIRNEasia will conduct research on the potential of ICTs in implementing traceability programs among small farmers.

In terms of methodology, LIRNEasia, in collaboration with a partner company, has introduced local language enabled mobile phones to a small sample of gherkin farmers in order to capture traceability information throughout an entire crop cycle, approximately three months. The farmers are required to enter information through a pre-designed phone application from the initial stage of sowing the seeds throughout the entire production process when raw materials such as fertilizers and pesticides are applied to the crop.

During the harvesting period, the farmers will receive a daily sms about the quantity of gherkins that passed the initial quality tests and were accepted, the daily income for these gherkins and the reason for rejection if any. A second similar sms may also be sent to certain farmers from the factory if there are any further quality issues.

At the end of the crop cycle, focus groups with the farmers and interviews with other members along the supply chain will be held to answer the following questions:
- Did the participants in the supply chain receive any benefit from the intervention? If so what are those benefits?
- Did traceability "improve" (or was made easier) due to having the ICT intervention?
- What was the value of the availability of up-to-date information to the farmer? Did this enable him to ultimately increase his productivity (i.e. reduce the number of rejected gherkins?)?

This project was funded by IDRC of Canada

Promoting ICT-based small businesses in India and Bangladesh

Jhulan Ghose, Jhumpha Ghosh Ray; i4Donline; March 2006
http://www.i4donline.net/articles/current-article.asp?articleid=641&typ=Rendezvous

This report is the outcome of the workshop titled "Women's ICT-based Enterprises Workshop" which was held at Kolkata, India during March 2-3, 2006. The authors of this article are Jhulan Ghose (jhulanpompi@rediffmail.com) and Jhumpha Ghosh Ray (suryatirtha@vsnl.com).

The falling cost of technology has generated self-employment opportunities for women in ICT-based enterprises, but great expectations need to be tempered with a realistic assessment of the country's IT infrastructure and the need for women to further enhance their entrepreneurial aptitude.

This emerged from the workshop on the scope of women's ICT-based enterprises in West Bengal and Bangladesh that was organised by Change Initiatives in collaboration with the Institute for Development Policy and Management, University of Manchester. Around 40 prospective women entrepreneurs attended the workshop. In over two days they obtained snapshots of the opportunities and constraints in ICT-based enterprises from development practitioners and researchers from the government, private sector, NGOs and banks. There were three invitees from Bangladesh who spoke on the initiatives in the field of ICT-based enterprises in the country.

Making e-Agriculture work through public-private partnership in Asia

e-agriculture Policy Brief
http://www.e-agriculture.org/fileadmin/uploads/documents/eAgPPPAsiaJuly2008.pdf

Public-private partnerships (PPPs) in e-Agriculture are generally found at the community level where the strengths of the public and private sectors complement each other in providing information and advisory services that address the needs of farmers and rural communities. The public sector's mandate for provision of information and services can be best achieved through harnessing the potential of the private sector to add local context in a commercial environment.

Appropriate Technology for Sustainable Food Security

Edited By Per Pinstrup-Andersen, August 2001
http://www.ifpri.org/2020/focus/focus07/focus07.pdf

'Modern science and technology offer tremendous opportunities for improving the well-being of current and future generations and the environment. However, they also embody risks. Science and technology must be guided toward outcomes desired by society. Guiding science and technology to benefit the poor and food insecure in developing countries is the focus of this set of policy briefs. It presents relevant evidence regarding actual and potential benefits and risks associated with a number of technology areas and contains suggestions for how the benefits can be enhanced and the risks reduced.'

Promoting Sustainable Development In Less-Favored Areas

Edited By John Pender And Peter Hazell, IFPRI 2000
http://www.ifpri.org/2020/focus/focus04/focus04.pdf

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    Frank Place
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    John Pender And Peter Hazell

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Development Strategies For West Africa
    Simeon Ehui, Samuel Benin, And Dunstan Spencer
The Role Of Agricultural Science
    Shawki Barghouti And Peter Hazell

Constructing useful information for farmers– the role of IT

Warwick Easdown1 and Ann Starasts, The Regional Institute Ltd.
http://www.cropscience.org.au/icsc2004/symposia/4/3/238_easdownwj.htm\

Abstract

The Internet will be of most use to cropping farmers when providers of agricultural information use it less like a library and more like an interactive field day. It is not its scarcity but the local contextualization of information that makes it valuable for farmers. The huge volume of information available on the Internet is of less value to farmers than the opportunities for interactivity with others that it provides to help make local sense of that information. There is a mismatch between current content aimed at farmers and the way that farmers make decisions.

The high social and economic costs of Internet access mean that it must complement and supplement traditional low cost media if it is to be most useful. A comparison is made of rural Australia and rural Uganda: the constraints on Internet services and the need for cross-promotion and integration with other media. In both cases a positive policy environment has been vital to the successful development of rural Internet services.

Farmers need good access, a supportive peer group, personalized training and online mentors to make best use of the Internet. Developing online support groups based on existing farmer groups is a good way to help individuals develop their skills in a safe environment and to find practical uses for the Internet. Organizations providing online information to farmers could greatly improve its relevance if they invested in online extension services to help farmers find and interpret their information and to facilitate the development of online farmer groups.

What Works: Scaling Microfinance With The Remote Transaction System

World Resources Institute, USAID, Microsoft and others
http://www.nextbillion.net/files/RTS.pdf

Executive Summary

In 2002, Hewlett Packard formed a partnership with a number of microfinance networks (MFIs) and commercial partners working in related areas to explore how technology could be used effectively to help scale microfinance. It was apparent that the microfinance industry faced major issues, including the lack of industry-wide standardization, high transaction costs, and the inability to reach out to rural areas. These challenges have limited the availability of microfinance services to about 70 million clients out of a potential market estimated at 500 million and an even larger "unbanked" population of more than a billion worldwide. The partnership—called the Microdevelopment Finance Team (MFT)—was quite successful at mobilizing resources from the United States Agency for International Development, leading academic institutions, and engaging a large management consulting firm. What emerged from the effort was a combination of technology and business processes, the Remote Transaction System (RTS), that supports both group and individual lending, online and batch offline processing, and back office synchronization.

This solution was intended to become an industry standard, help MFI reach isolated clients cost-effectively, and enable microfinance to reach a new stage of development. The RTS is based on the use of sturdy hand-held devices that can communicate over GSM cellular networks. Combined with the use of smart cards given out to clients and microfinance agents, the system allows MFI agents to collect crucial financial data in the field and subsequently to transfer the data directly into the MFIs' computerized financial management systems. The RTS eliminates the need to prepare, transport, and enter hand-written reports, reducing costs for rural operations. In addition, electronic collection of data raises client confidence in MFIs, as well as reducing fraud. Finally, the system, if used by the industry as a whole, might allow MFIs to take full advantage of latent synergies that exist among geographically and financially diverse institutions.

Business Model

With prototype technology, the MFT implemented a pilot of the system in Uganda in partnership with three MFIs active in this country. The three MFIs were Uganda Microfinance Union (UMU), a cooperating partner of ACCION; the Foundation for International Community Assistance (FINCA), and the Foundation for Credit Community Assistance (FOCCAS), a collaborating partner of Freedom from Hunger. The difference in size and modus operandi for each MFI has allowed the MFT to assess the value of RTS against a range of practices currently in use in the microfinance industry, including group, branch, and individual clients. This assessment showed that the most commercially-oriented of the three MFIs gained the most value from the technology, in large part because they were most willing to re-engineer their business model to take advantage of the RTS. The advantages of the system as implemented included automation of transactions, reduced client time and travel, more frequent payments, reduced cash management risk, and avoidance of costs for "brick and mortar" branches. The MFT is experimenting with improved MFI business models in Uganda. In addition, the MFT has handed over its intellectual property rights to the RTS to a new organization, Sevak Solutions, whose task will be to evolve licensing procedures and a broader business strategy for disseminating the RTS platform to microfinance institutions both in Uganda and throughout the developing world.

Development Benefit

Because the RTS Uganda pilot was of a relatively short duration and rolled out to only hundreds of clients, it was not able to definitively prove the value of the technology at scale. Financial analysis provides evidence of benefit to loan clients, especially in rural areas that would otherwise go unserved. However, the solution was only tested with existing clients and did not include previously unserved customers. The analysis also provided evidence of high value to the agents and MFIs under some business models. Intangible benefits were also perceived, but difficult to measure. In addition, the MFT demonstrated the advantages of non-traditional partnerships among non-governmental organizations, for- What Works Case Study Scaling Microfinance With The Remote Transaction System 2 profit groups, and development agencies. If the potential for enabling remote transactions, expanding services into rural areas, and altering business practices can be achieved, then the RTS could potentially have very significant developmental impact.

Portable satellite connections give remote communities a chance to voice their opinions

Gregg Swanson, ICT Update
http://ictupdate.cta.int/en/Feature-Articles/Using-BGAN-to-talk

Using a VoIP conference call feature on a portable satellite connection, remote communities can express their opinions in their own language, and organizations can reduce the travel costs for agricultural projects.

Many organizations, research institutes and government departments have staff members who travel regularly to remote areas. If there is no mobile phone network in the communities where they work, and no fixed telephones, then communicating with colleagues back at head office can be extremely difficult, if not impossible. Field workers who travel for extended periods to rural areas can often feel disconnected. When they leave, the communities will have to wait until their next visit for answers to their questions. In these situations BGAN could provide a useful solution.

Portable BGAN (broadband global area network) terminals connect to a system of three communication satellites to transfer data and voice. Together, the satellites cover almost 98% of the Earth's surface, which means that the terminal can be used almost anywhere and will connect to one of the satellites via its own built-in antenna. A wide variety of broadband terminals is now available, from different manufacturers, but they can all be linked up to a computer using a USB connection.

Conflict, Disasters, Environment, Energy

Family Links Website

International Committee of the Red Cross
http://www.familylinks.icrc.org/

The aim of the International Committee of the Red Cross FamilyLinks website is to help those separated by conflict or disaster to find information about their loved ones in order to restore contact. It currently has details of some 125,000 families. It is currently focusing on:
* Nepal (List of missing persons in Nepal in relation to the conflict)

* Angola (For people seeking to restore contact with family members after the conflict in Angola)
* Bosnia and Herzegovina (For persons unaccounted for in connection with the conflict on the territory of Bosnia and Herzegovina)
* Gulf 2003 (For persons affected by the conflict in Iraq)
* Kosovo (For persons unaccounted for in connection with the crisis in Kosovo)
* Liberia - Sierra Leone - Côte d'Ivoire (For separated children and their parents/relatives being looked for in connection with the armed conflict in Liberia, Sierra Leone and Côte d'Ivoire)
* Somalia *People sought by their relatives in connection with the conflict in Somalia)
* Sri Lanka 2006 (For persons seeking to restore contact with family members in connection with the fighting in Sri Lanka)

'Information and Communication Technology and Peacebuilding: Summary of a Workshop'

http://books.nap.edu/openbook.php?record_id=12255&page=1

'Those who would use information and communication technology (ICT) in the cause of peace need to be cognizant of the risks as well as the benefits. ICT can facilitate positive dialogue but also hate speech. It can be used to fight corruption but also facilitate it. Simply giving people more information does not necessarily lead to predictable or positive results. As people become more informed, they may become more motivated to change their circumstances and to do so violently.

National Early Warning System Sri Lanka

LIRNEasia, 2005, http://lirneasia.net/projects/2004-05/national-early-warning-system/

Executive Summary

1. The 2004 Indian Ocean tsunami that claimed the lives of one in 500 of Sri Lanka's people and displaced one in twenty has highlighted the critical importance of an effective National Early Warning System for Sri Lanka (NEWS:SL). Meeting this need, which has been discussed (and forgotten) after each of our too frequent disasters such as the cyclones of 1978 and the floods of 2003, can no longer be postponed.

2. Public warning is a system, not a technology. The identification, detection and risk assessment of a hazard, the accurate identification of the vulnerability of a population at risk and finally the communication of information to the vulnerable population about the threat in sufficient time and clarity so that they take action to avert negative consequences constitute the system of public warning. Warning allows people to act in order to prevent hazards from becoming disasters. Effective public warning saves lives, reduces economic loss, reduces trauma and disruption in society and instils confidence and a sense of security in the public. It is an important component of the foundation of a sound economy.

3. Recognizing that effective warning is just one of the critical parts of a comprehensive risk management system that includes mitigation, preparedness, response and recovery, this concept paper focuses on the warning component. (Government cannot do it alone; all sectors of society must contribute). Warning is a crucial component of the overall risk management system that failed in the 2004 Indian Ocean tsunami; it needs urgent strengthening for the country to benefit from the

proposed improvements in the regional hazard detection systems and to minimize losses from local hazards.

4. Linkages to local, regional and international hazard detection systems are extremely important for an effective national warning system. For localized hazards such as floods and landslides, seamless connections must exist between the hazard detection systems and the Early Warning System. People are not only the recipients of warning messages from experts, they are also valuable sources of hazard detection and monitoring information. An early warning system without education, planning and rapid action is sub-optimal.

5. It is the core business of government to protect its citizens to the best of its ability. However, in many developing countries, government action is constrained by numerous competing claims on scarce resources and by capacity and organizational-culture problems.

6. For example, *the private sector offers complementary resources and necessary infrastructure* (e.g., telecommunications and broadcasting networks) that are needed for disseminating warnings; civil society provides social infrastructure at the grassroots. The use of already existing capacities is not only cost-effective, but ensures the continuity and maintenance of the system. The cost to the government of implementing a nation-wide warning system is significantly less when other stakeholders contribute to the costs for maintenance, management and service. It is also important that there be adequate oversight of the performance of the vital functions associated with an early warning system; this can only be provided when multiple players are involved.

7. Sri Lanka should adopt an 'all-hazards' approach, wherein the detection component may differ for each kind of hazard (flood, cyclone, fire, earthquake, epidemic, etc) and may be provided by different entities with subject expertise, but the warning system is capable of carrying warnings for all kinds of hazards. An important element of this is an agreed format of warning messages for all hazards types, as given in the international standard Common Alerting Protocol (CAP). A common system capable of carrying warning for all types of hazards is not only a superior use of resources, but will also counter a common problem of lack of maintenance of systems that are rarely used. A common warning system is also important from the demand side, enhancing the ease of understanding of warning messages by the recipient.

