

Internet Governance and Sustainable Development

This document includes:

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Internet Governance and Sustainable Development

Towards a Common
Agenda



Don MacLean, Maja Andjelkovic and Tony Vetter

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Internet Governance and Sustainable Development: Towards a Common Agenda

By Don MacLean, Maja Andjelkovic and Tony Vetter

October 2007

IISD gratefully acknowledges the generous support of Canada's International Development Research Centre (IDRC).

About the attached CD

On the inside back cover of this booklet, you will find a CD that contains 10 exploratory papers that informed the development of this publication.

IISD wishes to thank the following authors for their contributions to this project. Their papers appear on the attached CD:

Issue area: Governance processes

Jovan Kurbalija and Don MacLean, Internet Governance
Arthur Hanson, Global Governance for Environment and Sustainable Development

Issue area: Economic barriers to development

Abi Jagun, Economic Barriers to Development: Cost of access to Internet infrastructure
Hugo Cameron, Internet Governance and Sustainable Development: Economic barriers to development

Issue area: Capacity of developing countries to participate in international governance

David Souter, Capacity of Developing Countries to Participate in ICT International Governance
Peter Doran (with Johanna Gloel), Capacity of Developing Countries to Participate in International Decision-making

Issue area: Access to knowledge as a critical input to decision-making

Tony Vetter and Eddan Katz, Access to Knowledge in the Information Society
Ashish Kothari, Traditional Knowledge and Sustainable Development

Issue area: Indicators for development

Christoph Stork, Sustainable Development and ICT Indicators
Clark Miller, Creating Indicators of Sustainability: A social approach

Early in 2007, in collaboration with partners and stakeholders, IISD commissioned these exploratory papers to be written in pairs to provide some insight into five issue areas from the perspectives of the Internet governance and sustainable development communities. Each of the papers defines its issue area; describes the relevant governance structures and processes; identifies the main issues currently

being debated; articulates actual and potential links between Internet governance and sustainable development; and proposes areas for further study.

The goal with these papers is to facilitate a discourse around linkages among the issues considered under the Internet governance and sustainable development topic umbrellas, through examining how specific questions in Internet governance discussions to date interlink with those in the sustainable development arena.

From September 15 to 28, IISD hosted an e-conference to offer the opportunity for researchers and practitioners to review the papers and to participate in online discussions specific to each issue area to further the aim of facilitating dialogue between the two communities, as well as to inform our analysis of the papers. See <http://www.iisd.org/infosoc/gov/igsd/>

This booklet features the outcome of this analysis in the form of short editorials on each set of papers, which explore common positions, mutual challenges and differences between the issues discussed in the papers, and outlining where lessons from one side might inform progress on the other.

IISD gratefully acknowledges the generous support of Canada's International Development Research Centre (IDRC) for our ongoing work in this area.

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Introduction

In 2003, the World Summit on the Information Society (WSIS) declared its challenge “to harness the potential of information and communication technology (ICT) to promote the development goals of the Millennium Declaration”¹ with a “commitment to the achievement of sustainable development.”² Internet governance, a key issue emerging from this process, is defined as “the development and application by Governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programs that shape the evolution and use of the Internet.”³ By simultaneously highlighting sustainable development as a critical goal, and Internet governance as a critical debate to the evolution of the information society, the WSIS process brought to light the nexus of sustainable development and Internet governance.

The difficulty in defining that nexus is not the lack of connections between the two fields, rather, it is the pervasive, complex and intricate nature of the linkages. From the point of view of sustainable development, Internet governance can be described as the decision-making process through which global communications and knowledge exchange over the Internet develop and evolve. In a broad view, sustainable development cannot be conceived without global communications and knowledge exchange. The closer we consider today’s communications channels, the more aware we become of the paramount importance of the Internet to the flow of information and knowledge around the world. The Internet governance debate, which includes issues of access, multistakeholder participation, openness and security, among others, is essential for global communication and knowledge exchange, in that its outcomes will affect our ability to manage the social, environmental and economic aspects of sustainable development. On a more detailed level, the connections between Internet governance⁴ and sustainable development can seem obtuse,

1 WSIS Declaration of Principles, December 12, 2003, <http://www.itu.int/wsis/docs/geneva/official/dop.html> (accessed August 30, 2007).

2 *Ibid.*

3 Report of the Working Group on Internet Governance, June 2005, <http://www.wgig.org/docs/WGIGREPORT.doc> (accessed August 30, 2007).

4 With the Internet Protocol becoming the standard of choice for an increasing number of information and communication technologies, governance of the Internet encompasses a significant number of other technologies, in addition to applications we most often think of in relation to the Internet (e-mail and the World Wide Web).

partly, as IISD has written,⁵ because the two communities of practitioners have spent over three decades working in relative isolation from one another, creating gaps in vocabulary and culture.⁶

Early in 2007, in collaboration with partners and stakeholders, IISD commissioned exploratory papers to be written from the perspective of each community. Our goal with these papers is twofold. First, we aim to facilitate a discourse around linkages among the issues considered under the Internet governance and sustainable development topic umbrellas, through examining how specific questions in Internet governance discussions to date interlink with those in the sustainable development arena. Second, we continue to test a method of informing each practitioner community of the major policy and research questions and findings in the other field, a method IISD piloted in an earlier compilation of papers on similar topics.⁷

Five pairs of papers were commissioned, each consisting of one piece written about a topic from an Internet governance, or, more generally, an ICT perspective, and the other from a sustainable development point of view. From September 15 to 28, 2007, IISD hosted an e-conference to offer the opportunity for researchers and practitioners to review the papers and to participate in online discussions specific to each issue area to further the aim of facilitating dialogue between the two communities, as well as to inform our analysis of the papers.

This booklet features the outcome of this analysis in the form of short editorials on each set of papers, which explore common positions, mutual challenges and differences between the issues discussed in the papers, outlining where lessons from one side might inform progress on the other. Electronic copies of the original papers have been included in a CD accompanying this booklet.

The first set of papers examines emerging multistakeholder **governance processes**, tested in both the sustainable development arena and in the new Internet Governance Forum. Arthur Hanson provides an overview of the evolution of global governance for environment and sustainable development, covering institutions, state-centred negotiations, the rise and influence of civil society, multistakeholder processes and related mechanisms. In examining the evolution of Internet governance, Jovan Kurbalija and Don MacLean focus on the process around the World Summit on the Information Society and point to the leadership of civil society and the technical community in the Internet governance debate.

5 Willard, Terri and Michael Halder. *The Information Society and Sustainable Development: Exploring the Linkages*. Scoping Study. Winnipeg: IISD, 2005. <http://www.iisd.org/publications/pub.aspx?id=598>

6 Kapur, Akash. *Internet Governance: A Primer*. Elsevier: UNDP-APDIP, 2005. p. 29.

7 Willard, Terri and Maja Andjelicovic (eds.). *A Developing Connection: Bridging the Policy Gap between the Information Society and Sustainable Development*. Winnipeg: IISD, 2005. <http://www.iisd.org/publications/pub.aspx?pno=740>

“Notably, one of the strategic imperatives for sustainable development in the Brundtland Report is ‘reorienting technology and managing risk,’ an objective under which improved access to Internet resources in low-income countries falls squarely.” – Hugo Cameron, from “Internet Governance and Sustainable Development: Economic barriers to development.”

The second set of papers focuses on **economic barriers to development**. Abi Jagun considers the cost of access to the Internet infrastructure, as an “indispensable” resource for general development and economic growth by identifying and describing factors that contribute to the prohibitive access costs in developing countries. Hugo Cameron considers access as a “vector” for sustainable development—he outlines a number of infrastructural, systemic and regulatory impediments to ensuring the spread of information and knowledge, business opportunities, administrative efficiencies, employment and transparency, including those in what Cameron calls “the wider systemic setting,” like the WTO.

Both of the papers in the third set focusing on the **capacity of developing countries to participate in international governance** note that recent changes—whether in the governance systems, or in the international “geopolitical context”—have brought about specific challenges for participation of developing countries in governance negotiations. David Souter discusses the differences in challenges facing developing countries to participate in intergovernmental models of governance employed in the management of traditional ICTs (for instance, the ITU and WIPO) and governance models emerging around the Internet, where there has been “little involvement of the powers-that-be.” From the sustainable development angle, Peter Doran looks beyond the capacity to participate in governance processes, and treats “knowledge” itself as a (geo)political concept, which is always implicated in formations of power and “governmentality.”

The fourth set examines **access to knowledge as a critical input to decision-making**. Tony Vetter and Eddan Katz focus on the “access to knowledge” campaign that challenges current information infrastructure systems. Vetter and Katz point out several examples of advocacy and agenda setting that represent a pivotal shift towards global intellectual property policies that balance economic principles with the development dimension. Ashish Kothari suggests ways to revive or maintain knowledge that is critical to sustainable development beyond intellectual property regimes. Focusing on the relevance of traditional knowledge (TK) to the human quest for sustainable living, he shows how essential contributions of traditional knowledge can be made to various sectors of human welfare and development.

The fifth pair of papers considers the topic of **indicators for development**. Christoph Stork and Clark Miller describe some of the existing ICT and SD indicators, and suggest ways to make them more meaningful for evaluating results. Stork distinguishes between access, usage and impact indicators, among other types,

pointing out that impact indicators, as derivatives of primary or secondary data, are most useful in gauging the impact of ICTs on sustainable development. Miller examines traditional indicators of sustainability, and points to the need to establish indicators customized at the community level—an observation that could be especially useful for designing effective derivative indicators noted by Stork.

Beyond illustrating intersections between Internet governance and sustainable development, a common feature of the sets of papers presented here is that they identify building blocks originating in one field that are useful, if not crucial, for continuing research in the other. These building blocks seem to originate more frequently in the ICT or Internet governance field, but the reverse is also true: lessons from the sustainable development field, such as in the area of indicators development, can inform Internet policy.

It is also useful to compare these papers from a values perspective. The WSIS Declaration of Principles expressed a “common desire and commitment to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, premised on the purposes and principles of the Charter of the United Nations and respecting fully and upholding the Universal Declaration of Human Rights.”⁸ These values parallel those expressed in the Johannesburg Plan of Implementation of the World Summit on Sustainable Development, where it was declared that “peace, security, stability and respect for human rights and fundamental freedoms, including the right to development, as well as respect for cultural diversity, are essential for achieving sustainable development and ensuring that sustainable development benefits all.”⁹ Therefore the values expressed in the WSIS Declaration of Principles also serve the purpose of achieving sustainable development in that their promotion as a foundation of the evolving information society serves to embed them in our social, economic and political systems.¹⁰ The sets of papers, therefore, also help to illustrate specific examples of how the values of the Internet governance policy community are shared by those of the sustainable development policy community. Such acknowledgement of shared values could help bridge the historic gaps in vocabulary and culture between these two communities.

8 WSIS Declaration of Principles, December 12, 2003, <http://www.itu.int/wsis/docs/geneva/official/dop.html> (accessed August 30, 2007).

9 Johannesburg Plan of Implementation, August 11, 2005, http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm (accessed September 17, 2007).

10 James Goodman. *Communication: the missing link in sustainable development*. openDemocracy, December 11, 2003, http://www.opendemocracy.net/media-edemocracy/article_1628.jsp (accessed September 17, 2007).

In today's great small world of global communication, the questions of sustainability cannot be analyzed in isolation from Internet policies that affect information flows, exchange of knowledge and global trade. The importance and speed of ICT and Internet development, and the profound changes that these have caused worldwide, require the cooperation of these two groups of researchers. We hope that this booklet and the papers accompanying it on CD are signs of their future fruitful cooperation.

Governance processes

The first pair of papers in this collection, “Global Governance for Environment and Sustainable Development” by Art Hanson and “Internet Governance” by Jovan Kurbalija and Don MacLean, shows that there are interesting similarities between international governance arrangements in these two areas, as well as striking differences.

As the papers demonstrate, the two governance universes are very complex. Both “sustainable development” and “Internet governance” are umbrella concepts that cover a wide range of issues, some of which are closely related, others less so. As a reflection of this diversity, both universes are populated by a large number of governance instruments, institutions, organizations and processes that have been set up to deal with these issues.

Global Governance Building Blocks

The Internet governance and sustainable development universes are populated by a large number of governance instruments, institutions, organizations and processes. These communities have been evolving their governance processes over decades through precedent-setting global governance initiatives that have resulted in key globally-negotiated building blocks. *Please see the Appendix* for background narratives on how these building blocks have contributed to the formation of the global governance systems that each community continues to evolve.

Whatever their specific form, sustainable development and Internet governance arrangements often include representatives from government, the private sector and civil society—the three main stakeholder groups that are now widely recognized as having legitimate and complementary roles in global governance. However, there is considerable variation in the rights and responsibilities enjoyed by these different stakeholder groups in sustainable development and Internet governance structures.

In some cases, one stakeholder group holds decision-making power, and the others are involved only in a consultative capacity. In arrangements of this kind government is usually the dominant stakeholder, although there are notable exceptions

particularly in Internet governance. Kurbalija and MacLean point to the Uniform Domain-Name Dispute-Resolution Policy (UDRP) as an example of a fast, efficient and multistakeholder reaction to the Internet governance issue of cybersquatting. In other kinds of arrangements, though, there is no dominant stakeholder and each group considers the others as full partners. As an example, Kurbalija and MacLean see the concept of multistakeholder governance as a key achievement of the World Summit on the Information Society that may be applicable in areas other than Internet governance.

Most sustainable development and Internet governance structures have been purpose-built to deal with broad issue areas or specific governance challenges. As a result, their actions are not always well coordinated in terms of overall objectives, guiding principles or simple efficiency. Although nominally universal in aim and generally open to participation by all countries, sustainable development and Internet governance arrangements tend to be dominated by governments and other stakeholders from developed countries and the emerging giants of the developing world, with little effective participation by most of the world's poorest countries. In the case of Internet governance this is further complicated by the tendency, as noted by one e-conference participant, for the governments of developing countries to lack the motivation to take an interest. Viewing the Internet as a domain they cannot control, this lack of interest creates a vacuum in developing country Internet governance policies and decision-making. In contrast, another e-conference participant observed that efforts to link national ICT policy to the achievement of the Millennium Development Goals has helped to push Internet governance issues like access, security, open standards and information rights to the policy foreground for some developing country governments.

In spite of these superficial similarities, there are at present significant differences between the worlds of sustainable development and Internet governance.

The universe of sustainable development governance arrangements is, on the whole, older than the universe of Internet governance. It is also more mature in terms of the range of instruments, structures and processes that are in play. These points are illustrated by the chronology provided by Hanson, which traces the evolution of today's complex web of sustainable development governance arrangements back to the early decades of the 20th century. In contrast, in spite of the large number of arrangements inventoried by Kurbalija and MacLean, and although one of these arrangements—the International Telecommunication Union—dates back to 1865, most of the key elements of international Internet governance were put in place in the last decade and are still in relatively early stages of development.

One other significant difference worth noting is the timeframes over which governance issues evolve in these two domains. Hanson mentions that environmen-

tal and sustainable development problems often take 20 to 30 years to be recognized and as long again for effective action to be implemented. In contrast, issues in the Internet governance domain tend to be recognized over much shorter timeframes with effective action taken rapidly. Returning to the example of the UDRP, Vetter and Katz¹¹ cite this as a successful use of a “soft law” approach by stakeholders to rapidly deal with the issue of cyber-squatting (as opposed to having only the option of proceeding towards the adoption of a new treaty, i.e., hard law). Hanson suggests that experimentation with “soft law” and other governance initiatives like those currently functioning in the IG should be considered in the context of the general incompatibility between global economic growth models, globalization agreements and sustainable development.

Sustainable development governance appears to be more solidly rooted than Internet governance in science and other forms of systematized knowledge. Scientific tools and indicators have been important vehicles of the sustainable development community for influencing policy-makers. Multidisciplinary forecasting methodologies have also been developed by sustainable development researchers and policy-makers over the past three decades by drawing from the knowledge of social and physical sciences, as well as law, management and political disciplines. At the moment, Internet governance appears to rest on a more fluid knowledge base that mixes engineering with economics, social sciences, philosophy and other branches of the humanities in different proportions, depending on the issue being considered and the point of view of the researcher or policy-maker.

In part because of its greater age and maturity, and in part because of the issues it deals with, the sustainable development governance universe appears to be more heavily populated by intergovernmental arrangements of one kind or another than the world of Internet governance. As Kurbalija and MacLean make clear, national governments and intergovernmental organizations are recent arrivals on the Internet governance scene, and are still viewed with suspicion by important segments of a community that has long been used to governing itself, even though the need for their active participation with respect to some issues—such as cyber-crime and other Internet abuses—is now more or less universally accepted.

As stated in the Introduction, the overall purpose of this collection of essays is to facilitate a discourse around linkages among the issues considered under the Internet governance and sustainable development topic umbrellas in order to see if the two communities could benefit from closer cooperation and, if so, how this might be achieved. In this spirit, the essays by Hanson and by Kurbalija and MacLean suggest that the following governance-related questions may be worth pursuing:

11 See section “Access to knowledge as a critical input to decision-making.”

1. *Are there lessons the Internet governance community can learn from the experience of the sustainable development community in relation to the development of internationally-agreed frameworks for facilitating the development, implementation and coordination of policies that cut across institutional and disciplinary boundaries? In particular, is there merit in the proposal put forward by the Internet Governance Project to develop a framework convention on Internet governance modelled on the United Nations Framework Convention on Climate Change?*¹²
2. *Are there lessons the Internet governance community can learn from the experience of the sustainable development community in using multidisciplinary modelling and forecasting techniques to develop alternative scenarios of the future, as a support for Internet governance decision-making?*¹³
3. *Are there opportunities for shared learning between the sustainable development and Internet governance communities on the basis of their respective experience with private-public partnerships and multistakeholder approaches to governance?*

12 See "A Framework Convention: An Institutional Option for Internet Governance" at <http://www.internetgovernance.org/pdf/igp-fc.pdf> (accessed September 17, 2007).

13 See "Great Transition: The Promise and Lure of the Times Ahead" at <http://www.gsg.org/> (accessed September 17, 2007).

Economic barriers to development

Motivation for collaboration between two policy communities can be driven by an awareness of how the governance decisions taken by each community can affect the other, as well as how these decisions can be influenced in order to help achieve mutually-beneficial results that are greater than either community could realize on its own. With regards to the Internet governance and sustainable development policy communities it appears that this awareness is highest in relation to the issue of economic barriers.

The papers by Abi Jagun and Hugo Cameron on the theme “Economic Barriers to Development” provide complementary perspectives on a question that should rank high on the agendas of both the Internet and sustainable development governance communities—the question of what steps are needed, in policy and in practice, to enable people in developing countries (a) to get affordable access to the Internet and other information and communication technologies (ICTs); and (b) to use these technologies to support sustainable economic growth and development, particularly through trade.

Jagun’s paper deals with the first part of this question by examining the economic barriers that stand in the way of affordable access to the Internet and other ICTs in developing countries. These include five major and distinctly different kinds of costs: the cost of deploying the telecommunications infrastructure of copper wires and cable, satellite and fibre optic links, and wireless connections on which the Internet runs; the cost of accessing the Internet in developing countries because of high international interconnection charges; the cost of accessing software-based applications and electronic content that are needed to add value to the bit streams made available by the Internet; the cost of dealing with spam and other Internet abuses, which is relatively much higher in developing than in developed countries because of their more limited bandwidth and other resources; and the cost of developing the human, technological and financial capacities required to build, maintain and effectively use an Internet/ICT-based communications, e-commerce and knowledge infrastructure.

As Jagun’s paper points out, the experience of the past two decades has consistently shown in both developed and developing countries that the most effective approach to addressing the first of these issues—the cost of deploying telecommunications infrastructure—is to introduce competition in the supply of telecommunication networks and services under the supervision of regulatory

authorities that are independent of government and whose mandate includes protection of consumers and achievement of universal access, as well as promotion of competition and investment. However, as her paper also acknowledges, equally effective strategies have not yet emerged for overcoming the other costs of Internet access in developing countries. Although other papers in this collection will touch on some of these questions—for example, the cost of accessing applications and content arising from the current intellectual property regime, and the question of capacity-building—it appears that there is not yet a “general theory” to help guide governance of the full range of economic issues related to Internet access.

Cameron’s paper deals with the second part of the question posed above—namely, the steps that are needed in policy and practice to overcome the cost barriers to using the Internet and other ICTs in developing countries to support sustainable economic growth and development, particularly through trade.

Cameron begins by noting the positive correlation between ICT investment and economic growth, and summarizes the main ways in which the Internet and other ICTs can contribute to economic growth by helping improve the efficiency of production processes in all economic sectors, creating new business opportunities, improving access to markets and reducing transaction costs. He goes on to describe policies and programs that have been designed to help developing countries use the Internet and other ICTs to achieve these benefits. These include: aid aimed at building both the physical and institutional infrastructures needed to engage in trade (aid for trade); agreements in the World Trade Organization (WTO) to facilitate trade in telecommunications and other services that are supplied using telecommunication networks; regulatory frameworks that facilitate investment in telecommunications and other ICTs promote the development of Internet-based e-commerce; measures to encourage the adoption of ICTs by the small- and medium-sized enterprises that are the backbone of the non-agricultural economy in many developing countries; and measures to build the human capacities required to use the Internet and other ICTs.

On a cautionary note both papers also acknowledge the reality that telecom infrastructure in developing countries tends to be concentrated in urban areas due to the lack of economies of scale, a phenomenon further exasperated by unrestricted global competition as noted by Cameron. Rural areas of developing countries also tend to be limited more than urban areas in terms of the availability of electricity supply, and the frequency of breakdowns and associated power outages. As one e-conference participant noted, repeated electricity failure and interruption not only leads to frustration and annoyance but sometime results in great loss in terms of damage to ICT equipment.

Such issues are problematic for both the goals of Internet governance and sustainable development since three-quarters of the developing world’s poor still live

in rural areas.¹⁴ Given that agriculture is often the only means of making a living in rural areas, agricultural development researchers have suggested that agricultural growth that benefits the poor more than growth in other sectors should be accelerated, an area where science and technology and rural infrastructure can play key roles.¹⁵ Cameron notes that the agriculture sector can experience large efficiency gains through relatively small investments in ICT infrastructure. The experience of one e-conference participant was that the value chain in agriculture is the most effective approach for introducing technology solutions to rural people as they quickly see the potential for income improvement. These ideas and observations should inform policies that aim to mitigate uneven patterns of development within, and between countries by ensuring services that can support such policy initiatives reach rural areas along with complementary human capacity-building initiatives.

The complementarity of the Jagun and Cameron papers shows that there is a solid basis for cooperation between the Internet governance and sustainable development communities on issues related to building telecommunication networks in developing countries and regions, extending access to their services, and using the Internet and other ICTs to support economic growth, in national and regional markets as well as through the global trading system.

This is perhaps not surprising, given the large amount of attention these questions have received in the past 10–20 years, in international organizations such as the WTO, the United Nations Conference on Trade and Development (UNCTAD) and the World Bank; in major United Nations conferences, such as the World Summit on Sustainable Development (Johannesburg, 2002) and the International Conference on Financing for Development (Monterrey, 2002); and in less formal settings such as the World Economic Forum (WEF), the G8 Digital Opportunities Task Force, the UN ICT Task Force, the Global Alliance for ICT and Development (GAID) and the New Partnership for Africa's Development (NEPAD).

With this base in place, what are some of the main challenges facing the sustainable development and Internet governance communities in the short, medium and longer term in relation to both existing and emerging economic barriers to ICT-enabled growth and development? The following questions may be worth exploring:

1. *Should we be striving to achieve a global consensus on reducing barriers to affordable Internet access?*

14 Ravallion, M., S. Chen and P. Sangraula. 2007. New Evidence on the Urbanization of Global Poverty. Washington D.C.: World Bank, <http://ideas.repec.org/p/wbk/wbrwps/4199.html> (accessed October 6, 2007).

15 Joachim von Braun. *Focus on the World's Poorest and Hungry People*, IFPRI 2006–2007 Annual Report Essay. October 2007. http://www.ifpri.org/pubs/books/ar2006/ar2006_essay01.asp (accessed October 6, 2007).

Although there is now global consensus on the framework policies and regulatory measures needed to support widespread, affordable access to *telecommunication networks and services* in developing countries, there is not yet a similar consensus on the framework policies and regulatory measures needed to support widespread, affordable access to *Internet services* in these countries. From both an Internet governance and a sustainable development point of view, this means that the job is only half done.

Affordable access, particularly to wireless networks and services, has brought major economic and social benefits to many developing countries over the past decade. As the experience of developed countries during this same period of time has demonstrated, affordable access to Internet services would likely bring relatively comparable benefits to developing countries. To maximize these benefits, though, it will likely be necessary to achieve a global consensus on Internet governance similar in scope to the consensus that is already in place for telecommunications governance—for example, in relation to charges for interconnection to the Internet backbone and arrangements for managing core Internet resources.

As the paper on Internet governance arrangements has sought to demonstrate, this will be no easy task. Since reduction of the economic barriers that stand in the way of affordable access to the Internet and other ICTs is a necessary condition for sustainable development in the information society, cooperation on this challenge should be a top priority for the Internet governance and sustainable development communities.

2. *How do we develop the economic models needed to support policies aimed at reducing or eliminating economic barriers to accessing the Internet and other ICTs?*

To be effective, policies aimed at reducing or eliminating economic barriers to accessing the Internet and other ICTs, and to using them to support sustainable development must be based on sound economic models of the relationship between inputs, in terms of investments in ICT development and use; the prices of services, applications and content; and outputs, in terms of economically, environmentally and socially sustainable activities.

Construction of such models is a challenge for the Internet governance community. After many years of study, there is now consensus among economists that there is a positive relationship between, on the one hand, investments in telecommunication networks and services, other elements of ICT infrastructure, and human and organizational capacities and, on the other hand, productivity at the level of firms, industrial sectors and national economies. However, as indicated above, there is at present no consensus on other

Internet governance-related issues that have important economic dimensions and significant implications for sustainable development. One example is the question of what kinds of economic models and policy mechanisms are likely to be most effective for encouraging investment in the development of electronic applications and content, determining their price and ensuring their widespread use, so as to maximize their benefits in terms of economic, environmental and social sustainability.

Construction of new economic models to help guide policy-makers is also an important challenge for the sustainable development community—for example, “green accounting” models that include environmental costs in the prices of goods and services, as well as the direct costs of production.

Developing new economic models that would help improve policy-making is a longer-term challenge facing both the Internet governance and sustainable development communities. There might be merit in exploring the possibility of collaborating on at least some elements of this venture—for example, in areas where the cooperative development of complementary Internet governance and sustainable development policies would maximize positive externalities and minimize negative ones.

Capacity of developing countries to participate in international governance

In spite of the differences between the Internet and sustainable development governance universes described earlier in this book, the papers by David Souter and Peter Doran papers show that the two communities face similar challenges in seeking to build the capacity of developing countries to participate effectively in international governance arrangements in their respective domains.

Developing countries make up a majority of the membership of many international organizations involved in the governance of sustainable development. This is also the case if a broad view is taken of Internet governance, so that it is not limited to the technical and managerial bodies directly involved in Internet governance, but also includes international organizations such as the ITU, WTO, WIPO and UNESCO whose activities have important direct and indirect influences on the development and use of the Internet.

As recent studies cited by Souter and Doran demonstrate, membership of developing countries in the various intergovernmental organizations involved in Internet and sustainable governance and attendance by developing country representatives at the meetings of these organizations is not the same thing as effective participation in the complex set of governance processes that set international policy agendas, negotiate agreements, and follow up on results. In addition, particularly in the world of Internet governance, important decisions are made by organizations that have very little, if any, developing country representation—for example, by private sector standardization fora or by individual companies or consortia of companies that enjoy significant market power, and whose “code is law.”

Taken together, the papers suggest that there are both horizontal and vertical dimensions to international governance processes—“horizontal” in the sense of a more or less sequential series of steps, or path that needs to be followed at the international level, each of which requires different skills and capacities; and “vertical” in the sense of the underlying structures that are needed at the national and regional levels to participate effectively in international decision-making processes.

Doran’s paper explores the sequential requirements of capacity-building, or path that should be followed to build the capacity of developing countries to participate

more effectively in international negotiations related to questions of sustainable development. It distinguishes the various steps that typically take place before, during and after a negotiating process, in order to identify the skills and capacities that negotiators need to participate effectively at each stage of the process. In addition, Doran identifies a number of underlying economic, social and political factors that help determine a country's negotiating capacity. These factors include various endogenous resources, international connectivity and geopolitical status.

Souter's paper probes a similar set of capacity-building questions and issues as they arise in relation to Internet and ICT governance, but from a structural point of view rather than a sequential one. It identifies the underlying capacities that need to be in place by developing countries at the national and regional levels so that they can participate effectively at each stage of the negotiation process. These include the capacities to formulate and implement policies, particularly those involving the multistakeholder approaches that are increasing common in Internet and ICT governance, as well as "deep policy structures" that include the capacity to track trends, forecast issues, analyze their implications for national development objectives, conduct policy research and analysis, and evaluate the effectiveness of policy implementation.

In both the Internet governance and sustainable development communities, provision of background information and other briefing materials on issues being negotiated, training in the science and art of negotiation, and assistance in implementing the results of negotiating processes traditionally have been considered the principal means of capacity-building, corresponding to the needs of developing countries at each of the main stages of international governance processes. Doran's paper provides a comprehensive overview of the capacity-building supports of this kind that are available to developing country negotiators at each stage in this process. It focuses in particular on identifying training approaches that have proved most helpful in preparing negotiators to protect and advance their interests in sustainable development negotiating fora.

The statement in Doran's paper that "from the perspective of developing countries the language game is sometimes 'fixed' from the outset and 'incapacity' is built into the rules of the game as a *fait accompli*" captured the mood of one of the more dominant debates of the e-conference. Many participants felt quite strongly that a top priority of capacity-building assistance for developing country negotiators should be the accommodation of languages competencies through the acceptance of a broader range of recognized languages for negotiation and the translation of supporting documentation. Some participants suggested, as mentioned by Doran, that lack of support for such accommodations at international meetings ignored the distinct advantage to exercise authority over the meaning of words in one's native language and was symptomatic of a wider context over meaning and power in the global community.

Souter's paper builds on this analysis by suggesting that although training is an important part of capacity-building, other things are also needed to enable developing countries to participate effectively in international ICT decision-making. In addition to training, Souter suggests that more needs to be done to provide developing country negotiators with timely, reliable and easily understandable information on issues being negotiated; to establish consultative processes within developing countries and regions that include non-governmental stakeholders in the development of policy proposals and negotiating positions; and to create informal spaces where decision-makers can engage in creative thinking outside the pressure-cookers of negotiating fora. These suggestions appear similar in spirit to some of the success factors identified by Doran, such as transnational connectivity, but take an additional step by emphasizing the importance to international performance of national and regional structures, and the fundamental importance of an informed citizenry at the national level.

Many of these same points were echoed by e-conference participants when the challenges of promoting online participation in international meetings as a means of achieving capacity-building objectives were raised for discussion. One solution presented for overcoming the lack of skills and resources in developing country communities for effectively participating in preparatory meetings and international negotiations was the formation of regional centres to support effective remote access. It was felt that these centres could also facilitate more cost effective capacity-building initiatives, coalition building, alleviate travel restrictions as a barrier to participation, as well as create informal spaces like those mentioned above. The biggest challenge with such a proposal universal to both the Internet governance and sustainable development communities would be to find an appropriate organization that can represent regional interests that stakeholders from all countries in that region can agree to.

Souter makes an important point when he notes that ICT capacity-building initiatives traditionally have rarely addressed the intersection between ICT/Internet policy and other areas of public policy. He suggests that Internet and ICT decision-makers will make better decisions, from an overall developmental perspective, if they learn more about the wider implications of their decisions. He also suggests that decision-makers outside the world of the Internet and ICTs could benefit by learning more about the governance of these all-pervasive technologies. His suggestion that one way of achieving these two objectives would be to establish better spaces for dialogue between ICT and non-ICT decision-makers at both the national and international levels seems well worth pursuing.

To do this, it might be useful to begin by exploring the following questions:

1. *Are there existing dialogue spaces where the Internet/ICT governance community could learn more about the implications from the sustainable development com-*

munity of Internet/ICT governance decisions, and the sustainable development community learn more about the governance of Internet/IC technologies, in a focused and systematic fashion?

2. *If not, what options exist for creating such a space?*

Access to knowledge as a critical input to decision-making

The activities of both the Internet governance and sustainable development communities are motivated by a basic conviction that in order to reach a desirable future, fundamental changes are urgently needed in global economic, social, and governance structures, and that these transformations imply equally fundamental changes in human perceptions, values and behaviour.

So far, the two communities have tended to see this desirable future and the obstacles to realizing it from very different points of view that are not only contrasting, but in some senses appear to be diametrically opposed.