8. The telecommunications and electronic broadcasting industries play crucial roles in the effective dissemination of warnings. Action to ensure optimal contributions from the telecommunications network of networks should be ensured through the collective efforts of the operators, facilitated by the regulator. Government should also work collaboratively with the electronic broadcasting industry to ensure effective contributions to early warning at national and local levels.

9. An early warning system is a pure public good that will be undersupplied by the market. The responsibility for its supply thus falls on government. In the event government undertakes this task in the aftermath of the tsunami, it should adopt a design that provides the necessary conditions for high performance required of a National Early Warning System. These conditions include provisions for the deployment of proper expertise and equipment, adequate levels of funding, insulation from day-to-day political interference, transparency and accountability. The Public Utilities Commission of Sri Lanka Act, No. 35 of 2002 provides a good starting point.

10. If the government does not wish to create a new agency focused solely on warning, it may wish to consolidate the hazard-warning experts of the existing hazard detection and monitoring organizations along with disaster communication experts in a new entity. Because the current organizations have several other functions and have personnel configurations that may not be optimal

for a modern, performance-oriented agency, it would be advisable to build the new entity as a greenfield organization with a clear focus.

11. A variant of the option of government supply meshes government supply of hazard information and funding with actual operation by a community based organization, as in Bangladesh. The success of this public-private solution rests on the community based entity being perceived as credible and capable of issuing authentic warnings   based on a network of trust established over time at the community level.

12. Hazard warnings are often based on incomplete information and judgment. In many societies, the final decisions on warnings and especially on evacuations are taken by political authorities, on the basis of independent and professional advice of experts. In Mauritius, the professional heading the warning agency makes the final call. Different options need to be considered taking into account Sri Lanka's political and administrative environment.

13. In the event government supply of warnings, directly or through a public-private partnership, proves problematic, the alternative is private sector supply, where the warning is bundled with a private good. However, unlike government supply which lends itself readily to an all-hazards approach, non-governmental supply of warnings is likely to be partial in nature. Some forms of non-governmental supply of warnings, undertaken in good faith, may have to be indemnified by government.

14. The solution that is appropriate and feasible for Sri Lanka is likely to be a hybrid, ideally with government leadership on the establishment of an effective National Early Warning System and complementary private sector and civil society initiatives that capitalize on their respective comparative advantages. Prompt action to establish an effective National Early Warning System is the best memorial we can build to the 40,000 valuable lives that were swept away for the lack of a few minutes of warning and a little awareness.

APDIP-UNDP e-Note: ICTs for Disaster Management

Chanuka Wattegama, UNDP – APDIP e-Primer, 2007
http://www.apdip.net/publications/iespprimers/eprimer-dm.pdf

This e-Note published by APDIP-UNDP and written by Chanuka Wattegama focuses on ICTs for Disaster Management: "Even in a poor country, disaster management would be much better if right ICT infrastructure is in place." reminds the author. Foreword: "The United Nations International Strategy for Disaster Reduction (UN/ISDR) has calculated that of the 5,210 disasters recorded in the world between 1991 and 2005, 2,029 (approximately 40 percent) have occurred in the Asia-Pacific region. Several other reports have stated that in the last three years alone, the region has been prone to more natural disasters than in the last three decades. Earthquakes across Indonesia and other countries in the region have now become annual occurrences for the last three years, particularly in areas along the Sumatra fault, the origin of the earthquake that spawned the 2004 tsunami.

The year 2006 was also notable in that the Pacific typhoon season ran year-round, causing considerable physical damage and loss of life in many Asian countries, including China, the Democratic People's Republic of Korea, the Philippines, the Republic of Korea and Viet Nam. The consequences of natural and man-made disasters and the vulnerabilities to which populations are exposed can be mitigated if they are targeted proactively. Though one must always remember that it

is not always possible to completely eliminate a risk, extensive experience and practice in the past few decades have demonstrated that the damage caused by any disaster can be minimized largely by careful planning, mitigation and prompt action.

In this context, information and communications technology (ICT) can potentially play a pivotal role in disaster prevention, mitigation and management. Remote sensing for early warning is made possible by various available technologies, including telecommunication satellites, radar, telemetry and meteorology. ICT encompasses both traditional media (radio, television) as well as new media (cell broadcasting, Internet, satellite radio), all of which can play a major role in educating the public on the risks of a potential or impending disaster.

Before disasters strike, ICTs are used as a conduit for disseminating information on an impending danger, thereby making it possible to take the necessary precautions to mitigate the impact of these disasters. In order for this to be possible, it is critical that there be consistency in the application of ICT and the dissemination of warning messages to at-risk areas. Such warning dissemination must be widespread and should educate the public on the potential risks to the local area. No matter how expensive or sophisticated, a warning system can never be totally effective without an education component.

Furthermore, ICT plays a critical role in facilitating the reconstruction process and in coordinating the return of those displaced by disasters to their original homes and communities. Disaster management activities, in the immediate aftermath of a disaster, can be made more effective by the use of appropriate ICT tools. These include tools for resource management and tracking, communication under emergency situations (e.g. use of Internet communications), collecting essential items for the victims, and national and international fundraising. Since the December 2004 Indian Ocean tsunami, the Asian Disaster Preparedness Center (ADPC) together with the International Telecommunication Union (ITU) have taken initiatives to study the current situation of emergency communications in the Asia-Pacific countries and to give recommendation on national emergency telecommunication and national early warning system setups. Assessments were conducted in Bangladesh, Maldives and Sri Lanka on these emergency communication systems.

Significant progress made on making communities resilient to disasters

Rohan Samarajiva, LIRNEasia, April 2007
http://lirneasia.net/2007/04/significant-progress-made-on-making-communities-resilient-to-disasters/

LIRNE Asia   The findings of a pilot project designed to learn how ICTs and community-based training can help in responding to disasters such as tsunamis were discussed by community leaders and international experts at a workshop on "Sharing Knowledge on Disaster Warning with a Focus on Community-based Last-mile Warning Systems" held on March 28th and 29th, 2007 in Sri Lanka. The project is part of LIRNEasia's work related to the WDR theme on ICTs and disasters.

These finding ranged from the difficulties experienced in communicating disaster warnings to villages when mobile GSM and fixed CDMA telecom networks were not functional due to conflict conditions to the importance of not leaving newspapers on top of sensitive electronic equipment which can overheat and shut down as a result. In terms of the five communication technologies that were evaluated across multiple criteria, the addressable satellite radio sets and the java-enabled

mobile phones performed the best, with the GSM-based community warning device developed locally by Dialog Telekom, MicroImage and University of Moratuwa following closely. The VSAT based warning system did not perform too well in the tests.

Télécoms sans Frontières (TSF)

http://www.tsfi.org/tsfispip/spip.php?lang=en

Télécoms sans Frontières (TSF) is a French voluntary agency that provides communications assistance in the case of emergencies. It has signed an agreement with the United Nations to become the telecommunications "First Responder" in emergencies such as earthquakes, hurricanes and other natural disasters that disrupt conventional communications. TSF is able to establish emergency telecommunications centers in just 48 hours to aid disaster victims -- connecting those in need of help with family members, medical care, and emergency assistance.

environment

A Developing Connection: Bridging the Policy Gap between the Information Society and Sustainable Development

Edited by Terri Willard and Maja Andjelkovic, IISD, 2005
http://www.iisd.org/pdf/2005/networks_dev_connection.pdf

'In 'A Developing Connection,' seven young researchers from six countries look at the emerging relationship between sustainable development and the information society. The potential of information and communications technology to contribute to a more sustainable world is limitless. The challenge is to bring the policy communities together and help them understand the links. In this volume, some important challenges are outlined—and some important examples of success are highlighted.'

- Towards a Sustainable Development View of Local Content using ICTs in South Africa
- Using ICTs for Poverty Reduction and Environmental Protection in Kenya
- Women as Professionals in the Costa Rican Information Technology Sector
- Capturing Grassroots Voices in the Information Society and Sustainable Development
- Socializing Knowledge and Reducing Regional Inequalities
- Geographic Information Systems (GIS) in Egypt

Dynamic Coalition on Internet and Climate Change

Internet Governance Forum
http://www.intgovforum.org/cms/index.php/dynamiccoalitions/81-internet-and-climate-change

The Dynamic Coalition on Internet and Climate Change (DCICC) is an open body committed to moderating the environmental impact of the Internet and to seeking new ways to embrace the power of the Internet for reducing greenhouse gas emissions worldwide and to enable transformation in line

with the objectives set and to be set under the UNFCCC. Background - It is estimated that the Internet consumes up to one trillion kilowatt hours of electricity per year, amounting to around 5 per cent of world's total electricity consumption. More than half of this figure comes from PCs, laptops and screens, but data centres are also a major contributor. Although it is difficult to be precise, it is clear that this figure is growing, especially as Internet use expands in the developing world. More efficient energy use can reduce these numbers significantly, but there is a need to raise user awareness. Furthermore, a globally-connected, broadband Internet can generate savings in terms of encouraging flexible work patterns, travel substitution and supply-chain optimization.

ICTs for e-Environment: Guidelines for Developing Countries, with a Focus on Climate Change

ITU Telecommunication Development Sector, 2008
http://www.itu.int/ITU-D/cyb/app/docs/itu-icts-for-e-environment.pdf

Executive Summary

The impact of human activities on the environment – and on climate change in particular – are issues of growing concern confronting life on Earth. At the same time, information and communication technologies (ICTs) are being rapidly deployed around the world. Although ICTs require energy resources, they also offer a number of opportunities to advance global environmental research, planning and action. This includes monitoring and protecting the environment as well as mitigation of and adaptation to climate change.

This report, ICTs for e-Environment, reviews key ICT trends and provides an overview of the impact that ICTs have on the environment and climate change as well as their role in helping mankind to mitigate and adapt to these changes. Intended as guidelines for developing countries, the report approaches the topic from a developmental perspective and is based on consultations with key actors and extensive online research. The ICTs for e-Environment report documents current activities and initiatives and makes a set of recommendations for strengthening the capacity of developing countries to make beneficial use of ICTs to mitigate and adapt to environmental change, including climate change.

The ICTs for e-Environment report presents the results of research that demonstrate that ICTs can help to significantly reduce greenhouse gas (GHG) emissions while increasing energy efficiency and reducing the use of natural resources. This is achieved through the use of ICTs for travel replacement, dematerialization and reduced energy consumption. The report indicates there is a need for more research to understand the long-term impacts of ICTs on human activities. For example, there is a need to undertake life cycle assessments (LCAs) of ICT impacts on the environment and especially on GHG emissions and energy consumption. The report also looks extensively at the use of ICTs in many different aspects of work on the environment, including environmental observation, analysis, planning, management and protection, mitigation and capacity building.

The report demonstrates that ICTs are essential to our understanding of the environment and to our ability to deal with environmental change. Newly developed high speed processors using energy efficient CPU designs along with the rapid diffusion of advanced broadband networks and deployment of web-based services are transforming the way environmental research, learning and

decision-making are taking place. Faster processors using ever larger, accurate and detailed data sets are increasingly linked together through GRID networks and this is permitting more accurate, predictive and complete modeling of environmental processes. This In turn is facilitating decision-making thanks to new technologies such as geographic information system (GIS) and a new generation of web-based services such as virtual globe browsers which may gradually replace stand-alone software platforms.

Today, a broadband Internet connection is probably the most important tool to support environmental research, learning and decision-making. But not all countries have the capacity to take advantage of these technologies in order to use the full potential of ICTs for environmental action. There is a need to strengthen the capacity of developing countries to benefit from the use of ICTs for managing the environment to help countries mitigate the impact of and adapt to environmental and climate change – all while helping them to achieve the Millennium Development Goals (MDGs).

There is a clear need for a more comprehensive and integrated approach to global environmental action through access to ICTs and the use of information technologies and management practices to eliminate duplication of efforts. This can be done by consolidating action at national levels on the many and varied environmental conventions and initiatives that developing countries have already agreed to in principle. ICTs provide a unique opportunity to do so while assisting in building local capacity to use these tools and practices. There is also a need to assign the environment a more important profile in ICT strategic planning initiatives at the national level and, in particular, in e-Government initiatives so that the use of ICTs for the environment is integrated into planning processes from the beginning, along with other national priorities and initiatives.

Finally, the ICTs for e-Environment report proposes a methodology to undertake rapid national e-Environment assessments as well as to develop and implement national e-Environment strategies. Among other proposals, the report recommends the preparation of an e-Environment toolkit comprised of best practices as one practical method to assist developing countries to take advantage of ICTs for environmental research, planning and action. Strengthening ongoing research activities is another proposal as well as placing more focus on the environment sector in e-Government initiatives. Working on a regional basis may be the best approach for smaller, landlocked or island jurisdictions, such as small island developing states (SIDS).
Whatever approach is taken to support the use of ICTs for environmental action in sustainable development, it must be undertaken in close collaboration with key development partners at the national and international level and in consultation with actors in the public and private sectors as well as civil society.

This is a preliminary scoping study. The authors recognize the need for much more feedback from development practitioners and environmental actors – especially from collaborators and partners in the developing world. There is also a need for more input from stakeholders at local and community levels where there are undoubtedly many additional important examples that can be shared on how ICTs can be used for environmental action.

ICTs, Innovation and the Challenge of Climate Change

Don MacLean, Associate, International Institute for Sustainable Development, Bill St. Arnaud, Chief Research Officer, CANARIE Inc., IISD 2008

http://www.iisd.org/pdf/2008/ict_innovation_climate.pdf

The purpose of this paper is to provide comments and suggestions aimed at helping the OECD Working Party on the Information Economy (WPIE) develop a work program on the subject of 'ICTs and the Environment' under the general theme: 'Impact of Networked ICTs on the Economy and Society.'

This paper was prepared on the invitation of Industry Canada as a voluntary contribution to the OECD Workshop on ICTs and Environmental Challenges in Copenhagen on May 22–23, 2008. It reflects the personal views of the authors.'

The Global eSustainability Initiative

http://www.gesi.org/

SMART 2020: Enabling the Low Carbon Economy in the Information Age
Through enabling other sectors to reduce their emissions, the ICT industry could reduce global emissions by as much as 15 per cent by 2020 – a volume of CO2e five times its own footprint in 2020.

GeSI is a global partnership of ICT companies that promotes technologies for a sustainable development. GeSI seeks: to foster global and open cooperation, to inform the public of its members' voluntary actions to improve their sustainability performance, and to promote technologies that foster sustainable development. In alliance with GeSI's Secretariat, the United Nations Environment Program (UNEP) and the International Telecommunication Union (ITU), GeSI supports companies and institutions across the ICT industry, including manufacturers, network operators, service providers, trade associations and associate organizations connected to the industry.

Role of technology industry in climate change exposed by 'Intellect' research

PublicTechnology.net, 2008
http://www.publictechnology.net/modules.php?op=modload&name=News&file=article&sid=14136

Intellect, the trade association for the UK technology industry, will today publish a report examining the role of technology in tackling climate change. The authors believe the report, entitled High Tech: Low Carbon is the first publicly available document to set out the issues relating to the energy demands of products and services together with a clear action plan for the sector to address them. In addition, it discusses the impact of technology on other sectors, stating that if we do not implement low-carbon technologies soon, we will cause irreparable harm to the environment.

Green Guide to your Office

Sponsored by WebEx Communications
http://ict.developmentgateway.org/Content-item-view.10976+M58c53f85d23.0.html

Foreword - Steve Howard, CEO, The Climate Group

WebEx on Communications
The impact of business travel and green communication solutions.
    Quocirca on Employees
How green business practices can improve productivity and the bottom line.
    Vodafone on Mobile Devices
Green mobile business practices.
    Fujitsu-Siemens on Hardware
IT hardware and energy consumption.
    Cisco on Storage and Data Centres
Environmentally friendly data management policies.
    Conclusion

SMART 2020: Enabling the Low Carbon Economy in the Information Age

Report by GeSI and The Climate Group
http://www.gesi.org/

Through enabling other sectors to reduce their emissions, the ICT industry could reduce global emissions by as much as 15 per cent by 2020 – a volume of CO2 five times its own footprint in 2020.

About GeSI: GeSI is a global partnership of ICT companies that promotes technologies for a sustainable development.

Latest quarterly Guide to Greener Electronics by Greenpeace

http://www.greenpeace.org/international/news/guide-greener-electronics-march-170308

In the latest edition of our quarterly Guide to Greener Electronics Samsung and Toshiba share top spot. Nokia misses out on top spot due to a penalty point for inconsistent global takeback. Nintendo remains rooted to the bottom with only a tiny improvement but Microsoft and Philips both improve their scores. The Greener Electronics Guide is our way of getting the electronics industry to face up to the problem of e-waste. We want manufacturers to get rid of harmful chemicals in their products. We want to see an end to the stories of unprotected child labourers scavenging mountains of cast-off gadgets created by society's gizmo-loving ways. The Guide ranks top market leaders of the mobile phone, computer, TV and games console markets according to their policies and practices on toxic chemicals and takeback. Samsung and Toshiba share top spot with 7.7/10 closely followed by Nokia, Sony, Dell and Lenovo all on 7.3. Apple continues its steady rise due to new products like the MacBook Air with less toxic chemicals helping boost Apple to 6.7.

Society for International Development: Advancing Environmental Governance Presentation

http://ict.developmentgateway.org/Community-Content.7836+M5f0d67f851c.0.html

SID-Washington's Environment Workgroup hosted the event "Advancing Environmental Governance: Tools for Improved Measurement and Decision Making" with Jean-Michel Dufils on October 9, 2007. Click to view the Power Point presentation.

It's Getting Hot in Here: an online community focusing on global warming

http://itsgettinghotinhere.org/about/

It's Getting Hot in Here is the strong voice of a growing movement, a collection of voices from student and youth leaders of the global movement to stop global warming. Originally created by youth leaders to allow youth to report from the International Climate Negotiations in Montreal, It's Getting Hot In Here has since grown into a global online community, with over 90 writers from countries around the world.

Coping with Climate Change, Escaping the rising sea

Eric L. Gilman, February 2007, ICTUpdate
http://ictupdate.cta.int/en/Feature-Articles/Escaping-the-rising-sea

Researchers in American Samoa are employing GIS, satellite imagery and tide gauges to track the landward retreat of mangrove forests in response to rising sea levels.

The mangrove forests that fringe the coastlines of many tropical and subtropical islands harbour exceedingly rich ecosystems, and protect the coastlines from erosion and damage due to storms. Their stilt-like rooting systems filter sediment and nutrients from fresh water rivers and streams before they flow into the sea, and in the process protect the nurseries of valuable fish and crustaceans in offshore sea-grass beds and coral reefs. Mangrove forests also represent a valuable resource for many local communities, who use mangrove wood for building materials and in the manufacture of a wide variety of products. In total, the economic value of mangroves ranges from €150,000– 700,000 per hectare on an annual basis.

Gender, Rights, Security, Governance, Empowerment

Gender in the Information Society : Emerging issues

Edited by Anita Gurumurthy, Parminder Jeet Singh, Anu Mundkur and Mridula Swamy
UNDP-APDIP ICT4D series, 2006
http://www.apdip.net/publications/ict4d/GenderIS.pdf

The access of women and girls to ICTs remains limited even today. Even in situations of poverty, where both women and men share equally the lack of access to the gains from technology, the poverty of exclusion exacerbates the situation for women. For them the problem is compounded by

other obstacles, such as social and cultural norms that constrain their mobility and access to resources. There is a compelling need now to direct efforts towards enabling women to utilize the new avenues opened by ICTs for social, economic and political empowerment. The greatest challenge that we face is that of harnessing ICTs for social transformation. This publication showcases perspectives that critique the engagement with new technologies in various development sectors such as the media, work and economy and governance.

Gender and ICT, e-Primer

Getting access to ICT potentially offers a number of benefits for women. Through ICT many women have gained access to valuable information they wouldn't have gained otherwise. Technology is however, not neutral to the context it is being applied in. Where ICT has been perceived to be gender neutral the ICT sector still remains primarily a male domain. Although women are starting to use ICT for a variety of purposes, women are mainly viewed as consumers of ICT. This e-Primer examines why it is necessary also to view women as ICT producers, developers and decision makers, in order to ensure further equal participation of women in the Information Society.

Recognizing the importance of integrating a gender perspective as a cross-cutting area in ICT and development, this e-Primer provides a gender perspective on issues of ICT policies, access and control, education, training and skill development, and content development. Furthermore, the e-Primer introduces a framework to integrate gender in ICT for development and to empower women.

This e-Primer also contains policy recommendations for creating inclusive development strategies and how to integrate a gender perspective into national ICT policies.

The publication is jointly produced by UNDP Asia-Pacific Development Information Programme (APDIP) and the Association for Progressive Communications Women's Networking Support Program (APC WNSP).

The publication is part of the series of e-Primers for the Information Economy, Society and Polity. This series details the concepts, issues and trends surrounding the information economy, society and polity. It intends to raise awareness and help policy makers and planners understand the relevance of ICT for development, by explaining technical jargon in simple terms.

Related links	All APDIP e-Resources
APC WNSP web site	Other APDIP projects on Gender and ICT
APDIP resources related to Gender and ICT	United Nations Fund for Women (UNIFEM)
Previous publications in the series of e-Primers for the Information Economy, Society and Polity	

National Gender and ICT Policies in Uruguay: A Call To Action

Dec 2006, Cecilia Gordano, genderIT.org
http://www.genderit.org/en/index.shtml?apc=a--e95065-1&x=95065

In Uruguay, the National Women's Institute (INAMU) led a consultation process with a range of social actors to develop the First National Plan for Equality of Opportunities and Rights (PPNIOD), planned for the period from 2007 to 2011. One of the chapters of the Plan, entitled "Innovative Uruguay", includes the strategic aim of an "increase in women's access to information and communication technologies (ICTs), eliminating the current gender gap". According to GenderIT collaborator Cecilia Gordano, this represents "a big step forward on the slow journey towards consolidating a national strategy for digital inclusion. Nevertheless, the timidity with which this need is addressed leads one to believe that pieces of this puzzle are still missing"…

Shifting Political Landscape

This initiative has arisen in a particularly favourable political context, given that for the first time in Uruguayan history, the national government for the period from 2005 to 2010 is in the hands of a political force made up of left-wing groups. This meant important changes in the political governance of the country, including new faces in positions of power, the incorporation of actors historically marginalised from decision-making spaces such as civil society groups, and the creation of new government entities committed to human rights, such as the Ministry of Social Development (MIDES). Although this administration has not been in power for long, important changes can be seen in the political agenda, and there is a breadth of perspectives more in keeping with the times.

One of the areas where this new spirit can be felt is in the efforts to institutionalise a gender perspective as a cross-cutting theme in the design and implementation of national policies. In this regard, the INAMU has clearly signalled that it is taking up the challenge. Under the leadership of a well-known feminist Carmen Beramendi, the organisation is establishing itself as the primary promoter of transformations from the inside. With its new team and the conviction that "they who name, claim (power)", the old name of the National Family and Women's Institute (INFM) was changed by law, as were its functions and the Ministry under which it falls. The INFM was previously under the Ministry of Education and Culture, and amongst its objectives was "promoting, planning, designing, formulating, executing and evaluating national policies relating to women and families".

The PPNIOD is the first genuine intent to use policy to transform the structural inequalities of a patriarchal society that has relegated women to private spaces and reproductive tasks on the basis of gender, depriving them of the full exercise of citizenship, hindering their public participation, restricting their rights and obliging them to live within systems thought up by and for men.

One of the chapters of the Plan, entitled "Innovative Uruguay", proposes "to promote measures which provide incentives for sustainable development processes which take into consideration equal access and participation in processes of technological, scientific and cultural innovation, as a form of assuring equality in levels of social well-being". Amongst its strategic aims is the "increase in access by women to information and communication technologies (ICTs), eliminating the current gender gap". If this objective were to become reality, the Uruguayan state would thereby reaffirm its political will to comply with its international commitments (including section J of the Beijing Platform relating to Women and Media and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) as well as regionally (the eLAC 2007 Regional Action Plan and the Rio Commitment)…

Inconclusive conclusions

Although Uruguay is quantitatively well positioned in the ranking of ICT access in Latin America, it lacks national digital inclusion policies that promote the democratisation of the economic, cultural and political opportunities that these tools offer.

The challenge is all the greater when it comes to gender because alongside defining a National Plan for Equality of Opportunities and Rights, it is necessary to coordinate actions with other social actors in an arena which is diffuse due to a lack of systematisation and continuity of efforts that have been launched to enable the population to participate actively in the Information Society as citizens rather than as passive consumers of technological offerings.

In this uncertain landscape, the one thing that is clear is the need to widen the spectrum of social actors participating in the discussion of proposals, enriching the debate and contributing from their areas of influence so as to consolidate a truly inclusive and equitable national plan. It is definitely time to answer the call.

Gender Equality through ICT Access and Appropriation: Taking a Rights-Based Approach

Anita Gurumurthy, IT for Change Occasional Paper, May 2008
http://www.itforchange.net/media/ISSS/Gender_Equality.pdf

The Gender Transformative Opportunity in the Information Society
Moving Beyond the Plug-in Model
Access and Connectivity from a Gender Perspective
What We Seek to Achieve from 'Access'
Key Considerations for Building Access and Connectivity Models
- Collective rather than individual modes of access to and appropriation of ICTs are likely to effect empowerment.
- The value of new technologies only becomes evident after a certain 'incubation' period, foreclosing 'ready demand'
- Cost-benefit and sustainability analysis for 'access models' need to be seen in terms of the extent of community appropriation of new ICTs
Directions for ICT Policy Making
- Providing the best digital technologies that women need and not merely what can easily be provided by markets
- Promoting people-centered instead of corporate-centered ICTs: Moving towards 'open ICT' models
- Ensuring public investment to facilitate community capital for collaborative appropriation of ICTs
- Promoting the right to 'do and be' on the Internet: Freedoms of expression and association
- Ensuring safe spaces for women on the Internet: The right to bodily integrity and autonomy
  Applying a Rights-Based Framework for Gendering ICT Policies: A Concluding Remark
References

APC Africa Women

African regional network of the Association for Progressive Communications Women's Networking Support Programme (APC WNSP)
http://www.apcwomen.org/

APC-Africa-women is the African regional network of the Association for Progressive Communications Women's Networking Support Programme (APC WNSP). APC WNSP is a global network of women who support women networking for social change and women's empowerment, through the use of Information and Communication Technologies (ICTs). We promote gender equality in the design, development, implementation, access to and use of ICTs and in the policy decisions and frameworks that regulate them. We have a special focus on redressing inequities based on women's social or ethnic background - through the provision of research, training, information,

and support activities in the field of ICT policy, skills-sharing in the access and use of ICT, and women's network-building.

Resources about Women & Gender

(Women of Uganda Network)
http://www.wougnet.org/Links/aboutwomen.html

(Click for Women Organisations in Uganda.)

AfricaBib consists of two bibliographic databases covering Africana periodical literature (Bibliography of Africana Periodical Literature Database) and African Women's literature (African Women's Database). It also provides a comprehensive bibliography on women travellers and explorers to Africa (Women Travellers, Explorers and Missionaries to Africa: 1763-1999: A Comprehensive English Language Bibliography). The databases are maintained by Davis Bullwinkle, Director, Institute for Economic Advancement (IEA) Research Library.

Africawoman is a fully-wired women-led news and broadcasting service. The service currently operates in four countries - Ghana, Kenya, Uganda and Zimbabwe - but will eventually include every African country. It is run by about 40 women journalists and activists. Africawoman's vision is driven by a monthly web-based newspaper that is distributed via the Internet to activists and community radio networks. It creates a distinctive African women's news agenda and enables news written by women to be accessed by rural women, using radio to by-pass the challenges of literacy and distribution. The project also involves training the women journalists in a monthly "virtual newsroom" to plan and write the next edition. Africawoman is funded by the UK Government's Department for International Development (DFID) and by the British Council.