In the case of the Internet governance community, the future has generally been seen in a very positive light, from the perspective of the apparently limitless possibilities created by the Internet for improving the generation, communication and sharing of information, knowledge and cultural expression. From this point of view, limitations on Internet access and use are the main obstacles to progress that must be removed. In other words, from the point of view of the Internet governance community, the glass that represents the future is already half full, with plenty more to come.

The vision that has motivated much of the activity of the Internet governance community is captured in the following passage from the *Tunis Commitment* of the World Summit on the Information Society:

We reaffirm our desire and commitment to build a people-centred, inclusive and development-oriented Information Society, premised on the purposes and principles of the Charter of the United Nations, international law and multilateralism, and respecting fully and upholding the Universal Declaration of Human Rights, so that people everywhere can create, access, utilize and share information and knowledge, to achieve their full potential and to attain the internationally agreed development goals and objectives, including the Millennium Development Goals.¹⁶

¹⁶ See Tunis Commitment, November 18, 2005, WSIS-05/TUNIS/DOC/7-E, <http://www.itu.int/wsis/docs2/tunis/off/7.html> (accessed October 6, 2007).

In the case of the sustainable development community, since the 1972 Stockholm Conference on the Human Environment and the publication in the same year of the Club of Rome's *Limits to Growth*, the future has generally been seen in a somewhat different light—from the perspective of the harm that has been done to the natural and human environment by industrialization, and the consequent limitations that need to be placed on economic activity in order to preserve and improve the natural and social environments on which sustainable life also depend. From this point of view, the complex set of relationships among economic, social and cultural structures that developed in some regions of the world in the modern industrial era and which have been extended on a worldwide basis through the process of globalization are all, to a greater or lesser extent, obstacles to progress. In other words, the glass that represents the future is at present half empty and draining rapidly.

The vision that has motivated much of the activity of the sustainable development community is captured in the definition given in *Our Common Future*, the 1987 report of the Brundtland Commission:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.¹⁷

In spite of these apparent differences, the visions of the Internet governance and sustainable development communities share a number of common elements. One is a belief in the power of technology and other forms of innovation to support the realization of their respective visions—a theme that was explored in the previous section of this paper. Another is a shared belief in the transformative power of knowledge and the absolute importance of using technology to improve access to knowledge.

The papers by Tony Vetter and Eddan Katz on “Access to Knowledge in the Information Society” and Ashish Khotari on “Traditional Knowledge and Sustainable Development” point to another possible point of convergence in the visions guiding the Internet governance and sustainable development communities. Both papers raise fundamental questions about whether the models for governing knowledge generation and access developed during the industrial era are the most appropriate approaches for moving forward. Vetter and Katz raises these questions with respect to the intellectual property rights (IPR) model that largely governs access to knowledge via the Internet and other communications media, while Khotari focuses on the role that could be played by traditional knowledge (TK) as a complement to scientific knowledge in sustainable development activities.

¹⁷ Report of the World Commission on Environment and Development: *Our Common Future*, <http://www.un-documents.net/wced-ocf.htm> (accessed October 6, 2007).

As the Vetter and Katz paper shows, the historical conjuncture of new needs for widespread, affordable access to information and knowledge that are created by the rise of the global information society; the obstacles to such access created by traditional proprietary approaches, particularly in developing countries; and the opportunities presented by the Internet and other information and communication technologies for reducing the cost of information products and services and improving ease of access have had two main consequences, both of which challenge the sustainability of traditional IPR-based approaches.

On the one hand, this conjuncture has given rise to widespread violations of IPRs, particularly in developing countries and regions and by youth everywhere. These violations range from traditional forms of “piracy” (i.e., making physical copies for other than personal use without paying licensing fees or otherwise having permission to do so) to innovative technologies for sharing electronic files on a peer-to-peer basis (P2P) or creating “mash-ups” from different information sources for distribution via social networks.

On the other hand, this conjuncture has led to the development within the Internet and ICT governance communities of new models for governing the generation, dissemination and use of information and knowledge products that are based on a cooperative approach designed to lower the cost of accessing these products, as well as to encourage users to add value and in turn make the results of their work freely available. Underlying these new models is a belief that in the global information and knowledge society, cooperative approaches to generating and disseminated knowledge will yield greater overall economic and social benefits than the traditional proprietary approach embedded in IPR regimes, which allows creators to control access to their products through prices and other mechanisms. Creative commons licensing and open source software are examples of these new approaches that are designed to lower the cost of access to information and knowledge products and to increase their value to society by facilitating innovation and the widest possible use. It is interesting to note that these new approaches have attracted considerable attention in the sustainable development community.

Like IPRs, the scientific model for generating knowledge was a product of a particular historical period; its development both coincided with and contributed to the rise of the industrial model of economic and social development—a model that is being challenged by both the Internet governance and sustainable development communities through their post-industrial visions of the global information and knowledge society, and a common future in which balance is restored between the human and natural environments.

In challenging different aspects of the industrial model, members of the sustainable development community have called attention to the important roles that

traditional knowledge can play—in supporting environmentally-sustainable economic practices, preserving communities and innovation.

During the industrial era, traditional knowledge was devalued and largely displaced by scientific knowledge. However, many of the fundamental attributes of TK are well suited to the needs of communities, particularly in developing countries. Traditional knowledge tends to be local and adapted to specific economic, environmental and social contexts. It aims at achieving a mutually-beneficial relationship between the natural and human environments, so that both will be preserved from the past into the future. It is generated and disseminated cooperatively and as a part of the process of maintaining a community across generations.

The argument for traditional knowledge is of course not an argument against scientific knowledge. As the current debate about climate change demonstrates, the natural sciences and other forms of systematized knowledge play a central role in the development of economic, environmental and social policies aimed at achieving long-term sustainability. Rather, the argument for traditional knowledge is simply that it be given due weight alongside scientific knowledge in the development of policies and programs. In support of this view, Khotari provides numerous practical examples of how traditional knowledge can play an important role in helping communities develop and maintain sustainable relationships between the human and natural environments.

Superficially, steps being taken by the sustainable development community to preserve and strengthen traditional knowledge may appear to have very little in common with the new approaches to governing access to knowledge that are emerging in the Internet governance community. However, in the context of the shared belief in the transformative power of knowledge and the absolute importance of using technology to improve access to knowledge, one e-conference participant questioned whether the tendency of technology to create a common cultural plane, and the threat this could pose to traditional knowledge, would be tolerated by the sustainable development community. In contrast, another e-conference participant offered an excellent example based on the use of ICTs to improve the efficiency of the value chain of rural milk production that suggested that technologies solving particular needs get easily absorbed into lives without threatening local traditions.

Through a reflection on the issues, the Vetter and Katz, and Khotari papers suggest that the following questions may be worth exploring with the aim of strengthening cooperation between the two communities to their mutual benefit.

1. *At a practical level, it may be worth systematically exploring how the Internet and other ICTs can be used to help preserve and strengthen traditional knowledge. What kinds of policies regarding access and use are needed to support this objective?*

2. *At a policy level it may be worth exploring the underlying similarities between the access to knowledge (A2K) and the TK movements (e.g., their rejection of the proprietary model of knowledge and market-based mechanisms for obtaining access in favour of alternative models and incentives), in order to identify opportunities for building on strengths and minimizing weaknesses (e.g., Can the A2K movement recommend approaches that would protect TK against third-party exploitation? Can the TK movement help the A2K movement understand the economic and social conditions required to ensure that creative commons and open source are sustainable?)*

Indicators for development

The papers by Clark Miller on “Creating Indicators of Sustainability: A Social Approach” and Christoph Stork on “Sustainable Development and ICT Indicators” are similar in that each paper proposes new approaches to designing indicators that differs from current practice in their respective fields. At the same time, the papers present contrasting views of the kinds of information, and the nature of the epistemic processes, which are needed to create indicators that not only measure the current state of affairs in a given area, but also provide tools that can help decision-makers shape policies and strategies for moving towards desired goals—in particular, by reflecting relationships among the different factors measured by individual indicators through composite indexes and more complex development models.

Miller argues that to be useful in this broader sense, sustainable development indicators must be much more than macro-level numbers designed to measure where things stand in relation to the various categories that typically are used to analyze and compare the economic, social and environmental performance of different groups of people, whether they are grouped as country populations, demographic cohorts or market segments. Instead, in Miller’s view, sustainable development indicators should be developed from the ground up by communities in light of needs and objectives that they themselves define. Communities may be either geographical or virtual, and they may be constituted at different governance levels ranging from local to global. Reflecting this point of view that sees good indicators as intentional constructs rather than as objective measures, Miller also makes the interesting suggestion that good indicators are usually the result of policy decisions rather than a prelude to policy-making.

Stork is equally iconoclastic in relation to much of past and current practice in the field of Internet and ICT indicators. He argues that to be effective, ICT indicators need to be holistic in a number of different senses. In view of the convergence that is taking place between formerly independent ICTs—largely, although not exclusively because of the Internet—it is important that indicators not only provide information on the many different technologies, services and applications that make up the ICT sector, but that indicators also provide a sense of how the sector is changing overall as a result of technological convergence. To do this, in Stork’s view, it is necessary to complement the supply-side measures that have traditionally dominated ICT indicators with equally robust but more difficult to collect information on the demand side, since market forces are now driving all areas of the ICT sector. Finally, to help governance bodies

make the link between, on the one hand, policies and strategies aimed at developing markets for ICT goods and services and, on the other hand, policies and strategies aimed at achieving sustainable development, it is essential that ICT indicators help decision-makers measure and evaluate the impact of ICTs on economic, social and environmental development goals and objectives—an even more complex challenge.

To some extent, the differences in the approaches advocated by Miller and Stork may reflect general differences between the sustainable development and Internet governance communities, some of which have emerged in the papers presented in previous sections of this report.

One such difference may be the contrasting points of departure for indicators work in the two governance communities.

It seems fair to say that sustainable development governance processes have been concerned from the beginning with developing a holistic approach that included economic, environmental and social factors and was aimed at achieving an appropriate balance among them. If this is so, it seems natural that work on sustainable development indicators would reflect this goal and aim not only at measuring these different factors, but also at illuminating the relationships among them. As Miller suggests, given the great diversity of the world, this is perhaps something that can be done most effectively from the viewpoint of specific communities and in light of their common purposes.

ICT governance processes, on the other hand, have been primarily concerned with facilitating the supply of technologies, applications and services—latterly, through the creation of open, competitive markets. It is, therefore, perhaps not surprising that ICT indicators work has tended to focus on measuring supply and demand within the ICT sector, and has been less concerned to this point with developing a holistic view of the relationship between the development of ICTs through markets and other mechanisms, and the use of ICTs to achieve sustainable development objectives. From this perspective, Stork's call for a holistic approach is timely.

In spite of these differences in approach, there are important similarities in the nature of the policy visions that have guided indicators work in the two governance communities over the past couple of decades. During this period, an important part of the work of both communities has involved helping people see the world in a new light, so that they could better understand the challenges facing them as individuals, citizens and members of a global community, develop appropriate policy responses, and change their own behaviour.

For the sustainable development governance community, the central challenge has been to strike a new balance between economic growth, social development and preservation of the natural environment. For the Internet and ICT governance community, the central challenge has been to ensure that people everywhere are

able to use technology to improve the lives and further their development. In spite of their differences, the policy visions of a “sustainable common future” and a “global information society” share a similar fundamental purpose—to move beyond the approaches to economic and social development that emerged during the nineteenth and twentieth centuries, towards the development of new governance frameworks that will better serve the long-term interests of people everywhere by recasting rights, responsibilities, incentives and commitments in light of twenty-first century needs, threats and opportunities.

If it is true that the sustainable development and Internet governance communities share similar fundamental “policy intentions” of this kind, and that good indicators are an essential support for good policy-making, it seems worthwhile in the context of this project to identify steps that could be taken to improve cooperation between the two communities on the development of indicators. To this end, the following questions may be worth exploring.

1. *What mechanisms are needed to develop more holistic approaches to both ICT and sustainable development indicators by designing improved sets of indicators that would help policy-makers measure and evaluate the relationship between the development and use of ICTs and various aspects of sustainable development?*
2. *To what extent are the challenges involved in developing more holistic approaches conceptual—i.e., requiring fresh thinking about what kinds of things should be measured and the relationship between different variables in the ICT/sustainable development equation? To what extent do they raise practical issues of data gathering and analysis? To what extent do they entail the development of new policy approaches explicitly linking ICT and sustainable development governance?*
3. *What are likely to be the most effective strategies for developing more holistic indicators? The macro-level top-down, institutional approaches that typify much of current sustainable development and ICT indicators work? Micro-level, bottom-up, community-based approaches? Or blended approaches that incorporate both dimensions?*

In consideration of blended approaches, one e-conference participant suggested that we sometimes create difficult situations for ourselves when we try to develop the best criteria for selecting indicators (macro-level, top-down) while at the same time trying to engage the community in indicators development and selection (micro-level, bottom-up). While clearly defining what makes a good indicator is incredibly useful, this participant cautioned that the length of the list of criteria is directly proportional to the size of the barrier created for community participation. In their opinion, really good indicators tell a story you can do something about and that motivate you to action. Such an emphasis helps to avoid discouraging community members who are often made to feel ignorant or impotent by overly complex indicator criteria, resulting in resentment toward the process.

Conclusion: Towards a common agenda

As discussed in the Introduction, this collection of essays is part of a larger project that originated in the observation that the communities of researchers, policy-makers and practitioners involved in Internet governance (IG) and sustainable development (SD) live in largely separate governance universes.

The reasons for this are understandable. The SD governance universe had its origins in the environmental movement of the 1960s and 1970s. The Internet governance universe grew out of the information revolution that began to occur at about the same time, as a result of advances in computer and communications technologies. These two parallel but largely distinct movements—symbolized by the archetypes of the “tree-hugger” and the “techie”—began on the fringes of industrial society. Today, they are part of the policy mainstream in both developed and developing countries, and rank high on the international governance agenda.

As the economic, social, scientific and technical challenges that preoccupied the members of the IG and SD communities moved from the periphery of public life towards its centre, and as these challenges became concerns for all countries whatever their level of development, the range of issues addressed by the policy visions guiding the work of the IG and SD communities has steadily expanded.

Today these visions—which were most recently articulated by the World Summit on Sustainable Development (Johannesburg, 2002) and the World Summit on the Information Society (Geneva, 2003 and Tunis, 2005)—encompass most of the main security and development challenges facing the global community. The IG and SD communities share a common ambition to find global solutions to global problems.

The visions that guide the two communities are largely complementary. One deals primarily with the challenges of the material world, while the other deals primarily with the challenges of the world of ideas and knowledge. Together, they hold out the promise of a better future for our planet and its peoples. However, there are as yet very few practical linkages between their proponents—in terms of policy research, public advocacy, or participation in governance processes. The fact that WSSD paid relatively little attention to the Internet and other ICTs, while WSIS made only passing reference to environmentally-sustainable development, suggests that there is indeed a “governance gap” between the IG and SD communities.

Recent IISD publications have demonstrated that policy frameworks with the potential to bridge the activities of these two communities are beginning to emerge, and that there are increasingly strong connections on the ground between the evolution of the Internet and sustainable development practices.¹⁸

While these are encouraging signs, the fact remains that over the past two decades, international discussion, debate and decision-making about governance of the Internet and other information and communication technologies (ICTs) has taken place more or less in complete isolation from discussion, debate and decision-making about the policies needed to ensure that economic development takes place in ways that preserve and enhance the quality of the natural and human environments on which long-term sustainability depends.

This isolation does not mean that the IG community has been completely oblivious to the Internet's economic, social and environmental impacts and implications. Nor does it mean that IG activities have been focused exclusively on advancing the development of Internet technology and on resolving the increasingly complex legal and regulatory issues surrounding the deployment and use of IP-based networks—issues such as convergence, network neutrality, privacy and cyber-security.

Quite to the contrary, the Internet Governance Forum, WSIS follow-up activities, and other events dealing with Internet and ICT governance invariably include broad economic and social development questions in addition to Internet- and ICT-related technical, legal and regulatory issues, and usually make at least passing reference to environmental concerns.

What this isolation does mean, however, is that Internet governance activities often take place without the active participation of people who have expertise in these broader economic, social and environmental issues—either through participating in research on sustainable development policies and practices—or through experience exercising political, administrative, or business responsibilities in these areas—or by being engaged in sustainable development activities as members of civil society.

This lack of regular engagement with the sustainable development community means that members of the Internet governance community generally do not have ready access to evidence-based research, or to the kinds of practical insights that come from first-hand experience, when they attempt to address general issues of sustainable development or seek answers to the following kinds of questions:

18 See Willard, Terri and Michael Halder. *The Information Society and Sustainable Development: Exploring the Linkages*. Scoping Study. Winnipeg: IISD, 2005. <http://www.iisd.org/publications/pub.aspx?id=598>, and Willard, Terri and Maja Andjelicovic, (eds.), *A Developing Connection: Bridging the Policy Gap between the Information Society and Sustainable Development*, Winnipeg, IISD, 2005.

- *What has been the impact of the development of the Internet and other ICTs on the natural and human environments in developed and developing countries? In particular, to what extent have the Internet and other ICTs ...*
 - developed in ways that reduce demand for energy and natural resources, and enable them to be used more efficiently in economic processes and social life? Had the opposite effect, by stimulating demand for energy and natural resources, with negative consequences for the natural and human environments?
 - supported conservation of the natural environment and maintenance of biodiversity? Had the opposite effect and contributed to the degradation of the natural and human environments, e.g., by generating e-waste and other forms of pollution?
 - contributed to sustainable economic development in developing countries and regions by improving the efficiency of markets, supporting innovation and enabling developing country enterprises to be included in trans-national value chains? Had the opposite effect, and contributed to the economic marginalization of developing countries by excluding them from global markets?
 - contributed to maintaining and promoting cultural diversity and traditional knowledge? Had the opposite effect, and contributed to cultural homogenization and loss of human diversity?
 - contributed to mitigating the negative effects of urbanization and helped maintain the viability of rural communities? Had the opposite effect, by helping to reinforce migration from rural to urban areas?
 - led to improvements in education, health care and other public services, and to the exercise of legal, economic, social, cultural and political rights? Had the opposite effect, by increasing inequality in access to essential public services and derogating from enjoyment of the fundamental human rights enumerated in the Universal Declaration?
 - increased public awareness of sustainability issues, knowledge of good practices, access to sustainability tools, and engagement in governance processes? Had the opposite effect?
- *What demands are the activities of the sustainable development community likely to place on the Internet in the medium to longer term? How will these demands influence the development of Internet technology, applications and content? How will they help shape Internet governance discussions and decision-making? In particular ...*

- How will the needs of the scientific community for networks capable of connecting researchers, databases, sensor networks and computational resources on a global scale impact the development and management of core Internet resources, including the TCP/IP protocol suite, and the current IP address and domain name systems?
 - How can the demand of developing countries and regions for affordable access to high-bandwidth networks and services—as well as to applications and content in local languages and relevant to local needs—be more effectively met?
 - How can Internet security and quality of service be improved, so that it meets the standards expected of an infrastructure that is critical to sustainable economic and social development, public security, disaster warning and emergency assistance?
 - How can the rights of consumers and citizens be better protected in the online environment, so that they can have confidence in the Internet as a medium for economic and social development, and trust in the different kinds of transactions that take place through the Internet?
- *What policies and practices are needed to ensure that the beneficial impacts of the Internet and other ICTs on the natural and human environments outweigh their harmful effects, and to ensure that any damages they cause are remedied as rapidly and effectively as possible? In particular ...*
 - What role can top-down, framework-based, partnership approaches of the kind pioneered by the sustainable development community play in the development of these policies and practices?
 - What role can be played by bottom-up, “running code and rough consensus,” multistakeholder approaches of the kind pioneered by the Internet governance community?
 - How can these different governance approaches most effectively complement each other?

The hypothesis the IISD IG and SD project aims to test is that global governance of the Internet and sustainable development can each be improved if steps are taken to bridge the gulf that currently exists between the two communities, so that the answers given to the kinds of questions listed above (which are derived from the sustainable development agenda established by the 1992 Rio Conference and the Internet governance agenda established by WSIS) are based on the evidence, experience and insights that members of each community are best positioned to contribute.

In considering this hypothesis, it is important to note that building bridges between the IG and SD communities is a two-way challenge.

Just as the IG community has a general awareness of the potential implications of the Internet and other ICTs for sustainable development, so the SD community has a general awareness of the role these technologies potentially can play in the achievement of sustainable development objectives.

However, just as the Internet governance community currently lacks significant, ongoing engagement with experts from the SD community, so the SD community currently lacks significant, ongoing engagement with members of the IG community who could bring technical, legal, regulatory and other forms of expertise to bear on questions of common concern—either through involvement in research on Internet and ICT technologies, applications, services, diffusion and use—or through political, administrative or business responsibilities in these areas—or by being engaged in Internet governance activities as members of civil society.

Research, discussion of findings, identification of policy options, debate and decision-making in relation to the questions listed above and others of their kind is likely to be more solidly grounded, better informed, more efficient and more productive if it is based on the direct engagement and interaction of expertise, experience and insight from the two communities.

The papers presented in this collection of essays give an initial indication of areas in which it may make sense for the Internet governance and sustainable development communities to begin to cooperate more closely.

On issues related to governance structures, capacity-building and indicators, it seems clear that the IG and SD communities have much to learn from each other's experience, as well as opportunities to work together on developing new models and common approaches.

On issues related to economic barriers and access to knowledge, it is clear that in many important policy areas decisions taken by one community directly affect the ability of the other to achieve its objectives, and that there are potential benefits to cooperative policy development in such cases.

The commentaries on each pair of papers in this collection suggest a number of specific questions that the IG and SD communities may wish to consider exploring together in relation to the five issues covered in this volume. Other issues and other questions will undoubtedly arise in the discussions and debates that hopefully will follow its publication.

As well as exploring specific questions related to the five issues addressed in this publication, and others that arise of common concern to the IG and SD communities, it may be worthwhile conducting a more general examination of the overall relationship between Internet governance and sustainable development.

This examination could begin by systematically mapping the different ways in which the Internet and other ICTs affect sustainable development—positively and negatively, actually and potentially—both overall and in relation to the economic, environmental and social pillars that jointly support sustainable development. A framework of this kind could be used to identify current and emerging governance issues that need to be resolved to enable the Internet to support sustainable development policies and practices as efficiently and effectively as possible.

There is some urgency in bridging the governance gap between the IG and SD communities—whether through a bottom-up approach focused on specific issues where there is a common interest in working together, a top-down approach to mapping and exploring a shared governance terrain, or a combination of both.

In the next five years, discussions and decisions in a number of Internet governance forums, including the Internet Governance Forum and the 2008 OECD Ministerial Conference on the future of the Internet economy, are likely to have an important influence on the evolution of the Internet and its capacity to contribute to the achievement of sustainable development objectives. During this same period of time, there will be equally important discussions and decisions related to climate change and other central issues of sustainable development.

The conjunction of these events gives members of the IG and SD communities the opportunity to develop and pursue a shared agenda on issues of common concern, to their mutual benefit. However, if the members of these two communities are right about what is at stake in their respective governance domains, closer cooperation is more than an opportunity for mutual support. It is a necessity for the common good.

Appendix

The Issues: Internet Governance and Sustainable Development

One of the pairs of papers featured on the attached CD—“Internet Governance” by Jovan Kurbalija and Don MacLean; and “Global Governance for Environment and Sustainable Development” by Arthur Hanson—examines the governance processes that have been emerging in these two areas. These communities have been evolving their governance processes over decades through precedent-setting global governance initiatives that have resulted in key globally-negotiated building blocks. Both papers include narratives of how these building blocks have contributed to the formation of the global governance systems that each community continues to evolve while navigating their governance challenges. These narratives are repeated here in this appendix so that the reader may easily refer to them for additional background information as they read this booklet.

Excerpt from “Global Governance for Environment and Sustainable Development” (by Arthur Hanson)

Defining Global Governance for Environment and SD (E&SD)

Given the range of views about SD, how it should be defined, its linkages to environment, and its growing influence on global policies, any definition of governance for environment and sustainable development (E&SD) is likely to be controversial. Certainly the following statement might be of some value. Global E&SD governance is organized action on the part of individuals and organizations such as governments, intergovernmental bodies, private sector, community and NGO bodies taken to achieve E&SD objectives concerning problems of global interest, including those affecting the global commons and those of global interest that occur at sub-global or country levels.

More difficult is the matter of defining governance action not primarily intended to address E&SD problems, but which might have significant impacts on E&SD outcomes. Examples include perverse economic incentives; non-tariff trade barriers and specific international trade agreements and investment initiatives including foreign direct investment (FDI); and governance of ICT which has put in place a tremendous array of enabling tools for E&SD globally.

Building Blocks for Today's E&SD Global Governance System

It is important to recognize that the underpinnings for today's E&SD governance are derived from more than a hundred years of effort—that global sustainable development efforts have roots in conservation, public health, and integrative efforts such as those intended to deal with governance of human use of the oceans.

The main elements developed in several waves during 20th century. Early precedents such as those noted below laid the groundwork of international understanding and cooperation for later, more complex efforts to develop and be accepted. At present there is perhaps a general perception that global E&SD problems are rapidly outgrowing the global governance system intended to address them.

- Conservation and natural resource management
 - 1900–20 (National Parks, Conservation Agencies, Water Laws)
 - 1950–90 (Rise of innovative analytical approaches based on bio-economic analysis, scarcity, etc; global institutions such as FAO, IUCN, disaster response, Development Banks with resource management objectives, regional UN-linked bodies for fisheries management, etc.)
- “Modern” public health and infectious disease control 1920–present
 - By the 1920s the well established recognition of the immense value of vaccines, sanitation as a means for epidemic control, and drinking water treatment led to coherent public health programs that became the later basis for global efforts after WWII and especially with the establishment of the World Health Organization.
 - Attention shifted during the 1970s and 1980s to include a better understanding of the ecological basis for many tropical diseases in particular, and the importance of addressing vector (e.g., malaria-bearing mosquitoes) and habitat issues, leading to reasonably governed regional efforts such as control of the disease onchocerciasis afflicting people and cattle in West Africa through global cooperation.
 - During the 1990s, and to the present, emphasis has been placed on understanding zoonoses (diseases moving from animals to humans) such as those involved with the transfer of AIDS to humans, SARS and Avian Flu. Some of these have turned out to be very expensive endeavours now intended to reduce the potential of epidemics through pre-emptive rather than reactive action, and require a sophisticated global governance response. This response includes innovative public-private sector brokered deals.

- Environmental management 1970–present
 - The Stockholm Environment Conference, plus the rise of national and international environmental bodies (including UNEP) during the 1970s and early 1980s set the stage for an ever-increasing level of complexity in E&SD governance, and for dialogue continued under UN and national auspices. The preparations for the Stockholm Conference built the first truly global consensus of the significance of environment to all nations.
 - Organized international environmental lobbies, professional organizations and other non-governmental contributors to global E&SD became particularly significant forces mainly from the 1980s, often with financial backing from U.S. foundations (e.g., Ford Foundation), as well as from people through bodies such as WWF and Greenpeace.
- Biodiversity management 1980–present
 - Earlier themes of conservation, endangered species (e.g., CITES), and preservation of natural areas continue to be of major significance, but with the 1980 World Conservation Strategy, academic work on biological diversity (E.O. Wilson, Norman Myers), and rising fears that humans might create mass extinctions of species, there has been a global shift towards biological diversity, including the 1992 Global Framework Convention on Biological Diversity (CBD). It has opened complex genetic issues to global governance (Cartagena Protocol), and set the stage for the recent Millennium Ecosystem Assessment, with implications for a modern framework of ecosystem-based natural resources management.
- Sustainable development 1980–present
 - The move towards global acceptance of an integrated approach to governing relationships among environment, economy and social issues began with the World Conservation Strategy, but it received broad political support only after the 1987 report of the World Commission on Environment and Development (WCED – the Brundtland Report) and the subsequent 1992 Rio Earth Summit. Certainly the Earth Summit was a pivotal point for national sustainable development (given some direction by the consensus on Agenda 21) and by the Global Framework Conventions on Climate Change and on Biological Diversity, plus other more specialized agreements. The Earth Summit set out a new standard of transparency, openness and non-governmental participation of immense significance to global governance. It was the first global governance meeting to take advantage of ICT for document and results dissemination. Unfortunately the institutional follow-up was weak at both global (e.g., CSD, Convention Secretariats, Earth Council) and national

levels (national SD implementing bodies and plans). The influence of the Earth Summit and SD on global economic agreements was relatively weak (e.g., WTO, failure to reach agreement on a robust global investment agreement).

- The 2002 World Summit on Sustainable Development (WSSD) brought consensus on a number of themes, especially on the need to address as a means of improving and safeguarding global and local environmental conditions, on the need for protecting ecosystems, and on the need for better partnerships to implement sustainable development.
 - The Millennium Development Goals (MDGs) provide a comprehensive basis for addressing poverty reduction globally, and link environmental quality and protection, human development and economic well-being. These goals provide for a specific timetable (2015) and specific sub-goals that are a test of the global communities resolve and capacity to deliver.
- Managing human use of the global commons
 - 1982 UN Convention on the Law of the Sea (LOS) 1957–present. The 1982 Convention is often referred to as the Constitution of the Ocean. It builds upon a body of law and precedent extending from the 16th century, but particularly from unilateral declarations of extended economic zones, negotiations from the 1958 Geneva Conventions on LOS, and especially from the 1973–1982 negotiations of UNCLOS 3. UNCLOS set precedents for today’s concern for atmosphere and climate change, and for other global issues. But the LOS is hardly a global agreement for E&SD. Indeed, today many of the provisions need to be reconsidered. And the LOS opened the door to many unsustainable maritime activities, especially in relation to fisheries. Some of these are now being dealt with through derivative agreements that likely could not have been put in place without the LOS, for example, the UN Convention on Straddling Fish Stocks and Highly Migratory Fish Stocks. The World Maritime Organization (WMO) is a particularly significant body for marine shipping and environmental protection, with many achievements for pollution prevention, ship design standards, safer navigation and other contributions relevant to E&SD.
 - Atmosphere and climate 1987–present. Arguably the most successful of the global environmental agreements has been the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer. It has operated in an adaptive fashion, has involved a range of incentives and policing measures to guide action, and has involved both rich nations and developing ones. Decision-making has been science-based, and knowledge has been shared widely. Most importantly, the implications of inaction have been clearly

understood by citizens, politicians and industry. Many people considering action on climate change wonder why this larger challenge cannot be governed in a similar way, with fast results. The problem addressed by the UN Framework Convention on Climate Change and the follow-up Kyoto Protocol is, of course, far more complex and embedded in current models of economic growth, consumption and globalization. While there is great frustration at the limited achievements concerning climate change, another view is that a revolution is taking place in global environmental governance. Climate change has been the vehicle to make an irrevocable and significant connection between environment and economy in public policy. It will be the leading edge for dialogue on future environmental governance with implications for many other global agreements involving trade, public health, and environment, among others.

This list of precedent-setting global governance initiatives identifies only some of the key globally-negotiated building blocks. Agreements such as those covering trade in endangered species (CITES), movement of hazardous wastes (Basel Convention), those agreements covering migratory species of birds and marine mammals, and other multilateral environmental agreements (MEAs) have come into force over the past 30 years. Undoubtedly other MEAs will be negotiated, but there is a lot of concern about making those we already have much more effective.

**Excerpt from “Internet Governance”
(by Jovan Kurbalija and Don MacLean)**

The World Summit on the Information Society: A Turning Point?

From the viewpoint of government policy-makers, researchers, civil society organizations, and businesses concerned with the relationship between information and communication technologies (ICTs) and the great issues of global development, WSIS was in some ways similar to the 1992 Rio de Janeiro Conference on Environment and Development.

Like the Earth Summit, WSIS elevated to the highest level of the international policy agenda a complex set of issues that had been discussed and debated in UN circles and other forums for the previous two decades. For the sustainable development community, the ground for Rio had been prepared by events such as the 1972 Stockholm Conference on Human Environment and the publication of *Our Common Future*, the 1987 report of the World Commission on Environment and Development (the Brundtland Report). In the case of WSIS, a similar role in preparing for the main event was played by the publication of *The Missing Link*, the 1984 report of the Independent Commission for World Wide Telecommunication Development (the Maitland Report) and a series of conferences that subsequently took place on the relationship between telecommunications, other ICTs, and development.

Like the Earth Summit, WSIS was a world gathering as well as an intergovernmental conference. Although there was some concern before the event that WSIS might be lightly attended—coming as it did in the wake of the dot-com crisis and a meltdown in the global telecommunications industry—175 governments and 12,000 delegates participated in the Geneva phase of the summit, while 174 governments and 19,000 delegates attended the Tunis phase. In spite of the downturn in the Internet and ICT industries, and the changes in the international environment that had occurred post 9/11, WSIS showed that a substantial global community remained interested in the issues on the conference agenda.