African Women. Guide to Internet Resources.
An annotated directory of information, on the internet, about women in Africa. Full text articles, women's organizations, bibliographies, discussion lists. Based at Stanford University, California.

afrol Women is an African Internet media, covering almost daily African gender news, background presentations and country gender profiles. The site also includes free portal services.

BRIDGE: Gender and Indicators Cutting Edge Pack
In July 2007, BRIDGE will publish 'Gender and Indicators' - the latest in a series of Cutting Edge Packs. What does a world without gender inequality look like? Realising this vision requires inspiring and mobilising social change. But what would indicate we are on the right track - and how do we know when we get there? The Gender and Indicators Cutting Edge Pack provides a comprehensive overview of gender and measurements of change with a focus on indicators, highlighting good practice from the grassroots to the international level, and making key recommendations.

The Pack explores issues such as:

- Deciding what and how to measure - including selecting appropriate methods and methodologies;

- Measuring the effectiveness of gender mainstreaming;
- Measuring change in especially 'hard to measure' areas: poverty, empowerment, gender-based violence and conflict;
- Monitoring and strengthening international measurement instruments and indicators, including widely recognised goals - such as the Millennium Development Goals - and indices - such as the United Nations Development Programme's Gender-related Development Index (GDI) and Gender Empowerment Measure (GEM);
- Developing and better utilising regional gender-sensitive approaches, indicators and statistics.

Commonwealth Women's Network: Established in September 1991, the Commonwealth Women's Network is a non-governmental pioneering body within the realm of the Commonwealth community and is aimed at improving the quality of life of women throughout the Commonwealth. The purpose of the network is to create and strengthen relationships among women in the Commonwealth, to create and strengthen links with policy-makers in the Commonwealth, and to create and strengthen links among women NGOs in the Commonwealth.

Dimitra Project: Rural Women and Development is an information and communication project which aims to highlight rural women's contribution to their community and their country. It is implemented by the Gender and Development Service (SDWW), of the Food and Agriculture Organization of the United Nations - (FAO). The project is coordinated in Brussels, with support from Rome and Accra, and relies on the active cooperation of a large network of local partners in Africa and the Near East. In the East African sub-region, the Dimitra project covers the five countries of Uganda, Kenya, Tanzania, Somalia and Ethiopia. To coordinate the Dimitra project and its activities in the region, early in 2006, Dimitra established a partnership with Women of Uganda Network (WOUGNET). As the regional focal point in the sub region, WOUGNET will coordinate Dimitra activities in Eastern Africa, establish local partnerships and collect, encode and disseminate information on NGOs, research institutes and information activities pertaining to rural women or rural development with a gender approach.

FemSud Consult was established to contribute to the fight against acute poverty, illiteracy, ignorance, and apathy on gender, politics and a general lack of development among the rural people especially women in Africa. The organisation facilitate training women, girls and men in agriculture, health care, SME (Small/Medium Enterprises), and management skills so that they can actively participate in developing their society. Femsud Consult is a private company registered early in 1999 in the Netherlands.

The Gender Responsive Budgeting Initiatives (GRBI) website is a collaborative effort between the United Nations Development Fund for Women (UNIFEM), The Commonwealth Secretariat and Canada's International Development Research Centre (IDRC), aimed at supporting governments and civil society in analyzing national and local budgets from a gender perspective and applying this analysis to the formulation of gender-responsive budgets. The initiative strives to promote the global objectives and cross-regional information sharing through the formation and support of a network, further development of concepts, tools and training materials, global training of trainers, South-South exchanges, and collaboration with international and regional organizations.

The Gender, Science and Technology Gateway is being relaunched, with a new look and more features. The Gateway is a portal to resources, organizations and programming around the gender

dimensions of S&T for social development and policy. It is a web site of the Gender Advisory Board, UN Commission on Science and Technology for Development and is meant to promote understanding of these issues and serve as a knowledge map on research, programming, policy, and resources for policy makers, NGOs, agencies, and development agents.

In addition to sections on the gender and S&T dimensions of education, employment, S&T for social development (needs of society), local knowledge, ethics of technology and sex-disaggregated data in S&T, the Gateway provides links to region-specific resources, e- resources (newsletters and portals on related topics), United Nations programming and policy. Highlighted are new sections on Women in Science Organizations, and Guidelines and Toolkits for policy and programming.

The Gateway is hosted by Women in Global Science and Technology (WIGSAT) and made possible with funding from The Netherlands Ministry of Foreign Affairs.

Human Strategies for Human Rights (HSHR) is a United States based non profit organization that provides grassroots NGOs with on-site organizational capacity building, personnel empowerment training and strategic guidance in the promotion and protection of human rights and through online human rights mentoring. Most of HSHR's work is targeted towards NGOs that work on women's political and economic empowerment and legal literacy. HSHR's working principles are to strengthen local groups by serving as a listener, provide guidance in critical thinking and offer technical and professional skills training that is tailored to the local environment within which each NGO works. HSHR's capacity building focuses on two key areas - sustainable organizational development and strengthening the NGO's thematic area of human rights work, for example women and micro enterprise development.

ICON is a socially responsible development organisation in Uganda that strives to shape individual citizens and local organisations that are productive, financially healthy, efficient and effective in all they do. ICON envisions a totally transformed, developed and violence free Africa led by a new breed of women leaders and young leaders. The mission is to fully unleash the visionary leadership potential of African women and young people through self-help, self-determination and self-employment. The pillar of ICON's work is a Women and Young Leaders Network (WYLN) that aims to nurture generations of visionary leaders and citizens through the provision of tailored on-going mentorship and technical support to individual women leaders, young leaders and their organisations. Eligible members of this network are women leaders in any field, young people (children and young adults) and male leaders who are working with women and young people.

Interagency Gender Working Group (IGWG), established in 1997, is a network of NGOs, including the United States Agency for International Development (USAID), Cooperating Agencies (CAs), and the Center for Population, Health and Nutrition (PHN) of the USAID. The IGWG promotes gender equity within PHN programs, in order to improve Reproductive Health/HIV/AIDS outcomes and foster sustainable development.

International Center for Research on Women: ICRW's mission is to improve the lives of women in poverty, advance women's equality and human rights, and contribute to the broader economic and social well-being. ICRW accomplishes this, in partnership with others, through research, capacity building, and advocacy on issues affecting women's economic, health, and social status in low- and middle-income countries.

ILO Publications: Gender Issues and Women at Work: Established in 1919, and since 1946 a member of the United Nations Organization, the International Labour Organization has focused on

workplace issues, actively seeking to create decent work for all - work which is freely chosen and performed in an environment of equity, security and human dignity. While focusing primarily on employment in the global economy, the ILO publications programme provides relevant research findings and practical solutions to workplace problems for workers and employers in developing, transition and industrial economies. ILO research contributes to enhancing public awareness of crucial labour and employment issues in subject areas such as Gender Issues and Women at Work, and Child Labour.

JENdA: A Journal of Culture and African Women Studies is an ejournal devoted to the promotion of the research and scholarship of African women to the global African community and friends of Africa. JENdA documents and responds to debates on women's history and studies in African social, cultural, political, and economic systems. It creates a forum for African women scholars, analysts and activists to participate on an equal footing with their contemporaries worldwide in debates, exchanges of ideas, and the creation and documentation of knowledge. JENdA: A Journal of Culture and African Women Studies is published by Africa Resource Center, Inc, an organization that dedicates resources and staff to the provision of information on and about Africa.

Kampala Declaration: Prevent GBV in Africa: Over 30 leaders from non-governmental organizations and local authorities from the Horn, East and Southern Africa convened in Kampala, Uganda in September 2003 for the first Regional Dialogue, Preventing Gender-based Violence: Sharing Experiences, Breaking New Ground, organized by Raising Voices and UN-HABITAT's Safer Cities Programme. The Kampala Declaration was developed in which the participants call on civil society, local authorities, UN agencies, governments and funding agencies to increase attention, investment and action on preventing gender-based violence in Africa.
Read the Kampala Declaration and join in preventing gender-based violence by adding your name in support.

Ministry of Gender, Labour and Social Development, Uganda: This website includes information on the National Gender Policy and other gender oriented sectoral policies and plans, Uganda's Action Plan on Women, Facts and Figures on women and men in Uganda, Ministry publications, and programmes and projects in the Ministry.

Novib: Combating violence against women - Solutions and Best practices. This website presents the final results of the Novib/Oxfam project "Sharing Knowledge to Combat Violence Against Women (VAW)". Experiences from different countries, policy guidelines and definitions are among the highlights of the report, which will assist everyone involved or interested in combating VAW. The website is used by Novib, Oxfam and their partners to learn how they can most effectively contribute to the elimination of violence against women.

One World: Gender and Micro-finance resource page. One World has assembled a collection of research papers about gender and microfinance in the developing world. This web resource is a follow-up to the One World Action Conference in March 2002 Women's Empowerment or the Feminisation of Debt? Towards a New Agenda in African Micro-Finance. Papers from that conference are being posted as background for the November 2002 Micro Credit Summit in New York where gender and women's empowerment will be part of the mainstream agenda. The Gender and Micro-finance page is intended to act as an ongoing resource for those wishing to look at the issue of Micro-finance from a gender perspective. All the material collected for the Gender and

African Micro-finance conference is collected here, as well as papers that focus on different geographical areas. There are also links to key papers in other websites.

Organisation for Women in Water, Electricity & Gas in Africa (OWWEGA). Throughout history, women have taken charge of the collection, distribution and purification of energy and water resources to sustain their communities and families (sadly a difficult challenge still facing many rural women today). It is however positive to see that the number and profile of women in the African Electricity, Water and Gas industries are growing - as is evident as more and more women hold top positions in both the public and private utility sectors. The Organisation for Women in Water, Electricity & Gas in Africa (OWWEGA) was founded to celebrate the role of women in both industrialised and rural societies.

Raising Voices: Gender Based Violence Field Review. Raising Voices and UN-Habitat are undertaking a field review of organizations and institutions working to prevent gender-based violence (GBV) in East and Southern Africa. The aim is to create networks and alliances between those working to prevent GBV through conferences and partnerships and to produce a publication that highlights successful approaches to preventing GBV in the region. All NGOs, government agencies, local authorities and other groups working on the prevention of gender-based violence are warmly invited to share their experiences. For further information contact lori.michau@raisingvoices.org or follow this link www.raisingvoices.org/FieldReview.doc to complete the simple questionnaire.

Siyanda - Mainstreaming Gender. Siyanda is an on-line database of select gender and development materials from around the world. Siyanda aims to assist busy gender practitioners with locating essential gender mainstreaming resources, quickly and easily. It is also an interactive space for practitioners, policymakers and academics to share ideas, experiences and resources for mainstreaming gender in development. Siyanda is maintained by BRIDGE - Institute of Development Studies, University of Sussex.

SID-WID Network. The Society for International Development - Women in Development (SID-WID) Network provides a space for women and men working on gender to strategize together for social justice within the international development arena. SID-WID was first born in 1976 and over the decades the SID-WID network has promoted gender justice through a variety of programmes and activities throughout the world. In the last five years, the focus of SID-WID has been on reproductive health, globalization/economic and social justice, information and communication technologies and gender policy. Using the opportunity created by SID's on-going dialogues at different international and national events in the last decade, as well as the SID journal Development (which regularly features gender issues), SID-WID members have been involved in the on-going struggle to bring about gender justice.

United Nations Office of the Special Adviser on Gender Issues and Advancement of Women (OSAGI). The Office of the Special Adviser to the Secretary-General on Gender Issues and Advancement of Women (OSAGI) was created on 1 March 1997. The Office's main objective is to promote and strengthen the effective implementation of the Millennium Declaration, the Beijing Declaration and the Platform for Action of the Fourth World Conference on Women (FWCW) held in Beijing in 1995 and the Outcome Document of the special session of the General Assembly on Beijing+5. OSAGI's website includes a section on gender mainstreaming, providing links to concepts and definitions, tools to support gender mainstreaming and good practice examples. Website contents include: Concepts and definitions; Intergovernmental mandates; Roles and responsibilities;

Competence development; Tools to support gender mainstreaming; Monitoring and evaluation; Good practice examples; Regional symposia; Milestones; Statements and papers; and Interagency collaboration.

University of the Philippines Center for Women's Studies. The Center for Women's Studies is a system-wide unit under the Office of the President of the University of the Philippines. It coordinates the Women's/Gender Studies programs and some service facilities (i.e. crisis counselling and Kalinga Day Care) of the seven campuses in Manila, Diliman, Baguio, Los Baños, the Visayas, Open University and Mindanao. The Center was established in December 1989 to encourage and strengthen teaching, research extension and advocacy on and for women in the university. It has vigorously implemented interconnected programs of research and publications, outreach and services, training, curriculum development and networking following its national commitment and women's global agenda. In the last twelve years, the Center has conducted several studies, notably, feminist research methodologies, women's health, reproductive health, the nature and extent of gender violence in the family, women and the environment, intergenerational transmission of feminist values, as well as gender and globalization.

The ViVa Web Database is a current bibliography of periodical articles about women's and gender history. In addition to African history titles, we select articles from 146 European, American, and Indian journals. Today, the ViVa database contains bibliographic records describing more than 6,500 articles published between 1975 and 2001 in historical and women's studies journals. The ViVa Web Database is maintained by the International Institute of Social History.

Women's Commission for Refugee Women and Children. The Women's Commission is an expert resource and advocacy organization that monitors the care and protection of refugee women and children. It speaks out on issues of concern to refugee and displaced women, children and adolescents, who have a critical perspective in bringing about change but often do not have access to governments and policy makers. It also provides opportunities for refugee women and youth to speak for themselves through briefings, testimony, participation in field assessments and international conferences. The Women's Commission was founded in 1989 under the auspices of the International Rescue Committee - a non-profit, non-sectarian, voluntary agency providing assistance to refugees around the world.

Women's Funding Network (WFN). Founded in 1985 and located in the United States, the Women's Funding Network is an international partnership of more than 90 women and girls' funds and philanthropic organizations. Committed to changing society by improving the status of women and girls locally, nationally, and internationally, Women's Funding Network works to strengthen and empower member funds.