Like the Earth Summit, two of the main products of WSIS were a declaration and an agenda—the 2003 Geneva Declaration and the 2005 Tunis Agenda for the Information Society.¹⁹ However, unlike the Earth Summit, which adopted the Convention on Biological Diversity and the Framework Convention on Climate Change as well as the Rio Declaration and Agenda 21, WSIS did not produce any documents that constituted binding international agreements—although they may come in time.²⁰

From today's perspective, less than two years after the summit took place, it is too early to tell if over the next 10–20 years WSIS will have consequences similar to those engendered by the Earth Summit by reshaping the global policy agenda in the areas it addressed. However, while its overall long-term effect is not yet known, even this close to the event it is reasonable to view WSIS as a watershed in the evolution of Internet governance.

Although the original purpose of WSIS was to substantially advance the role played by ICTs in helping to achieve the Millennium Development Goals and other internationally agreed development objectives, for the most part the summit simply consolidated and confirmed actions that were already underway. Internet governance is arguably the only area in which the summit broke new ground and where a number of significant decisions were made.

Enlarging the vision of Internet governance

Prior to WSIS, Internet governance was generally considered as principally concerned with two things; standardization and other technical matters related to the design and operation of the Internet primarily handled by the Internet

19 The WSIS output documents are available at <http://www.itu.int/wsis>. Although each phase of the summit produced two output documents, the 2003 Geneva Declaration was largely reprised in the 2005 Tunis Commitment, while the essence of the 2003 Geneva Plan of Action was incorporated in the 2005 Tunis Agenda for the Information Society.

20 The Internet Governance Project (IGP), a consortium of academic researchers, has proposed development of a framework convention on Internet governance similar in principle to the Framework Convention on Climate Change. See <http://www.internetgovernance.org/pdf/igp-fc.pdf>

Engineering Task Force (IETF); and the management of two sets of resources that are central to the functioning of the Internet in its current form:

- Internet domain names, including generic top-level domain names (gTLDs) such as “.com,” country code top-level domain names (ccTLDs) such as “.uk,” and their respective lower-level derivatives;
- the numerical IP addresses that are assigned to computers and other devices connected to the Internet.

The WSIS debate on Internet governance was triggered by dissatisfaction, particularly among developing countries and civil society, with some aspects of the arrangements for managing Internet names and numbers that had been put in place by the United States Department of Commerce in the 1990s.

These arrangements had been developed with the aim of facilitating the transition of the Internet from a U.S.-based academic and research network with a very limited number of users to a global communications medium, widely available to the general public, run mainly on a commercial basis that left it largely free from direct government control (with the potential exception of the United States government, which retained at least theoretical control over the management of key Internet resources through various contractual relationships).

The concerns of those who were either uneasy with aspects of these arrangements or outright opposed to them centred on the fact that responsibility for managing Internet names and numbers had been transferred in 1998 to a private, not-for-profit corporation—the Internet Corporation for Assigned Names and Numbers (ICANN). Previously these responsibilities had been carried out by members of the Internet community on a largely informal basis.

Although ICANN was set up to operate as a globally decentralized organization with bodies in all regions of the world, and even though its structure included a Government Advisory Committee and mechanisms for representing the interests of civil society, the governments of a number of major developing countries and some other WSIS stakeholders strongly felt—albeit for very different reasons—that ICANN was the wrong model for managing core Internet resources at a time when the Internet was becoming a critical infrastructure for economic and social development in all countries.

From the point of view of some developing countries, this responsibility should have been entrusted to an intergovernmental organization, such as the ITU. From the point of view of civil society, a less commercial approach that was more respectful of the needs and rights of individual users would have been preferable. ICANN’s status apart, the fact that the U.S. government retained control over the operation of the root server system that enables the Internet to function by help-

ing to map Internet domain name system onto IP addresses only added to these concerns.²¹

Although much of the debate about Internet governance in the early stages of WSIS centred on concerns related to the management of core Internet resources, a much broader vision of the scope of Internet governance evolved during the course of summit process.

The development of this broader vision was assisted by the report of the Working Group on Internet Governance that was set up to explore a number of key questions related to Internet governance between the first and second phases of the summit.²² Largely on the basis of this report, the sections of the Tunis Agenda for the Information Society dealing with Internet governance include not only issues related to the management of core Internet resources, but also issues that had emerged in various forums in the decade before the summit took place. These issues, and some of the main forums in which they had been discussed, included:

- the development of the telecommunications infrastructure that underlies the Internet, particularly with respect to new mobile and broadband technologies, as well as the longstanding question of how to achieve universal and affordable access to this infrastructure in developing countries—*ITU and WTO*
- the structure of the global Internet service provider industry, particularly with respect to the prices charged to Internet service providers in developing countries for interconnection with global Internet backbone networks and the lack of regional Internet traffic exchange points in some developing regions—*ITU, the Organization for Economic Cooperation and Development (OECD) and the Asia-Pacific Economic Cooperation (APEC) forum*
- the development of multilingual or internationalized domain names (IDNs), particularly in languages that use non-Roman scripts—*IETF, ICANN, ITU, UNESCO, and the Multilingual Internet Names Consortium (MINC)*
- abuses of the Internet including
 - annoyances such as viruses, spyware and spam—which has a particularly devastating impact on Internet users in developing countries who typically pay high prices for very limited Internet access—*OECD, European Union (EU), ITU and multistakeholder arrangements such as the London Action Plan*

21 See Mueller, Milton L., *Ruling the Root: Internet Governance and the Taming of Cyberspace*, Cambridge MA, MIT Press, 2002, and Paré, Daniel, *Internet Governance in Transition: Who Is the Master of This Domain?* Lanham MD, Rowman and Littlefield, 2003 for detailed analyses of issues surrounding the management of Internet names and addresses.

22 See <http://www.wgig.org> for the Final Report and Background Report of the Working Group on Internet Governance.

- various forms of cybercrime such as phishing, other forms of online fraud—*OECD and ITU, as well as in the Council of Europe which developed a Convention on Cybercrime*
- threats to the security of the Internet as critical infrastructure, including denial of service attacks—*IETF*
- the impact of the Internet on
 - human rights, particularly as embodied in the Universal Declaration of Human Rights and with respect to issues such as freedom of expression and protection of privacy—*UNESCO and the Council of Europe*
 - competition policy and consumer rights—*ITU, WTO and OECD*
 - international trade—*OECD, WTO, the United Nations Conference on Trade and Development (UNCTAD), and the United Nations Commission on Trade-Related Law (UNCITRAL)*
 - intellectual property rights—*WTO and the World Intellectual Property Organization (WIPO), which adopted a set of “Internet treaties” in 1996, as well as in ICANN (particularly the relationship between trademarks and domain names) and various standardization fora including the IETF and ITU*

In addition to these specific issues, there had been considerable discussion in the decade prior to WSIS of the general implications of the Internet for overall economic, social, and cultural development, particularly in developing countries, including issues related to

- the development of e-commerce, e-health, e-education and e-government;
- the preservation of traditional knowledge, the development of content in local languages; and
- the building of technical, financial and policy capacities in all these areas.

These more general developmental issues were extensively discussed in multilateral agencies such as the World Bank, the United Nations Development Program (UNDP), the ITU and UNESCO. In addition, they were the subject of multi-stakeholder initiatives by the Group of Eight (G8) countries and the UN ICT Task Force in the years immediately preceding the summit.

This “top-down” discussion of Internet-related issues in intergovernmental organizations was mirrored in a more bottom-up fashion by the Internet Society (ISOC), which was founded in 1992 to provide an international, non-governmental organizational structure in which members of the Internet community could discuss issues related to standards, public policy and capacity-building.

Internet Governance and Sustainable Development Towards a Common Agenda

In 2003, the World Summit on the Information Society declared its challenge “to harness the potential of information and communication technology to promote the development goals of the Millennium Declaration” with a “commitment to the achievement of sustainable development.” Governance of the Internet understandably emerged as a key issue from this process given its increasing importance to the global economy. Sustainable development efforts cannot be conceived without global communications and knowledge exchange. Therefore, the outcomes of the Internet governance debate will affect our ability to manage the social, environmental and economic aspects of sustainable development.

These two historically disparate policy communities will each gain if they can discover and leverage the overlap in their respective visions for the future. However, the pervasive, complex and intricate nature of the linkages between Internet governance and sustainable development makes this nexus difficult to define.

Can a dialogue between these two communities contribute to mitigating degradation of natural and human environments in developed and developing countries; help avoid the economic marginalization of developing countries facing digital exclusion from global markets; and help maintain and promote cultural diversity and traditional knowledge?

Internet Governance and Sustainable Development contemplates such questions, and stimulates further dialogue.

Internet Governance

DRAFT FOR DISCUSSION

Jovan Kurbalija and Don MacLean

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Internet Governance

By Jovan Kurbalija and Don MacLean
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The Internet's effect on our lives is pervasive. Over the past decade, the use of e-mail, the web, and blogs have become part of the daily routine of more than a billion Internet users, and the Internet has gradually become part of the vital infrastructure of global social, economic, cultural, and political life. Accordingly, it is not surprising that questions related to Internet governance have risen from relative obscurity to attract attention worldwide, particularly as a result of the debates that took place during the United Nations World Summit on the Information Society (WSIS) that was held in two phases, in Geneva (December 2003) and Tunisia (November 2005).

The World Summit on the Information Society: A Turning Point?

From the viewpoint of government policy-makers, researchers, civil society organizations, and businesses concerned with the relationship between information and communication technologies (ICTs) and the great issues of global development, WSIS was in some ways similar to the 1992 Rio de Janeiro Conference on Environment and Development.

Like the Earth Summit, WSIS elevated to the highest level of the international policy agenda a complex set of issues that had been discussed and debated in UN circles and other forums for the previous two decades. For the sustainable development community, the ground for Rio had been prepared by events such as the 1972 Stockholm Conference on Human Environment and the publication of *Our Common Future*, the 1987 report of the World Commission on Environment and Development (the Brundtland Report). In the case of WSIS, a similar role in preparing for the main event was played by the publication of *The Missing Link*, the 1984 report of the Independent Commission for World Wide Telecommunication Development (the Maitland Report) and a series of conferences that subsequently took place on the relationship between telecommunications, other ICTs, and development.

Like the Earth Summit, WSIS was a world gathering as well as an intergovernmental conference. Although there was some concern before the event that WSIS might be lightly attended—coming as it did in the wake of the dot-com crisis and a meltdown in the global telecommunications industry—175 governments and 12,000 delegates participated in the Geneva phase of the summit, while 174 governments and 19,000 delegates attended the Tunis phase. In spite of the downturn in the Internet and ICT industries, and the changes in the international environment that had occurred post 9/11, WSIS showed that a substantial global community remained interested in the issues on the conference agenda.

Like the Earth Summit, two of the main products of WSIS were a declaration and an agenda—the 2003 Geneva Declaration and the 2005 Tunis Agenda for the Information

Society.¹ However, unlike the Earth Summit, which adopted the Convention on Biological Diversity and the Framework Convention on Climate Change as well as the Rio Declaration and Agenda 21, WSIS did not produce any documents that constituted binding international agreements—although they may come in time².

From today's perspective, less than two years after the summit took place, it is too early to tell if over the next ten-twenty years WSIS will have consequences similar to those engendered by the Earth Summit by reshaping the global policy agenda in the areas it addressed. However, while its overall effect long term is not yet known, even this close the event it is reasonable to view WSIS as a watershed in the evolution of Internet governance.

Although the original purpose of WSIS was to substantially advance the role played by ICTs in helping to achieve the Millennium Development Goals and other internationally agreed development objectives, for the most part the summit simply consolidated and confirmed actions that were already underway. Internet governance is arguably the only area in which the summit broke new ground and where a number of significant decisions were made.

Acknowledging a role for governments in Internet governance

WSIS was the first time that a large number of governments representing both developing and developed countries from all regions of the world had attempted to agree on a comprehensive international framework for governing the Internet that included principles, objectives, priorities, and governance arrangements. The fact that the framework that emerged from WSIS was not binding does not necessarily diminish the significance of their efforts.

Unlike telecommunications and broadcasting, which traditionally had been subject to laws, regulations and other forms of government control applying specifically to these media at both the national and international levels, the Internet traditionally had been self-governing. On this basis, as WSIS recognized, the Internet had “evolved from a research and academic facility into a global facility available to the public” and had become “a central element of the infrastructure of the Information Society”—a development unprecedented in the 150-year history of electronic communications media.

In the honeymoon phase of rapid Internet growth that took place during the second half of the 1990s, it was widely believed that the Internet had created a borderless world in which the concept of national sovereignty was increasingly meaningless, a realm of cyberspace that was inherently beyond the control of national governments and intergovernmental institutions. This sentiment was most famously captured in John Perry Barlow's “Declaration of the Independence of Cyberspace,” which sent the following message to all governments: “You are not welcome among us. You have no sovereignty where we gather.

¹ The WSIS output documents are available at <http://www.itu.int/wsis>. Although each phase of the summit produced two output documents, the 2003 Geneva Declaration was largely reprised in the 2005 Tunis Commitment, while the essence of the 2003 Geneva Plan of Action was incorporated in the 2005 Tunis Agenda for the Information Society.

² The Internet Governance Project (IGP), a consortium of academic researchers, has proposed development of a framework convention on Internet governance similar in principle to the Framework Convention on Climate Change. See <http://www.internetgovernance.org/pdf/igp-fc.pdf>

You have no moral right to rule us nor do you possess any methods of enforcement we have true reason to fear. Cyberspace does not lie within your borders.”

While not fully sharing the views of cyber-enthusiasts, before WSIS the governments of developed countries generally believed the remarkable success of the Internet was due in large part to the fact that it had developed free of direct government regulation at either the national or international levels, and that the best way forward was to continue this policy. For various reasons, developing countries generally did not share this view and believed that some level of government regulation was needed at both national and international levels, if the Internet was to serve their needs as well as those of developed countries.

Given the opposing views on this fundamental question, it was by no means certain that WSIS would be able to agree on an Internet governance framework that affirmed the relevance of the principle of national sovereignty to Internet governance, and which included an active role for national governments and intergovernmental organizations. The fact that such a framework was agreed signalled that a shift in thinking had occurred, even if the results of this shift were not binding. Although the specific implications of this shift are not yet entirely clear, the following extracts from the Tunis Agenda give a general sense of its direction:

- “We reaffirm that the management of the Internet encompasses both technical and public policy issues and should involve all stakeholders and relevant intergovernmental and international organizations. In this respect, it is recognized that policy authority for Internet-related public policy issues is the sovereign right of States. They have rights and responsibilities for international Internet-related public policy issues.” (§ 35)
- “We recognize that all governments should have an equal role and responsibility for international Internet governance and for ensuring the stability, security and continuity of the Internet. We also recognize the need for development of public policy in consultation with all stakeholders.” (§ 68)

Establishing the principle of multi-stakeholder governance

Perhaps unusually for a UN summit, although the roles of national governments and intergovernmental organizations in Internet governance were hotly contested items in WSIS negotiations, the roles of the private sector and civil society were not—at least in principle.

Whatever their views about the extent to which they should or should not be involved in Internet governance, all of the governments participating in WSIS acknowledged the obvious—that the development of the Internet had been driven in the past, and would continue to be driven in the future, by the research and academic communities, the private sector, and civil society. They therefore decided that these stakeholders deserved to be treated as full partners in Internet governance institutions and processes.

As in the case of all UN summits, full participation in WSIS was limited to governments. However, in adopting the resolution that authorized the summit, the UN General Assembly

recommended the establishment of an open-ended preparatory process and invited not only governments, but also the private sector, non-governmental organizations and civil society to participate actively in this process. More significantly, the Internet governance framework adopted by WSIS was founded the principle that “the international management of the Internet should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society and international organizations.”³

The multi-stakeholder principle proved difficult to implement during WSIS negotiations. Nor is it yet clear what it means in practice—either in the new UN Internet Governance Forum that was established by WSIS, or in existing international organizations involved in aspects Internet governance, such as the International Telecommunication Union (ITU), the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO). However, it is generally believed by WSIS stakeholders that the summit’s adoption of multi-stakeholder engagement as a fundamental principle of Internet governance is an important innovation that may also be applicable in other areas of global governance, possibly including sustainable development.

Enlarging the vision of Internet governance

Prior to WSIS, Internet governance was generally considered as principally concerned with two things; standardization and other technical matters related to the design and operation of the Internet primarily handled by the Internet Engineering Task Force (IETF); and the management of two sets of resources that are central to the functioning of the Internet in its current form:

- Internet domain names, including generic top-level domain names (gTLDs) such as “.com,” country code top-level domain names (ccTLDs) such as “.uk,” and their respective lower-level derivatives;
- the numerical IP addresses that are assigned to computers and other devices connected to the Internet.

The WSIS debate on Internet governance was triggered by dissatisfaction, particularly among developing countries and civil society, with some aspects of the arrangements for managing Internet names and numbers that had been put in place by the United States Department of Commerce in the 1990s.

These arrangements had been developed with the aim of facilitating the transition of the Internet from a US-based academic and research network with a very limited number of users to a global communications medium, widely available to the general public, run mainly on a commercial basis that left it largely free from direct government control (with the potential exception of the United States government, which retained at least theoretical control over the management of key Internet resources through various contractual relationships).

³ Tunis Agenda for the Information Society, § 29

The concerns of those who were either uneasy with aspects of these arrangements or outright opposed to them centred on the fact that responsibility for managing Internet names and numbers had been transferred in 1998 to a private, not-for-profit corporation — the Internet Corporation for Assigned Names and Numbers (ICANN). Previously these responsibilities had been carried out by members of the Internet community on a largely informal basis.

Although ICANN was set up to operate as a globally decentralized organization with bodies in all regions of the world, and even though its structure included a Government Advisory Committee and mechanisms for representing the interests of civil society, the governments of a number of major developing countries and some other WSIS stakeholders strongly felt—albeit for very different reasons—that ICANN was the wrong model for managing core Internet resources at a time when the Internet was becoming a critical infrastructure for economic and social development in all countries.

From the point of view of some developing countries, this responsibility should have been entrusted to an intergovernmental organization, such as the ITU. From the point of view of civil society, a less commercial approach that was more respectful of the needs and rights of individual users would have been preferable. ICANN's status apart, the fact that the US government retained control over the operation of the root server system that enables the Internet to function by helping to map Internet domain name system onto IP addresses only added to these concerns.⁴

Although much of the debate about Internet governance in the early stages of WSIS centred on concerns related to the management of core Internet resources, a much broader vision of the scope of Internet governance evolved during the course of summit process.

The development of this broader vision was assisted by the report of the Working Group on Internet Governance that was set up to explore a number of key questions related to Internet governance between the first and second phases of the summit⁵. Largely on the basis of this report, the sections of the Tunis Agenda for the Information Society dealing with Internet governance include not only issues related to the management of core Internet resources, but also issues that had emerged in various forums in the decade before the summit took place. These issues, and some of the main forums in which they had been discussed, included:

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- the structure of the global Internet service provider industry, particularly with respect to the prices charged to Internet service providers in developing countries for interconnection with global Internet backbone networks and the lack of regional Internet traffic exchange points

⁴ See Mueller, Milton L., *Ruling the Root: Internet Governance and the Taming of Cyberspace*, Cambridge MA, MIT Press, 2002, and Paré, Daniel, *Internet Governance in Transition: Who Is the Master of This Domain?* Lanham MD, Rowman and Littlefield, 2003 for detailed analyses of issues surrounding the management of Internet names and addresses

⁵ See <http://www.wgig.org> for the Final Report and Background Report of the Working Group on Internet Governance

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- the development of multilingual or internationalized domain names (IDNs), particularly in languages that use non-Roman scripts—*IETF, ICANN, ITU, UNESCO, and the Multilingual Internet Names Consortium (MINC)*
 - abuses of the Internet including
 - annoyances such as viruses, spyware and spam—which has a particularly devastating impact on Internet users in developing countries who typically pay high prices for very limited Internet access—*OECD, European Union (EU), ITU and multi-stakeholder arrangements such as the London Action Plan*
 - various forms of cybercrime such as phishing, other forms of online fraud—*OECD and ITU, as well as in the Council of Europe which developed a Convention on Cybercrime*
 - threats to the security of the Internet as critical infrastructure, including denial of service attacks—*IETF*
 - the impact of the Internet on
 - human rights, particularly as embodied in the Universal Declaration of Human Rights and with respect to issues such as freedom of expression and protection of privacy—*UNESCO and the Council of Europe*
 - competition policy and consumer rights—*ITU, WTO and OECD*
 - international trade—*OECD, WTO, the United Nations Conference on Trade and Development (UNCTAD), and the United Nations Commission on Trade-Related Law (UNCITRAL)*
 - intellectual property rights—*WTO and the World Intellectual Property Organization (WIPO), which adopted a set of “Internet treaties” in 1996, as well as in ICANN (particularly the relationship between trademarks and domain names) and various standardization fora including the IETF and ITU*

In addition to these specific issues, there had been considerable discussion in the decade prior to WSIS of the general the implications of the Internet for overall economic, social, and cultural development, particularly in developing countries, including issues related to

- the development of e-commerce, e-health, e-education and e-government
- the preservation of traditional knowledge, the development of content in local languages
- the building of technical, financial and policy capacities in all these areas.

These more general developmental issues were extensively discussed in multilateral agencies such as the World Bank, the United Nations Development Program (UNDP), the ITU, and UNESCO. In addition, they were the subject of multi-stakeholder initiatives by the Group of Eight (G8) countries and the UN ICT Task Force in the years immediately preceding the summit.

This “top-down” discussion of Internet-related issues in intergovernmental organizations was mirrored in a more bottom-up fashion by the Internet Society (ISOC), which was founded in 1992 to provide an, international, non-governmental organizational structure in which members of the Internet community could discuss issues related to standards, public policy and capacity-building.

Today, it seems fair to say that international debate about Internet governance has been transformed by two things: the larger vision of Internet governance developed by WSIS, which drew together all these different discussion threads; and the multi-stakeholder approach to Internet governance WSIS derived from this vision.

The WSIS vision and framework have the potential to re-shape Internet and ICT-related policies, strategies and governance arrangements at both the international and national levels. In this sense, the vision of Internet governance developed through the WSIS process may play a role in the future evolution of Internet policy similar to the role that has already been played in the evolution of global development policy by the vision of environmentally, economically and socially sustainable development crystallized at the Rio summit.

Whatever the apparent similarities between the vision of Internet governance adopted by WSIS and the vision of sustainable development adopted at the Earth Summit—in terms of their comprehensive nature and potential role in transforming policy and governance internationally and nationally—the fact remains that there is at present relatively little contact between the Internet governance and sustainable development communities. David Souter, the author of one of the other papers in this collection, has demonstrated in a recently published study that, in spite of the large number of people who took part in the two phases of WSIS, only a relatively small portion came from the sustainable development community. Although its avowed goal was to link the transformative power of the Internet and other ICTs to the achievement of the MDGs and other internationally agreed development goals, WSIS was primarily an internal event, by and for the Internet and ICT community.⁶

The main purpose of this paper, as part of a larger project to help bridge the gaps that currently exist between the Internet governance and sustainable development communities, is to give a sense of the scope of Internet governance in terms of issues, institutions and processes, as well as the key challenges moving forward. As we shall see from the sections that follow, the complex web of Internet governance activities sketched out above will continue to develop along various evolutionary paths, many of which are likely to be of interest to the sustainable development community, whether or not WSIS was indeed a turning point.

Success Factors

As the previous section has attempted to demonstrate, Internet governance is very diverse. It is not one system, and this makes it difficult to make one evaluation of overall Internet governance. It is far easier to focus on specific fields, such as Internet names and numbers, intellectual property, and data protection. For an overall evaluation of Internet governance, the following factors could be used:

- preserving the global and integrated Internet (avoid risk of fragmentation)
- promoting further development of the Internet

⁶ See Souter, David, “The World Summit on the Information Society: the end of an era or the start of something new?”, Association for Progressive Communications, 2007 *Information Society Watch*, available at <http://www.globaliswatch.org>.

- preventing misuse and abuse on the Internet.

Preserving the global and integrated Internet (avoid risk of fragmentation)

One of the main advantages of the Internet is its global nature. Once connected to the Internet, any user can access any website on the Internet. In some cases, this possibility has been gradually reduced through various filtering and content control mechanisms. For example, users in China and many Islamic countries cannot access certain websites whose content is declared unacceptable by national authorities. More recently, the governments of Turkey and Thailand have filtered access to YouTube because it was hosting material that insulted Kemal Ataturk in the case of Turkey, and the King in the case of Thailand. While filtering restricts access to the website, it is still a corrective mechanism to an otherwise unified and global Internet.

In the case of possible fragmentation of the Internet, there will be separate Internets established on national or regional bases. The main risk for such a development is dissatisfaction of some national governments with the current ICANN-driven system. Hypothetically, fragmentation could lead towards creation of national root servers, which is technically feasible and relatively simple to implement. However, economic and social consequences of fragmentation of the Internet along national borders could be far reaching. Such development could be avoided by having an Internet governance system that accommodates the interests of various actors, in particular those of national states. If actors are satisfied with the ways in which their policy interests are met, they will not have any particular reason to establish alternative Internets. So far, Internet governance has been highly successful in this respect.

Promoting further development of the Internet

Internet governance has contributed to the fast development of the Internet in two directions. First, the number of Internet users has increased substantially. With the exception of a few countries, it is difficult to find any part of the world without access to the Internet. Currently, the number of users is more than one billion, with a continuous and rapid increase. Second, due to its architecture of “end-to-end networking,” the Internet has fostered creativity and fast development of various applications. Skype, Wiki, and YouTube are the latest examples of creative solutions that have developed into successful business modules. One of the main challenges for future Internet governance is to preserve and further develop an architecture that facilitates growth of the Internet.

Preventing misuse and abuse on the Internet

This is possibly the field where Internet governance has not been particularly successful. The more the Internet has developed, the more it has been exposed to misuses and abuses. The

decentralized structure of the Internet, which is considered as its strength, can easily become a weakness if cyber-criminals and terrorists use it. The lack of central authority allowed creativity on the Internet, but it can also hamper law and order. The fight against cybercrime and SPAM are a few examples where success has been limited.

Examples of successes in Internet governance

Proactive action towards the risk of shortage of IP numbers

The response of the Internet technical community to the problem of a potential shortage of IP numbers is an example of prompt and proactive governance. The concern that IP numbers might run out and eventually inhibit the further development of the Internet led the technical community to take two major actions. The first was the rationalization of the use of the existing pool of IP numbers.¹ The second action was the introduction of IPv6 (a new version of the TCP/IP protocol), which provided a much bigger pool of IP numbers, namely (430,000,000,000,000,000,000).¹ The reaction of the Internet technical community could be described—in environmental governance parlance—as a “precautionary principle.”

Cybersquatting – Uniform Domain-Name Dispute-Resolution Policy (UDRP)

The Universal Domain Name Dispute Resolution Policy (UDRP) is an example of a fast, efficient, and multi-stakeholder reaction to problems in Internet governance. The UDRP was developed in order to curb cybersquatting—the practice of registering names of companies, usually protected by trademark, and selling them later at a higher price. The UDRP was developed by WIPO and implemented by ICANN as the main dispute resolution procedure in the field of domain names. Since then, cybersquatting has significantly reduced.

Problems

In spite of its success, Internet governance has already encountered numerous problems and challenges. New problems will come with new developments of the Internet. Who was able to predict in the 1990s that SPAM would become one of the major Internet problems? While it will be difficult to anticipate, it is essential to develop mechanisms that will be flexible enough to deal with new problems. Most problems of Internet governance were already discussed earlier; here, we will focus on a few structural problems likely to influence the future development of Internet governance.

Decentralized vs. centralized structure of Internet governance

According to the decentralized view, the current governance structure reflects the very nature of the Internet: a network of networks. Such a complex setup cannot be placed under

a single governance umbrella, such as an international organization. It includes interplay among different layers (global, regional, national, and local) as well as among different types of governance (inter-governmental, professional, and communal).

The decentralized and versatile governance structure has been the strength of the Internet and one of the main reasons for its growth. No central authority could have controlled or stopped innovation on the Internet. The decentralized approach is strongly supported by the Internet community and the developed countries.

However, a traditional Internet governance scheme poses certain challenges. First, it is difficult to coordinate such a variety of institutional and professional mechanisms. The lack of coordination could lead to duplication of efforts, and to failure to cover all issues and possible misunderstandings. It can also lead to fragmentation and, in the most negative scenario, balkanization of Internet governance. Second, it is particularly difficult for countries with limited human and financial resources to follow Internet governance discussions in a highly decentralized and multi-institutional setting. Such countries find it difficult to attend meetings in the main diplomatic centres (Geneva, New York), let alone to follow the activities of other institutions, such as ICANN, W3C, and IETF. These developing countries argue for “one-stop shopping,” preferably within the framework of an international organization.

Basis of legitimacy of the Internet governance system

One of the fundamental issues is the basis of global Internet governance. In the inter-governmental segments such as intellectual property, it is clear. A usual line of decision-making and implementation is followed. Governments sign international treaties and undertake international duties. Governments implement internationally adopted rules through national legislation. Similar situations occur in the field of human rights, taxation, and customer protection.

The main challenge is in the ICANN-related sector of managing Internet infrastructure. Traditionally, the main constituency was the Internet community, consisting mainly of technologists and other people involved in development and management of the Internet. While it was an acceptable approach with a limited number of Internet users, it is increasingly difficult to justify a predominant position of the Internet community in the Internet world of one billion users. Can their pioneering role in development of the Internet justify a privileged role in Internet governance? How might we articulate the interests of those billion-plus users of the Internet? Should it be done through governments as a regular channel for democratic representation? If yes, should we be led towards a more prominent role of governments in managing Internet infrastructure? Those are some questions that have been reoccurring in the Internet governance debate. The answer to those questions will be needed in order to create a stable Internet governance system and to avoid ambiguities and possible confusion.

Technical vs. policy aspects of Internet governance

Technical solutions are not neutral. Ultimately, each technical solution or option promotes certain interests, empowers certain groups and, to various extents, effects social, political, and economic life. Internet governance issues usually involve technical and policy aspects. One of the main problems in Internet governance has been how to draw a clear distinction between technical and policy aspects.⁷

The dichotomy between technical and policy management was mainly present in discussions on ICANN's activities. While ICANN has been trying to portray itself as the organization that deals with technical issues, the critics have stressed that there are no technically neutral solutions. However, the idea of techno-neutral management has been constantly reoccurring in the ICANN-related debate. It also inspired the *Economist*, which argued that ICANN “should rethink its mission and cut down as much as possible to the technical aspects of running the domain-name system, leaving more political issues to other organizations. ICANN would then stand a much better chance of becoming a model for consensus-based self-regulation.”⁸ The recent debate over the introduction of the “xxx” domain clearly showed that ICANN will more often deal with policy than pure technical decisions.⁹ Instead of basing its position on an indefensible point of “pure technical organization” ICANN should be reformed in order to handle policy aspects, as it had to do in the “xxx” case. Without clearly articulated and designed process policy, decisions could be influenced through informal lobbying and pressure on ICANN. Dealing with policy aspects will need a different organization with a stronger role of governments and a broader legitimacy base.

How to harmonize public and private interests on the Internet

One of the main strengths of the Internet is its public nature, which enabled its rapid growth and fostered creativity and inclusiveness. How to protect the public nature of the Internet will remain one of the core issues of the Internet governance debate. Likewise, how to strike the proper balance between private and public interests in Internet governance will continue to be at the forefront of discussion. The question of public and private interests emerges in discussion of any Internet governance issue, whether infrastructure, content, access, or intellectual property. In each of the specific issues, the public-private debate has a specific focus.

⁷ Karl Auerbach made the following distinction between governance and technical issues, “If you can make a wrong decision about the thing and that causes the Internet to fail in delivering its fundamental service, then it is a technical matter.”

⁸ Available at: http://www.economist.com/research/articlesBySubjectdisplayStory.cfm?story_ID=1011796&subjectid=348963.

⁹ The “xxx” domain was supposed to be a “sex zone” on the Internet. Proponents of the introduction of the “xxx” domain argued that this domain would reduce the risk of children accessing this type of materials. Others were against the introduction of the “exxx” domain based on various religious and cultural grounds. After long debate, the Board of ICANN rejected the “xxx” domain proposal in March 2007. The main criticism of this decision was that it was made under pressure of the US government, which strongly opposed the introduction of the “xxx” domain. Interestingly, the US government was supported by many other governments, including those who are usually against the US’ predominant position in ICANN system, such as Brazil and China.