Women's History Virtual Library. The main purpose of the Women's History Virtual Library is to list women's history institutions and organizations, locate archival and library collections, and provide links to Internet resources on women's history. In addition, also included are a list of women's studies journals and a few comprehensive link collections useful as a starting point for searching the Internet for women's studies in general. The Women's History Virtual Library is maintained by the International Institute of Social History.

Women, Ink. has just released its latest catalogue of books and training resources on women and development. Featuring over 70 new books from women's organizations and mainstream university

and small presses worldwide, this catalogue is a "must have" for academics, activists and development practitioners who want to keep current on new thinking in the field of women, gender and development. In keeping with its strong commitment to locate and promote books by groups and small presses in the Global South, this catalogue presents the work of several South-based organizations including Asia-Pacific Forum on Women, Law and Development (Thailand), International Women's Rights Action Watch – Asia-Pacific (Malaysia), Women Unlimited (India), Genderlinks (South Africa) and the Institute for Global Dialogue (South Africa). Besides its newest acquisitions, the Women, Ink. collection includes some 150 other cutting-edge books in categories like Conflict & Peace Processes, Training, Economics & Globalization, Education, Culture & Religion, Gender & Development, Human Rights, Law & Violence Against Women, Empowerment and Movement Building. Information about all our publications are available online at www.womenink.org

Women's International Net (WIN) Magazine: The WIN Magazine is a free international online magazine for women, publishing articles by new as well as experienced writers from all over the world on the lives of women in different countries.

Women's Issues in Third World Countries speciality area of About.com features a huge library of Women's Issues oriented Web links, divided into a couple of dozen categories (statistics, terms, issues, women's culture, information by country and more) and updated weekly. Plus there's a new feature article every two weeks on issues related to the advancement of women in society, along with a 24-hour chat room and bulletin board. The Women's Issues section is overseen by Cecil Marie Cancel whose area of expertise is Women's Issues and Socio-political Issues around the world. Since 1996, Ms. Cancel has had a site on the About.com network solely devoted to Women's Issues in Third World Countries.

Women's Studies Online Resources: is a guide to information-rich, high-quality web sites focusing on women's studies or women's issues; women- or gender-related e-mail lists; women's studies files from the WMST-L File Collection (an international electronic forum for people involved in Women's Studies as teachers, researchers, librarians, and/or program administrators); links to women's studies programs around the world and to the Center for Women and Information Technology (CWIT); financial aid for women; updates to Internet Resources on Women; and more. The guide is maintained by UMBC Center for Women and Information Technology (CWIT).

Women Waging Peace, a multiyear collaborative venture of Harvard University's John F. Kennedy School of Government, connects women addressing conflicts worldwide. The initiative breaks new ground by recognizing the essential role and contribution of women in preventing violent conflict, stopping war, and sustaining peace in fragile areas around the world. Waging brings together women from diverse areas of conflict around the world to share peace building strategies, sharpen skills, and shape public policy.

The World's Women Online! A collection of art by 900 women from 62 countries including African nations. The site was originally presented at The United Nations World Conference on Women, Beijing China, 1995. We are looking for more professional women artists from African countries to join the collection entitled "The World's Women On-Line!" For more information, contact Muriel Magenta.

Empowerment via ICTs

UNDP-Sewa workshop, 30-31 March 2007, New Delhi, India – i4D Network
http://www.i4donline.net/articles/current-article.asp?articleid=1161&typ=Rendezvous

'You teach us and we can do it' - This was the overwhelming response of the 20 odd women from the rural areas of Gujarat, who attended the workshop organised by Self Employed Women Association (SEWA) (http://www.sewa.org/) along with UNDP, held in Delhi, India on 30-31 March 2007. Over two days, the workshop delved on the critical aspects of how ICTs can empower women to address issues of poverty and livelihood challenges. We heard evocative stories of how women from the most backward areas of the country had broken the boundaries of illiteracy, caste and social backwardness to independently raise their social and economic status.

And other articles on i4D, e.g.

Women demand equal access to leadership in Community Radio, Asia-Pacific

http://www.i4donline.net/articles/current-article.asp?articleid=1154&typ=Features

Women in reflection, UKS Radio Project, Pakistan

http://www.i4donline.net/articles/current-article.asp?articleid=1157&typ=Features

Women in IT

Bursary and Mentorship Programme
http://www.womeninit.co.za/index.asp?page_ID=9

Women in IT consists of a bursary and mentorship programme that helps to grow and develop women within the information technology sector and create formal and informal networks between female IT students, tertiary institutions, South African IT professionals and corporates. Women in IT has three main objectives:
- Grow: Enhance the image of the Women in IT forum through knowledge transferral and education
- Develop: Act as a platform for skills development in order to alter the perception of women and girls engaging in IT as a career
- Mentor: Create formal and informal networks through the hosting of programs for members and young women in order to connect and access positive role models in the IT field

The forum was launched on the 1st of September 2005 with 100 members. Since then, our community has grown to over 1400 women. Our mission is to provide support and information to women in IT as well as those entering the IT industry. This is done around the following four pillars:
  1. Leadership   2. Education   3. Mentoring/Coaching   4. Networking

Gender and ICTs for development: a global sourcebook

OXFAM; Editors Sarah Cummings, Henk van Dam, and Minke Valk
http://publications.oxfam.org.uk/oxfam/add_info_018.asp

This book is a collection of case studies about women and their communities in developing countries and how they have been influenced by Information and Communication Technologies (ICTs). It notes that ICTs and policies to encourage their development can have profound implications for women and men in terms of employment, education, health, environmental sustainability and community development. It makes the point that, due to systemic gender biases in ICTs and their applications, women are far more likely than men to experience discrimination in the information society. It notes that, despite these constraints, even resource-poor and non-literate women and their organisations are aware of the power of information technologies and communication processes and, if given the opportunity to do so, will use them to advance their basic needs and strategic interests.

Introduction: Gender and ICTs for development: setting the context
Helen Hambly Odame

1. The effect of ICT on women's enterprise creation: a practical example from China
    Li Guihuan
2. E-business piloting and readiness for rural women weavers in Bhutan: lessons learned
    Minori Terada
3. Fishers and radio's: a case study of Radio Ada in Ghana
    Blythe McKay
4. Development through radio: a case study from Sierra Leone
    Mercy Wambui
5. Gender, ICTs and health in the Caribbean
    Nancy Muturi
Annotated bibliography
Web resources (PDF 277KB)
About the authors (PDF 75KB)
Related links
Other titles from KIT Publishing in association with Oxfam

Other titles from the Gender, Society and Development series, including:
    * Gender, Citizenship and Governance: A Global Source Book
    * Women's Information Services and Networks
    * Natural Resources Management and Gender: A Global Source Book
    * Revisiting Gender Training: The Making and Remaking of Gender Knowledge: A Global Sourcebook
    * Gender Perspectives on Property and Inheritance : A Global Source Book

Also from Oxfam Publishing:
    * Promoting gender equality? Some development-related uses of ICTs by women
    * Information Management for Development Organisations
    * Gender and Technology

Oxfam Information
    * Oxfam's work on Gender Equality

ICT Initiatives, Women and Work in Developing Countries: Reinforcing or Changing Gender Inequalities in South India?

Shoba Arun, Richard Heeks & Sharon Morgan, 2004
Development Informatics Working Paper Series, Institute for Development Policy and Management
University of Manchester
http://www.sed.manchester.ac.uk/idpm/research/publications/wp/di/documents/di_wp20.pdf

Abstract

Information and communication technologies (ICTs) are increasingly used by developing countries in strategies that see the new technology as having the potential to deliver economic growth, employment, skills generation and empowerment. There is growing agreement, however, that the impact of ICTs in developing countries is not gender neutral, necessitating an engendered approach to ICT-based projects. This paper argues that ICTs as a form of new technology are socially deterministic, with varied implications for women in terms of employment and empowerment dependent on the context within which the ICTs are utilised. The paper presents findings from two ICT initiatives in South India showing significant impacts on women's employment, income and social roles. One ICT initiative – "gender-blind" and pursued within the globalised, competitive context of an increased role for markets and 'flexibility' – has generally reinforced gender inequalities. By contrast, a gender-focused ICT initiative involving significant state intervention has brought about positive changes to livelihood outcomes and empowerment of poor women.

Guidebook on Developing women's entrepreneurship and e-business in green cooperatives in the Asian and Pacific region

Preface
1. INTRODUCTION
     1.1. Purpose of the Guidebook
     1.2. Definition of terms
     1.3. Target audience
     1.4. Methodology and restrictions
     1.5. Structure of Report

PART I WOMEN'S ENTREPRENEURSHIP IN GREEN COOPERATIVES
2. GREEN COOPERATIVES IN THE DEVELOPMENT CONTEXT
     2.1. Why promote women's entrepreneurship in green or "organic" products?
     2.2. Challenges and opportunities of women farmers   .
     2.3. Women and rural poverty
     2.4. Women's gendered rural constraints
     2.5. The traditional role of women in agriculture
     2.6. Promotion of women's entrepreneurship in rural areas

Cybercrime laws are not enough, there is also a need for education

Monday 18 Aug 2008, APC Policy Monitor in Latin America & the Caribbean
genderIT.org Changing the way you see ICT…….
http://www.genderit.org/en/index.shtml?w=a&x=96159

Related articles:
Dealing with fraud and internet "love": women and cybercrime in Burkina Faso
Unequal protection, cyber crime and the internet in India
Finding a difficult balance: Human rights, law enforcement and cyber violence against women

The different forms of online violence against women should be covered by criminal legislation to provide adequate protection and redress. However, laws are not enough. There is also a need for education, prevention, the development of defence mechanisms and a legal system that is capable of addressing these issues without subjecting the victims to further victimisation. Carlos Gregorio, a researcher at the Research Institute for Justice (Instituto de Investigación para la Justicia) in Buenos Aires, Argentina, shares his views on a number of issues related to cybercrime.

Women's ICT-Based Enterprise for Development Home Page

Project Coordinator: Dr Richard Heeks (IDPM)
http://www.womenictenterprise.org/home.htm

Project Researchers: Dr Shoba Arun (Manchester Metropolitan University), Dr Richard Duncombe (IDPM), M.J. Joseph (Planet Kerala), Sarah Mosedale (IDPM), Sharon Morgan (IDPM), Terry Thomas (Planet Kerala). Project Advisory Board: Kemly Camacho (Fundación Acceso), Dorothy Okello (Wougnet), Ratna Sudarshan (Institute of Social Studies Trust), Katherine Reilly

This Web site provides online guidance and networking about women's ICT-based enterprises in developing countries.

Understanding the Women's ICT-Based Enterprise for Development Project

Practical Guidance Handbooks (Bengali, English, Hindi, Indonesian, Kannada, Luganda, Luo, Spanish, Tamil) - New Material Added July 2007

Case Studies

Audio-Visual Materials - New Material Added June 2007

Other Project Publications - New Material Added November 2007

Project Partners
Project Contacts
Get Involved: Join Our Online Workspace
Other Online Resources ***Suggest Your Own Link***

Women's ICT-Based Enterprise for Development Handbook Page

http://www.womenictenterprise.org/handbook.htm

Universal/English Language Version
· Click here for Word version with photographs (c.7MB)
· Click here for Word version without photographs (c.1MB)
· Click here for RTF version without photographs (c.2.5MB)

This page provides links to a Handbook on developing and supporting ICT-based enterprises for women in developing countries.

The Handbook is designed to be useful to two groups of people. First, it aims to help government and NGO officials to plan, initiate, evaluate and improve ICT-based enterprise projects for women. Second, it is intended for facilitated use by groups of women themselves who want to start up, manage and improve ICT-based enterprises.

The Handbook contents are as follows:

1. Introduction Audience, Purpose, Content
2. What are women's ICT-based enterprises? Overview, Case sketches, Individual women's stories
3. Why support women's ICT-based enterprises? Benefits to women, Agency benefits, Risks
4. Planning and managing ICT-based enterprises for women: the enterprise perspective - How to analyse, What to analyse, Business good practice advice sheets, Gender good practice advice sheets
5. Supporting and evaluating ICT-based enterprises for women: the agency perspective - Why? Whom? What? How? How well? Agency good practice advice sheets
6. Sources of further information

Other Language Versions

Use and Adaptation of Handbooks

The handbooks are produced under copyleft-type principles. They can be freely copied and adapted for non-profit-only purposes, so long as the original authorship continues to be attributed, and so long as any documents produced are themselves made freely available. Please use our Contacts page to inform us of any adaptation and use of handbooks.

The "Women's ICT-Based Enterprise for Development" project is coordinated by the University of Manchester's Institute for Development Policy and Management. The project was initially funded by the UK Department for International Development's Knowledge and Research programme.

<u>Gender Evaluation Methodology for Internet and ICTs (GEM)</u>

<u>Association for Progressive Communications</u>
<u>http://www.apc.org/en/projects/gender/all/gender-evaluation-methodology-internet-and-icts-ge</u>

GEM is an evaluation methodology that integrates a gender analysis into evaluations of initiatives that use information and communication technologies (ICTs) for social change. It provides a means for determining whether ICTs are worsening or really improving women's lives and gender relations, as well as for promoting positive change at the individual, institutional, community and broader social levels.

GEM is the only evaluation methodology that has been developed from the ground up, through collaboration with non-governmental organisations, and provides a systematic guide to integrating gender analysis and perspectives in ICT-type projects. In addition to the step-by-step evaluation methodology, GEM suggests strategies and methodologies for incorporating a gender analysis throughout the evaluation process (and as far as possible, to begin with conceptualisation and planning) and offers insights from ICT4D practitioners who have applied GEM in their projects and attribute increased gender-planning skills to GEM.

GEM is available in English, Spanish, French and Portuguese and will soon be available in Arabic.

Originally developed in 2002, GEM is currently in a second phase of customisation. The GEM 2 project, initiated in 2007, will provide special adaptations, to increase GEM's user-friendliness and especially to community-based organisations working on rural ICT4D projects, telecentres, localisation initiatives, and on gender and ICT policy advocacy.

Why was GEM developed?

The Association for Progressive Communications Women's Networking Support Programme (APC WNSP) developed GEM to facilitate the process of learning about using ICTs for gender equality and to increase consciousness on the possible negative impact of ICTs on women's lives if gender and ICT issues are not considered from the start.