In the US, priority has been always given to the protection of private interests as the engine for business growth. For example, when Morse, one of the inventors of the telegraph, offered to sell his invention to the US government, Congress declined the offer based on its interpretation that the Constitution limited government involvement in commercial affairs. Consequently, the network of telegraph lines was financed by the private sector. The same approach applied to the development of the telephone, radio, and television. It continued with the Internet. The first principle of the *White Paper on Internet Governance* (1997), which is considered the founding document of ICANN, is that “the private sector should lead.”

Unlike the US, in other countries telecommunication infrastructure has often been developed and owned by government organisations, such as the post-telegraph-telephone. This underlying conceptual and historical difference between the US and other countries has influenced the Internet governance debate on the relationship between public and private interests.

How to anchor the Internet into existing political and legal geography

As mentioned previously, one of the early assumptions regarding the Internet was that it overcame national borders and eroded the principle of sovereignty. John Perry Barlow’s previously cited “Declaration of the Independence of Cyberspace” is an example of the predominant techno-optimism typical of the mid-90s. It was inspired by the notion that the Internet would cut the link between geography (where we live) and the political and legal systems governing our social reality.

Since Barlow’s declaration, there have been many developments, including more sophisticated geo-location software. Today, it is still difficult to identify exactly who is behind the screen, but it is fairly straightforward to identify through which Internet service provider (ISP) the Internet was accessed. In addition, the latest national laws around the world require ISPs to identify their users and, if requested, to provide necessary information about them to authorities.

Most international court cases reflect this tension between cyber and real space. It includes a considerable number of court cases starting from the CompuServe case (1996) when a German court prohibited access to pornographic materials, even if the websites were located outside of Germany. In 2001, the Yahoo case brought the question of cyber and real space in sharper focus. A French court requested the US-based company Yahoo to prevent access to Nazi materials to French Internet users. While in the CompuServe case, the solution was found in restriction to all users, in the Yahoo case, technology helped to introduce a more sophisticated filtering by using geo-location software.

The more the Internet is anchored in geography, the less unique its governance will be. For example, with the possibility to locate Internet users and transactions geographically, the complex question of jurisdiction on the Internet can be solved more easily through existing laws.

Risk of running society through software code

One significant aspect of the relationship between technology and policy was identified by Lawrence Lessig, who observed that with its growing reliance on the Internet, modern society may end up being regulated by software code instead of law.¹⁰ Some legislative functions of parliament and government could *de facto* be taken over by computer programmers and technical developers. Through a combination of software and technical solutions, they would be able to influence life in increasingly Internet-based societies. Should the running of society through code instead of laws ever happen, it would substantially challenge the very basis of the political and legal organization of modern society.

DRAFT

¹⁰ Lawrence Lessig, *Code and Other Laws of Cyberspace* (1999).

Crises and Internet governance

One of the main features of the Internet is its robustness and stability. Since the Internet was created in order to survive a nuclear attack, the complete failure of the Internet is very unlikely to happen. Although there have been many warnings of possible cyber-terrorist attacks, none have been recorded. The robustness of the Internet has been proven in a few recent global crises. While the telephone system collapsed during the 9/11 attack, the Internet functioned. Similarly, after the terrorist attack in London (2004) the Internet was the most reliable communication medium.

The doom/crisis argument was used in early WSIS negotiations on Internet governance when some argued that the failure of the root server could lead to a collapse of the Internet. Initially it captured the imagination of a few delegates and provided an argument that such an important system must be put into the hands of the UN or some other public authority. The misperception of an Internet-doom scenario was addressed quickly and debate on Internet governance became more informed and substantial. The WGIG made one of the main contributions to awareness building and learning on Internet governance.

While it is unrealistic to have the collapse of the Internet or a major Internet crisis, the Internet may be affected by other security and political crises. For example, a “9/11” influenced adoption of anti-terrorist laws in the US (Patriot Acts) introduced broad and lawful surveillance of Internet communication. The main justification for increasing surveillance is the use of the Internet as the main communication medium for the preparation of “9/11” and other terrorist attacks. The Internet is also employed by terrorist organisations for planning, recruitment, fund-raising, and delivering manuals for preparing terrorist activities. The side-effect of increased surveillance of the Internet could be the endangerment of the delicate balance between the need to protect national security and civil liberties.

According to current global trends, it is reasonable to expect future terrorist attacks and other security threats. In such a context of increasing security threats, it will be important to design response mechanisms and regulations to avoid adoption of *ad hoc* solutions. The precautionary approach would involve the adoption of international legal instruments and the establishment of necessary institutional mechanisms on the global level.

Strategies for Strengthening Internet Governance

Promotion of a holistic approach and prioritization

A holistic approach should facilitate addressing not only the technical, but also the legal, social, economic, and developmental aspects of Internet governance. This approach should also take into consideration the increasing convergence of digital technologies, including the

migration of telecommunication services towards Internet protocols. The holistic approach to Internet governance was adopted by the WSIS and it is in the basis of the Internet Governance Forum.

While maintaining a holistic approach to Internet governance negotiations, stakeholders should identify priority issues depending on their particular interests. Neither developing nor developed countries are homogenous groups. Among developing countries there are considerable differences in priorities, level of development, and IT readiness (e.g., between ICT-advanced countries such as India, China, and Brazil, and some least-developed countries in sub-Saharan Africa). On the national level, considerable diversity of position and views is apparent. In the US, it was particularly noticeable in the recent debate on Net neutrality, where the main companies of the “Internet economy” (Google, Yahoo) argued for preserving neutrality of the Internet (not discriminating different traffic on the Internet) while telecommunication and entertainment companies argued for different “Internets.” They argued for providing special facilities for distribution of video and other multimedia materials. In this debate, many developing countries are strong supporters of net neutrality because any differentiation of the Internet would leave them with inferior services.

A holistic approach and prioritization of the Internet governance agenda should help stakeholders from both developed and developing countries to focus on a particular set of issues. This should lead towards more substantive and, possibly, less politicized negotiations. The stakeholders would group around issues, rather than around the traditional highly politicized division-lines (e.g., developed vs. developing countries, governments vs. civil society).

Make tacit technical solutions explicit policy principles

It is a common view that certain social values, such as free communication, are facilitated by the way the Internet is designed technically (the “end to end” principle). However, this is not necessarily correct. The latest developments in the Internet, such as the use of firewall technologies for restricting the flow of information, prove that technology can be used in many, seemingly contradictory, ways. Principles such as free communication¹¹ should be clearly stated at the policy level, not tacitly presumed at the technical level. This does not mean that certain technological solutions cannot contribute to the promotion of certain values, as has been the case with Internet infrastructure (openness, creativity, inclusiveness).¹²

¹¹ For discussion on Internet architecture and freedom of expression, consult Julien Mailland, Note, Freedom of Speech, the Internet, and the Costs of Control: The French Example, 33 N.Y.U. J. INT'L L. & POL. 1179, 1198 (2001)

¹² Many studies argue that the growth of the Internet and promotion of certain values (free flow of information, decentralization, creativity) was facilitated by the Internet infrastructure. Some of those sources include:

- Lawrence Lessig, *The Future of Ideas: the Fate of the Commons in a Connected World* 5–23 (Random House 2001);
- Michael L. Dertouzos, *What Will Be: How the New World of Information Will Change Our Lives* (HarperEdge 1998);
- Manuel Castells, *The Internet Galaxy: Reflections on the Internet, Business, and Society* (Oxford University Press 2001);
- Michael Hauben & Ronda Hauben, *Netizens: On the History and Impact of UseNet and the Internet* (IEEE Computer Society Press 1997).

The principle of technological neutrality

According to technological neutrality, policy should not depend on specific technological or technical devices. For example, regulations for the protection of privacy should specify what should be protected (e.g., personal data, health records), not how it should be protected (e.g., access to databases, crypto-protection).

Technological neutrality provides many governance advantages. First, it de-links governance from any particular technology and makes it ready for future technological developments. Second, technological neutrality is the most appropriate regulatory principle for the future convergence of the main technologies (telecommunication, media, Internet).

The EU has introduced technological neutrality as one of the cornerstones of its telecommunications policy. While technological neutrality is clearly an appropriate principle, one can envisage many difficulties in the transition from existing telecommunication regulations to new ones. This is already obvious in areas such as Voice over IP.

Conclusion

The Internet and the entire Internet technology revolution is ultimately based on 1s and 0s. Everything we experience online has its roots in 1s and 0s. These two digits have had such an impact on society that they can be included with other major breakthroughs in the history of mankind, including fire and the wheel. They have deeply influenced social, political, and economic life.

Paradoxically, the world created by them cannot be managed by binary logic and dichotomous approaches of either/or, good/bad, progressive/regressive, open/closed, us/them. The governance of the Internet requires an appreciation of different perspectives, various approaches, subtle differences, and managing paradoxes. It has to be analogue.

The need for a careful balancing act can be found in almost any Internet governance issue. This does not make Internet governance a simple and easy governance solution. It is most likely that future Internet governance will require a difficult interplay of international and national, public and private, democratic and expert, open and efficient elements.

Global Governance for Environment and Sustainable Development

DRAFT FOR DISCUSSION

Arthur J. Hanson

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Global Governance for Environment and Sustainable Development

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September 2007

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Purpose

IISD is exploring conceptual and policy linkages between Internet governance (IG) and sustainable development governance (SDG). This paper is one half of one pair among five pairs of short scoping papers intended to identify issue areas of mutual interest between the worlds of IG and SDG. The areas of interest include: (1) similar governance challenges and (2) issues in one domain that have the potential for positive or negative influence on the other. This short paper is an impressionistic piece based on personal and institutional experience on environment and sustainable development over the past 40 years, incorporating a variety of views of others. It is intended to bring out key points that might be of interest for follow-up. The terms of reference call for “a meta-level discussion of what has emerged as global environmental governance (or, more broadly, global decision making for sustainable development).” The paper is to cover institutions, state-centred negotiations, the rise and influence of civil society, multistakeholder processes and related mechanisms. The strengths, flaws and the future of global decision making are to be reviewed. The paper is paired with one having parallel terms of reference but covering ICT (Information and Communication Technology) governance relevant to the Internet.

Defining Global Governance for Environment and SD (E&SD)

Given the range of views about SD, how it should be defined, its linkages to environment, and its growing influence on global policies, any definition of governance for environment and sustainable development (E&SD) is likely to be controversial. Certainly the following statement might be of some value. Global E&SD governance is organized action on the part of individuals, and organizations such as governments, intergovernmental bodies, private sector, community and NGO bodies taken to achieve E&SD objectives concerning problems of global interest, including those affecting the global commons and those of global interest that occur at sub-global or country levels.

More difficult is the matter of defining governance action not primarily intended to address E&SD problems, but which might have significant impacts on E&SD outcomes. Examples include perverse economic incentives; non-tariff trade barriers and specific international trade agreements and investment initiatives including foreign direct investment (FDI); and governance of ICT which has put in place a tremendous array of enabling tools for E&SD globally. These indirect influences are included in this scoping paper along with action intended to have an effect on E&SD.

Building Blocks for Today’s E&SD Global Governance System

It is important to recognize that the underpinnings for today’s E&SD governance are derived from more than a hundred years of effort—that global sustainable development

efforts have roots in conservation, public health, and integrative efforts such as those intended to deal with governance of human use of the oceans.

The main elements developed in several waves during 20th century. Early precedents such as those noted below laid the groundwork of international understanding and cooperation for later, more complex efforts to develop and be accepted. At present there is perhaps a general perception that global E&SD problems are rapidly outgrowing the global governance system intended to address them.

- Conservation and natural resource management
 - 1900-20 (National Parks, Conservation Agencies, Water Laws)
 - 1950-90 (Rise of innovative analytical approaches based on bio-economic analysis, scarcity, etc; global institutions such as FAO, IUCN, disaster response, Development Banks with resource management objectives, regional UN-linked bodies for fisheries management, etc.)
- “Modern” public health and infectious disease control 1920-present
 - By the 1920s the well established recognition of the immense value of vaccines, sanitation as a means for epidemic control, and drinking water treatment led to coherent public health programs that became the later basis for global efforts after WWII and especially with the establishment of the World Health Organization.
 - Attention shifted during the 1970s and 1980s to include a better understanding of the ecological basis for many tropical diseases in particular, and the importance of addressing vector (e.g, malaria-bearing mosquitoes) and habitat issues, leading to reasonably governed regional efforts such as control of the disease onchocerciasis afflicting people and cattle in West Africa through global cooperation.
 - During the 1990s, and to the present, emphasis has been placed on understanding zoonoses (diseases moving from animals to humans) such as those involved with the transfer of AIDS to humans, SARS and Avian Flu. Some of these have turned out to be very expensive endeavours now intended to reduce the potential of epidemics through pre-emptive rather than reactive action, and require a sophisticated global governance response. This response includes innovative public-private sector brokered deals.
- Environmental management 1970-present
 - The Stockholm Environment Conference, plus the rise of national and international environmental bodies (including UNEP) during the 1970s and early 1980s set the stage for an ever-increasing level of complexity in E&SD governance, and for dialogue continued under UN and national auspices. The preparations for the Stockholm Conference built the first truly global consensus of the significance of environment to all nations.
 - Organized international environmental lobbies, professional organizations and other non-governmental contributors to global E&SD became particularly significant forces mainly from the 1980s, often with financial backing from US foundations (e.g, Ford Foundation), as well as from people through bodies such as WWF and Greenpeace.
- Biodiversity management 1980-present

- Earlier themes of conservation, endangered species (e.g., CITES), and preservation of natural areas continue to be of major significance, but with the 1980 World Conservation Strategy, academic work on biological diversity (E.O. Wilson, Norman Myers), and rising fears that humans might create mass extinctions of species, there has been a global shift towards biological diversity, including the 1992 Global Framework Convention on Biological Diversity (CBD). It has opened complex genetic issues to global governance (Cartagena Protocol), and set the stage for the recent Millennium Ecosystem Assessment, with implications for a modern framework of ecosystem-based natural resources management.
- Sustainable development 1980–present
 - The move towards global acceptance of an integrated approach to governing relationships among environment, economy and social issues began with the World Conservation Strategy, but it received broad political support only after the 1987 report of the World Commission on Environment and Development (WCED – the Brundtland Report) and the subsequent 1992 Rio Earth Summit. Certainly the Earth Summit was a pivotal point for national sustainable development (given some direction by the consensus on Agenda 21) and by the Global Framework Conventions on Climate Change and on Biological Diversity, plus other more specialized agreements. The Earth Summit set out a new standard of transparency, openness and non-governmental participation of immense significance to global governance. It was the first global governance meeting to take advantage of ICT for document and results dissemination. Unfortunately the institutional follow-up was weak at both global (e.g., CSD, Convention Secretariats, Earth Council) and national levels (national SD implementing bodies and plans). The influence of the Earth Summit and SD on global economic agreements was relatively weak (e.g., WTO, failure to reach agreement on a robust global investment agreement).
 - The 2002 World Summit on Sustainable Development (WSSD) brought consensus on a number of themes, especially on the need to address as a means of improving and safeguarding global and local environmental conditions, on the need for protecting ecosystems, and on the need for better partnerships to implement sustainable development.
 - The Millennium Development Goals (MDGs) provide a comprehensive basis for addressing poverty reduction globally, and link environmental quality and protection, human development and economic well-being. These goals provide for a specific timetable (2015) and specific sub-goals that are a test of the global communities resolve and capacity to deliver.
- Managing human use of the global commons
 - 1982 UN Convention on the Law of the Sea (LOS) 1957–present. The 1982 Convention is often referred to as the Constitution of the Ocean. It builds upon a body of law and precedent extending from the 16th Century, but particularly from unilateral declarations of extended economic zones, negotiations from the 1958 Geneva Conventions on LOS, and especially from the 1973-1982 negotiations of UNCLOS 3. UNCLOS set precedents for today's concern for atmosphere and climate change, and for other global

issues. But the LOS is hardly a global agreement for E&SD. Indeed, today many of the provisions need to be reconsidered. And the LOS opened the door to many unsustainable maritime activities, especially in relation to fisheries. Some of these are now being dealt with through derivative agreements that likely could not have been put in place without the LOS, for example, the UN Convention on Straddling Fish Stocks and Highly Migratory Fish Stocks. The World Maritime Organization (WMO) is a particularly significant body for marine shipping and environmental protection, with many achievements for pollution prevention, ship design standards, safer navigation and other contributions relevant to E&SD.

- Atmosphere and climate 1987-present. Arguably the most successful of the global environmental agreements has been the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer. It has operated in an adaptive fashion, has involved a range of incentives and policing measures to guide action, and has involved both rich nations and developing ones. Decision-making has been science-based, and knowledge has been shared widely. Most importantly, the implications of inaction have been clearly understood by citizens, politicians and industry. Many people considering action on climate change wonder why this larger challenge cannot be governed in a similar way, with fast results. The problem addressed by the UN Framework Convention on Climate Change and the follow-up Kyoto Protocol is, of course, far more complex and embedded in current models of economic growth, consumption and globalization. While there is great frustration at the limited achievements concerning climate change, another view is that a revolution is taking place in global environmental governance. Climate change has been the vehicle to make an irrevocable and significant connection between environment and economy in public policy. It will be the leading edge for dialogue on future environmental governance with implications for many other global agreements involving trade, public health, and environment, among others.

This list of precedent-setting global governance initiatives identifies only some of the key globally-negotiated building blocks. Agreements such as those covering trade in endangered species (CITES), movement of hazardous wastes (Basel Convention), those agreements covering migratory species of birds and marine mammals, and other multilateral environmental agreements (MEAs) have come into force over the past 30 years. Undoubtedly other MEAs will be negotiated, but there is a lot of concern about making those we already have much more effective.

“Building the ship while sailing it”

(a favourite quote of Emil Salim, Chair of the WSSD, and former Minister of the Environment, Indonesia)

Putting E&SD governance systems into place nationally and globally has occurred over a period of unprecedented human population growth, unprecedented global economic growth

and rapid technology change, and over a period when the world's political systems have dealt with World War, decolonialization, the Cold War, transformation of communist systems and now a war on terrorism. Today's E&SD governance developed at a time when confidence in the UN system and Bretton Woods institutions has been severely tested.

It could be said that the presence of any sort of global governance system developed under these circumstances is a success story. But that response is inadequate given the seriousness of the planet's environmental decline, and the urgent and on-going need for development compatible with ecological limits. What are the problems and most obvious success factors in the current use of our negotiated global building blocks?

Problems

Three major conclusions emerge from the many analyses concerning negotiated building blocks for global E&SD.

- Countries have not fully integrated internationally negotiated agreements into their domestic law and policies in an effective fashion, nor have they provided sufficient funding either to support the international institutions established to implement activities (with the possible exception of the Global Environmental Facility) or to adequately fund domestic E&SD initiatives contributing to global objectives.
- Implementation of MEAs is generally weak, with limited power for dispute resolution, limited ability to monitor compliance, and limited authority to impose sanctions. Important countries have chosen not to ratify some major agreements (e.g., USA – UNCLOS, CBD, Climate Change, Basel Convention). Coordination for implementation among the MEAs and certainly among the various categories of E&SD initiatives (e.g., between those related to health and those concerned with environmental protection) has been quite limited, and both learning and capacity development have been insufficient.
- Systems for regulation and stimulation of economic activities, and for a number of globalization matters have neglected environmental impacts, and have paid lip service to E&SD over the past three decades. This has generally been the case with major trade arrangements, arguably including the WTO, despite its trade and environment committee, and the commitment to SD in the preamble of its founding constitution. It is also the case for some technologies, which have largely avoided their environmental responsibilities. Examples include the electronics industry which has failed to deal adequately with end of product life issues, including where the toxic material found within computers is likely to end up (e.g., in Chinese villages); and the global ship-breaking industry which is not well regulated in health, safety or environment. In general economic activities still trump environmental controls, and globalization abets the process (e.g., via cheap and poorly regulated shipping of containers worldwide, with inadequate safeguards against environmentally damaging smuggling, and alien invasive species). MEAs are rarely fully compatible with economic agreements, and there is a reluctance to actually address such problems, although much discussion takes place.

There are many other problems in addition to these three matters. Not all the problems can even be mentioned in this short paper. But several important examples are provided below along with some of the ways the barriers are being tackled.

Older ways of conduct sometimes get in the way of potentially better governance mechanisms. An example is the long-standing effort to promote ecosystem-based management for natural resources such as forests and fisheries, and for protection of ecological services such as water supply and flood control. It has taken initiatives such as the World Commission on Dams and the World Water Forum to change perspectives on water management; and a long series of meetings through FAO and many other organizations to move from inadequate population models towards potentially more effective ecosystem-based management of fisheries.

The great convening power around key global E&SD issues has led to genuinely global debates from the time of the Stockholm Environment Conference. The success of attracting people and opinion is unprecedented, but also a problem. It has become very difficult to draw closure to the debates. Even on matters such as technical standards. And on matters such as citizen and nations' redress for environmental damage, progress is very limited, especially for globally significant concerns. The institutions are not there to hasten progress on key matters, to resolve disputes, etc., and those in existence such as the World Court are rarely used. A significant number of trade disputes now involve environmental matters. Some of these can be addressed through trade panels via the WTO, but sometimes this is done on narrow technical grounds without full reference to the MEAs or other environmental perspectives.

There are important expectation gaps generated through global meetings that tend to settle on goals that are really aspirations rather than serious, implementable objectives. The example of the Kyoto Protocol is cited by some as the most egregious case. However, that is contentious. Another is the unrealistic objective originally proposed (but not unanimously agreed at the WSSD) to reduce biodiversity loss by 2010. At a global level this would not appear possible, although it is actionable, for example, by some European nations. Similarly, the efforts to reduce destruction of global fisheries by 2015. If anything, the effort to destroy marine fisheries seems to have accelerated in reality. This dilemma of substituting high-sounding rhetoric for more modest but potentially achievable efforts is important because it gives the naysayer community good grounds to denigrate agreements and even the system of governance. On the other hand, by setting targets that are too modest, it is sometimes difficult to get away from incrementalism and "business as usual" so that innovation can prevail.

Important knowledge required for good decisions is lacking on many global E&SD governance matters. This problem has many facets including lack of basic scientific evidence (e.g., transboundary movement of mercury and transformation within atmospheric and aquatic ecosystems); reporting systems dependent on national or local information of highly variable quality (e.g., China's production-oriented data system, Canada's lack of comprehensive state of the environment reporting); and strong advocacy positions that distort real situations and delay consensus-building efforts (e.g., opposition to IPCC reports by some fossil fuel interests).

It is hard to escape the conclusion that the existing international E&SD formal agreement and convention system, although now quite comprehensive, is still immature. Negative characteristics include the following:

- Lacks full participation of nations; free rider problem; unilateralism undermines multilateral action.
- Monitoring and enforcement are limited; non-compliance results in limited sanctions.
- Poorly funded.
- Lags behind economic governance mechanisms.
- Institutional basis is weak and sometimes disorganized; weak secretariats to administer complex global agreements; lack of a true World Environment Organization (WEO); and UNEP is kept weak by nations and by other agencies in UN.
- Very limited dispute resolution.
- Implementation capacity weak for most nations.

The E&SD agenda, however, is becoming more and more complex. This situation will persist, since the full extent of environmental problems unfolds gradually and shifts over time, including who benefits and loses. Problems often take 20 to 30 years to be recognized and as long again for effective action to be implemented to the point where there are globally significant results. The main exceptions have been the Montreal Protocol and some specific marine issues, such as catastrophic oil spills by tanker ships. Why did global governance work in such cases? Good analyses are available. More generally, there are a number of encouraging signs of how global cooperation can bring about long-term change towards sustainable development, even when short-term progress appears limited.

Success factors

Perhaps the most obvious source of success is to set clear goals and then to act on them. There are a number of examples where goal setting has led to action plans, which can then be reviewed and updated periodically to address barriers, changing needs and circumstances, etc. This adaptive approach is important, permitting long-term consistency and but also a means to introduce fresh approaches.

The global effort on clean drinking water and sanitation is a good example. This began with the 1977 UN Mar del Plata Conference and Action Plan, followed by the International Drinking Water and Sanitation Decade, a focus on water in parts of Agenda 21 and in the early years of the Commission on Sustainable Development, and more recently at the WSSD. It led to vigorous review of the value of public private partnerships for delivery of water and sanitation, community-based wells, and many other efforts that have reduced significantly the fraction of the world's population without potable water supply and sanitation. The World Water Forums, which started in the 1990s, with the fourth held in Mexico in 2006, now bring together ministerial decision-makers, stakeholders and others to promote and act on an expanded agenda that still bears remarkable resemblance to the 1977 initiative. The MDGs provide an important link between water and broader anti-poverty and

environmental goals. There is no globally-binding convention on water, and yet action has been relatively strong.

On the other hand, two other prime examples where goal-setting has been at least partially successful do involve binding international goals and obligations. These are the Montreal Protocol and CITES (Convention on International Trade on Endangered Species). It is difficult to cover all aspects of their success. Some of the important matters are that:

- Key provisions of the global agreements have become embedded in national decision-making.
- Cooperation and differentiated responsibilities exist between richer and poorer countries.
- Strong science and reporting document both needs and level of success.
- On-going public awareness and public concern, aided by media interest.
- Coordinated international efforts are involved to address global problems of compliance, including smuggling, corrupt behaviour on the part of officials, etc.
- Funding exists for capacity building and for the development of alternatives to undesirable activities.
- Regular revisions to the basic agreements (at least five in the case of the Montreal Protocol).
- Continued political ownership of the problem at the global level by the UN and by non-governmental bodies, and to some extent by industry; and at the national level by governments, including prime ministers.

These examples, and others not mentioned, suggested that progress on issues of global significance will have a 20 to 30 year period of problem definition and consensus building, followed by 30 to 60 years or more of action to bring about a favourable outcome.

Over such time spans the characteristics of the problems will change, and also the range of possible solutions. For example, in the case of CITES, the potential for applying DNA tests, bar coding and electronic surveillance, plus electronic communications between exporting and importing country customs and other enforcement officials should allow for much greater control over illegal transport of endangered species.

Some problems with characteristics and potential success factors not dissimilar to those mentioned above have been remarkably resistant to progress on global accords. An example is the failure of the global community to save tropical forests, large predatory fish such as sharks, and coral reefs. There has been limited appetite for a global agreement on forests. The efforts of the World Commission on Forests and initiatives within the UN have failed. Another is the limited progress being made to control the negative effects of small-scale gold mining around the world, even though the mines operate to meet a global demand for this precious metal. A common characteristic of these obstinate problems is that both impacts and environmental control mechanisms are mainly in the hands of national and local governments. Secondly, they are problems where there are extremely powerful economic intermediaries engaged in exploitation, driven by strong demand from export markets. And commonly, corruption and illegal activities are rampant.

An unprecedented level of cooperative global environmental science is now linked to environmental governance mechanisms. Prime examples include the following:

- Ozone monitoring in support of the Montreal Protocol and assessment of chemicals for ozone-depleting potential.
- IPCC – scientific assessment panel operating inter-governmentally, but setting the research agenda on climate for thousands of scientists around the globe. The IPCC has undoubtedly knocked decades of time off what might otherwise have been required to understand the complexity of climate change
- Global Ocean Observing System via bodies such as the IOC (Intergovernmental Oceanographic Commission), the World Maritime Organization (WMO) and ICSU (International Council for Science).
- Integrated Global Observation Strategy that links data gathered by satellites with ocean, terrestrial and atmospheric information. One contribution is the Argo oceanographic floats that monitor ocean conditions throughout the world. Argo involves international collaboration of scientists from 23 countries. It is an example of science dependent on ICT, unheralded in public, but essential for understanding complex issues such as the role of the oceans in climate change.
- Millennium Ecosystem Assessment.

These initiatives and many others provide a credible scientific basis required for every international agreement, help to build scientific capacity within developing nations, and help to make science and technology innovations more widely accessible. In some instances, such as the February 2007 report of the Intergovernmental Panel on Climate Change (IPCC), the knowledge is immediately leading to transformative change in attitudes of many governments throughout the world.

Many E&SD topics have benefited from the new ways in which knowledge is generated and flows. These new ways are highly dependent on ICT, including sophisticated modeling and use of remote sensing information; on research and influencing networks that take full advantage of Internet communications; and on watchdog mechanisms concerned about environmental and social justice. A major role of ICT has been to enable organizations to build interest and awareness, capacity and transparency/openness for dealing with E&SD. Certainly initiatives such as the Earth Negotiations Bulletin and the International Centre for Trade and Sustainable Development (ICTSD) are examples in which IISD has played a major role. But there are many more. Arguably, the myriad of partnerships that now exist to support on-the-ground implementation of global MEAs, for example, could not operate without the Internet.

The global institutional renovation that should have taken place with the roll-out of MEAs by and large, has not occurred. The proponents and opponents of proposals for creating a powerful World Environment Organization (WEO) seem to be roughly equal, and it is unlikely that such an initiative will come into existence soon. Certainly overworked and under-funded UNEP cannot be said to be that organization. However, the successful endeavours of UNEP do need to be recognized, including its role in dealing with an agreement to limit persistent organic pollutants (POPs), land-based sources of marine pollution, cleaner production in industry, its ground-breaking GEO publication, the early successes of the regional seas programme, etc.

More difficult to assess are current intergovernmental mechanisms for financial transfers such as the contribution of the GEF (Global Environmental Facility). This facility provides developing nations and regional bodies (e.g., PEMSEA, Partnerships in Environmental Management for the Seas of East Asia) with funding for activities that support globally-defined E&SD interests. It is a financial transfer mechanism from rich nations to poorer, and also helps to transfer relevant experience. However it is a ponderous mechanism, operating via several UN bodies, often with extensive national level negotiations. Given the very wide range of supported initiatives, it is sometimes difficult to understand the bigger picture of what is indeed successful. But it is a hopeful direction to pursue. Other types of transfer mechanisms such as the Clean Development Mechanism (CDM) of the Kyoto Protocol, carbon offsets and, in the past, debt-for-nature swaps have been promoted. All these financial mechanisms deserve intense scrutiny in terms of their performance and efficiency in contributing to global solutions. They should be viewed as necessary but insufficient (in terms of scale and current level of effectiveness) financial components of the global E&SD governance framework.

What is still missing in this discussion of success factors is the role of the private sector. Without a doubt business now plays a controlling role in globalization, including the development and dissemination of advanced technologies, capacity development, influence on policies and on-the-ground action, and on the directions of sustainable development investment and international trade. Potentially, the greater responsiveness and efficiency of business could accelerate progress on E&SD globally. In fact without very active engagement of business, it is difficult to imagine how any amount of intergovernmental and NGO/community action could meet the challenges we see today. Yet the roles played by national and multinational corporations in E&SD governance are not well understood by comparison to the attention given to intergovernmental processes and to NGO initiatives.

In the case of multinationals there is a complex blend of home country, host country and international marketplace considerations, and relatively scanty international laws governing behaviour. The financial sector operates globally with relatively few E&SD considerations, and, while stock markets in regions such as North America and Europe now tend to give at least some consideration to environmental track records, the same cannot be said for Asian or other stock markets. Similarly with commercial banks. Organizations such as the International Chamber of Commerce, and the World Business Council for Sustainable Development have played a useful, sometimes defining role, by highlighting positive experience of corporations that have developed global E&SD strategies. But even the more advanced of these can run into difficulties as BP discovered, when rhetoric did not match performance.

It is quite clear that for newly emerging powerhouses such as Brazil, China and India, their domestic and international private sectors will have to develop a greater level of accountability not only domestically but also internationally, as their influence on market supply chains and through overseas acquisitions increases.

What is most intriguing is the role of local business initiatives, including those such as Grameen Bank model of microcredit for businesses operated by the very poor. It is clear that advanced models for financing local enterprise provide one of the most important

elements in modern global governance, but their full potential to support global E&SD governance is not yet well explored. For example, the compensation that could be provided to farmers willing to plant trees and grasses as sources of bioenergy, for carbon sequestration in the soil, and for biodiversity conservation. In urban areas there is potential for pro-poor initiatives involving recycling and re-use, including small business enterprises that can turn waste into new products.

Addressing what appear to be intractable problems through a combination of visionary solutions and dogged work involving better deployment of existing approaches seems to be the way forward for E&SD. This leads to “glass half-full, half-empty” perceptions, with considerable confusion about what is actually being accomplished today. The state of global E&SD governance reflects this division, with mighty celebrations over minor successes, major gaps in action on certain key matters such as E&SD obligations under private sector investment (the remarkable lack of adequate regional environmental assessment and monitoring in Canadian oil sands development is an example with global ramifications), and the ability of some countries to assert that although they may have a growing ecological footprint abroad, they are still complying with international environmental laws—recognizing that the legal framework is weak and without teeth.

Opportunity for “Soft Law” and “Voluntary” Initiatives to Thrive

The on-going weaknesses of the intergovernmental system of negotiated agreements has provided massive opportunities for NGOs, the private sector, professional and scientific bodies, and individual governments to be creative in seeking precedents and new solutions for global E&SD governance. In some cases these represent end-runs around the intergovernmental process (e.g., USA-inspired Asia-Pacific Climate Initiative) but often they present a genuinely new or alternative approach (e.g., certification processes such as ISO 14001 Environmental Management; Forest and Marine Stewardship Councils; Responsible Care; carbon markets; Internet-based transparency mechanisms; international non-governmental environment and conservation organizations such as WWF, Conservation International and The Nature Conservancy with capabilities to organize at national levels throughout the world in support of global objectives such as expanding the area and effectiveness of protected areas).

The reality that global economic growth models and globalization agreements generally are still incompatible with global E&SD provides an incentive for experiments that result in “soft law” and other governance initiatives which gradually could move societies to consider new directions. Some specific drivers include:

- On-going concern that MEAs are trumped by economic agreements, with conflicting provisions.
- Inability for E&SD initiatives operating through intergovernmental channels to keep pace with other aspects of globalization, especially in rapid economic growth situations, and situations where substantial illegal activities and corruption exist.

- Absence of E&SD factors in criteria and agreements for global investment flow.
- Rampant consumerism in rich countries and soon likely also in rapidly expanding economies such as Brazil, India and China, all based on increasing material consumption and increasing energy use.
- An increasing focus on international market supply chains and ecological footprints in order to act on distant environmental impacts, and on both producer and consumer responsibility.
- Weak standing of national governmental E&SD institutions that carries over into the global governance arena.
- The ease and relatively low cost of spreading new ideas and accountability initiatives via global communications including the Internet. This has permitted many small E&SD organizations to have a large voice internationally. Through networks and national developing country organizations, the digital divide is to some extent being addressed in relation to environment and development matters.

Crises, Ordered Responses and Sustainability

Crisis is an important, albeit complex driver for E&SD governance. Truly global acute environmental crises in the form of natural disasters are still rare, thankfully. Yet events such as the Avian flu outbreak of 2005-present, the 2004 tsunami in the Indian Ocean region, impacts of El Niño, and environmental change in the Antarctic and Arctic result in global concern and concerted action by intergovernmental, national governmental and non-governmental bodies. These forces have resulted in several important innovations, or protocols for dealing with issues. These include: the recruitment of “star” status global figures such as Bill Clinton (tsunami, AIDS cheap medication), involvement of well-funded and private foundations that can massively invest in a focused way (Bill and Melinda Gates among others), cooperation and partnership between private organizations (private and non-profit) and intergovernmental UN bodies, growing involvement of the insurance sector to identify long-term damage-reduction strategies, and action plans that focus on longer-term outcomes rather than only short-term mitigation. Some of these innovations appear to be potentially very helpful in long-term resolution of convergent crisis situations towards sustainability pathways.

But there are other matters associated with crisis resolution that are less promising for sustainable development. Specifically, the militarization of development and the crossover between efforts to create stability and resolve crisis through war seem perverse, costly, and generally unlikely to succeed. This type of ordered response in which governance is attempted in the most costly way possible (Iraq, some African nations and Afghanistan) using force, is the antithesis of E&SD.

More generally still, over the past decade much attention has been given to developing a better understanding of the relationship between environment and security. One view is to broaden security from a military-oriented approach to a much broader base of human and environmental security. Another approach is to interpret acute conflict as an outcome

influenced by environmental scarcity such as access to land and water. A third approach is to look at specific human actions such as overfishing, removal of wetlands and forests, etc., as factors leading to long-term ecological decline on the planet. It is clear that all three perspectives have some validity, but rarely is the relationship simple. The role that environment and security should play in addressing global E&SD governance is not well understood, despite some good academic work by various researchers, and despite the efforts of military establishments to understand the subject from their narrower view.

The debate about environment, militarization and development centres on a couple of key governance approaches. One vision, driven particularly by civil society, is to work from the bottom-up and top-down in a transparent, participatory and cost-effective way. These are hallmarks of governance from an SD perspective. The other is an ordered response approach: to work in a secretive and costly military-supported approach to impose views generally from the outside. Bilateral aid agencies, and even the United Nations are caught between these two approaches.

The current situation in Afghanistan is an example; where the cost of the most basic development has soared since it must be delivered through military means, and, of course where decades of warfare have reduced the Afghan environment to a very fragile and unproductive condition. Now this country is Canada's largest recipient of development assistance, likely with consequences for some time to come on expenditures elsewhere in support of E&SD initiatives, and with limited hopes for creating E&SD within Afghanistan itself. This is a dilemma seen elsewhere—not just in Afghanistan—and which could affect outcomes of development spending by many countries for many years to come.

At the conclusion of the Cold War in the early 1990s there was a strong hope and even the expectation of a substantial “Peace dividend” since the stupendous expenditures for arms races and containment policies would no longer be needed. The dividend could be invested in development, especially poverty reduction, and for improvements in the environment nationally and globally. But the hope for such a dividend was quickly dashed. It simply evaporated. Little money was allocated for follow-up to the Earth Summit, bilateral development agencies were squeezed, regional wars replaced the Cold War, and then, in the aftermath of 9/11, a new round of militarization began in order to fight the “War against Terrorism.”

It is disturbing that the global effort for E&SD was more or less sidelined over the past five years, while attention focused on acute conflict and destabilization within various parts of the world. If the situation persists, then it is difficult to see how adequate and cost-effective approaches to E&SD can be instituted to deal with issues such as climate change mitigation. Yet climate change itself is destabilizing and one of the greatest factors likely to affect environment and human security. Thus it will be a factor in future militarization and governance efforts through ordered responses. In the worst case scenarios, positive feedback loops may lead to very expensive crisis management and governance based on reactive emergency responses characteristic of a “fortress world” scenario in which the richest and most powerful attempt to reduce their risk, while ignoring equity considerations and setting terms for maintaining stability among the less powerful.

Furthermore it is possible that convergent crises affecting environment, economy, social and political stability will be seen more often in the future. In the late 1990s, there was a combination of the Asian meltdown, plus a series of El Niño events in the Pacific that led to deliberate burning of drought-stricken Indonesian forest lands for conversion to oil palm estates, regional health and environmental impacts from smoke, and an enormous contribution to global carbon dioxide emissions. These problems contributed to the end of the Suharto regime and to unsettled political and declining ecological conditions that still persist within the region. In the years ahead, within the same region, a combination of destabilizing governance conditions might arise from further ecological deterioration, avian flu outbreak, and perhaps extremist terrorism in the world's largest Muslim country. In such a situation, could E&SD prosper? Already Indonesia has called for global assistance to stop forest destruction within its boundaries. And could destabilization spread globally if public health efforts to contain avian flu are unsuccessful? This case is only one of several regional events in various parts of the world that might turn into global governance nightmares. Funding for long-term matters such as biodiversity or climate change, and the elaborate structures established for E&SD governance could fail, with immense implications.

These various factors influencing environment, crises and governance responses hardly are pleasant, nor are they likely to give comfort to those hoping for a better world through sustainable development. They do highlight that global E&SD governance still ranks well below governance for traditional defence and security concerns and likely below those for public health—whether it is debate by the UN Security Council, or action by a country such as the USA, or even action by global health authorities.

Strengthened Mechanisms for Global E&SD Governance

This review of E&SD governance would not be complete without some consideration of what might be done in the coming 5 to 10 years. This time frame is perhaps the last chance to influence positive outcomes for E&SD during the critical decade of 2020 to 2030, given the lengthy lead time to mobilize global action. The second quarter of the 21st Century is significant because it is when full expression of problems associated with declining biodiversity, unsustainable water use, global climate change, consumption within major fast growing economies such as China, etc., will occur. It is the time by which the identified weaknesses of the E&SD governance framework need to be fully addressed. There are various means to do so, including the suggestions below.

- Place emphasis needs on partnership models (e.g., WSSD Type 2 Partnerships; public-private partnerships to more efficiently deliver services for water, sanitation, urban and rural infrastructure; foundation-business-intergovernmental partnership models such as those intended to deliver medications and vaccines more cheaply; co-management models for sustainable natural resource management and for nature reserve and park management, etc.)
- Improve governance of the Millennium Development Goals in order to make them achievable within the 2015 time frame originally suggested. The improvements in

governance of these global goals should be of direct value for other E&SD governance initiatives.

- Build the current wave of global interest on environment into a functional climate change action plan that has much fuller participation of all major nations. The negotiations for the post-2012 period provide the entry point for major innovations, including such matters as governance for technology transfer and co-development on leading edge matters such as carbon dioxide sequestration and coal gasification; strengthening of participation by China and other rapidly growing countries; and, in general, building an adaptive framework approach that might be more credible with both rich and poor nations.
- Prepare for the wave of innovation technologies including many associated with ICT, biotechnology, nanotechnology and possible advanced forms of energy technology. These technologies are poorly assessed by current environmental assessment approaches. Yet they are likely to play a greater role in achieving E&SD objectives. Innovation technologies may need their own E&SD monitoring framework, and dialogue mechanisms in order to overcome public distrust that translates into non-tariff trade barriers, boycotts, etc.
- Expand knowledge generation, and strengthen clearinghouse and dialogue mechanisms operation at global levels for both scientific and policy information. As well, much of the knowledge required is now integrative, for example, ocean-atmospheric interactions, market supply chains, etc. The need is to provide the most relevant decision support information required for complex governance processes in a timely way, and to all important stakeholders. This will be a challenge that can be met only through ICT innovation.
- Intellectual property rights (IPR) could become a more serious barrier to global E&SD governance, but there also are opportunities to build more workable solutions, especially for latest generation technologies in countries that are building new infrastructure. Integrative efforts are needed to (1) add IPR provisions within E&SD global agreements, (2) provide for financing arrangements in various ways, sometimes on a concessional basis, (3) combine international public-private sector arrangements with national-level legal requirements and incentive systems, and (4) develop a robust international investment agreement with suitable IPR terms.
- Obviously the creative energy that surrounds voluntary initiatives and “soft law” will continue to produce new ideas and many of these might be adopted more quickly into the intergovernmental governance processes. However, there is wariness about their effectiveness and possible financial burdens related to compliance. More could be done to address such matters, and also to build capacity. This would help to make the transition to that point where new ideas such as certification actually involve the majority of producers or retailers rather than just a limited number of leading edge firms.

- Hybrid organizations will play a greater role in global E&SD governance in the future. These are bodies that link different sectors, and levels from local or national to global. Prime examples are the IUCN, and the Davos World Economic Forum. Also, institutions that are sometimes described as “border organizations”. Such organizations sit between sectors, and between sectors, often linking different bodies of knowledge. IISD is certainly one such body, another is TERI. These institutions are generally small but nimble, with a capacity to shape global policy and governance debates in creative ways. They tread where sectoral bodies and intergovernmental organizations may have difficulty for a variety of reasons. Unless they are innovative, their reason for existence is questionable.

The problem of resolving environment and globalization relationships is looming as an ever-larger element in most E&SD governance and problem-solving. As noted in IISD’s recent publication *Five Propositions*, the influence between E&SD and globalization is two-way. They are intrinsically linked issues and therefore governance of both is interlocked. Parallel action on environment and on economic growth is not enough. As the discussion on environment, crises, and security has revealed, however, it is important to recognize these factors in future global governance adjustments. This will be an even trickier effort than the propositions outlined in the IISD paper.

Several of the solutions proposed in *Five Propositions* are worth repeating here, sometimes in modified form:

- Manage institutional fragmentation and lack of coordination among institutions that each hold part of the solution, or are in competition with each other.
- Link progressive market-based and civil society bodies that are often at the cutting edge of “soft law” with intergovernmental and other state-driven processes.
- Carry out international institutional reform at the level of sub-systems involving support systems for finance, economic development, environment, etc.
- Look for permanent links among these sub-systems in order to build a better shared vision based on sustainable development.
- Build new instruments based on interactions among two or more dynamics (e.g., trade and environment, ITC and environment).
- Improve assessments of global conditions, including topics such as ecological services, and the full benefits associated with them, who needs to receive those benefits, compensation mechanisms for their protection, and trends in their use, deterioration, restoration and protection.

This section has placed emphasis on making the existing global governance system perform better, including those elements directly related to E&SD. The alternative is to suggest a more radical makeover. While this second option is tempting to consider, it is a dangerous proposition because it could lead to a hiatus in action for a prolonged period. That is a danger with the proposal for development of a World Environmental Organization. The lesson learned so far is that it is important to create responsibility centres within all the key sectors and bodies that have a stake in sustainable development. Otherwise, it will be too easy for bodies such as the WTO to disengage from E&SD governance responsibilities,

Crossover of E&SD with ICT

E&SD global initiatives are inextricably linked to ICT, as noted through examples in various parts of this paper. This has been the case certainly since the early 1970s when satellite remote sensing (e.g, Landsat and ocean remote sensing) became available for scientific use. During the 1980s the use of desktops and supercomputers as enabling, synthesizing tools created a recognition of the value of massive data bases on which meta-analysis could take place. These tools were invaluable, for example, in discovery of the ozone hole in Antarctica. Nowadays complex simulation and computational models are the mainstay for climate change, pollution distribution, and many other E&SD problems. In the years to come, the sophistication and value of such models will be increased further. As well, tools such as GIS (Geographic Information Systems) inform decision makers on problems at various scales ranging from very local ecosystems to global concerns.

Surveillance at all scales for tracking global illegal activities, pollution flows, disease factors, migration of fish stocks, accurate identification of species, etc., has been revolutionized by IT tools such as bar codes, and by use of techniques such as DNA analysis. These efforts are path-breaking, promising enormous advances for sustainability, and for credible tracking of trade-related E&SD, for accountability (e.g., for carbon credits) and for dealing with many biodiversity, pollution and other transboundary and global environmental matters. Likely, the whole field of environmental and resource management will be transformed in the coming 20 years, but most intergovernmental and national agencies are poorly prepared, in both rich and poor countries.

The presence of the Internet and particularly the World Wide Web has led to:

- The opening of institutions to public review and better transparency.
- New watchdogs (Transparency International, etc.) capable of spreading knowledge of violation of human and environmental rights, and able to examine performance of the international, national and local governance systems.
- Institutions such as the ENB that can document E&SD global negotiation processes and outcomes and processes more or less in real time, and in a fashion that builds understanding among all key players and stakeholders, whether or not they are actually taking part in the negotiations.
- Electronic clearinghouse functions that now allow key studies and other information to be instantly accessible around the world.
- Networking among self-selecting “communities of interest.”
- Participatory video and other ICT mechanisms that “show all–tell all,” using a variety of techniques including You-tube, cell phones, and likely many other modalities in the future.

There is likely no end to future innovation in communication possibilities, with many having direct benefits for E&SD knowledge dissemination and development of points of view.

This revolution in ICT that supports global E&SD knowledge, action and governance undoubtedly has helped with accountability since transparency is now an expected part of decision making. But governance specifically related to the use of E&SD is limited. E&SD is

only one of many fields that benefit from the Internet and other ICT applications, and generally would be subject to the same constraints as other user types.

The most significant governance efforts are probably those related to scientific and management protocols related to data sharing from global monitoring programs, and in the use of surveillance and information sharing for enforcement, for example in relation to policing of endangered species, hazardous waste, pollutants, etc.

The watchdog function of Internet use is subject to increasing levels of scrutiny. China and some other countries have tried, with some success, to block websites that carry information deemed to be detrimental or controversial to governmental positions. Watchdogs could be sued by businesses or others who feel false statements have been made. And, if IPR rights are violated, or perceived to be violated, lawsuits may occur. So far, despite the millions of pages of varying credibility available on E&SD subjects, there has been surprisingly little legal action. Efforts such as the Conservation Commons that set out protocols for the use of data and information are helpful, and we might expect to see more of this.

The existing Internet governance system promotes equality between the small and creative, and the big and perhaps ponderous. It leaves the viewer to decide on the value of information. Perhaps this is the best way, since it opens opportunities to build independent screening mechanisms and appropriate ratings. Yet the increasing, even overwhelming volume of available information is creating issues that may need to be addressed. On the other hand, there are many constraints on access for people living in remote areas, for poor people, and for those whose language is not English. With the availability of instant translation likely in the near future, what are the implications for important texts that might be incorrectly rendered?

A bigger issue is whether intergovernmental and powerful national or business bodies are willing to leave the interpretation of their activities in the hands of others, or will work proactively to gradually shape delivery mechanisms, advertising standards, filtering mechanisms, etc., to better display their particular points of view. There is also the matter of standards and protocols as they might apply to user-shaped information sources such as Wikipedia.

These few examples of how E&SD governance interacts with Internet governance are illustrative rather than comprehensive. They are only a starting point to a complex topic.

Conclusion: Some important matters for good global governance of E&SD

The following characteristics are important for any initiatives on global E&SD governance: consensus-building and inclusive, participatory within reasonable limits, and with partnerships; clear and feasible objectives and well-defined implementation authority; supported with suitable knowledge and capacity development; adaptively managed to

consider changing situations and progress assessment; appropriately funded; with transparent accountability mechanism; plus perceived and actual effectiveness.

The dynamic tension between negotiated intergovernmental E&SD accords, of which there are now several hundred, with more added each year, and the broad range of “soft” law and volunteer initiatives is valuable since it creates a testing ground for new ideas while providing a body of consensus-based international law that can gradually find its way into national decision making. What is needed desperately is a way of making this patchwork effort into a more responsive and accountable system operating globally and within both rich and poor nations and regions. New efforts should focus particularly on creating a workable overall system rather than focusing mainly on individual agreements.

The biggest challenge remains the integration between environment and economy, and now, environment and security. While E&SD now has more standing than at any point in the past, it is clear that this field is still the junior partner when it comes to dispute resolution among the various types of international agreements, and in terms of funding. At the present time, global governance in all fields of environment and sustainable development play second or third fiddle to these other elements of the international governance system. E&SD agreements have been drawn up in ways that constrain their effectiveness, and are continually subject to national-level efforts to hold back action. It is quite possible that the situation will change, especially in the global governance of action on climate change. But it is not clear whether the movement will be towards effective multilateralism, or towards unilateralism, or power blocs with particular vested interested interests.

The most innovative work over the next several years for an effective global E&SD governance system is likely to be on topics such as market supply chains, various aspects of climate change, and possibly on E&SD technology transfer via partnerships. The role of countries such as China, India and Brazil in global E&SD governance may turn out to be pivotal.

As noted throughout the text of this short paper, there are many points of intersection between ICT and E&SD initiatives, locally, nationally and globally. ICT is an enabling factor in most cases, permitting rapid dissemination of ideas, tracking of products and pollutants across continents and globally, monitoring of illegal activities, even identifying previously unknown species and protein combinations. ICT also is the basis of many technology innovations for resource management and pollution control devices and systems. In the future ICT will be a major factor in transforming industrial processes, transportation systems, homes and offices towards low energy, non-polluting outcomes. Globalization will have to be reshaped to ensure that these benefits are widespread and occur much more swiftly than in the past. And that truly is the point of convergence for a number of global governance concerns, including those for E&SD and for the Internet.

Economic Barriers to Development

Cost of access to Internet infrastructure

DRAFT FOR DISCUSSION

Abi Jagun

September 2007



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Economic Barriers to Development: Cost of access to Internet infrastructure

By Abi Jagun
September 2007

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DRAFT

Introduction

The Internet is increasingly viewed as an “indispensable” resource for general development and economic growth (UNDP 1999). Its adoption by governments, organizations and individuals has resulted in the shrinking of spatial and temporal distances between different regions of the world, and has greatly facilitated the “free” and quick exchange of information. Such constrictions of time and space impact upon social and economic interactions at all levels of society. Furthermore, ramifications of this impact are felt by a society, group or individual irrespective of whether or not they use the Internet. The ability to access the Internet, and in particular the costs associated with such access, are therefore important points of consideration. Not only do these costs contribute to the disproportional spread of the Internet across the world's population; they also potentially contribute to uneven patterns of development within, and between countries.

This chapter discusses the cost of Internet access by identifying and describing factors that contribute to the high costs experienced in developing countries. The discussion is categorized according to the technological, market, and socio-economic conditions that exist in developing countries.

Factors Contributing to Access Cost

Various studies and commentaries exist on the causes and effects of the cost of Internet access in developing countries (Zennaro et al. 2006; Jin 2005; ITU 2003; Ngini et al. 2002; Sarrocco 2002; Petrazzini and Kibati 1999). These studies agree that high cost of access impedes the ability of developing nations to connect to networks of economic growth, and to benefit from infrastructure that can facilitate socio-political development. The contributors to high cost of access include the following:

Technological conditions: Lack of adequate Internet infrastructure

There is consensus amongst operators and decision makers that the technological conditions prevailing in a country shape the ability of its population to gain access to the Internet. These technological conditions include:

- The level of development of the telecommunications (telecom) infrastructure within the country. In particular the range and choice of access technologies that exist (i.e., technologies that the population can use to access the Internet—fixed line, cellular/mobile, satellite, cable television etc.)
- The spread or deployment of the telecom infrastructure across the country's population.
- The bandwidth capacity of the country's telecom network (i.e., the amount of information or data that can be carried or sent on the telecom infrastructure).
- The number of Internet “host” computers in the country and/or region.
- The presence or lack of regional network backbones between/across countries.
- The presence or lack of Internet exchange points.
- The presence or lack of international network backbone infrastructure.

In most developing regions, the choice of access technologies is predominantly limited to fixed and fixed-wireless lines. Whilst availability of cellular/mobile technologies is increasing, the low bandwidth capacity they offer, and physical attributes of end-user terminals, limit the types of services and applications that can be delivered through them. Optical fibres are generally unavailable (especially in the “last mile” portion of telecom infrastructure), and satellite links are limited and expensive.

Furthermore, telecom infrastructure in developing countries also tends to be concentrated in a few urban areas/cities. This uneven spread or deployment of infrastructure places the rural population at a disadvantage and results in a significant proportion of the population having limited or no access to the Internet¹.

The level of development of the telecom infrastructure in developing countries; in terms of the limited availability of access technologies and uneven deployment of the infrastructure impacts upon the bandwidth capacity that is available in these countries. Low bandwidth is associated with poor telecom infrastructure; and this is illustrated by Table 1 which compares the bandwidth that is available to the population of different regions of the world. Approximately 88 per cent of the total bandwidth available worldwide is located in developed regions of the world. Using the indicator “bits per inhabitants.” Table 1 shows that a person living in Europe has access to approximately 570 more bits of bandwidth than someone living in Africa. This situation in Africa is also succinctly described in Zennaro et al.’s (2006) assessment of Internet connectivity in the region. Their study showed that many of the Internet access sites, which (incidentally) were supporting hundreds of users, have less bandwidth than many homes with DSL, cable, or dial-up modems in developed countries. Furthermore, bandwidth is unevenly distributed on the continent with Egypt accounting for approximately one third of Africa’s international internet bandwidth. South Africa is the second most connected country on the continent, followed by the more industrialized North African countries—Algeria, Morocco, and Tunisia (IDRC 2005).

¹ For example more than 70 per cent of Africa's population live in rural areas. The level of a country's connectivity infrastructure can also be assessed using the ITU's teledensity indicator—the number of wired residential and business lines per 100 people. Teledensity value that is less than 10 is associated with countries with high connectivity (ITU 2003).

			AFRICA	ASIA	LAC
International Bandwidth	% of World	Bits per inhabitant	Less than other regions	Less than other regions	Less than other regions
(Mbps)			[approx]	[approx]	[approx]
2004		2004	2004	2004	2004
World	4,704,468.8	759.0			
Africa	5,329.4	0.11%		0.05	0.04
Asia	474,207.3	10.08%	20.0		0.9
Latin America and Caribbean	80,377.0	1.71%	22.9	1.1	
Oceania	26,789.6	0.57%	131.6	6.6	5.8
Europe	2,929,246.0	62.27%	569.2	28.4	24.9
North America	1,188,519.5	25.26%	3,647.9	28.4	24.9

Bits per inhabitant = International Bandwidth/Population

Source: ITU (2006) World Telecommunications Indicators Database

Table 1: Distribution of International Bandwidth across Regions

Although often referred to as ethereal "cyberspace", the Internet is in fact interconnected physical networks of public and private infrastructure and content providers. A key technological requirement of using the Internet is that a user on one network can communicate with users or resources located on other networks. The following technological conditions impact on the ability and efficiency with which developing countries fulfil this requirement.

Internet "hosts" are computers that are connected to the Internet and provide content, information, and e-commerce activities (Roycrof and Siriwan 2003). According to Petrazzini and Kibati "... more than 97 per cent of all Internet hosts are in developed countries that are home to 16 per cent of the world's population" (1999:31). This means that for the majority of people in the world, requests for, and transfer of information and data via the Internet are fulfilled via international connections to computers in developed countries. Furthermore, the cost of transferring information and data via these international connections is borne solely by Internet Service Providers (ISPs) and operators in developing countries (who invariably pass it onto the end user—Chisenga 2000; Adams 1997). These costs can be substantial, for example in 1999, the Asia & Pacific Internet Association (APIA) estimated that as much as US\$5 billion per year was accruing to US telecommunication operators as a result of non-US ISPs and operators bearing 100 per cent of the connection cost with the US Internet network as well as of the circuits to the United State.

The number of Internet "host" computers in developing countries and/or regions can therefore have an impact on cost of access. Hosts located in developing regions can serve as storage for information retrieved from other remote computers (a process known as "caching"). Information and data requested by users can then be supplied from content caches located in their country or region, instead of connecting to a host located in a developed region. This would reduce the use of expensive international bandwidth and thereby save on cost.

However, savings through increasing the number of hosts in developing countries/regions to a large extent depend on the presence of regional backbone networks within and across these countries/regions² and Internet eXchange points (IXPs). IXPs allow ISPs to exchange Internet traffic between their systems, whilst regional networks facilitate the transfer of traffic between countries in a geographic region. Where IXPs and regional backbones are ill developed or absent, connectivity is accomplished using international routes.

With respect to telephone calls, Dhliwayo (2005) estimates that approximately 90 per cent of calls from African countries to other African countries are routed through Europe or North America at a cost of USD400 million a year. Likewise with Internet connectivity, in the majority of cases, communication between African countries is effected via North America or Europe. Figure 1 below illustrates this scenario and relates to the transfer of data between a specific location in South Africa and various other locations throughout African. As can be seen from the map, few countries within Africa have direct connectivity with South Africa—only Botswana and Zimbabwe; and in some cases, for example Burkina Faso, Internet traffic from South Africa first goes to Europe, then USA before finally reaching its destination (ICFA 2007).

Further compounding the technological conditions described so far is the limited presence or availability of international backbone infrastructure in developing countries. International backbone facilities provide high-capacity network connections between countries and regions and these are currently concentrated in the developed regions of the world. There are fewer submarine fibre cables serving developing regions and the reliance on satellite connectivity has implications on the capacity, speed and cost of access.

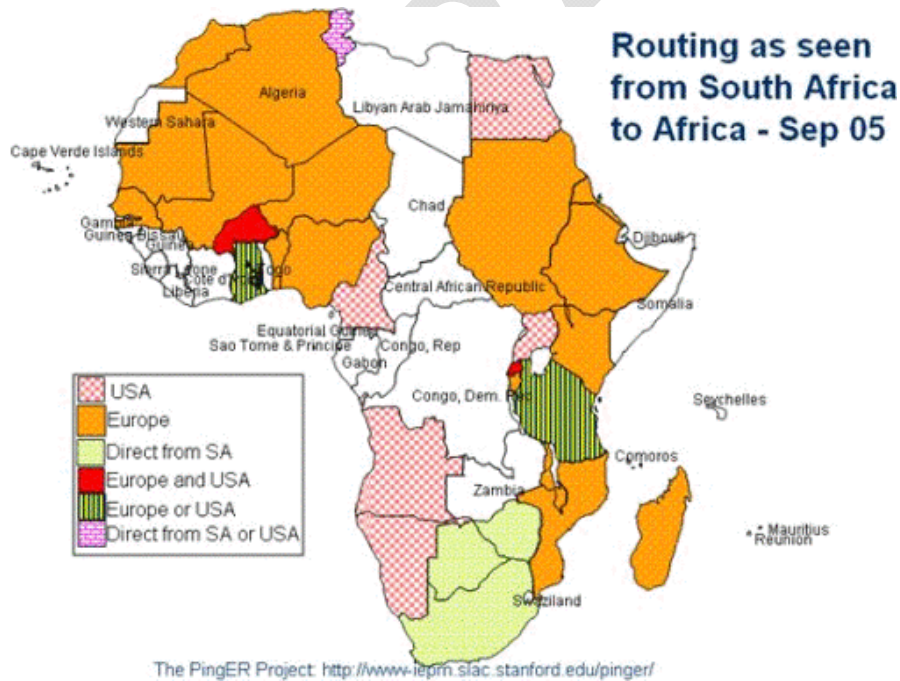


Figure 1: Illustration of routing between African countries

² This is in addition to the level and reach of telecom infrastructure development within individual countries—i.e., national backbone network.

To summarize, underdeveloped infrastructure has been described as the “main problem” facing developing countries in relation to access cost (Smith 2000). From the developing world’s current viewpoint access to the Internet is attained predominantly through limited Internet access facilities and on limited national data networks. Furthermore, demand by users is for proportionally larger volume of international content (as opposed to domestic content), which can only be provided through limited international bandwidth and at significant interconnection costs (Roycroft and Anantho 2003).

Technological conditions: Access to applications and content

As highlighted in the preceding section, the dominant contributor to the high cost of internet access in developing countries is lack of adequate infrastructure. However, other technological factors contribute to cost, particularly those that determine how effectively people can make use of the Internet once they are able to connect to it. These limiting factors are easier to identify when the structure/architecture of the Internet is described using a “layered model.”³

This chapter combines Benkler (2000) and Lessig (2001a) interpretations of the layered model which categories the structure of the Internet into three layers—the *Physical Layer* at the base; upon which sits the *Logical Layer* or *Code Layer*, and the *Content Layer*, which represents the topmost level of the model (see Table 2). The physical layer refers to the networks, wires, cables, and equipment that both constitute the physical infrastructure called the Internet, as well as those required to connect users to the Internet. The logical or code layer is comprised of software protocols and applications that determine if, and how access to the Internet is obtained and managed. The content layer comprises the “actual substance of communications” (UNCTD 2006:279)—that is the data or information that is accessible to users via the Internet.

The “success” of the Internet lies in the ability of these layers to function and interface with each other. The physical network is largely private owned (predominantly by large telecom or cable companies), and there are many proprietary applications in the logic or code layer. Also, data and information that exist in the content layer are often protected and exist in different formats. Yet irrespective of who designs, manages, or controls the activities or content in each layer, access to the Internet is accomplished because the various layers have been made to function and interconnect with each other.

Factors that therefore limit or inhibit the collective functioning of the layers impede access, and as such contribute to increasing the cost of access.

³ Various interpretations of the layered approach exist; these have as there basis the technical Open Systems Interconnection (OSI) model developed by the International Organization for Standardization and the International Electrotechnical Commission. Interpretations of the OSI model include those by Solum and Chung (2003), Werbach (2002), Lessig (2001a), and Benkler (2000).

CONCEPTUAL LAYER	SUBJECT ¹	GOVERNANCE ISSUES
Content	Text, data, graphics, audio, video, etc.	Spam, Local content
Logical Layer or the Code Layer	Browsers, e-mail clients, anti-virus software, streaming media players, etc.	Data protection, privacy rights
	HTTP, FTP, DNS, BioTorrent, etc.	Cybercrime
	TCP, UDP, etc.	DNS root server system
	IP (IPv4, IPv6) etc.	IP addressing
	Ethernet, Wi-Fi	Stability
Physical Network	Binary transmission	Access, costs

Source: UNCTD (2006) *Information Economy Report 2006: The Development Perspective*. United States, New York: United Nations. Page 280

¹ For definitions of protocol acronyms please refer to Annex 1 of UNCTD publication

Table 2: *Conceptual Layers of the Internet*

A selection of such limiting factors is highlighted in Table 2 (under the title Governance Issues). Two of these factors, namely spam, and the cybercrime implications of illegal use of propriety software are now discussed from the perspective of access costs.

Spam

Spam refers to unsolicited bulk electronic messages, which can be advertising information or avenues for criminal activity such as "... financial theft, identity theft, data and intellectual property theft, virus and other malware infection, child pornography, fraud, and deceptive marketing" (Wikipedia *nd*). The most common type of spam is email spam but the term is also used in describing unsolicited (and often undesired) messages that are sent to target groups or applications, including instant messaging systems, newsgroups and forums, and sites that provide opportunities for users to contribute—such as blogs, wikis and guestbooks.

Spam is said to thrive because the costs incurred by originators of spam are low; yet, the costs incurred by Internet service providers and users in receiving, storing, and downloading spam is much higher in comparison (OECD 2005). Specific to the cost of Internet access in developing countries, high volumes of incoming and outgoing spam are an addition burden on the already limited bandwidth that is available. Receiving ISPs in developing countries must bear all the cost of receiving, handling, sorting, and delivering spam to users. Furthermore, users in developing countries must bear the cost of downloading spam in their mailbox. As connection to the Internet is often at low speeds and via limited bandwidth capacity, this constitutes an unnecessary cost to both users and ISPs.