ICT use is increasing everywhere. In particular, women are using ICTs to strengthen their organization and movement building at the local, regional and global levels. ICTs, however, can also pose a potential threat to women. ICTs can be used in ways that replicate or perpetuate gender stereotypes and biases, and can have unintended negative impacts.

Gender evaluation methodologies can be used to investigate whether ICTs are being used in ways that change gender biases and roles and do not simply reproduce and replicate existing ones. As more and more of today's development work and money is channelled into projects that employ ICTs, their effects on women are of great importance.

Who is GEM designed for?

GEM is intended to meet the needs of ICT practitioners seeking appropriate gender analysis tools and frameworks for their ICT interventions. The tool is for APC WNSP members as well as other practitioners who share a common commitment to gender equality and women's empowerment in ICTs, including:

  * ICT initiatives for social change
  * Project managers and project staff using ICT in projects without a specific gender or women's focus
  * Evaluators working in the IT field
  * Donors and development agency staff working in the IT field
  * Gender focal points that support women's and IT issues
  * Policy makers
  * ICT planners
  * Consultants in the area of gender and ICTs

The guide is available online in the GEM Tool section and here.

The GEM practitioners network
The GEM practitioners network is a network of individuals and organizations, who apply GEM and want to learn more about gender and ICT evaluations. The network aims to enhance GEM expertise, and build partnerships in order to incorporate a gender perspective in evaluation of ICT initiatives, and to promote gender accountability in global, regional, national and local ICT policies and initiatives.

Programmes
  Women's Networking Support Programme (APC WNSP)
Staff
  Angela Marianne Kuga Thas
  Chat Garcia Ramilo
  Lenka Simerska
Funders
  International Development Research Centre (IDRC)
  * Français   * Español   * Português

Gender and ICTs for development: a global sourcebook

Collection of case studies on how ICT has influenced women in developing countries, Publisher: Royal Tropical Institute , 2005
http://www.eldis.org/go/display/?id=19559&type=Document

This book is a collection of case studies about women and their communities in developing countries and how they have been influenced by ICTs. The book proposes that ICTs and policies to encourage their development can have profound implications for women and men in terms of employment, education, health, environmental sustainability and community development. As such, policy is needed to ensure that investment in ICTs contributes to more equitable and sustainable development as these technologies are neither gender-neutral nor irrelevant to the lives of resource-poor women.

The book is made up of five chapters, covering topics including:

* the effect of ICT on women's enterprise creation: a practical example from China
* e-business piloting and readiness for rural women weavers in Bhutan: lessons learned
* fishers and radios: a case study of Radio Ada in Ghana
* development through radio: a case study from Sierra Leone
* gender, ICTs and health in the Caribbean

The paper also includes an annotated bibliography and list of web resources relating to gender and ICTs for development.

Locating Gender in ICTD Projects: Five Cases from India

A research study undertaken by IT for Change, Commissioned by National Institute for Smart Government, MAY 2008
http://www.itforchange.net/media/nisg/nisg_bejoy-Chicago.pdf

This research project examines Information and Communication Technology Development (ICTD) initiatives in India with the aim of exploring how gender-inclusive principles are, and can be, incorporated into ICTD projects. Building from this conceptual framework of women's empowerment, the approaches and strategies of five initiatives are mapped within broader development and policy contexts. The emergent understandings of gender-related change and challenges 'on the ground' then inform an analytical model for project design and implementation, along with recommendations for adopting a social justice-oriented, gender-sensitive approach to ICTD policy and initiatives.

Unequal protection, cyber crime and the internet in India

Monday 18 Aug 2008, [GenderIT.org]
http://www.genderit.org/en/index.shtml?w=a&x=96161

Related links:
The Information Technology Act, 2000 (No. 21 Of 2000) Of India

In assessing cyber crime legislation, policy makers and gender and development advocates must carefully consider the implications for privacy and information security. On the one hand, ICT have created opportunities to combat inequality through movements and communities against issues that were once deemed 'private', such as domestic violence and sex trafficking. On the other hand, ICT

exacerbate existing structures of inequality by enabling cyber criminals to access and misuse private information to target vulnerable groups. As ICT blur the lines between personal and public, the nature of the internet and cyber crime - including how they affect human rights and social justice - must be questioned. Weiting Xu casts a gendered lens on cybercrime laws in India.

Do women's access to ICTs lead to empowerment? Looking at the CEEWA ICT project in rural Uganda

genderIT.org, Thursday 12 Jul 2007, Patricia Litho
http://www.genderit.org/en/index.shtml?w=a&x=95381

Related articles:
Feminist theory, practices and actions can lead to innovative solutions on internet governance
     'Wanting to' versus 'Being able to': The rhetoric of access to the information society
     Revolution in ICT infrastructure: Hope for the Ghanaian woman
     New technologies and women in Arab countries: a forest of concepts, a complex reality

Is there a direct connection between empowerment and access to information and communication technologies? Patricia Litho interrogates this question through the CEEWA ICT project case study in rural Uganda. She examines the conceptualisation of empowerment, and its relationship with infrastructure, skills, connectivity, access and participation.

Empowering Rural Women Through ICT4D and Small-Scale Agriculture in the Rwenzori Region, Western Uganda

Johnstone Baguma-Kumaraki, The Author is Executive Director, Toro Development Network (ToroDev); Submitted by Baguma Johnstone on 22 May, 2008
http://www.kabissa.org/blog/empowering-rural-women-ict4d-and-small-scale-agriculture

Successful research results globally indicate that there is no doubt "Information and Communication Technologies (ICTs) improve rural people's livelihoods" (IDRC/Acacia Prospectus 2006-2011).

In a rural community context, this phrase is widely understood to mean traditional and modern electronic tools that include telephony, both mobile and fixed, community radio transmissions, Television broadcasting, cinemas, computer hardware, software and the Internet that help to access and use quality information that accelerates, if used strategically, sustainable rural people's social, economic and political development. However, in the Rwenzori Region of Western Uganda where Toro Development Network (ToroDev) operates, ICTs need to be more embraced on comprehensively. Although efforts have been made in the past five years by a limited number local and international NGOs, like RICnet (Rwenzori Information Centres Network) and others, assessments show most of these initiatives have been dominated by men. More gender sensitive intervention is needed to enable the local population generate and exchange reliable information in a relevant local content[1] on their own, enhance gender advocacy and sensitization programmes that target to improve the status of women and share knowledge by building an electronic community and networks,[2] especially in the agricultural and agro-business sector. Over 80% rural women depend on small-scale agriculture and agro-business sector in the region.

Importantly to address are the gender social, cultural beliefs that typically marginalized[3] women in all aspects of positive livelihoods in this region including access and use of quality information. ICTs cannot sustainably impact the Rwenzori rural community of Western Uganda (Kabarole and Kyenjojo districts) unless the women, who make up 63% of the total population, are given special attention. Customized ICT-enabled production, capacity/skills building and marketing tools that empower women in the agricultural sector are therefore imperative in this case.

What Toro Development Network (ToroDev) does to address this issue:

ToroDev (Kabissa profile) is a community based NGO established in 2005 to promote the use of appropriate ICTs for sustainable and gender sensitive socio-economic community development of both men and women in the rural Rwenzori region of western Uganda. Its current operations cover the districts of Kabarole and Kyenjojo. For the past two years, ToroDev has been involved in community ICT4D awareness programmes using two community radios, holding sensitization workshops and writing ICT4D articles in local newspapers and bulletins with special attention on building the lobbying capacity of the marginalized youth and women to access and use relevant community information on their own[4] and communicate their development needs to local leaders - Local government and eventually influence ICT policy formulation at central government level.

At the beginning of 2006, after a community Information Needs Assessment survey, ToroDev embarked on a campaign of establishing of an ICT4D Research and Resource Centre in the Toro community (Kabarole and Kyenjojo districts) of the Rwenzori Region. The centre would later support its research, documentation, lobbying and advocacy, train rural men and women and facilitate knowledge sharing for best production practices among small-scale farmers and help them to access quality marketing opportunities at local, regional and international levels. This project was nominated and selected finalist in the prestigious Stockholm Challenge Award 2008. The project has so far brought together ten (10) main community based NGOs in the region to contribute resources and establish a bigger community owned telecentre facility "Kabarole Information Centre" whose one aim, among many others, is to train 700 women community development workers by 2011.

ToroDev approaches the improvement of small-scale agricultural production in the region using customized, affordable and relevant Information and Communication Technologies for Development (ICT4D). These are tools that efficiently facilitate cheap and instant access to information from community, regional, national and international level streams. Through the partnership with institutions like SATNET (Sustainable Agricultural Trainers Network) IMARK (Information Management Resource Kit) group in collaboration with FAO, CTA and APC, ToroDev is piloting the strategy of "Building Electronic Communities and Networks" through training community workers how to use simple modern Web 2.0 Tools[5] to produce and manage agricultural information in the two districts of Kabarole and Kyenjojo. This information is needed by local small scale farmers to improve their production practices, add value to their products and have opportunities to access regional, national and international markets. Over 80% women living in these two rural districts make their livelihood out of small scale farming. Effective use of simple ICT4D (Web 2.0) tools reduces production and post harvest costs like transportation of agricultural produce to nearest market places, increase rural women farmers total revenues and therefore, improve their livelihoods and those of their community members.

ICT-Enabled Life Skill and Sexuality Education for Adolescent Girls, India

Centre for Women's Development and Research
http://www.cwdr.org.in/

CWDR was initiated during 1993 by a group of women activists, they found only 2% of the NGOs are headed by women and they felt a need for more women headed organization to address women's issues. Now we are working in 95 slums of Chennai city and 7 villages of Edaikazhinadu Panchayath Kancheepuram district.

The objective of this project use information and communications technology (ICT) tools to provide comprehensive sexuality and life skills education that empower adolescent women in Chennai, India. In India, there are approximately 10 million pregnant adolescents and adolescent mothers at any given time. Unfortunately, education, health and family welfare programmes are not adequately addressing the special needs of these women. This project uses ICTs to provide comprehensive sexuality education and life skills training for young women to develop relevant skills needed to plan their career and life. The project employs computers, Internet and digital cameras to educate, organize and empower these adolescent women. The project targets adolescent women in urban and rural areas in Chennai, India.

ICT-Assisted Economic Empowerment: Integrated Tools Development, Malaysia

http://ict.developmentgateway.org/Community-Content.7836+M5ec36c32ecd.0.html

The objective of this project is to assist disadvantaged women who are confined to their homes due to disabilities and other circumstances. This project targets disadvantaged women who, due to disabilities and other circumstances, are confined to their homes and as a result are economically constrained. The project explores the possibility of developing an integrated system of information and communications technology (ICT) tools such as computers, Internet, telephone, Short Message System (SMS), facsimile and others to free the women from the confines of their homes. Through utilization of tools already available to them, or supplied through this project, the women can provide products and services to the external market.

Blogs for African Women get Nigerian women hooked on technology

APCNews, 29 March 2007
http://www.apc.org/en/news/gender/africa/blogs-african-women-get-nigerian-women-hooked-tech

Blogs for African Women (BAWo) has taken hold of the Nigerian blogging spirit to strengthen women's activism. Oreoluwa Somolu, BAWo's founder, sees blogging as a way to get women "hooked on technology", and gain important skills for community and NGO leadership at the same time. Networking for Success, BAWo's second initiative getting women into the blogosphere, has just been awarded an Harambee Small Grant to increase BAWo's collaboration capacity.

Nine young women, activists in non-governmental organisations or community programmes in Lagos, will come together online and face-to-face to gain technical skills in blogging, podcasting and wikis

over the next six months. Networking for Success is geared towards women who are already looking for ways that technology can help their work, who want to reach out to other organisations and collaborate more effectively. But the initiative is not just about "learning technology for technology's sake", says Oreoluwa. The project blog, which women will be trained how to use, will feature weekly themes of interest to women activists, such as how to start an NGO, fundraise, or organisational motivation. Every week two mentors, specialists in a given theme, will accompany the debate and questions from women. Interviews with experts will be available in podcasts. Training in new tools will take place in a local cybercafé twice a month, and the participants will collaborate in a project wiki.

"Knowing how to use technology is very empowering," comments Oreoluwa. "You feel, I have access to this now, I don't have to rely on someone who feels they know better than me or people that horde knowledge." This is especially important in Nigeria, she points out, because access to information is so difficult. Oreoluwa also notes that women's knowledge in particular is undervalued and dispersed, "We have so much information to share as African women. Blogging helps us pool our knowledge."

Wikis and blogs are so easy to use, continues Oreoluwa, that people get "hooked on technology." She considers blogs a "gateway technology" because they naturally lead people to dig deeper and learn more about the tools they are using. "You realise, I can DO this, and then maybe you change the look of your blog through the template, and doing that maybe you learn a bit of html." More importantly, the collaborative spirit of the blogging community encourages people to build their skills, with many willing to offer tips when a call for help is issued. And having increased computer savvy, Oreoluwa is quick to point out, is great for women's future employment opportunities.

Collaboration is contagious. BAWo got started because Oreoluwa posted about how she'd be mentoring young women in Middle Asia, and how she would like to do something similar for Nigerian women. "I was contacted by Sokari Ekine, whose blog BlackLooks.org is a landmark blog for all of us. She is one of the earliest African women bloggers. She said, if you really want to do that, let's do it!" Fahamu and Pambazuka News have been staunch supporters of BAWo since the beginning, hosting BAWo's blog.

"We are working towards having more young women being more active users of technology, and not just users but developers. It would be great to see women deciding to pursue technology related careers because of projects that they have been involved in through us," says Oreoluwa. "I really hope that Nigeria will become a place where information is not so hard to get a hold of. It's about building a stronger information society and having young women playing a big role in that."

Other Harambee grantee: Overcoming the orphan curse with ICTs
Blogs for African Women (BAWo)

rights, security, governance, political empowerment

HuriSearch: The Human Rights Search Engine

http://www.hurisearch.org/?set_language=en

HuriSearch is a Human Rights Search Engine searching over 3000 human rights websites. HuriSearch is a HURIDOCS project. Its general objective is to facilitate access to human rights information on the web. It targets persons working with or interested in human rights, who need powerful search tools to access up-to-date and relevant information including: human rights monitors and researchers, students and academics, diplomats and persons working in international organisations, politicians and journalists.

The New Tactics in Human Rights Project

http://www.newtactics.org/

The New Tactics in Human Rights Project, led by a diverse group of partner international organizations, advisors and practitioners, promotes tactical innovation and strategic thinking within the international human rights community. The collaborative Web site of the project proposes regular online discussions such as Mobile technologies for Human Rights and more. Strategic and tactical thinking, long used by business and military strategists, is an effective means for the human rights movement to expand options and possibilities of what can be done. Innovative tactics are emerging that may more effectively advance human rights and end persistent human rights problems. Many innovations have been valuable, yet are not well known outside their regions.

Power of Peace. Building Peace through Communication and Information

Global Forum hosted by UNESCO, in association with the Government of Indonesia, Bali, 2007
http://portal.unesco.org/ci/en/ev.php-
URL_ID=23522&URL_DO=DO_TOPIC&URL_SECTION=201.html

The purpose of the event is to identify practical measures to seek improvement for the ways mass media and information and communication tools can contribute to cultural self-expression and peace.

Access, Empowerment & Governance: Creating a World OF Equal Opportunities with ICT

Edited by Rinalia Abdul Rahim, Daniele Waldburger and Gabriele Siegenthaler Muinde
Global Knowledge Partnership, 2005
http://ict.developmentgateway.org/Content-item-view.10976+M59067308ecd.0.html

PART I: Introduction
      Foreword – Making the difference: creating a world of equal opportunities with ICT
      Editors' introduction – Meeting global development challenges
PART II: ICT and the global development system
      Scaling up development initiatives through ICT: potentials and challenges
            Illustrative examples
      Anchoring ICT in poverty reduction strategies
            Illustrative examples
      Using ICT as a catalyst for sustainable development: the role of national policy

What's Being Done On . . . Using the Internet and Other Media to Promote Democracy ?

World Movement for Democracy
http://www.wmd.org/wbdo/jun-jul02/capacity.html

CAPACITY BUILDING

African Virtual Business Association Network (AVBAN - CIPE) - Africa Regional
www.cipe.org/vba/
The Center for International Private Enterprise's Virtual Business Association helps business association leaders develop both the necessary skills for managing voluntary organizations and an understanding of the basic principles of the market and democracy. CIPE is expanding the reach of the VBA into Africa, providing a means for African business associations to exchange best practices and jump-start their presence on the Internet. The individual Web sites provide associations with a forum for sharing information with their members and with a wider audience, thereby strengthening their role as a key democratic institution.

Association for Progressive Communications (APC) - Global
www.apc.org
The Association for Progressive Communications is an international network of civil society organizations dedicated to empowering and supporting groups and individuals working for peace, human rights, development and protection of the environment, through the strategic use of information and communication technologies (ICTs), including the Internet.

Association of Liberian Professional Organizations - Liberia
Contact: Mr. Saa Philip-Joe, saaphilipjoe@yahoo.com
Established in 1995, the Association of Liberian Professional Organizations seeks to foster unity and strengthen the functioning of Liberian professional organizations and to increase public confidence in and support for the country's professional organizations. To meet these objectives, the Association

broadcasts its weekly, 30-minute radio program on a Liberian station. In the program, "Professional Half Hour," the Association's members discuss topics related to democracy and the rights of professionals. Its member organizations include the Press Union of Liberia, the National Teachers Association, the National Bar Association, and organizations representing nurses, doctors, dentists, transport workers, engineers, seamen, tailors, and photographers.

Capacity.org - Global
www.capacity.org
Capacity.org is an initiative of the European Centre for Development Policy Management with the aim to look at policy and practice of capacity building within international development cooperation. A section of its Web site, called "Capacity & ICTs", focuses on a rapidly-emerging issue in development - the challenge posed to individuals and organisations by new information and communication technologies (ICTs). The page provides information on ICT training programs, reports, publications, and other resources.

Center for Media, Education & Technology (C-MET) - Sierra Leone
www.cmetfreetown.org
The Center serves as a resource for Sierra Leonean media professionals and indigenous NGOs. By providing the independent media of Sierra Leone with professional skills enhancement training, new technology, and technical support and training, C-MET, in collaboration with the International League for Human Rights, seeks to initiate a democratic spirit of community reporting that would play a small part in reinvigorating a nation devastated by civil war. The League and C-MET are committed to providing and/or supporting: subsidized Internet access for media professionals and staff of local NGOs; technical capacity building for a variety of institutions (media, and NGO); rehabilitation of the national media infrastructure (print and radio media); professional skills enhancement training for media professionals; a central Web site for the media of Sierra Leone, which allows local newspapers and radio stations to publish and broadcast online; community-based radio presence, capacity building and strengthening of the Sierra Leone Association of Journalists (SLAJ) and Guild of Newspaper Editors (GNE); research and publication of reports on the media and related issues; hands-on training for human rights NGOs on the use of the Internet and electronic mail for advocacy purposes.

Center for Rural Assistance Telecenter Program - Romania
www.son.ro/Engleza/MOs/CAR2.htm
The program pilots the establishment of multipurpose telecenters in Timis Country, Romania. The telecenters work out of houses donated by the villages they are located in and contain computers, a copy machine, fax machine and telephone. They focus on encouraging individual and group initiatives and helping villagers learn how to act as citizens with rights and responsibilities. Each telecenter is multi functional with specific characteristics defined by the village. Functions range from providing public information education, office and community services, consulting, and business management to community service and social care. The program uses a 'Multipurpose Community Telecenter model' that requires initial community involvement (the donation of a house) coupled with external support and investment (provision of leadership, funds and equipment). Over time it is expected that the community will 'institutionally adopt' the infrastructure and as the telecenter becomes sustainable ownership will be transferred to the community.

Center for Ukrainian Reform Education (CURE) - Ukraine
www.umrep.kiev.ua/

The organization helps other organizations find the most effective methods to get their message across to Ukrainian citizens. It advises organizations on which approaches/mediums to use (TV, radio, publications, press clubs), what audiences to target and when to begin a campaign. It aids with the design of posters, brochures, and pamphlets, organizing focus groups and conducting public opinion surveys. It also offers a variety of media trainings for organizations, including public speaking, public relations for NGOs and how to get the core message across on TV and radio.

Committee for Democratization of Information Technology for the Americas Program (CDI Americas) - Latin America Regional
www.cdi.org.br
The program offers information technology skills to underprivileged youth in Latin America and the Caribbean. By raising awareness among potential new strategic partners, creative and motivated young people in every town and school in the region are "web-enabled" to make significant differences in their communities. Active in Brazil and Uruguay, Colombia and Mexico, CDI Americas creates new information technology and citizenship schools. The CDI curriculum teaches common computer programs and Internet training, such as MS, Word, Excel, PowerPoint, Access and HTML. In addition, students are instructed in computer and hardware maintenance and civic education.

Foundation for a New Ibero-American Journalism (Fundación para un Nuevo Periodismo Iberoamericano - FNPI) - Latin America Regional
www.fnpi.org
The Foundation for a New Ibero-American Journalism promotes the continuing education of journalists from Ibero-American countries. The foundation's core project is the Taller de Periodismo Iberoamericano (The Ibero-American Journalism Workshop Program), an itinerant program of workshops and seminars for journalists. The workshops and seminars follow four basic themes: basic journalism techniques for both print and broadcast media; journalism ethics and the problems journalists face in terms of freedom of the press, social responsibility and professional independence; new technologies and the challenges they pose to the profession; and specialized journalism (i.e. business reporting, environmental reporting, etc.)

India Development Network (INDEV) - India
www.indev.org/
India Development Network seeks to increase access to relevant and timely information about, for, and by the development sector in India through a Web site and list servers. INDEV's platform both enables the sharing of best practices among organizations and informs organizations about the nature of work and the application of creative solutions to development problems. INDEV Web site is a portal site with links to over 2500 leading development organizations in India. Bilateral agencies, government departments and leading NGOs, as INDEV partners, make the Web site a 'one-stop shop' for development information on India. The site offers four key databases: the NGO directory, project database, document database, and statistics database. Working closely with various NGOs, development agencies, training institutes and the government, INDEV will train NGOs to set up their Web sites, publish their home pages and use the Internet effectively. INDEV also provides free web pages for their members. INDEV launched a web newspaper in mid-1999 to highlight NGO success stories, recent policy changes in government, international declarations, and development events.

Institute for Press and Society (Instituto de Prensa y Sociedad - IPYS) - Peru
www.ipys.org.pe

The Peru-based Instituto de Prensa y Sociedad is a non-governmental organization founded in 1993 to defend and promote the freedom of expression. It has developed its network to protect journalists in Peru, expand its access to information initiatives domestically and promote an Andean network for journalists in Colombia and Venezuela. In the past three years, IPYS established ten monitors in five cities to cover the major regions of the country. IPYS maintains a network of 21 journalist volunteers in five cities in Peru who are linked to the central office in Lima through e-mail and a toll-free telephone line. The network permits a journalist who is in trouble or the victim of an attack to request assistance from the central office in Lima. IPYS supports their network correspondents in Peru and offers workshops for journalists on investigative reporting and accessing information.

Kabissa - Africa Regional
www.kabissa.org
Kabissa uses technology to strengthen non-profit organizations working to improve the lives of people in Africa. Kabissa provides African non-profit organizations with access to Internet services (domain hosting, web space, mailboxes, etc.), training opportunities, and channels for networking and sharing essential information. In addition to providing those services, its Web site includes various information about African non-profit organizations and African e-mailing lists.

NGO Network Alliance Project - Zimbabwe
http://www.kubatana.net/
The NGO Network Alliance Project (NNAP) strengthens the use of e-mail and the Internet among Zimbabwean NGOs. The NNAP makes human rights and civic education information accessible to the general public from a centralized, electronic source. NNAP develops a central Zimbabwean development and human rights portal: the portal contains editorial material highlighting the work of the organizations hosted on the portal. The portal also includes an electronic fact sheet for each hosted organization hosted on the portal, an e-activism page for each sector, on-line campaign information, and links to Zimbabwean NGOs.

OneWorld Radio - Global
http://www.radio.oneworld.net/
OneWorld Radio is a Web portal that offers services and networking for broadcasters and civil society organizations that are using radio for human rights, sustainable development and democracy. OneWorld Radio offers access to a wide variety of audio content on human rights, civil society and development topics. The OneWorld Radio audio exchange is a platform for the free exchange of programs between stations and organizations around the world. The News and Events section of the Web site offers news about the latest activity and developments within the broadcast sector. It features stories on key issues like media freedoms and information diversity and provides information on relevant conferences, launches and promotions. The resources include online training resources for broadcasters, a member directory, and information about trainers and courses.

Open Society Initiative for Southern Africa (OSISA)- Media Program - Africa Regional
www.osiafrica.org/eng_osisa-2_3.php
The OSISA media program endeavors to help people to overcome barriers that prevent them from exercising fully their right to communicate through mass media. Accordingly, the OSISA media program supports initiatives that promote and enhance the viability of non-governmental media, in particular print and radio. The OSISA media program also supports initiatives that develop the role of media to democratize society, in particular those that enable women, young people and other marginalized members of society to exercise their right to communicate through mass media,

especially radio and print, and thereby hold those in authority and power accountable to those they are supposed to serve. Support for radio and print initiatives, as well as for advocacy and support organizations form the core of the OSISA media program.

Central Vigilance Commission Website: A Bold Anticorruption Experiment

The World Bank, eGovernment website
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMUNIC ATIONANDTECHNOLOGIES/EXTEGOVERNMENT/0,,contentMDK:20485999~isCURL:Y~men uPK:702592~pagePK:148956~piPK:216618~theSitePK:702586,00.html

'The Central Vigilance Commission (CVC) in India has begun to share with citizens a large amount of information related to corruption. The CVC website has published the names of officers from the elite administrative and revenue services against whom investigations have been ordered or penalties imposed for corruption. Newsweek magazine carried an article about this effort, calling it E-shame.'

ICTs for Good Governance – Experiences from Africa, Latin America and the Caribbean

By Paul de GUCHTENEIRE and Kristina MLIKOTA
http://www.escwa.un.org/information/publications/edit/upload/ictd-07-8-e.pdf

Abstract
In the recent two decades, we have witnessed an extensive use of Information and Communication Technologies (ICTs) by national and local governments worldwide to enhance the efficiency of governments and bring them closer to citizens' demands. Evidence from numerous projects and initiatives worldwide shows that, well used, ICTs offer new possibilities for improved governance efficiency, new ways of citizens' engagement and their more active participation in policy-making, resulting in re-building of trust and transformation of relations between governments and their citizens.

The paper "ICTs for Good Governance – Experiences from Africa, Latin America and the Caribbean" explores the potential of ICTs to enhance local economic and social development, improve relations between governments and citizens and foster overall capacity-building in developing countries, based on experiences of UNESCO's project "ICTs as Tools for Improving Local Governance" and other relevant initiatives. Chapter I and II reflect theoretical foundations of e-governance and provide evidence of its use to foster accountability and efficiency of governments in developing countries. Methodology is described in chapter III. Experiences from UNESCO's project "ICTs as Tools for Improving Local Governance" are highlighted in chapter IV. The project focused on the use of ICTs to foster transparent and efficient local governance by providing training, capacity- building and regional collaboration in the African, Caribbean and Latin American regions. Chapters V and VI address main challenges to successful implementation of e-governance, and possible ways of how to overcome them, including the convergence of technologies, use of mobile phones and international and regional initiatives that focus on the use of ICTs for enhanced governance at the local level. Finally, chapter VII provides concluding remarks and suggestions for a possible way forward.

Reclaiming India: E-Courts In India Must Shift From Negp To Reality

The effectiveness of a Judicial System is measured by its capacity to provide a timely and apposite justice to the parties to the dispute. Similarly, its effectiveness is debatable when there are intolerable number of cases that are pending and undecided. In the Indian context this is a clear violation of "Right to Speedy Trial" as conferred by Article 21 of the Constitution of India. India is facing shortage of "Judicial Officers" to handle the mammoth cases filed and accumulated over a period of time. One of the possible solutions that can help India in this situation is the adoption of the benefits of Information and Communication Technology (ICT) in the Judicial Functioning.