Indirect costs are also incurred in the form of the frustration experienced by users in making use of the Internet, and can lead to reductions in trust of the Internet, and loss in productivity of individual and business users. This is in addition to less quantifiable costs that are incurred as a result of users falling prey to spam that are malicious (e.g., corruption or destruction of data as a result of a virus) and/or of criminal intent (e.g., financial loss resulting from fraud or identity theft).

Fortunately, software applications exist to combat spam; and most email applications offer functionality that allows users to filter out spam. Even though the spam would already have been processed by the ISP and downloaded by the user, this can reduce losses in productivity to the user. These applications like the most of those constituting the Logical/Code layer are proprietary and available for (legal) use upon payment of a fee.

Proprietary software

Two key issues are raised by proprietary applications in relation to cost of access; these are first the need for adherence to standards that allow for products, services, hardware and software created and owned by different parties to interoperate and work together. This increases (amongst others) the choice that is available to users and the cost benefits associated with the competition such choice engenders (and vice versa). The second relates to the fee paid to use proprietary software and limitations that are placed on the use of such software. In general, propriety software prohibits users from changing and modifying the software, and from redistributing it in modified or unmodified forms.

The high cost of software applications and licenses in relation to the purchasing power of developing country populations has led to high incidences of software piracy in these countries. Acts of piracy are classified under cybercrime; however from the analysis below it can be deduced that the utilization of the Internet and computer networks for socio-economic development in (at least) developing regions has been to an extent *facilitated* by such acts.

“By conservative estimates we have 1 million computers in India. If we were to install a legal version of the default operating system and office suite on each of these machines, India would have to pay a single American company approximately \$400 million every two years. This excludes client software for desktop publishing, web design, 3D modelling, drafting, animation, audio and video production, integrated development environments, accounting and finance, enterprise management and planning. To this, add the cost of mail, web, file, print, chat, database, application server software which are usually more expensive than client software. Therefore putting legal software on a million odd Indian computers will result in the total value of software imports far exceeding software exports.” (Abraham 2003)

The situation is further complicated by the dependencies that can arise when content is available in a format that requires that users have access to a specific application in order to view and manipulate it, both in the present and in the future. For example, public documents that are distributed solely under a propriety format can in effect increase the cost of access to their intended users.

In response to the limitation posed by propriety software, alternative products such as Free and Open Source Software (FOSS) and alternative licensing regimes (for example Creative

Commons, Copyleft etc.) have arisen that help to reduce the costs and (legal) risks associated with proprietary software and content. These “solutions” are not without their own challenges—for example FOSS is criticized for lacking adequate support for non-technical users and some software products under this category are relatively less mature than their proprietary counterparts (Hoe 2006a). Notwithstanding, they offer what can be considered an affordable means of building information and communications technology capacity which facilitates access to, and use of the Internet, particularly in developing countries.

In summary, analysing the structure/architecture of the Internet using a layered approach highlights areas (in addition to physical infrastructure) in which developing countries face technological challenges to their ability to access and make use of the Internet. These include the affordability of software applications that facilitate access to the Internet and content that is distributed on it. It also includes the extent to which such software applications allow for users to legally modify them for their own use and that of others, and to create their own content. Free and open source software, and alternative licensing regimes that enable copyright holders to grant some or all of their rights to their users are examples of products or mechanisms that reduce these technological challenges, and which can potentially lower the costs that results from them.

Market conditions

Technological conditions are not the only factors influencing the cost of access. Whilst having infrastructure in place is crucial, service charges⁴ for the use of such infrastructure in connecting to the Internet vary according to a country’s regulatory and licensing regime, the maturity of its telecom and Internet markets, and the costing methodology adopted by ISPs and telecom operators (Biggs and Kelly 2006; Sarrocco 2002; Afullo 2000; Chisenga 2000).

Market characteristics are therefore another major underlying reason for disparity in global access costs. Characteristics that are discussed below include:

- Regulatory and licensing regimes.
- Competitive structure of telecom and Internet services markets.
- Access to investment capital.
- Pricing policies adopted by operators.

Experience has shown that liberalization and privatization can transform telecom markets. An overview of the historical development of telecom in various countries indicates that deregulation of the sector; decreasing state intervention and participation in the delivery of telecom services; market liberalization; and increased private sector participation have in the majority of cases yielded positive results.

In countries where sector reforms have implemented, the result has been the expansion and modernization of telecom networks. In developing countries, improvements have been recorded in the deployment of fixed networks, but more widely reported has been the explosion of mobile networks.

⁴ These services charges typically include usage fees and local call telephone time (but exclude phone line rental).

It is however fixed networks that are (currently) the more critical infrastructure for Internet access; yet growth of such networks has been slow. Table 2 below highlights the compounded growth rates of “main telephone lines”⁵ in selected regions between 2000 and 2005. Whilst all regions registered some growth over the five year period, when this is related to their population certain regions appear to have done better than others (in particular South Asia). For example, the 7 per cent growth in fixed lines for sub-Saharan Africa (excluding South Africa) over the period has had little impact on (fixed line) teledensity in the region—which in fact decreased and stood at approximately 3 phones to every 100 people in 2005. A similar decreasing pattern (although with lower rates of growth in fixed lines) was observed in Oceania (excluding Australia and New Zealand) and in Latin America and the Caribbean. Clearly more needs to be done in improving the situation in these regions, and the answer may lie in increased competition within the telecom sector.

Main Telephone Lines

	Main telephone lines			Main telephone lines per 100 inhabitants		
	(000s)		CAGR (%)			CAGR (%)
	2000	2005	2000 - 05	2000	2005	2000 - 05
South Asia	37082.70	56921.10	14.03	2.81	2.98	11.83
Sub-Saharan Africa (exc. South Africa)	4538.40	5086.40	6.68	3.42	3.02	3.94
North Africa	10230.00	3263.36	6.68	8.05	10.46	5.24
Central Asia	6291.60	7638.70	4.21	9.54	11.35	3.89
Oceania (exc. Australia and New Zealand)	411.10	359.80	3.75	13.99	11.38	2.32
Middle East	18384.10	31563.20	7.95	15.61	17.93	5.21
Latin America and Caribbean	76655.90	98515.10	3.99	22.11	20.76	2.57
East Asia and Pacific	274873.20	496880.20	7.69	21.89	22.59	6.63

Source: Adapted from ITU ICT Statistics. Available online at <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx>

Table 3: Growth in Fixed Lines - Selected Regions

The opening up of the telecom sector, on its own, is often insufficient in bringing about the development of meaningful competition. Firstly, in many developing countries, regulatory reform is not implemented across all segments of the sector. For example, whilst the market for Internet services is often open to participation by many providers, that for basic telecom services tend to operate under monopoly conditions. The effect is that the decrease in the price for Internet access by end users, which result from competition amongst providers; are cancelled out by the high prices these providers must pay for uncompetitive basic services.

Secondly, achieving meaningful competition may be hampered by restrictive policies and inflexible licensing regimes. In developing countries, this relates in particular to the use of unlicensed bands of spectrum⁶ and satellite bandwidth, and means that telecom sectors in these countries are unable to capitalize on benefits that could accrue from technological innovations.

⁵ Defined by the ITU as “... telephone lines connecting a customer's equipment (e.g., telephone set, facsimile machine) to the Public Switched Telephone Network (PSTN) and which have a dedicated port on a telephone exchange. Note that for most countries, main lines also include public payphones. Many countries also include ISDN channels in main lines” (2006:3)

⁶ That is spectrum that has been set aside for transmission use without a licence.

Thirdly, competition is difficult to achieve where there are difficulties in accessing investment capital (Sarrocco 2002). Due to the substantial investments required in building and/or upgrading national communications infrastructures, there is a tendency for the incumbent operator to dominate the telecom market (ITU 2003). Thus whilst countries are adopting market liberalization reform initiatives and implementing policies that complement such initiatives, some governments have also taken more “active” roles in deploying infrastructure and fostering competition. Several governments have funded the development of Internet infrastructure (in particular broadband) in its early formative years (Jin 2005). In Singapore (via Singapore One) and Korea (Korea Information Infrastructure) for example, government planning and funding have played pivotal roles in the rollout of broadband services. In Korea, the government invested a total of US\$11 billion in broadband services between 1998 and 2002 (Belson and Richtel 2003), and in 1999, US\$77 million was made available in loans (at the prime rate) to ISPs for investment in access networks (Kim 2002).

Finally, competition can be further enhanced once Internet access technologies are incorporated into the business development strategies of the incumbent operator, dominant players and/or major carriers in the sector. This is because infrastructure deployment becomes a critical factor in the quest to increase market share. Such (market share driven) competition also encourages the adoption of more innovative pricing methodologies. Biggs and Kelly (2006) have argued that growth and expansion of fixed-line broadband markets are strongly influenced by the pricing strategies adopted by operators, and this has been corroborated by other studies on alternative internet access technologies (Madden et al. 2000; Afullo 2000; Adams 1997).

In summary, market conditions within the telecom sectors of developing countries further complicate the challenges that stem from the technological disadvantages these countries face. A combination of obstacles influences the cost of access to the Internet and strategies that are adopted by countries in remedying the situation must take cognisance of this.

Socio-economic conditions

Obstacles to lowering the cost of access to the Internet are not only technological and market-orientated. Multifaceted socio-economic characteristics of developing countries also exert their influence. Some studies have shown that general patterns of development influence Internet access (Hargittai 1998, ITU 1997, Kelly and Petrazzini 1997). These include:

- Economic wellbeing
- Existing technologies and infrastructure
- Human capital indicators—such as literacy and education levels
- Political stability

“Economics always plays an important role in encouraging the use of technology in developing countries” (Roycroft and Siriwan 2003:65), and the spending capacity of the population is an important factor to be considered in analysing the cost of access. Splitting the cost (to end users) of Internet access into its component parts of (i) setup cost and (ii) operating cost facilitates better understanding of the restraining impact of income.

Setup costs can be high whether the user is in a developed or developing country. However, setup costs relative to per capita income are much higher in developing countries. In such countries a computer is out of the reach for the majority of the population and the most common mode of access to the Internet is via some form of shared access (Adomi 2005; Ngwainmbi 2000).

Operating costs are also high in developing countries, and as pointed out by Petrazzini and Kibati, even where the absolute price difference between developed and developing countries does not appear significant, “the purchasing power of most people in the developing world makes access to Internet services an extremely expensive proposition” (1999:32). To illustrate, in a study of global accessibility of the internet, Ngini et al. found that “...unlimited dial-up monthly access cost of \$60 in Ghana represents 3 per cent of the GDP per capita, whereas in the UK the same service would be given at about \$12 representing 0.05 per cent of GDP per capita” (2002:333). The difference in price of \$48 when adjusted for GDP per capita means that internet users in Ghana spend up to 60 times more for the same type of access as users in the UK. This in itself reflects an improvement (i.e., decrease) in access cost⁷. However, even if the cost of access continues to decline, standards of living in some developing countries are also declining. Low per capita income may therefore continue to be a major restraining factor to access.

The presence or lack of existing technologies and infrastructure also significantly contributes to cost of access. The earlier sections of this chapter emphasized the impact underdeveloped telecommunications infrastructures have on cost of access. Also of critical importance is the country’s power infrastructure—in particular electricity supply. Limited availability of electricity supply, frequent breakdowns and associated power outages, disrupt access to the Internet and increase costs (Edoho and Udo 2000).

In the discussion presented so far, “cost” of access has been analysed within a primarily economic/financial context. “Cost” can also be assessed from a more social perspective. From this viewpoint; low educational levels, low literacy, lack of computer skills, shortages of technical staff all have an impact on the cost of access (Ngini et al. 2002; Afullo 2000; Jensen 2000; Madden et al. 2000; Hargittai 1999). Ethnicity and language also impact on cost of access. English is the most pervasive language in use on the Internet; however, only one in ten people in the world are English speaking (UNDP 1999) and this figure is projected to decline in the future (Graddol 2004). The possibility therefore arises that sufficient content, in languages understood by the majority of the world’s population, may not be available to make access to the Internet *relevant* to inhabitants of developing countries.

Lastly, the level of political stability exhibited by developing countries also exerts an influence on cost of access. Political stability in most cases correlates with economic stability and creates an environment that is conducive for growth and is attractive to investment. Therefore, the more politically stable a country is, the greater would be its chances of attracting investment capital for the development of its infrastructure and services. Low scores obtained by developing countries in governance indicators such as the Political

⁷ Petrazzini and Kibati (1999) in their study also adjusted for GDP per capita and found that users in Ghana were paying up to 485 times more for Internet access when compared with users in Finland.

Stability and Absence of Violence Index⁸ are indicative of the difficult environment in which initiatives for addressing the cost of access must be implemented.

Conclusion

It is an established fact that there are more users of the Internet in developed countries which are inhabited by a smaller proportion of the world's population (see Table 3). As a result these countries have benefited both economically and socially from the advantages the Internet bestows—in particular the quick exchange of information and increased efficiency of interaction. The disproportional distribution of the advantages of the Internet further increases the developmental gap between developed and developing countries.

WORLD INTERNET USAGE AND POPULATION STATISTICS

World Regions	Population (2007 Est.)	Population % of World	Internet Usage, (Jan 11, 2007)	% Population (Penetration)	Usage % of World
Africa	933,448,292	14.20%	33,334,800	3.60%	3.00%
Asia	3,712,527,624	56.50%	398,709,065	10.70%	35.80%
Europe	809,624,686	12.30%	314,792,225	38.90%	28.30%
Middle East	193,452,727	2.90%	19,424,700	10.00%	1.70%
North America	334,538,018	5.10%	233,188,086	69.70%	20.90%
Latin America/Caribbean	556,606,627	8.50%	96,386,009	17.30%	8.70%
Oceania / Australia	34,468,443	0.50%	18,439,541	53.50%	1.70%
WORLD TOTAL	6,574,666,417	100.00%	1,114,274,426	16.90%	100.00%

Source: Internet World Stats: Usage and Population Statistics
 Available online at <http://www.internetworldstats.com/stats.htm>
 Accessed March 12, 2007

Table 4: World Internet Usage and Population Statistics

The high cost of access to the Internet therefore has major implications for developing countries, not only in terms of their ability to compete on a global level in economic sectors that are highly influenced by the Internet (e.g., outsourcing industries, software production etc.) and in those that are dependent on it (e.g., e-commerce). High cost of access to the Internet also potentially impacts on the social development of countries, facilitating for example better interaction between individuals, businesses, citizens, and the State. These can result in increased transparency, accountability, and governance of both private/corporate and public affairs.

Initiatives aimed at reducing this *Internet-divide* can be viewed as a reflection (or sub-set) of the imperative to address the broader *development-divide*. It is, therefore, not surprising that the

⁸ The Political Stability and Absence of Violence indicator is a measure of "perceptions of the likelihood that the government will be destabilized or overthrown by possibly unconstitutional and/or violent means, including domestic violence and terrorism." Low scores in this variable indicate that citizens cannot count upon continuity of government policy or the ability to peacefully select and replace those in power. See World Resource Institute's EarthTrends Environmental Information Database. Available online at <http://earthtrends.wri.org/index.php>

conditions influencing the disproportional distribution of the Internet⁹ are in general the same as that of any other type of development-orientated divide.

This chapter has assessed these conditions from the perspective of the cost of access to the Internet. It identified and discussed the factors that contribute to the high cost of access experienced in developing countries, showing that they are multifaceted and can present a complex construct of obstacles—technological, market, and socio-economic.

Irrespective of this complexity, significant gains have been made by some developing regions in lowering cost and improving access to the Internet. Although regional variations exist, more Asian countries now have better telecommunications infrastructure. These countries have high-capacity domestic and international backbone networks; more Internet exchange points for routing local traffic and providing peering between ISPs. There are also regional backbones that interlink countries in the region and which also link to international (European and North American) backbones. Furthermore, investments have been made in “last mile” Internet access technologies, in particular broadband.

The improvements described above have been achieved within a largely conducive policy environment. The region has seen less incidences of conflicting policy interests that have characterized other developing regions. Although active participation by governments in the development of the telecom sector has resulted in some conflict in the relationship between governments, domestic and international organizations, progress in terms of deployment of infrastructure has still been achieved. The commitment of governments towards developing the potential of telecoms in general, and in the Internet in particular, is illustrated by the continued presence of international connectivity providers in these countries. Furthermore, initiatives at addressing socio-economic conditions are being implemented, with investments in educational and Internet literacy projects helping to increase the capacity of the population to use the Internet.

The above notwithstanding, even more progress in connectivity and cost is required in a region that appears to have achieved so much. Only approximately 10 per cent of the population in Asia currently use the Internet; this statistic for a region where more than half the world’s population lives (see Table 3) demonstrates that the ongoing need to be addressed by developing countries remains poorly underestimated. This raises a number of important challenges for developing countries that are further behind in developing their capacities to connect to and make use of the Internet. Whilst technologies are in general developing to make access more attainable and cheaper, these improvements are also being harnessed by more developed countries to increase the efficiency and effectiveness of their use of the Internet. The importance developing countries place on connectivity and widespread deployment of the Internet amongst their populations, and more importantly their commitment to ensuring that connectivity and use is achieved—through for example, reducing the technological, market, and socio-economic constraints of access—will therefore increasingly determine the nature of the digital and developmental divides between countries.

⁹ That is as a physical infrastructure.

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Internet Governance and Sustainable Development

Economic barriers to development

DRAFT FOR DISCUSSION

Hugo Cameron

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Internet Governance and Sustainable Development: Economic barriers to development

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September 2007

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“Information and communication technologies (ICTs) have the potential to profoundly change global trade, finance and production. By making businesses more competitive and economies more productive, and most of all by empowering people with knowledge, ICTs can support faster economic growth and thus strengthen the material basis for development. Our challenge is to ensure that this potential is used to generate real gains in the global struggle against poverty, disease and ignorance”—and their offspring, fear, intolerance and war.”

– Kofi Annan, UNCTAD Information Economy Report 2005.

Introduction

Internet access and the economic potential associated with it are growing rapidly in developing countries.¹ Growth in the number of Internet connections has been particularly rapid in Africa, the Middle East, and Latin America/Caribbean, as these regions play catch-up to the much higher penetration levels in OECD countries and East Asia. However, in some regions access remains low: for instance, while Africa's usage grew by over 600 per cent between 2000 and 2007, each African computer with an Internet or email connection usually supports a range of three to five users. This puts current estimates of the total number of African Internet users at around 5–8 million, with about 1.5–2.5 million outside the countries of the North Africa region and the country of South Africa. This is about one user for every 250–400 people, compared to a world average of about one user for every 15 people, and a North American and European average of about one in every two people. Access to the Internet can bring with it innumerable social, cultural and economic benefits in terms of spread of information and knowledge, business opportunities, administrative efficiencies, employment, and transparency. In so doing, it can be a vector for sustainable development by promoting more socially and environmentally equitable growth. But if access to Internet resources is to grow beyond small urban and niche markets in the developing world, a number of infrastructural, systemic and regulatory impediments must be overcome.

This paper seeks to highlight the benefits that can be gained through access to the Internet and accompanying information and communication technologies (ICTs). It also outlines the various constraints and challenges that stand in the way of wider access and more efficient delivery of ICTs in developing countries. Given its scope, the paper is by necessity broad and attempts to map out the terrain for further investigation. Following a brief discussion of ICTs and growth, it discusses five key areas affecting Internet access and sustainable development in developing countries: (i) Aid for Trade; (ii) Services; (iii) Regulation; (iv) E-Commerce; and (v) Business opportunities for SMEs. The final section looks at some major constraints and challenges facing sub-Saharan Africa. The paper explores the positive gains and key challenges faced in enhancing access to ICTs and the Internet, as well as the wider systemic setting²—particularly the World Trade Organization (WTO)³—where a number of these issues are being considered.

ICTs can contribute positively to economic growth in developing and developed countries. They boost productivity by improving the efficiency of individuals, firms, sectors and the economy as a whole. The adoption of ICTs creates new opportunities for businesses in developing countries to overcome the constraints posed by limited access to resources and markets. SMEs can get better access to trade finance and e-finance through improved credit and e-credit information structures. Access to Internet resources for those involved in agriculture and in rural settings can provide up-to-date market/price information on the domestic and international markets. ICTs also lower transaction costs and facilitate trade, thus opening up new international business opportunities and increased participation of

¹ See <http://www.internetworldstats.com/stats.htm>.

developing countries in the information economy. As a result, ICT development and access is an important factor in determining competitiveness and productivity. Effective and extensive access to Internet resources relies on a thriving ICT sector. This in turn rests on broad-based access to computer hardware and a suitable legal and regulatory framework (at the domestic, regional and international levels) that fosters competition.²

In adopting a sustainable development approach, this paper refers to the 1987 World Commission on Environment and Development (WCED) Brundtland Report definition as a starting-point. According to the WCED, sustainable development is:

development which meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of “needs,” in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.³

Notably, one of the strategic imperatives for sustainable development in the Brundtland Report is “reorienting technology and managing risk,” an objective under which improved access to Internet resources in low-income countries falls squarely. Sustainable development rests on the three pillars of environment, economic development and social equity. In addressing the myriad issues around economic barriers to access of Internet and ICTs in low-income countries, this paper focuses primarily on the latter two pillars.

ICTs and Growth

In analyzing the links between ICT investment and growth, past research indicates a generally positive impact of ICTs on economic growth in developing countries.⁴ A one per cent increase in the Infodensity index⁵ of a country resulted on average in a 0.1 per cent increase in per capita GDP in 1996 and in a 0.3 per cent increase in 2003. When the analysis also takes into account that economic growth has not been equally sensitive to changes in the ICT indicators across different levels of ICT performance, more moderate results are obtained for the least ICT-endowed countries. This is a potential indicator of the need to accumulate first a critical level of ICT adoption before being able to benefit from sizeable network effects. Graph 1 below shows that a one-point increase in the Infodensity index increases per capita GDP from \$US 124 to 164 on average.

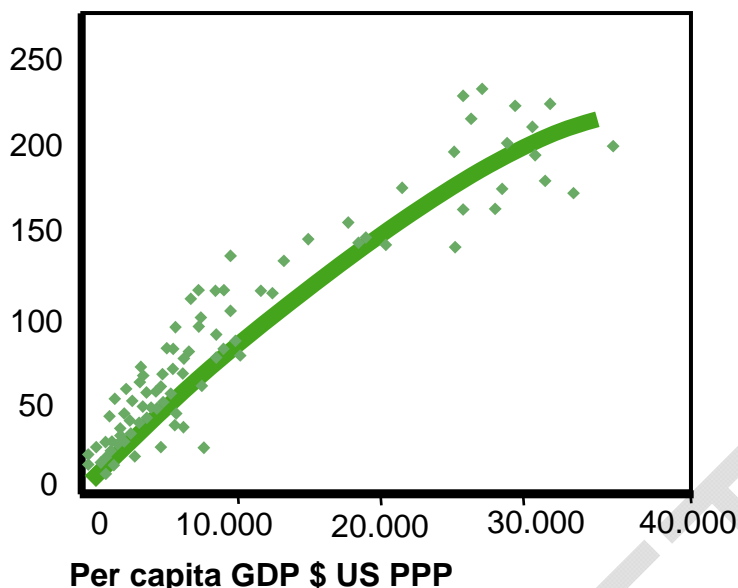
² The following definition of Internet governance was adopted at the World Summit on the Information Society in the Tunis Agenda (2005): “the development and application by governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution and use of the Internet.”

³ World Commission on Environment and Development (1987), *Our Common Future* (The Brundtland Report). Oxford University Press.

⁴ UNCTAD (2003), *E-Commerce and Development Report 2003*. Geneva: UNCTAD.

⁵ Infodensity refers to the slice of a country’s overall capital and labour stocks which are ICT capital and ICT labour stocks and indicative of productive capacity. It is used to measure the digital divide. See http://www.itu.int/ITU-D/ict/statistics/ict_oi.html

Graph 1: Infodensity



Source: Monitoring the Digital Divide ...and beyond, Orbicom, 2003.

A 2006 OECD study⁶ shows that ICT assets can be used more or less efficiently depending on the regulatory environment, the structure of the industry sector, and the degree of competition in the market. In a sample of 13 OECD countries, firm-level data demonstrated that the use of ICTs can help firms increase their market share, expand their product range, better adapt their products to demand, reduce inventories and help firms integrate activities throughout the value chain. A 2006 Finnish study on ICT impact in firms found that a computer increases average workers' productivity by 24 per cent and that computer portability and LAN connections add additional important effects (32 per cent and 14 per cent respectively).⁷ The impact was found to be much larger in younger compared to older companies.

In terms of Internet accessibility, however, large differences persist between developed countries, where broadband is growing rapidly, and developing countries, where connectivity, if it exists at all, is primarily dial-up. According to UNCTAD's Information Economy Report 2006, in developed countries, broadband subscribers increased by almost 15 per cent in the last half of 2005, reaching 158 million. By increasing bandwidth significantly, broadband enables companies to engage in more sophisticated e-business processes and to deliver a greater range of products and services through the Internet.

The growth of broadband is largely due to competition and declining prices, but it also depends on available infrastructure. UNCTAD indicates that many developing countries,

⁶ Based on a presentation by the OECD at the WPIIS Expert Group on ICT Impact, Paris, 4 May 2006. See www.oecd.org, TD/B/COM.3/EM.29/2.

⁷ Maliranta, M. and Rouvinen, P. (2006), "Informational Mobility and Productivity: Finnish Evidence". *Economics of Innovation and New Technology*, Vol. 15, No. 6, pp. 605-616, September 2006.

because of the lack of economies of scale, have low incentive to expand broadband infrastructure outside urban areas. More extensive use of wireless technology and satellite connections could help to circumvent the cost of infrastructure for sparsely populated, remote or rural areas.

Availability of broadband in developing countries is difficult to estimate: only 71 of 151 countries submitted data on the subject in the UNCTAD study. But 48 of those 71 said broadband penetration rates were under one per cent. Of that group, more than half of broadband subscribers were in mainland China, and even China's broadband penetration rate was only 2.9 per cent. The highest penetration rates among developing countries providing data were in Asia.

In directing ICT towards development and poverty reduction, innovative application of technologies is needed, particularly in sectors where the poor are most active, such as agriculture. Case studies undertaken by UNCTAD show that the agriculture sector can experience large efficiency gains through relatively small investments in ICT infrastructure. One example is the installation in villages by an Indian agricultural exporter of local satellite Internet stations, called "eChoupal". These became part of the supply-chain management, serving as a basis for information sharing, communication and knowledge transfer.⁸

Aid for Trade

Recent developments in the multilateral trading system have witnessed increasing attention to issues around building the supply-side and productive capacity of low-income countries. This is in response to the continuing difficulty faced by these countries"—many of which are in Africa"—in gaining access to the global market and producing and exporting goods and services competitively. The higher levels of official development assistance to address this involves funding for a range of areas, including infrastructure development and regulatory and institutional capacity building. Together this has come to be known as "Aid for Trade".

Donors have already pledged increases in the amount they are prepared to contribute to Aid for Trade. Prior to and at the World Trade Organization (WTO) Hong Kong Ministerial Conference, Japan, the EU and the U.S. all announced increases in resources for trade-related assistance. Japan announced US\$ 10 billion over three years. The European Union said it would increase its annual spending on Aid for Trade to EUR 2 billion by 2010, up from EUR 400 million in 2005. The U.S. announced a doubling of annual Aid for Trade to US\$ 2.7 billion by 2010 from US\$ 1.3 billion in 2005.

A large volume of work has been undertaken to assess countries' needs in these areas, for instance through World Bank-led Poverty Reduction Strategy Papers (PRSP) and Diagnostic Trade Integration Studies as part of the Integrated Framework for Trade-related Technical Assistance for Least Developed Countries. Invariably, these assessments point to necessary improvements in "bricks and mortar" infrastructure such as roads, ports, storage facilities,

⁸ Presentation on eChoupal at UNCTAD Expert Meeting: "Enabling small commodity producers in developing countries to reach global markets", Organized by UNCTAD Commodities Branch, 11-13 December 2006.

and telecommunications equipment. They also include needed upgrades in “softer” infrastructure such as private sector development; legal frameworks; norms and standards; and regulatory legislation and institutions for public utilities such as electricity and telecommunications. Funding for ICT falls under both these categories, as it requires investments in both hard and soft infrastructure.

The Aid for Trade agenda is continuing to gather steam in the WTO and in the donor community, and low-income countries and regions are in the process of refining and prioritizing their needs in this area. As a key element to stimulating growth and diversification, it is critical that Internet access and the infrastructure to enable it remains a priority on this agenda. However, if ICT-related Aid for Trade is to be oriented toward poverty reduction, related assistance or investment will need to be directed toward rural areas and marginalized segments of the population, and supported by training and capacity building to use the technology effectively. Importantly, if long-term capacity is to be built, installation of infrastructure must also involve local capacity building for maintenance and extension of services”—i.e., not simply recycled back to developed country firms and creating technology dependency. Countries and regions must be able to *own* it.

Trade facilitation

Aspects of Aid for Trade include efforts to ease the flow of goods through ports and customs facilities. So-called “trade facilitation” can help support reform efforts of governments and enhance the capacity to trade. The importance of this has been recognized in a WTO mandate agreed in August 2004, wherein WTO members agreed, *inter alia*, to enhance technical assistance and capacity building in this area and to improve effective cooperation between customs and other appropriate authorities on trade facilitation and customs compliance issues.

A major dimension of facilitating trade is action to reduce the time taken to process goods through customs. Addressing this source of operating cost would have a high return: each day of delay reduces export volumes by one per cent on average. For example, enterprises in Tanzania report that on average it takes about 12 days for exports and 19 days for imports to clear customs.¹⁰ In comparison, it takes only two and three days for exports and imports to clear customs in the Philippines. Overall, it takes 58 days for a typical import transaction in Africa, while it is only 14 days in OECD countries. On average, it takes three times as many days, nearly twice as many documents and six times as many signatures to trade in a poor country as it does in rich countries.

Internet accessibility is a key element in improving the ability of low-income countries to reduce wait times at ports and speed customs administration. Electronic submission of trade documentation has become standard practice in most OECD countries and some developing countries. Singapore, for instance, reduced its customs administration process from 2-3 days to 15-30 minutes by adopting an electronic system. This allows companies to

⁹ Trade facilitation is defined by the WTO as: “The simplification and harmonization of international trade procedures” where trade procedures are the “activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade”.

¹⁰ All data are from World Bank, *Doing Business 2006*.

move cargo at short notice and has enabled Singapore to reduce costs by as much as 50 per cent.

The practice”—dubbed “single window”—is catching on even in Africa. The Senegalese Customs Administration has, since 2001, established a new Automated Internet-based Customs Clearance System called GAINDE 2000 (Automated Management of Customs Information and Transactions).¹¹ The system is built on state-of-the-art tools and combines performance, security, and adaptability. It replaces a much slower paper-based system, and currently handles approximately 300 demands per day. It has cut processing time down from 2-3 days with at least four displacements, to less than one day without any displacements. To install, the system cost approximately US\$ 2 million, with annual operating costs running at approximately US\$ 800,000. The biggest obstacles remain power availability as well as interoperability with other African countries, as only a few others in the region maintain similar systems.

Services

During the period 1995-2004, according to UNCTAD,¹² computer and information services represented the world’s fastest growing services export sector, with a growth rate six times faster than total services exports. ICT-enabled services represented 45 per cent of total services exports in 2003. The increase in computer and information services exports from relatively low initial levels reflects the emergence of new ICT-enabled trade opportunities in services. The share of developing countries in this export sector increased from four per cent in 1995 to 20 per cent in 2003, with the highest growth occurring after 2000. This compares well with the share of developing countries in total ICT-enabled services exports (between 16 and 18 per cent in the same period).

Many developing countries have benefited from growth induced by trade in services. India has benefited from exports of computer software, while the Philippines has benefited from the movement of labour overseas and the resulting migrant workers’ remittances.

ICT is closely tied with the global services market, for which, like goods, WTO negotiations are underway as part of the Doha Round, guided by provisions in the General Agreement on Trade in Services (GATS). Negotiations involve bilateral (or more recently, plurilateral) requests by countries for liberalization in various sectors and along four different modes. These are then followed by offers from those requested. A key sector of the services negotiations involve talks to reduce barriers in telecommunications. Telecoms are not a new element in the WTO. Commitments in telecoms services were first made during the 1986-1994 Uruguay Round, mostly in value-added services such as online data processing, online database storage and retrieval, electronic data interchange, email, and voice mail. In subsequent negotiations that terminated in 1997, members addressed basic telecommunications services, wherein 69 governments”—accounting for more than 90 per

¹¹ See http://www.unece.org/cefact/single_window/sw_cases/senegal.htm.