ICT has the potential to transform judicial system of India. This is possible if we use the method of E-Courts in India. The mechanism of e-courts facilitate the filing of applications, arguments through the electronic mode, submission of documents and evidence using ICT, etc. The E-Courts System of Singapore is a trend-setter in this direction. It has implemented technologies like Digital Transcription System (DTS), Electronic Queue Management System (EQMS) and Electronic Signage System (ESS) to improve the efficiency of cases. However, the existing "Electronic Infrastructure Development Strategy" of India is deficient and needs rejuvenation.[1] This is happening because the Legislature and Executive are not versed with the Litigation and the Legal Fraternity is never consulted while making Techno-Legal Laws.[2]

E-Courts Project in India is presently managed under the National E-Governance Plan (NEGP). As part of the Mission Mode Project (MMP) under the NEGP, an attempt has been made to computerise the judicial processes and implement ICT systems in the courts. However, in the absence of "Proper Insight" and "Expertise" the E-Courts Project in India has still not seen the light of the day. In fact, the Cabinet has extended the term of the E-Committee for monitoring the implementation of the ongoing E-Courts project until February 2009, or until the work is completed…

Local Governance and ICTs Research Network for Africa

Dr. Venansius Baryamureeba, 2005, African Training and Research Centre in Administration for Development and International Development Research Centre
http://ict.developmentgateway.org/uploads/media/ict/State%20of%20ICT%20in%20Uganda.pdf

ICTs in local governance in Uganda have been identified as a major tool for achieving socio-economic development. In order for government to implement the long term national development programmes like the Poverty Eradication Action Plan (PEAP), the Plan for Modernisation of Agriculture (PMA), and others, timely and relevant information must be available at all levels of implementation. The National ICT Policy Framework (2002) is intended to stimulate more participation in the socioeconomic-political and other developmental activities, so as to lead to improved standards of living for the majority of Ugandans and enhance sustainable national development. Other ICT issues currently being considered in the formulation of ICT strategies are the recommendations of the World Summit on the Information Society (WSIS), The proceedings of the African Development Forum and ICT strategy for the achievement of the UN Millennium Development Goals (MDGs).

E-governance can only be implemented effectively if the right human resource, software and systems are in place and the citizens are ICT literate and sensitized. There is need to do undertake research in appropriate technology (software) that is free or affordable, ICTs for the marginalized groups like the disabled, the illiterate, and ICTs for rural transformation. It also important to research on how ICTs can effectively transform the agricultural sector in Uganda and increase household income. This will involve implementation of large-scale projects, which calls for research in areas such as perceptions/ failures of information system projects to minimize project failures. There is also need to undertake research on how ICTs can improve health service delivery especially among the poor.

Voting Technologies

http://www.nae.edu/nae/bridgecom.nsf/weblinks/MKEZ-744MLY?OpenDocument

Bridge, a magazine of the U.S. National Academy of Engineering for a general audience, has published this special issue on voting technologies. While it is intended primarily for a U.S. audience, the materials may be of interest to those in other nations. Volume 37, Number 2 - Summer 2007.

New issue of Information Technology in Developing Countries on e-government

Information Technology in Developing Countries, Volume 18, No. 3, October 2008
http://www.iimahd.ernet.in/egov/ifip/wg.htm

Editorial

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Book Review
Change Management in Information Services
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Conference Announcements
eASiA 2008
   November 11-13, 2008, Kuala Lumpur, Malaysia

International Conference on eGovernment and eGovernance (IC-eGov)
   March 12-13, 2009, Ankara, Turkey
3rd IEEE/ ACM International Conference on Information and Communication Technologies and Development (ICTD2009)
   April 17-19, 2009, Carnegie Mellon University, Doha, Qatar
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Addressing The Digital Divide: E-Governance and M-Governance in a Hub and Spoke Model

Gyanendra Narayan, The Electronic Journal of Information Systems in Developing Countries, Vol 31 (2007)
http://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/312

Abstract

E-governance has been perceived as a key to better governance. Though e-governance is capable enough of reaching to its objective, the problem of last mile connection is still persistent in developing countries due to unavailability of required infrastructure to provide e-governance with required depth. It has been witnessed that developing countries have deeper telephonic/mobile penetration than the internet penetration. Hence the use of telephone/mobile as a tool to supplement e-governance in its last leg becomes imperative. The higher level penetration of mobile connection makes the problem of last mile connectivity somehow redundant. Mobile-governance (m-governance) may be used as supplement to e-governance in a spoke and hub model. It will be helpful in bridging the digital divide particularly in rural areas and also in developing parts of world mainly Asia and Africa. This paper discusses e-governance and m-governance in a spoke and hub model. A generic process will be helpful for faster replication of services and greater penetration.

Government Interoperability Frameworks for Asia-Pacific Countries

United Nations Development Programme - Asia-Pacific Development Information Programme
http://www.apdip.net/projects/gif

IBM, Oracle, UNDP-APDIP and the International Open Source Network (IOSN) team up to help Asia-Pacific countries share and create strategies, blueprints and policies for adopting the right blend of open standards and technology services. The goal will be for more countries to develop universally compatible applications and networks to make internal and external government services and transactions more automatic, affordable and efficient.

Publications

e-Government Interoperability: Overview [PDF, 720kB]

The Overview introduces and guides policy makers to the what, who, why and how of e-government interoperability. Through a question-and-answer format, the publication walks its readers through the vision, rationale and value of GIF and a National Enterprise Architecture (NEA). It answers some fundamental questions such as what are the resources required, who should be involved and what are the key factors for its successful development and operationalization. It also looks at open standards and what they have to do with GIF. This Overview is particularly useful for senior officials in governments who are starting to implement their e-government strategies and for those who are planning to develop a GIF or NEA.

e-Government Interoperability: Guide [PDF, 725kB]

The Guide is a practical tool for technical officials and policy makers in governments who plan to draft or revise a GIF to ensure e-government interoperability among national government agencies. It is a comprehensive guide giving details on the approaches and principles of a GIF, and the standards categories and selection processes. It provides a step-by-step guide to developing and revising a GIF, illustrated with relevant case studies. This Guide also provides guidance on operationalizing the GIF, examining key issues related to implementation, compliance, enforcement and capacity development.

e-Government Interoperability: A Review of Government Interoperability Frameworks in Selected Countries [PDF, 1MB]

The Review provides a comparative analysis of eight existing GIFs of Australia, Brazil, Denmark, the European Union, Germany, Malaysia, New Zealand and the United Kingdom. It serves as a useful resource for government officials, the corporate sector and civil society involved in the development or revision of a GIF. This Review focuses on how GIFs in different countries were developed, the principles that animate them, the technical standards they mandated and/or recommend, the way these GIFs are managed, and the implementation and compliance mechanisms they established.

e-Primer on e-Government Interoperability [PDF, 751kB]

This e-primer walks its readers through the vision and value of e-government interoperability and the steps required to achieve effective interoperability. It also answers some fundamental questions such as why government interoperability frameworks should be developed; who should be involved; how are they produced and revised; and what are the key factors for their successful development and operationalization.

Africa i-Parliaments

United Nations Department of Economic and Social Affairs (UNDESA), Nairobi
http://www.parliaments.info/

This organization focuses on the application of information and communication technologies to improve information flows for African legislative bodies. The site provides the action plan for the network's programs as well as background materials.

Telecenters

telecenter.org

http://www.telecentre.org/

telecentre.org is a global community of people and organizations committed to increasing the social and economic impact of grassroots telecentres. Working together, we provide the resources that telecentres need to succeed: locally relevant content and services, support and learning opportunities, and networks that help telecentre activists connect to each other. With these things in hand, tens of thousands of telecentres will be in a better position to enrich the communities they serve. Our founding social investors include Canada's International Development Research Centre **IDRC, Microsoft and SDC**, the Swiss Agency for Development and Cooperation.

Quick Guide: Telecentres in International Institutions and Donor Agencies

By M. Trucano. Published August 2007, infoDev
http://www.infodev.org/en/Publication.190.html

Telecentres, Internet cafes, community multimedia centres, village computing: There are many names for similar initiatives that seek to provide shared public access to computers, the Internet and related technologies to serve a variety of often inter-related developmental objectives. Various versions of 'telecentre models' can be found in most countries, although questions of long-term sustainability are becoming increasingly acute for many initiatives in this area.

'Telecentres' have received a great deal of support and attention from international donor organizations and NGOs in the past decade; IDRC (especially through its support of the telecentre.org initiative) and UNESCO are two of the leading organizations quite active in this area:

(with links to each resource)

IDRC & telecentre.org

- telecentre.org
    - A quick useful starting point to learn more about a family of initiatives in this area.
- From the Ground Up : The Evolution of the Telecentre Movement
    - A valuable retrospective of how we got to where we are today.
- Making the Connection: Scaling Telecenters for Development
    - A great resource. (with AED & Microsoft)
- telecentre.org resource library
- IDRC - Telecentres
- Assessing Community Telecentres - Guidelines for Researchers
- Telecentre Leaders Forum (TLF) Workshops (WSIS)
- Telecentre Evaluation: A Global Perspective

UNESCO

- Community Multimedia Centres
- The best place to start to learn more about UNESCO's work in this area.
- From Access to Engagement: Community Access Centres
- A 'photo study'.
- UNESCO MCT sites in Africa
- Evaluation Report on UNESCO's Community Multimedia Centre Initiative
- Ten Steps for Establishing Multipurpose Community Telecentres
- International Community Telecentre Resources
- The Community Telecentre Cookbook for Africa
- A Guide to Community Multimedia Centres
- Strengthening Community Learning Centres through Linkages and Networks: A Synthesis of Six
- Country Reports
- Forging innovations: Community Multimedia Centres in Nepal

Telecentre-related work in other prominent international organizations and NGOs from ADB:
- ADB has offered a Distance Learning Course on Community Information Services
from AED:
- Making the Connection: Scaling Telecenters for Development (with Microsoft & telecentre.org)
from APC:
- Telecentres - Training Materials
- Gender Analysis of Telecentre Evaluation Methodology
from APDIP:
- e-Note 21: Identifying 'Killer' e-Governance Applications for Telecentres
- e-Note 19: Telecentre Technology
- e-Note 14: Telecentre 2.0 – beyond piloting telecentres
- e-Note 15: Telecentre sustainability – financing ICTs for the poor
- Apdip also maintains a collection of resources on telecentres.
from COL:
- Telecentres: Case studies and key issues
- Using Telecentres in Support of Distance Education
from CTA:
- Access to ICTs in Rural Areas - The African Telecentre Experience
from CTCnet:
- CTC Start-Up Manual
- CTCNet Guide: Access to Action
- CTC Resource Center
from FAO:
- Telecenter Sustainability - Myths and Opportunities
from Grameen Foundation:
- Village Computing: A State of the Field. Reflections on the Village Computing Consultation.
from IDB:
- Telecenters for Socioeconomic and Rural Development in Latin American and the Caribbean

from ITU:
- MODULES FOR TRAINING TELECENTRE STAFFS - An Interim Report with Sample Modules
- New Technologies for Rural Applications
- Preliminary Evaluation of Telecentre Pilot Projects

from UNDP:
- Telecottage handbook: How to establish and run a successful telecentre

from UNESCAP:
- Guidebook on Developing Community e-Centres in Rural Areas: Based on the Malaysian experience

from UNPANB:
- Themes and Issues in Telecentre Sustainability

from USAID:
- Powering ICT: An Energy Solutions Toolkit for ICT Projects

from the World Bank:
- Sustainable Telecenters: A Guide for Government Policy
- School Telecenters

General telecentre resources
from iTrainOnline:
- Telecentre Resource List from iTrainOnline

from the Development Gateway:
- Community Telecenters: Assuring Impact & Sustainability

from Telecentre.org:
- telecentre.org resource library

from the World Bank:
- School Telecenters

Other telecentre initiatives of note
- Mission 2007 ("Every Village a Knowledge Center")
- n-Logue Village Kiosk
- Telecenters of the Americas Partnership (TAP)
- UgaBytes

Additional resources
- Comparing Approaches: Telecentre Evaluation Experiences in Asia and Latin America
- Connecting Island Communities: The Emerging Telecentre Movement in the Pacific
- Indian Telecentre Forum 2006
- Gender and Telecentres: What Have We Learned?
- Lessons from the Field: ICTs in Telecenters
- Wikipedia entry for 'telecentre'

Telecentres in Rural Asia: Towards a Success Model

Roger Harris, Ph.D.
http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN006304.pdf

Abstract. The global digital divide threatens to deprive millions of people of the benefits that are attainable from having access to Information and Communication Technologies (ICTs). Most of these people live in rural parts of developing countries and they are unlikely ever to own their own computers. However, international aid agencies, governments and NGOs are becoming increasingly enthusiastic about the potential for generating rural development from community based telecentres. This report describes five telecentre projects that are concerned with bringing about social and economic development in rural communities in Asia. Existing success models from the field of Information Systems that relate to similar ICT based innovations in organisations, namely the Information Centre and End User Computing, are examined to establish how they might be adapted to the community based innovations represented by telecentres. A success model for telecentres is derived and applied to the five Asian projects. Results indicate that earlier research offers promise in understanding what leads to a successful community telecentre. In particular, the characteristics of communities emerge as the most potent influence on the success of community telecentres, yet are probably the least manageable. Suggestions for future research and implications for practice are drawn.

Rural communication: Is there still a need for telecentres now that there are mobile phones?

Ian Howard for APCNews - MONTEVIDEO
http://www.apc.org/en/news

Following the initial rush of Information and communication technologies for development (ICT4D) projects in rural Africa, many did not yield the anticipated outcomes, and interest has been dying down. People then began talking about "sustainable ICT" projects, in which it was understood that projects would become self-sufficient after their initial donor-led investment and set-up period. But with the use of mobile phones gaining in popularity, popular rhetoric has begun to question the need of ICTs beyond the mobiles phone. While mobile phones certainly have had a great impact in rural areas, a new study by Ian Howard, commissioned by APC, through the analysis of two case studies he argues that the need for telecentres and affordable internet connections exists, as such centres cater to rural and niche markets the way larger companies cannot.