¹² UNCTAD (2006), *Information Economy Report 2006*. Geneva: UNCTAD.

cent of telecoms revenue worldwide”—made multilateral commitments that were mostly extended to other members under the WTO’s most-favoured nation (MFN) principle. Since then, new commitments have been made either by new members upon accession, or in a unilateral fashion by existing members.

Barriers in telecoms include limitations on the number of suppliers, operations, and foreign workers allowed, as well as restrictions on types of legal entity and participation of foreign capital. Telecoms liberalization can be challenging, particularly in countries with entrenched incumbent telecoms services providers in fixed-line service. For instance, in South Africa, despite being open to competition by more than 200 Internet Service Providers (ISPs), the country’s Internet sector has been stagnant in recent years due to an expensive operating environment created by Telkom SA’s dominance in the fixed-line and bandwidth market. Modest growth has now returned to the market, stimulated by the launch of Asymmetric Digital Subscriber Line (ADSL) and wireless broadband services in 2004, followed by continuous price cuts in the following years. Further stimulus is expected in 2007 from the launch of a second national operator and an expansion of 3G services by the country’s mobile network operators.

This points to a key tension in broadening Internet access through fixed-line operators: lack of competition can facilitate monopolistic pricing and inhibit access. On the other hand, past experience in other services sectors such as water distribution shows that throwing the gates open to unrestricted global competition can lead to a focus on service delivery only to commercially viable areas, to the detriment of access by rural or marginalized areas. It can also lead to the loss of an important source of revenue for cash-strapped governments. Thus a balanced regulatory approach is needed that allows low-income countries to take advantage of market opportunities while ensuring that foreign investments are in line with their domestic development objectives.

For example, restrictions in telecoms services may be designed so that incumbent suppliers are only gradually exposed to competition—for infant industry-type reasons, to facilitate “orderly exit,” or simply because of political economy pressures. This explains, for example, why governments have generally been more willing to liberalize mobile than fixed-line telecommunications services: mobile telephony has only recently been introduced, and there is thus no incumbent to protect.¹³

Indeed, GATS Article IV requires developed country Members to negotiate commitments that will help developing country Members increase their participation in world trade in services, by: (i) strengthening developing country domestic services supply capacity (i.e., via Aid for Trade); (ii) improving developing country access to distribution channels and information networks; and (iii) liberalizing market access in sectors and modes of supply of export interest to developing countries. Despite this provision, most requests to date have been from OECD countries and directed to developing countries.

A 28 February 2006 request from 11 developed economies including the US, the EU, Canada and Japan called for a number of market-opening offers from a group of 24

¹³ Mattoo, A. (2002), “Negotiating Improved Market Access Commitments,” in *Development, Trade, and the WTO: A Handbook*. Washington: The World Bank, 2002.

developing countries in telecoms services. (Requested countries are still considering the extent of their offers). Specifically, the group of 11 countries asked that no restrictions be placed on foreign enterprises and investors in their right to establish, share of ownership, form of legal entity, and hiring of foreign personnel. They also requested that they be allowed majority foreign capital participation and effective control, as well as “national treatment,” i.e., that foreign service providers be treated at least as well as local firms.

In addition, they requested that targeted countries commit to all provisions of the “WTO Reference Paper on Basic Telecommunications.” These include establishing competitive safeguards to prevent anti-competitive practices; providing for interconnection; applying universal service obligations in a neutral and transparent way; making licensing criteria publicly available; establishing an independent regulator; and allocate scarce resources fairly.

The importance of these negotiations from a global equity perspective revolves around the ability of countries to maintain effective policy space and support the development of domestic service suppliers in the face of more powerful global firms. In addition, governments need to ensure that effective regulatory regimes are in place both nationally and regionally prior to opening up to competition. WTO rules in this sector do matter: the US has previously used WTO commitments to force both Mexico and Japan to reduce interconnection rates. Mattoo¹⁴ provides a number of examples of conditions that are not prohibited by the GATS and that might be useful to developing countries in this respect:

- Standards such as service targets: performance requirements, specification standards (for example to use local labour or to provide technology transfer). Competition law ;(for example preventing price fixing).
- Price controls: usually to ensure affordability to essential services.
- Entry controls: professional and educational requirement restrictions on marketing and use e.g., zoning laws as well as prior authorization requirements and licensing.
- Information regulations: certification and labelling requirements for the benefit of consumers.

Proper assessment of trade in services in this sector will allow Members to identify both their market access opportunities and national development needs before making commitments. This is one area where Aid for Trade could also be of great utility.

Regulation

This section is tied closely to that of services, above. Governments have an important role to play in improving access to Internet resources through infrastructure and policy. Policy can either encourage or be a disincentive to competition, and thus have an impact on availability and prices. It must strike a balance between too much regulation and not enough. Without intervention, a greater use of ICTs can increase existing social and economic inequality both between and within countries. Too much intervention, and consumers (and businesses

¹⁴ Ibid.

dependent on Internet resources) may be hampered by monopoly pricing and lack of competition. Adopting corrective measures to deal with this digital divide is therefore a major concern in development policymaking.

Research has demonstrated that growth in connectivity can rise as governments remove certain restrictive controls. In Egypt, the number of Internet users surpassed those in South Africa in 2004 due to a more liberalized market, rising to five million in 2005, up from 2.7 million at the end of 2003.

One way forward is to devise principles for developing international Internet networks which fulfil the objectives of making information technology available to all countries with a view to promoting their economic development. Work carried out in Asia could be used as an example without duplicating effort: the APEC principles on International Charging Arrangements for Internet Services were agreed upon by the telecommunications ministers of the member economies of the Asia-Pacific Economic Cooperation Forum (APEC) at the fourth Ministerial Meeting in May 2000. A key point raised in these principles is regional approaches. In the African context, regional approaches based around regulatory convergence could be a useful way forward by harmonizing regulations and taking advantage of economies of scale offered by country groupings administered by regional economic bodies. This can lead to larger and more competitive markets that in turn become of greater interest to international or intra-regional investment.

Such processes could be aided by guidance from regional organizations in Africa and within African sub-regions, such as NEPAD and regional economic communities. The East African Community, for instance, is looking to increase its capacity in this area by seeking funding for developing “an inclusive, balanced, and socially equitable information and knowledge-based society [in East Africa] that is founded on coordinated national strategies to effectively integrate ICT into regional development policies.”¹⁵ In addition to harmonizing ICT policies, the EAC is committed to completing implementation of a cross-border connectivity project and facilitating the implementation of the East African Marine Cable. However, without accompanying Aid for Trade to support these initiatives, it is unclear what leadership role (if any) the EAC will be able to play in this area.

Through its “e-Africa Commission”,¹⁶ the “New Partnership for Africa’s Development” (NEPAD) is also taking initiatives in the field of ICT on the continent. One of NEPAD’s priority objectives is the promotion and integration of regional ICT infrastructure. In June 2006, NEPAD received support to develop a terrestrial broadband ICT network for Central, Western and Northern Africa as part of its implementation of a broadband infrastructure programme for the regions. The support will enable the Commission to play a coordinating role while dealing with policy and regulatory bottlenecks that impede investment in ICT infrastructure in the region. The NEPAD e-Africa Commission intends to facilitate the development of investor friendly policies that promote private-public partnerships (PPP) that are critical to ICT infrastructure development.

¹⁵ EAC Secretariat (2006), *EAC Development Strategy 2006-2010*.

¹⁶ The NEPAD e-Africa Commission was set up in 2001 to manage the structured development of the ICT sector on the African continent, by developing policies and broad ICT strategies and by initiating projects. See http://www.eafricacommission.org/About_1-Origin.html

A report by the Central and West African research group CIPACO¹⁷ examines the major issues facing Central and West Africa on regulatory convergence. The report recommends that policy makers, regulators, industry and civil society all have to play a role in moving the convergence agenda forward. Towards this end, the study provides practical guidelines:

Policy makers

- Develop regional and sub-regional approaches and harmonize regulatory frameworks and training programs.
- Develop models that can be tailored to countries at different levels of information society development.
- Build convergence into technical cooperation projects addressing information society issues.
- Bring civil society into information society debates to ensure that the interests of society as a whole are adequately addressed.

Regulators

- Encourage regulatory associations to deepen the understanding of convergence issues.
- Establish channels of communication between telecommunications and media regulators to develop rationale for addressing convergence through single regulatory framework.

Industry

- Develop strategic partnerships between infrastructure and content providers.
- Develop economies of scale.

Civil Society

- Increase understanding of issues by civil society organizations.
- Lobby public and private sector to ensure recognition of social interests.

Such regional regulatory efforts require extensive coordination between member states, together with funding to establish required implementing bodies. As a benchmark¹⁷—possibly useful to guide Aid for Trade in this area¹⁷—US\$ 2 million, was spent to establish the Organization of Eastern Caribbean States (OECS) telecommunications regulatory authority.

One of the pitfalls of fair and transparent regulation is in the licensing process. Increasingly, the seriousness of a country's reform efforts is measured by the manner in which licences are issued. In recognition of this, auctions of licences and radio spectrum have become the preferred method of issuing new licences in some countries. Well-organized auctions are a highly transparent method of licensing, particularly when the proceeds of such auctions are ploughed back into the sector. Unfortunately, this does not always happen. The Nigerian Constitution, for instance, requires that such income be shared between the various governments of the Federation, thus drastically reducing the funds that may be returned to the regulator for development purposes or for investment in the state telecommunications carrier when it is privatized.

¹⁷ CIPACO (2005), *Régulation des communications électroniques à l'heure de la convergence: enjeux, état des lieux et perspectives en Afrique de l'Ouest et du Centre*.

At a January 2007 workshop organized by the International Telecommunications Union (ITU),¹⁸ participants saw the use of auctions and other economic tools for allocating spectrum emerging as an important area of policy research and practice. This is particularly due to changes underway in wireless technology and the key role that wireless networks and services will play in the evolution of the Internet and ICTs. As a result, it will be important to build developing country capacity and encourage economically efficient policies and regulations around spectrum allocation.

E-Commerce

According to the WTO, the potential for rapid growth of electronic commerce in developing countries is high. Electronic commerce, i.e., “the production, advertising, sales and distribution of products via telecommunication networks”¹⁹ greatly simplifies business transactions through electronic communication. It involves all forms of transactions in commercial activities based upon the processing and transmission of digitized data, including text, sound and visual images. It encompasses all activities ranging from advertising, marketing, purchasing, procurement, payment and delivery amongst and between governments, firms and consumers.

For low-income countries, the services most suited to electronic commerce include Internet access, web site hosting, marketing and advertising, financial and brokerage services, travel and tourism, leisure and information services, distance learning and tele/video-conferencing.²⁰ However, although there is virtually no data on the value of online sales in the developing world, it is apparent that e-commerce accounts for a very small percentage of the overall sales of domestic firms in these countries. Other e-business activities such as extranet usage, e-government, e-learning, and remote work are almost non-existent. Still, according to UNCTAD, some developing countries show a high rate of use of e-banking, such as Brazil (75 per cent of enterprises, excluding micro-enterprises used the Internet for banking in 2005) and Morocco (34.9 per cent).²¹ Three major types of innovations can be spurred by e-commerce in traditional transactions and marketplaces:

1. Process innovations. E-commerce simplifies, makes more efficient, reduces costs, or otherwise alters the process by which an existing transaction takes place”—for example, by streamlining accounting or improving inventory control.
2. Product innovations. E-commerce creates or facilitates new industries and products not previously available; some examples are business-to-business (B2B) exchanges for products or services.
3. Market innovations. E-commerce creates new markets in time, space, and information that did not exist previously because transactions costs and coordination costs were

¹⁸ See <http://www.itu.int/osg/spu/stn/spectrum/index.html>

¹⁹ WTO (1999), Work Programme on Electronic Commerce. Document number S/C/8, 31 March 1999.

²⁰ Daima Associates Limited, Tanzania (2007). *Opportunities and Risks of Liberalizing Trade in Services in Tanzania*. Geneva: ICTSD.

²¹ See footnote 11.

prohibitively high; markets for individually tailored editions of newspapers or sales of Andean mountain artisanship are examples.²²

Of course, benefits accruing from these depend on the existence of a minimal power and telecommunications infrastructure and appropriate regulatory framework in order to be realized. These are compounded by factors such as the relative scarcity of credit cards and other electronic payment systems, security of online transactions, and bandwidth scarcity. In moving to overcome these impediments, regulatory frameworks would need to include aspects such as provisions for electronic signatures, protection for the privacy and confidentiality of information, and prohibitions against various forms of cyber-crime.

Two cases involving Caribbean countries, which made significant investments upgrading their Internet accessibility in the early 2000s, outline the potential for tension between e-commerce and development.

Case Study 1: OECD tax-haven blacklist

Improvements in Internet access opened up a range of business opportunities in offshore financial services in a number of Caribbean countries in the late 1990s. These countries were able to use e-commerce as a means to gain comparative advantage in offshore banking services. However, subsequent concern around money-laundering and tax havens by the OECD led to pressure on many of these countries, forcing them to change practices and lose business, often to the benefit of banks in richer OECD countries. Although the regulatory concerns may have been legitimate, interviews with regulators both within and outside the Caribbean countries raise some doubts about the fairness of the assessment processes. First, the standards were unilaterally determined, and while that may be defensible in this sector, the process of establishing conformity was not transparent. Second, no criteria were specified as to how a country that had been blacklisted could improve its regulatory standards and be removed from the list. Finally, and perhaps of greatest concern to the Caribbean countries, the claims of harmful tax practices raised issues of sovereignty over tax policy and of discrimination in favour of European offshore financial centres that were not targeted despite the similarity of their tax regimes.

Case Study 2: The US-Antigua & Barbuda Gambling Case

In response to falling tourist revenue earlier this decade, the Caribbean country of Antigua and Barbuda built up a significant Internet-based gambling industry that eventually became the second largest employer after tourism. Following action by the US banning overseas gambling sites, the country took the US to the WTO over entry to the US gaming market. A WTO dispute resolution panel found in favour of Antigua in 2003. The US appealed, but the WTO Appellate Body largely supported Antigua's position in April 2005 regarding the discriminatory nature of the US ban (in part because US horse race betting depends on phone and Internet wagers across state lines). While the US was eventually forced to revise its regulations, employment was severely impacted in a country with few other economic options and few resources to devote to retraining.

²² Mann, C. (2002), "Electronic Commerce, the WTO, and Developing Countries," in *Development, Trade, and the WTO: A Handbook*. Washington: The World Bank, 2002.

As the two Caribbean cases show, ICT-enabled offshoring to developing countries has the potential to create employment in globally competitive sectors. But they also show the precariousness of attempts to create comparative advantages in e-commerce for developing countries. From a sustainable development perspective, this raises important questions around the issue of social equity and what values should guide an approach to Internet-based development opportunities.

Business opportunities for SMEs

Perhaps the greatest advantage offered by extending Internet access to low-income countries is in the new opportunities it offers domestic firms. This goes beyond the traditional ICT-enabled sectors of finance and banking to smaller businesses looking to improve their productivity and competitiveness.

The adoption of ICTs by small and medium-sized enterprises (SMEs) in developing countries holds great potential for development and employment creation. SMEs, the main creators of non-farm employment in developing countries, operate within more uncertain environments, deal with a reduced base of customers and suppliers and often have to face higher transaction and financial costs in regional and international markets. In this respect, ICT investments could help developing countries to mitigate the rigidities created by poor growth performance and high uncertainty among SMEs.²³ In banking and finance, ICT use can reduce information asymmetries between creditors and borrowers in developing countries.

Across all sectors, the productivity-enhancing applications of high-speed Internet technology are numerous, including more efficient information-sharing, communication and transactions between locations and with clients, cost-saving Voice-over-IP telephony, processing of multimedia-contents, remote work and the more effective maintenance of Internet presences and e-commerce systems.

However, access to ICTs alone is no panacea for SMEs. According to UNCTAD,²⁴ investments need to be accompanied by organizational changes and innovative ideas. SMEs may lack capital, knowledge about ICT applications and the human resources for setting up and taking advantage of ICT systems. Additionally, SMEs lagging behind their competitors in terms of ICT adoption will see their competitiveness seriously affected. Song and Mueller-Falcke see a potential solution to this through cooperation and associations among SMEs that would make it possible to pool resources.

²³ Song, GS and Mueller-Falcke, D. (2006), "The Economic Effects of ICT at Firm-Levels". In: Torero M and von Braun J. *Information and Communication Technologies for Development and Poverty Reduction. The Potential of Telecommunications*. Baltimore: Johns Hopkins University Press, 166-184., quoted in UNCTAD Secretariat (2006). *Using ICTs to Achieve Growth and Development*. Geneva, 4-5 December 2006.

²⁴ Ibid.

One project that attempts to improve accessibility of SMEs to ICTs is the “Digital Freedom Initiative” (DFI).²⁵ The DFI, launched in 2003 by various US agencies, aims to promote economic growth by transferring the benefits of information technology to entrepreneurs and small businesses in the developing world. Under the project, volunteers from the private sector and NGOs are placed with local businesses and entrepreneurs in low-income countries to share business knowledge and technology expertise, and help the volunteers develop the communications technology skills and the products”—such as Web sites”—needed to improve competitiveness in both the regional and global marketplace. Senegal, Peru, Jordan and Indonesia already are participating in the program.

Constraints and Challenges – the case of sub-Saharan Africa

A number of serious constraints hinder the full uptake of Internet and ICTs in low-income countries, depriving these countries of potential gains. Constraints affecting Africa in terms of Internet access and usage are highest due to the continent’s high and endemic levels of poverty, poor infrastructure, and”—in many countries”—lack of good governance. These add to the overall cost required to access Internet: in more than half the countries in Africa, one year of Internet access costs more than the average annual income.

Education and Language

ICT adoption favours skilled workers and can overlook those working in rural areas, the poor, unskilled workers and women. The rural poor, for instance, tend to be excluded from educational opportunities that would enable them to fully benefit from Internet-based technologies, even if these were made available. This includes basic levels of literacy as well as linguistic barriers. Sub-Saharan Africa, with an average literacy rate below 60 per cent, is at a distinct disadvantage. In 2000, the average literacy rate in the region was 52 per cent for women and 68.9 per cent for men, with gender disparities prevailing in 75 per cent of countries.²⁶ Thus addressing gender discrimination with respect to Internet accessibility must begin at the level of primary education.

With respect to language, a study cited by UNESCO in 2003 indicated that an overwhelming majority of Internet content—82 per cent—is in the English language. In a world where only 10 per cent of the global population is English-speaking, most are automatically excluded from taking advantage of the primarily English-based information economy. Africa, with a multiplicity of local and regional languages, is worst off. Research undertaken in East Africa, where English comprehension is relatively strong, confirms a high interest to access Internet content using local languages.

A related issue is that of “brain drain” and availability of personnel with sufficient skills to install and maintain ICT technologies in low-income countries. Internet infrastructure

²⁵ See <http://usinfo.state.gov/gi/Archive/2005/Dec/16-188487.html>.

²⁶ These figures often hide complex social, cultural and economical realities. For instance, the African continent is marked by strong regional differences in literacy levels (i.e., Western African countries are less literate, with Southern African countries being the most literate). See www.unesco.org.

demands have outpaced the supply of experienced staff, even in developed countries. As a result, experienced technicians in these countries are able to find much higher paying jobs in Europe and North America.²⁷ Within countries, this affects the human resources available to civil service and domestic businesses, where very low pay scales are common.

This is further affected by the cost of access of Internet resources, which are key to education. African universities, for example, typically only have one or two-megabit connections for the entire campus, while individuals have to pay US\$ 500 a month for a 128 kilobit per second connection. That's compared to less than US\$ 50 a month for a one megabit per second (1000 kilobit per second) or greater cable or DSL connection in the US.

Infrastructure

A recurring impediment to effective take-up of Internet technologies and ICTs in low-income countries is lack of related infrastructure. Irregular or non-existent electricity supplies are a common feature and a major barrier to use of the ICTs, especially outside major towns. In sub-Saharan Africa, access to energy is only seven per cent. Many countries have extremely limited power distribution networks which do not penetrate significantly into rural areas, and power sharing (regular power outages for many hours) is a common occurrence, even in some capital cities such as Accra, Dar es Salaam and Lagos. For instance, Dar es Salaam witnessed regular power outages of 12 hours a day in late 2006 due to low levels of rainfall and corresponding lack of hydro power from its dams.

Road, rail and air transport networks are limited, costly and often in poor condition, resulting in barriers to the increased movement of people and goods needed both to implement and support a pervasive ICT infrastructure, but also for the increased economic and social activity which would be stimulated through greater use of ICTs. Congested border posts and visa requirements add to these difficulties.

International submarine cable access and regulation

Perhaps the most immediately relevant aspect of infrastructure to Internet access in Africa is the availability of bandwidth. While bandwidth is growing, it is from a very low base”—for instance, Latin America has ten times as much bandwidth as sub-Saharan Africa, while the average North American resident has access to around 570 times more than the average African citizen. Many countries, particularly in Central and East Africa”—do not have access to cable connections, and therefore rely on satellite (VSAT). Satellite is also important for access outside of urban areas where other forms of infrastructure fail to reach. The pricing for international bandwidth has dropped due to greater competition in the sector caused by new supplies from satellite providers and the establishment of a submarine fibre-optic cable along West Africa connecting to Europe and Asia (see Map 1). With the recent launch of new low-cost service offerings such as 2-way Ku-band VSAT and GPRS mobile data, it appears this growth will continue. However, according to the Global Internet Policy Initiative (GIPI), the increasingly widespread use of VSAT links is troubling: through they

²⁷ See Research and Markets (2006), *RegionalReport - Internet - Europe, Africa, Middle East – 2006*.
http://www.researchandmarkets.com/reportinfo.asp?rfm=rss&report_id=446950

may be cheaper in the near term than fibre optic cabling, exclusive reliance on slower satellite connections threatens to permanently condemn Africa to second-class international Internet connectivity.²⁸

Map 1



Source: BBC News, "Warning over African internet cable" 15 March 2006.

Africa is moving toward more cable access, though the road is a bumpy one. There have been many expectations placed on the forthcoming East African submarine cable system (EASSy), which is set to bring direct broadband fibre-optic connections to most of the countries from South Africa to Djibouti along Africa's eastern coast, as well as many of the landlocked countries adjacent to the coastal nations. Set to begin laying cable in March 2007, planners expect the EASSy fibre cable to provide sufficient capacity for as long as 25 years. The project is being spearheaded by 15 telecommunications companies from Kenya, Uganda, Tanzania, Malawi, Sudan, Ethiopia, Djibouti, Mozambique, Botswana, South Africa, Madagascar, Rwanda and Somalia—who will also be the principal shareholders.

How the EASSy process is managed by the incumbent telecoms service providers will be critical to determining the extent of access to Internet resources to the region's populations. The experience of the SAT3 cable in West Africa could be instructive in this regard (see Annex 1). Consumers are already calling for regulated competition and fair access. In the words of one contributor to a BBC survey on the topic, "although circumstances and volumes are different to those in more developed countries, regional governments must seek to develop regulated competition to share the benefits of the improved technology. If they don't, technology remains out of reach for all except a tiny minority, as the prices remain high to pay large dividends to the government shareholder."²⁹ The World Bank has offered to provide as much money as necessary for the project as long as it follows an open access model, but EASSy consortium members thus far have asserted that they can fund the project themselves.

²⁸ Global Internet Policy Initiative (2004), Internet Exchange Points: Their Importance to Development of the Internet and Strategies for their Deployment – The African Example. GIPI, 3 May 2004.

²⁹ Graeme Keay, Gaborone, Botswana. Quoted in BBC News, "Warning over African internet cable" 15 March 2006.

Observers say it is difficult to predict the final outcome of this telecommunications watershed. Some members of the consortium have said they will allow other entities to invest in the cable, though none of these promises have as yet been put on paper. What is clear is that, in order to extend access to more users, there must be both improvements in available infrastructure as well as a competitive environment that allows access to service providers beyond existing incumbent monopolies.

Conclusions and Way Forward

The foregoing discussion sketches out a broad array of economic concerns affecting accessibility of Internet and ICT, particularly in low-income countries in Africa. Related issues are being raised in the context of negotiations at the WTO, and Aid for Trade holds out the prospect of further global funds being made available for ICT investment. There is little dispute that greater access to Internet technologies can bring improvements through greater opportunities for business, education, and access to knowledge that can help countries move towards sustainable development. However, significant burdens remain in providing such access, particularly in extending the reach of Internet technologies to rural areas and marginalized sectors. These include insufficient infrastructure, lack of qualified technical personnel, linguistic and educational barriers, and high costs related to monopoly pricing,

Moving ahead with improving access requires improvements in basic infrastructure and education. Developing better ICT literacy and infrastructure can help countries improve their competitiveness and participate more fully in the global economy”—though as the Caribbean cases show this is not always without pitfalls. Wireless technologies, including mobile networks, could be one way to improve connectivity in areas that have poor or non-existent fixed-line networks. As a first”—and relatively simple”—step, governments must learn lessons from past experience and establish competitive regulatory frameworks and practices that will enable lower prices. Until then, the potential benefits of wider Internet use will remain blocked from those who could benefit the most.

Annex 1: West African SAT3 Cable

The experience of the SAT3 cable linking West and Southern Africa with Europe highlights the critical linkage between infrastructure and regulation.

According to the Association for Progressive Communications (APC)—an Internet social advocacy group—SAT3 has not provided the benefits of cheaper, faster Internet access expected from cable because it is controlled either by state-owned monopolies or their privatized successors, which still enjoy near-monopolies. This has kept prices high and high-speed access beyond the reach of most people in West and Southern Africa.

In countries with strong incumbent providers such as Nigeria’s Nitel, affordable broadband has not been forthcoming. Rates on SAT3 have been as high as US\$ 25,000 per Mb per second per month but are now around US\$ 10-15,000, while actual costs to the operator are around US\$ 2,000. Such high prices mean that there are a significant number of countries where the full capacity of the cable is not being used. Further, countries without a direct connection to the cable—such as Namibia—are reliant for their access on a single foreign company, which can charge exorbitant fees without fear of competition. Testimonials by users in Africa provide perhaps the most poignant perspective on access.

“We don't want another SAT3 cable situation,” says Brian Cheesman, a consultant for the New Partnership for Africa's Development (NEPAD) “The promise was that SAT3 would bring down prices and improve telecommunications, but it didn't do that because the monopolies that control it have charged an arm-and-a-leg to competitors or anyone else wanting access to that international connection.”³⁰

³⁰ CISCO News Release, “International undersea fiber optic cable promises much needed bandwidth to East Africa but specter of monopoly pricing threatens project's benefits,” May 31, 2006.

Capacity of Developing Countries to Participate in ICT International Governance

DRAFT FOR DISCUSSION

David Souter

September 2007



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Capacity of Developing Countries to Participate in ICT International Governance

By David Souter
September 2007

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Overview

Participation in international governance raises a complex set of issues anywhere; and at present particularly so with information and communication technologies. This chapter looks primarily at the challenges which this poses for developing country participation in international ICT and Internet governance, and at potential capacity-building initiatives that might address these. It begins with an account of change within governance of the ICT sector which seeks to set these challenges—and potential new initiatives—in context.

ICT and Internet Governance

The word "governance" itself is inexact. Governance arrangements within countries include intersecting management and consultation processes that involve national, regional, local and sectoral tiers of government; elected representatives; quasi-governmental agencies and civil society agencies; judicial processes and self-regulatory bodies in the public and private sectors—and so forth. International governance has seemed simpler, historically, because nation-states have been represented by their governments in international fora. International governance has largely meant intergovernmental governance. But here, too, governance has become more inexact in recent years, involving more diverse participation and a wider range of stakeholders, if sometimes in the teeth of resistance from intergovernmental institutions and some governments.

Nowhere has this increased diversity been more apparent in the information and communication technology sector, and it is worth briefly considering why. For most of the twentieth century, international telecommunications governance was dominated by the International Telecommunication Union (ITU), the intergovernmental agency first established in 1865 to coordinate international telegraphy. The ITU had a number of critical roles where transnational coordination was required in order to make national networks interact: notably the allocation of radio spectrum, the establishment of technical standards, and rules relating to the distribution of proceeds from international telephone traffic. As the twentieth century progressed, a number of other treaty-based international telecommunications agreements arose, notably those establishing satellite infrastructure such as INTELSAT and INMARSAT. Interconnection and accounting arrangements were largely handled at a bilateral level between state-owned monopoly telephone operating entities.

All of these intergovernmental governance arrangements were highly technocratic. The ICT sector did not spill over substantially into broader policy issues except on rare occasions—the ITU's Maitland Commission enquiry into the developmental potential of telephony in the mid-1980s being one of the most apparent. The last fifteen years of the twentieth century, however, saw a succession of major changes in the nature and scope of the ICT sector, which have realigned its institutions of international governance, introduced new and sometimes highly unusual governance structures in new areas of the ICT market, and led to much more complex interactions between ICT governance and other areas of policy. These changes were driven by four factors:

- Technological innovation has enabled communications businesses and consumers to bypass traditional internationally governed accounting and traffic management.
- Liberalization and privatization of telecoms markets have transformed the structure of national and international communications markets, replacing public sector priorities with those of private businesses, many operating internationally rather than within nation-states.
- The convergence of information and communications markets—telecommunications, broadcasting, computing—and their increased interaction with other markets such as financial services—have broadened the range of stakeholders with an interest in ICT governance.
- New services—and in particular the Internet—have led to the establishment—or in some cases, organic evolution—of new governance arrangements which provide alternatives to or contest authority with traditional intergovernmental arrangements.

As a result of these factors many new agencies, with overlapping powers and interests, now play crucial roles in international governance within the ICT sector. The restructuring (liberalization and privatization) of communications markets has brought them within the ambit of trade as well as technical regulation, with the post-GATS WTO's Agreements on Telecommunications and Information Technology playing major roles in relation to international investment, competition and dispute resolution. Liberalization and privatization have undermined governments' abilities meaningfully to represent national ICT sectors in international fora, thereby also diminishing the ITU's authority and (some say) relevance. Private sector companies and standardization fora now play much of the role which governments used to play in standard-setting, both within the ITU and, more importantly, without it.

In addition, the growing perceived importance of the ICT sector as a driver of globalization and/or economic growth has led to much more extensive policy and decision-making where it is concerned within non-sector-specific international governance structures. The World Intellectual Property Organization (WIPO), for example, plays an increasingly important part in an ICT sector characterized by rapid changes in technology and in the capacity to deliver an ever increasing amount of content in an ever increasing number of ways. Development agencies like the World Bank play an important part in international ICT policy development and in national decisions concerning investment and sector restructuring. There have even been two World Summits on the Information Society, which articulated the hopes of many that ICTs can transform the lives of all, though they failed in many ways to bring together the different worlds of ICT and development specialists.

And then there is the Internet. Most of the international governance agencies described in the previous paragraphs come from the intergovernmental model, in which governments alone represent nations and their citizens. Not so with the Internet—perhaps the most important phenomenon in human social and economic development to have evolved with so little involvement of the powers-that-be. Although the Internet's first origins lay in the US military, its dynamic leadership has moved outwards through a succession of non-governmental actors—academics, computer programmers and developers, commercial businesses—so rapidly that it had become a major force in society (at least in industrial countries) before governments took much notice.

The Internet has therefore been a much less intergovernmental space with much less intergovernmental governance. Most of the crucial components of Internet governance—such as the Internet Engineering Task Force (IETF), the World Wide Web Consortium (W3C) and the Internet Society—were developed outside governmental circles, often by people suspicious of the role of governments: individuals and individualists who relished the opportunity to move things forward experimentally, through what they often saw as democratic consent, without the caution and political manoeuvring they associated with intergovernmental fora. ICANN, the centre of much dispute in the World Summit on the Information Society, is a curious hybrid—exercising regulatory powers, theoretically (if rather uncertainly) subject to jurisdiction in one country (the United States), but—like other Internet fora—peopled by individuals rather than representatives.

The last few years, therefore, have seen something of a clash of paradigms in ICT/Internet governance—between traditional, treaty-based institutions like the ITU, WTO and WIPO, and more innovative, less formal agencies within the Internet community. (The former might be called traditional ICT governance; the latter Internet governance.) Governments clearly retain authority within the former, though they are increasingly reliant on the private sector for expertise in technical areas. Negotiating skills are often more important in these contexts than technical knowledge.

Governments have struggled, however, to gain comparable authority in Internet agencies, where technical knowledge remains a more important criterion for successful participation. The contest for authority between governments and non-governments was at the heart of intense debate about Internet governance during the World Summit on the Information Society. Many governments in WSIS, particularly from developing countries, sought to vest more authority over it in an intergovernmental forum such as the ITU or some new agency in a similar mould (as well as seeking to diminish the authority of the United States). Their desire for this was resisted by the Internet community, civil society and the private sector as well as by industrial country governments, all of which see the lack of historic governmental and intergovernmental control over Internet standards and development as one of the reasons for its dynamism and growth.

Developing Countries and ICT Decision-making

How do these contrasting paradigms of ICT/Internet governance affect the capacity of developing countries to participate and influence policy outcomes?

The *Louder Voices* enquiry, conducted for the G8 Digital Opportunity Task Force (DOT Force) in 2002, looked in some detail at the capacity of developing countries to participate in international ICT decision-making fora. It focused on three agencies in particular—the ITU, WTO and ICANN—but concluded that its findings had relevance across the board. It identified serious under-representation of developing countries in ICT decision-making processes, which resulted in decisions made taking insufficient account of the contexts, needs, priorities and concerns of developing countries and those living in them—on issues ranging from terminal design to international bandwidth pricing. Sub-optimal technical decisions, from a developing country point of view, were likely to lead to poorer social,

economic and developmental outcomes, including slower access growth and weaker integration into the global ICT economy.

Analysing extensive interviews with developing country participants, the *Louder Voices* report identified six key areas of deficiency behind the underperformance of developing countries in international ICT decision-making. Some of these concerned the international decision-making institutions themselves, but the more important concerned the national policy-making processes available to participants.

Three main problems were identified within the structure of international decision-making institutions. These were:

- a. lack of easy, affordable and timely access to information about ICT-related issues, decision-making fora and processes;
- b. logistical problems, including the frequency and location of international meetings and restrictions on participation (for example, by private sector and civil society experts); and
- c. ineffective use of financial resources available to support participation.

These challenges are, obviously, not particularly specific to the ICT sector. Developing country representatives face the same problems in many international fora in many different contexts. Meetings are usually organized in ways that suit their major players, particularly large delegations with the personnel to attend parallel sessions and engage in extensive lobbying activity outside the formal meeting space. Lack of appropriate information is a particular problem where highly complex issues are discussed in a number of different fora, as is increasingly the case in the ICT sector with its overlapping layers of authority (ITU, WTO, regional regulatory associations, standardization bodies, Internet governance entities, development agencies, *etc.*).

The *Louder Voices* report also identified three main groups of problems with national policy-making processes. These were.

- a. lack of policy awareness, at all levels of government and citizenship, of the potential role of ICTs in social and economic development;
- b. lack of technical and policy capacity on ICT issues, particularly in respect of emerging technologies and new policy areas—such as migration from circuit-switched to IP networks and indeed Internet issues in general;
- c. weaknesses in national and regional policy-making processes, including:
 - lack of political leadership;
 - absence of national ICT strategies;
 - ineffective coordination between different government departments and agencies with ICT responsibilities;

- lack of private sector and civil society participation in national decision-making;
- inadequate preparation for international meetings;
- and ineffective use of financial and human resources.

In short, the report—based substantially on interviews with developing country participants in decision-making processes—identified lack of policy development capacity, poor coordination in government and insufficient attention to non-governmental expertise as critical factors in under-representation and under-performance. Lack of attention to non-governmental expertise was particularly problematic in areas such as the Internet, which had been developed by the private sector and (sometimes) civil society rather than by government action.

All of these national policy weaknesses are susceptible to new approaches in-country and to capacity-building initiatives, some of which are considered later in this chapter. First, though, it is useful to consider two particular issues about the representation of developing countries in international ICT/Internet fora: who participates, and what requirements they have to participate effectively.

Stakeholders

“Multistakeholderism”—the participation of diverse stakeholder communities in decision-making—was commended by the World Summit on the Information Society. Although the practice of participation by the private sector and civil society in the development of WSIS texts was resisted by many governments, the principle was endorsed within those very texts. “We recognise,” the *Geneva Declaration of Principles* put it, “that building an inclusive Information Society requires new forms of solidarity, partnership and cooperation among governments and other stakeholders, i.e., the private sector, civil society and international organisations.” “The international management of the Internet,” added the *Tunis Agenda for the Information Society*, “should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society and international organisations.”

This is very different from the way things have usually been done in international ICT decision-making. It reflects the influence of the Internet governance world, in which multistakeholder participation is strongly established and governments are weak. Even if intergovernmental agencies like the ITU gain more say in Internet affairs, it is difficult to see that this multistakeholder character could be displaced. The Internet Governance Forum, the only significant new entity created as a result of WSIS, has also been set up on an explicitly multistakeholder basis. Some think that this will pose challenges to established ICT (as opposed to Internet) decision-making fora, though whether this happens is yet to be seen. The ITU’s 2006 Plenipotentiary Conference initiated a very limited review of stakeholder participation in its WSIS-related work (rather than its workload as a whole). There seems to be little appetite in the traditional ICT agencies’ governance processes for much widening of stakeholder participation.

We need therefore to look at two stakeholder groups, and at the interaction between them. Neither of these stakeholder groups is simple.

On the government side, a number of different categories of personnel are involved in ICT decisions. These include, in particular:

- diplomats, whose expertise lies in negotiating and drafting international agreements;
- ICT policy specialists, whose objective is to understand the issues and maximize the value derived from an ICT sector point of view;
- ICT technical specialists, whose expertise lies in understanding and maximising the value of technical (technological, accounting, *etc*) options within agreements;
- and non-sector specialists, whose responsibilities intersect with the ICT sector and whose contribution focuses on the priorities which they require from international ICT governance for their own purposes (for example, personnel from ministries of finance concerned with attracting investment or managing customs revenue; personnel from development ministries seeking cheaper international bandwidth to enable more effective use of ICTs in health, education *etc.*).

None of these stakeholder groups within government needs to understand everything about ICTs and their interaction with other areas of policy. It is important, however, that they understand sufficient of the issues across the board to ensure that they can engage effectively. At present, there is often a substantial gap in understanding between these different groups; and, in particular, there is often a paradigm gap between ICT specialists and non-sector specialists such as those in mainstream development ministries. Addressing this paradigm gap—enabling both groups to understand each other's priorities—is critical to enabling more joined-up government.

There is significant pressure for wider stakeholder input within national policy environments. Although WSIS showed that most governments still prefer to retain policy development inside officialdom, some did seek during WSIS to engage with the private sector and civil society, and in a few countries (such as Kenya) the private sector and civil society became quite assertive about their right to policy engagement. The scope for this engagement differs at present quite significantly between traditional ICT and new Internet governance bodies, for reasons that naturally follow from the structural differences described above. Governments still wholly represent their nation-states in the traditional ICT institutions, but Internet bodies draw participation from the whole Internet community, irrespective of stakeholder identity. Citizens of any country may take part in them without being official representatives.

The result is a set of institutions whose representative characteristics (and flaws) differ from those of their intergovernmental equivalents, but in which developing country participation suffers from quite similar deficiencies. Everyone, for example, can participate in principle in the Internet Engineering Task Force's development of standards, but it takes a lot of time and money to do so. And, as one IETF habituée put it in a recent colloquium, it takes a great deal of courage for any "newbie" to put her/his expertise on the line and enter the fray. New spaces are rarely very open to all; like traditional fora for negotiation, capacity to participate really depends on the assets which individuals or organizations can bring to bear—assets

such as time, expertise and funding. Most stakeholders in most developing countries—and all in some—lack these necessary assets. The Internet's governance fora may therefore be more open in terms of the status of participants (private sector, civil society, individuals as well as—often instead of—governments), but they are no more open in practice to developing country participation than permanent intergovernmental fora. There may well be fewer developing country actors playing substantial roles in some Internet governance bodies than there are in the more traditional ICT institutions.

Questions for Participants

Those who do participate need to acquire and hold such assets, and this lies at the heart of the capacity-building requirements discussed later in this chapter. To participate effectively, certainly if they intend to be proactive rather than reactive, developing country personnel—whether from governments or other stakeholder communities—need to know answers to a number of questions about what they are seeking to achieve. These questions might be summarized as follows:

1. What policy outcomes or decisions are in the interest of the country or stakeholder community I represent?
2. What is the range of opinion on the issues concerned? Why do others think they way they do? How do I judge the viability of different approaches or the likelihood of success in achieving these objectives?
3. How do I negotiate outcomes that are desirable for my country or stakeholder community in the particular institution(s) concerned (*i.e.*, how does that/those institution(s) work)?
4. What partnerships are available to me with other countries/stakeholder groups in pursuing these outcomes?

It is clear from these questions that effective participation requires a number of different assets. In particular, it requires:

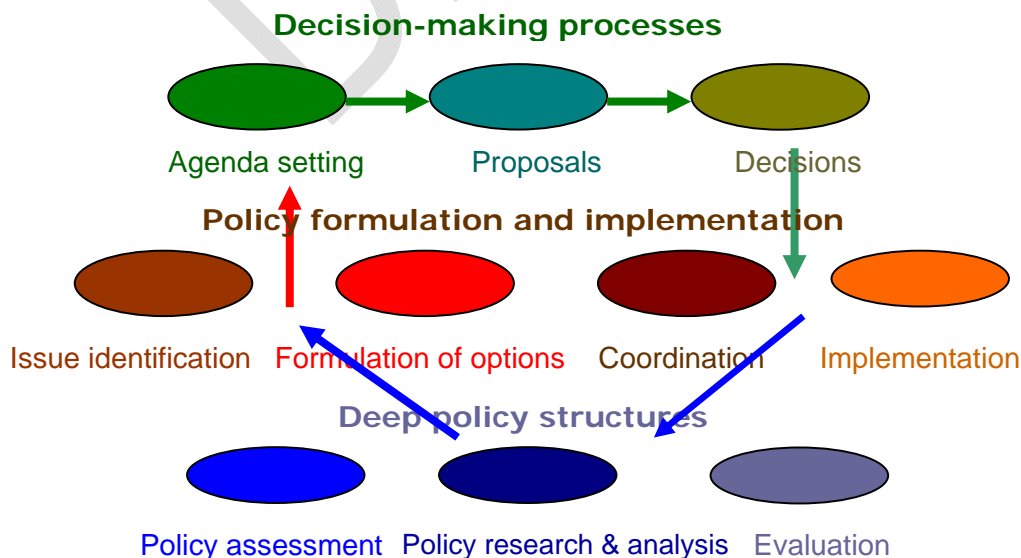
- a. access to reliable, upto-date information about the issues under consideration and the state of negotiations to date;
- b. technical understanding of the issues under consideration;
- c. analytical understanding of the policy options under consideration;
- d. expertise and (preferably) experience in the formal and informal processes of decision-making in the institution(s) involved; and
- e. understanding of and sensitivity to the views and underpinning thinking of other actors within the decision-making process, probably based on personal acquaintance and past experience.

These are not easy assets for new participants to acquire, particularly if they are from smaller countries. To some extent they involve personal skills (and there are numerous examples of individuals from small countries who have played important roles in international ICT decision-making because they have deployed strong personal skills). But the participation of developing countries in international decision-making should not depend on the personal qualities of individuals; and most important deficiencies faced by developing countries are in any case systemic and structural rather than personal.

There are initiatives that can be taken—by international institutions, by national governments, by stakeholder communities—to increase the participation assets that are available to developing country participants. International institutions, for example, could do a good deal more to make information available about their processes and procedures and to train participants from developing countries so that they can make most effective use of them. Such institutions can also do much more to demystify issues under consideration. A common complaint of developing country participants is that they don't have the time or research support to trawl through the metres (or gigabytes) of documentation prepared (especially for technical meetings)—but that they also can't participate effectively in the absence of reliable, objective synopses. Where, they ask, are those synopses?; why do international agencies not make them available?

Participation in international fora is also expensive. Some international agencies, including the ITU, offer fellowships, covering the cost of travel, accommodation and subsistence, to allow developing country personnel to attend. These fellowships have value, but are also criticized for two reasons: too often, it is said, they go to the wrong people; and, in any case, they merely support the presence of developing country personnel, not their effective participation. For that, much more is required: the kind of induction process and ethos that make newcomers feel part of what is going on, participants rather than observers.

The requirements for effective ICT policymaking are, if anything, even more complex at the national level. Ideally, national decision-making processes should draw together policy, strategic planning, underlying knowledge and research, and implementation into a single coherent process, which draws expertise from political leadership, the range of relevant government personnel, the private sector, civil society, academic research and, in the case of Internet, what might be called the Internet community. The structure of such a process is illustrated in the following diagram, developed from analysis originally published in the *Louder Voices* report.



This diagram seeks to represent the complexity of serious policy development and articulation. At the top level, representation in formal meeting spaces—the international meetings themselves—is required not just in final decision-making plenaries, but in agenda-setting meetings and throughout the dialogue and negotiating process. Much of this process is informal, conducted in coffee bars rather than conference rooms, and requires lobbying and negotiating skills as well as depth of policy and technical understanding. Effective participation, therefore, requires both expertise and continuity. As suggested above, it cannot be achieved through fellowships alone, but rather through demanding and resource-intensive continuous participation in conjunction with like-minded colleagues.

The central tier of the diagram represents the bureaucratic and technocratic support systems that underpin both political decision-making and diplomatic negotiation. It is this tier that analyses implications and selects between policy options, referring these upward to more senior (and often political) decision-makers. It is also responsible for implementing decisions that are taken, drawing the implications from the outcomes of international decision-making processes back into the national sphere and seeking to take advantage of the opportunities (and avoid the negative impacts) that arise from them. Without this supporting infrastructure of bureaucrats and technocrats, representatives in international fora are likely to be ineffective.

But the bureaucrats and technocrats are not themselves sufficient to make the most of international processes. Ideally, their work should be based upon a deeper layer of expertise, within research and academic institutions, in the private sector and civil society as well as government itself. It is at this level that the underlying understanding of national needs and priorities is developed—where the research is undertaken into national communications environments and markets, where the potential impact of different policies is analysed and where actual impact is evaluated.

Policymaking capacity—and therefore the capacity to take part effectively in international decision-making institutions—depends on the extent to which this range of interconnected layers is actually in place, and the skills which participants have to make use of what it offers them. It is evident that this multi-layered policy-making structure is much more likely to be achieved in industrial countries or in large developing countries than in LDCs (Least Developed Countries) or small island states. The latter are, therefore, always likely to be weaker in international fora—though regional coordination does offer the potential to build more expertise than can be achieved through individual national delegations. Whether or not regional coordination has been achieved, capacity-building initiatives also have a role to play.

Capacity Building

Capacity-building in this context should not be confused with training. Training is an important part of capacity-building. But capacity-building involves much more, including the availability of reliable information, the establishment of consultation processes, and spaces where decision-makers can engage in creative thinking outside the pressure-cookers of negotiating fora.

Capacity-building is also required at different levels. Officials and stakeholders who participate themselves in international fora need a high level of capacity—substantial participation assets, in the sense in which the word was used above. So do those others represented in the diagram in the previous section. But the contribution of these policymakers will be improved if they can engage more inclusively with social actors who are also better informed. In addition to the higher level skills required by negotiators and policy development personnel, there is need to build a common base of sound understanding of the issues among opinion-formers and engaged citizens. When ICANN is discussed, for example, those discussing it should understand what ICANN is and does; when they talk about the root server system, their understanding of root servers should be based on facts rather than assumptions. There is plenty of scope for disagreement about such issues without adding misunderstanding to the mix.

At the higher level—that of active participants in decision-making fora—there are many examples of good practice. The ITU organizes many workshops on different technical and policy issues, which are valued by those who participate in them. The WTO invests significantly, with limited financial resources, in helping developing countries to navigate its very complex processes. ICANN, the Internet Society and regional Internet registries support a range of different training initiatives to improve the expertise, and thereby the participatory capacity, of developing country Internet managers. Some of these are sizable—the African registry AfriNIC organizes regular two-week programmes, including a number of distinct modular events, that draw together well over a hundred technical and other Internet managers from around its continent. Non-specialist organizations, such as the Diplo Foundation, also contribute significantly to this type of capacity-building through documentation, online courses, and training sessions on both ICT/Internet issues and negotiating skills.

There are more examples like this today than there were two years ago, and they provide a sound foundation on which to build; but there is a long way still to go. Capacity-building of this kind in ICTs, where technology and markets change so rapidly, is very short-term in its impact. Ongoing processes that continue to engage people, post-training, are as important as initial training events. Without them, former participants are likely to rely on increasingly outdated information. Training events can also only reach a relatively small number of people. Even the substantial AfriNIC events mentioned above, if they have, say, 150 participants, will only reach an average of three in each African country. This is not sufficient to build the broad policy understanding and deep policy structures that are needed to underpin effective long-term international participation.

Training initiatives, seminars and workshops also tend to focus on specific issues, particularly technical aspects of ICTs and the Internet or, where policy issues are concerned, more technical aspects of policy such as regulation. They are usually concerned more with transmitting information—which is important—than with building discourse—which also matters. They rarely address the intersections between ICT/Internet policy, on the one hand, and other areas of public policy (such as economic development, security, content, or the application of ICTs to social policy objectives) which are increasingly important at both national and international level. ICT decision-makers need to know more about these wider implications of their decision-making, just as those outside the ICT sector could benefit by knowing more of ICTs.

One way in which this might be achieved is by establishing better spaces for dialogue between ICT and non-ICT decision-makers, at both national and international levels. One example of such an opportunity may be provided by the Internet Governance Forum (IGF), whose first meeting proved to be an intriguing space for international discourse. The IGF was set up, for many *faute de mieux*, following WSIS' failure to find consensus on substantive ways in which Internet governance might move forward. Its mandate, as agreed by WSIS, is extensive, but its resources are scant and its powers nil.

The IGF's first meeting, in late 2006, was unashamedly a talking shop—for some a matter of disappointment, but for others (including the present author) something to celebrate. It discussed a very wide range of subjects, and was, in truth, more an Internet Policy Forum or even Internet Issues Forum than a forum on internet governance *per se*. It drew participation from a wide range of people with different levels of expertise and different specialisms, including (crucially) the Internet's big names; and it treated all of them not as members or representatives of particular stakeholder groups but as equal individuals. Discussion at the IGF was very open, in a way that it would not have been had the Forum had the power to make decisions—another marked contrast with UN fora, including the recent World Summit. Almost everyone felt at the end of the meeting that they had learnt something, and in particular, had learnt a good deal about why others think the way they do. An illustration, perhaps, of the value of the “talking shop” in moving thinking forward.

A final word is due about the information, rather than training, dimension of the capacity required for developing country participation. Three key deficiencies in information resources are often identified by developing country participants in international ICT fora. These are:

- lack of basic information about international ICT institutions and their negotiating and decision-making processes;
- lack of straightforward, objective information about issues under discussion; and
- lack of update information, providing an account of "where we are today".

As noted earlier, these deficiencies are not exclusive to developing countries or to international ICT fora. They are common to many participants in international decision-making processes of all kinds. They are perhaps particularly acute in the ICT/Internet context, however, for three reasons:

- the rapid pace of change in ICT/Internet technical and policy issues;
- the very large number of fora, with overlapping responsibilities and often fundamentally different processes and methodologies involved; and
- the substantial overlap between Internet-specific and other international governance institutions (*e.g.*, WTO, WIPO, security agencies, *etc.*).

The need for better information resources here applies both to those who are substantially involved in policymaking and in international fora, and to stakeholders in the wider community whose interests and responsibilities intersect with ICT and Internet issues. The latter, in particular, would be much more able to contribute effectively to debate and policy

development if they shared a common base understanding of the organizations, technologies, issues and policies being discussed. There are already some excellent materials—such as the Diplo Foundation’s manual on *Internet Governance: Issues, Actors and Divides*—offering guidance in these areas, but more are needed, addressing in particular individual organizations and narrow but important issues, and keeping users up to date with these. A good example of an archived resource addressing these needs in a different context is the UN Non-Government Liaison Service journal *The Go-Between*, which summarizes significant reports and meetings within the UN family. One of the “dynamic multistakeholder coalitions” formed at the first Internet Governance Forum is actively considering ways of establishing basic core information on ICT/Internet issues, including objective summaries of the roles and outcomes of different governance fora.

Conclusion

International ICT decision-making fora have always been challenging environments for developing country participation because of the high levels of technical capacity required for effective participation. Larger developing countries, particularly those with substantial ICT sectors, have been able to play a significant part in decision-making, while smaller countries and LDCs have found this more difficult. New Internet governance institutions, built around Internet stakeholder communities rather than intergovernmental representation, pose new and different challenges in many ways, but also require high levels of technical expertise for effective participation. Efforts to increase developing country participation are essential if developing country concerns and needs are to be properly addressed by either type of forum. These can be made—by international institutions themselves, by governments and stakeholder communities. The value of doing so should be significant; while opportunities—within the ICT sector and beyond—will be missed if the chance to do so is not taken. While there are distinctive aspects to the ICT/Internet governance agenda here, it has much in common with other areas of international governance, including sustainable development, and there may be much to be learnt from cross-fertilization.

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DRAFT FOR DISCUSSION

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DRAFT

"The globe is one, but the earth is not."
(Brundtland Commission, 1987)

Introduction: Earth, power, knowledge

This scoping paper identifies some of the epistemological, process and policy issues associated with the question of negotiating capacity in developing countries in the context of international governance and multilateral agreements for sustainable development.

The marginalization of developing countries (and civil society) from multilateral processes has been described by Fisher and Green¹ as one of *disenfranchisement*:

Being deprived of the capability to participate and to influence agenda-setting and decision-making in international regimes for sustainable development.

Fisher and Green (2004) have described the three dimensions of disenfranchisement or sources of incapacity. The first is “Endogenous” and consists of those factors that pertain to a country or region itself, notably factors of training, people, knowledge, government and bureaucracy. The characteristics of a national government and its stability can act to inhibit effective participation. Secondly, “Transnational Connectivity”, which explains the means through which disenfranchised actors obtain and circulate information and promotes engagement in and understanding of international policy making. Information can range from basic technical and procedural issues to policy-relevant science and social science. Litfin (1994)², for example, has argued that influencing policy-making decisions is closely tied to persuading other actors to accept a specific set of scientific facts or logic. The third dimension is “Geopolitical Status”, reflecting the political fact that there are key political actors in each international regime. Key actors may derive their power from money, military capability, strategic alliances, natural resources, or some combination thereof; and we can speculate that these sources of power are sometimes closely related with a capacity to fund and organize powerful research and think-tank institutions.

Table 1. Operationalizing the Dimensions of Disenfranchisement. Adapted from Fisher and Green (2004)

Dimension	Developing Country Operationalization
Endogenous Resources	Human resources Knowledge of English Financial resources Political stability and political system
Transnational Connectivity	- Membership in epistemic communities - Interactions with scientists, academics or policy-makers from other countries

¹ “Understanding Disenfranchisement: Civil Society and Developing Countries Influence and Participation in Global Governance for Sustainable Development”, article by Dana R Fisher and Jessica F Green, in *Global Environmental Politics*, 4:3 August 2004. Available at: Project Muse: http://muse.jhu.edu/journals/global_environmental_politics/v004/4.3fisher.pdf. Site visited on 13 April 2007. The definition of disenfranchisement was developed by participants in US and Japanese roundtables in the Summer of 2003.

² Litfin, Karen T. 1994. *Ozone Discourses: Science and Politics in Global Environmental Cooperation*. New York, NY: Columbia University Press.

	- Membership/leadership in UN bodies, commissions, subsidiary bodies
Geopolitical Status	- Alliance and proximity of country to colonial power/superpower - Natural Resources

The paper is organized in three main sections, setting out issues/programmes for decision-makers a. before, b. during, and c. after negotiations. To some extent, these sections map on to the four processes or stages of multilateral negotiations (Chasek and Rajamani 2002): issue definition, fact-finding, bargaining, and implementation and strengthening. Obvious challenges for developing countries, at each stage, include:

- i. Delegation size and composition: many developing countries have limited access to sufficient numbers and range of delegates to make up their delegations.
- ii. Proliferation of meetings: a related issue is the sheer number of multilateral negotiations and the demand on developing country governments to service them.

The challenge of creating a level playing field, however, raises issues beyond those of capacity to participate. The paper treats “knowledge” itself as a (geo)political concept, which is always implicated in formations of power and governmentality³. The challenge for developing country negotiators is not merely to achieve a “level playing field” through access to technical proficiency in basic skills, from language competencies to negotiating techniques. Their challenge is also to recognize and address the fact that that knowledge production and capacity building opportunities are (supposedly outside the formal multilateral negotiating processes are) already embedded in a wider contest over meaning and power in the global community. This raises questions about *who* is providing or funding capacity building support and in *whose* interest? For example, Haas (2001) has observed that non democratic developing countries are unlikely to be affected by building national concern. The principal form of leverage over LDCs by international institutions is through capacity building, and the exercise of conditionality by sources of aid and investment⁴.

Overview of issues and responses: Before, during and after negotiations

³ "Governmentality" applies to a variety of historical periods and to different specific power regimes. However, it is often used in reference to "neoliberal governmentality", i.e., to a type of governmentality that characterizes advanced liberal democracies. In this case, the notion of governmentality refers to societies where power is de-centered and its members play an active role in their own self-government, e.g. as posited in [neoliberalism](#). Because of its active role, individuals need to be regulated from "inside". A particular form of governmentality is characterized by a certain form of knowledge ("*savoir*" in French). In the case of neoliberal governmentality (a kind of governmentality based on the predominance of market mechanisms and of the restriction of the action of the state) the knowledge produced allows the construction of auto-regulated or auto-correcting selves.

⁴ Haas, 2001, "Lessons from Environmental Governance for Debt Forgiveness." A version was published in John Ikenberry and Vittorio Paris eds. 2001 Manuale di Relazioni Internazionali Rome: Gius, Laterza & Figlie.

Chasek and Rajamani (2002) have identified a number of common strategies adopted by developing countries to compensate for some of the inherent weaknesses they bring to the table. These are: a. coalition building; b. priority setting; c. pooling expertise; d. pre-negotiation briefing and training; and e. alliance building with non-state actors e.g., NGOs.

Issues before negotiations

In the run up to negotiations, developing countries are often faced with a number of basic obstacles, including:

- Low skills capacity in the generic techniques of negotiation;
- Limited access to expert knowledge in the field of international law;
- Limited availability of issue-based knowledge and expertise, especially where diplomats have been following or pursuing negotiations on behalf of a country;
- The related problem of not having a prior and agreed policy position on an issue; and
- A limited grasp of the most important issues pertaining to a particular developing country or its region.

The growth in the complexity and increased regularity of negotiations, in climate change for example, has exacerbated issues around capacity for many developing countries.

A lack of human resources sometimes results in developing country negotiators missing vital pre-negotiations meetings. The negotiators can miss out on critical discussions—and opportunities to impact on agenda setting, issue definition, fact finding, and preliminary bargaining. Negotiators also need early exposure to meetings if they are to pick up the rules and “lingo” of the discussions. Consistency in the make-up of delegations can also be a problem over time, where membership changes according to the location and frequency of negotiations. This undermines a country’s ability to build up networks and personal contacts that can play an important role in building expertise and allies.

Timely regional meetings can be useful for pre-negotiation sessions, providing opportunities for coordination and strategy sessions.

Where countries engage external assistance, including the services of NGOs, science centres, or independent international consultants, there is a risk of substitution rather than building capacity. Developing countries also have to be aware of the introduction of value judgements that do not necessarily serve the interests of their own negotiating positions. There is no substitute for rigorous policy analysis led by the interested party.

Some of the organizations offering programmes that address some of the pre-negotiation issues, are set out in Table 2.

Table 2: Selected training interventions

Support Organization	Programme	Outputs	Document	Contact
FIELD	AOSIS	Help with set up. Offers support before, during and between negotiations		M J Mace, Programme Director, Climate Change and Energy, Field Mj.mace@field.org.uk
FIELD+World Bank	National and Regional capacity in East Africa	Policy-making and negotiations		
FIELD + IIED	CB Workshop for junior Climate Change Negotiators			
FIELD	Strengthening Implementation and negotiation capacity (CC and Biodiversity)	Regional preparation workshops, negotiation training, workshop for national and regional coordination		
FIELD + UNCTAD	CB for improved policy making and negotiation on key trade and environment issues	Regional meetings		
ECBI	Oxford Fellowship Programme for leading negotiators	Trust building and working relationships outside official negotiations		
ECBI	Bursaries for attendance at UNFCCC sessions	Attendance at UNFCCC sessions		
ECBI	Workshop programme	Issues and negotiation skills, regional, enable to divide tasks among group/coalition		
ECBI	Junior Bursaries	Enable to take part in workshops		
ECBI	Regional annual Workshop	Networking between regions		
ECBI	Policy Analysis	Enhance analytic capacity, formulation of common positions within coalitions, analysis of burdens and benefits associated with politics		
ICTSD	Southern Agenda on Trade and Environment	Reference Tool and Guide for negotiators and policy makers	Trade and Environment Resource Book	
UNITAR and IPU	Global Capacity Building Initiative for Parliaments on SD	Resources to enhance involvement in negotiation of MEAs, identification of country priorities in MEA negotiations, and support for enhanced role of parliaments		
UNITAR	Climate Change Programme	Regional training, online platform	Who needs to do what to implement the Kyoto Protocol. An assessment of capacity building needs in 33 DCs. Climate Change (CC) and internet support. Developing human and institutional capacity to address CC issues in LDCs	
UNITAR	Multilateral Diplomacy and International Affairs Management e-	Online course for diplomats and people active in multilateral		

	learning web site	conferences		
CCKN	Climate Compendium	Guide to issues and actors, building knowledge		
CCKN	Negotiation Guide	Survival guide for DC Climate Negotiators	<i>"On behalf of My Delegation"</i> , by Joyeeta Gupta	
IISD + ENDA-ENERGIE	Climate Change Capacity Project Africa	Knowledge about CC, implications for Africa, negotiation skills, facilitating working together, inter-sessional meetings.		
Cambio Global	Courses to build local capacity			
UNFCCC & other conventions	All information concerning the conferences		Documents on Capacity Building	
UNEP + UNCTAD	CBTF, Capacity Building Task Force. WTO and MEA issues.	Thematic research, training, networking, bringing people together from the trade and environment fields		Andrew.stevenson@unctad.org
IIED/FIELD supported by DFID	Climate Negotiations training	For LDCs		
SACEP +FIELD	Workshop on Negotiation			
IUCN/RBP	Capacity Building and decision-making and various levels			
IUCN/RBP	Organising national preparatory sessions, promote discussions and debate			
IUCN/RBP	Knowledge on Climate Change and Biodiversity			
UNEP and Secretariat of the Pacific Regional Environment programme (SPREP)	Pacific regional workshops on negotiation training.	Training for representatives from Marshall Islands, Federated States of Micronesia and Fiji.		Ian Fry, International Environmental Officer, Department of Environment, Tuvalu ianfry@envtuvalu.net
Ian Fry, Tuvalu International Environmental Officer	Booklet PINPASS Pacific Islands Negotiation Passport	Hints on negotiations		
WWF South Pacific (with EU funding)	Coordination of negotiations training	Training for govt. officials from Tuvalu and Cook Islands.		

Issues during negotiations

The challenges for developing country negotiators *during* negotiation sessions derive from the limited size of some delegations, resulting in an inability to keep up with all the relevant formal and informal meetings, and the challenge of absorbing all the relevant documentation. The climate negotiations, for example, pose particular problems given the quantity of sometimes complex documentation, and the continuous nature of the negotiations.

Some negotiating teams compensate for their lack of capacity by taking to the “corridors” and networking, to establish what has taken place in some informal sessions (often without translation facilities). Some well chosen NGO representatives are used as intelligence sources, as are allies in other delegations who share an interest in certain issues under discussion.

Meetings of the G-77/China or other coalitions and regional groupings can also be a source of updates. South-South coalitions such as the G-77/China and AOSIS bring their own challenges. Competing interests and agenda capture by dominant interest groups count among the most obvious weaknesses within the G-77/China. Coalitions are most cohesive and effective across the board when they are homogenous, and share a history and some sense of identity.

Table 3 sets out some of the programmes addressing in-session challenges.

Table 3: Addressing in-session negotiation challenges

Organization	Programme	What they do	Document	Contact
FIELD	AOSIS	Briefing material, information, drafting of submissions and interventions		
FIELD	Side event WSSD	Briefing, assistance, preparation of submissions		
ECBI	Mobile Phones	For LCD during negotiations		
IISD	<i>Earth Negotiation Bulletin</i>	Daily summary and analysis of meetings, available in paper and electronic format.		

Issues after negotiations

The challenges that follow a negotiation session or completion of a negotiation include accurate debriefing of those within and outside government who need to know, implementation and communication with civil society.

Organization	Programme	What they do	Document	Contact
UNITAR and IPU	Global Capacity Building Initiative for Parliaments on SD	Support with implementation of laws		
LDCEG	Advice to LCDs on preparation and implementation of national adaptation programmes			

SACEP	Facilitation ratification and implementation			
IUCN/RBP	Implement Convention on Biological Diversity			
UNEP	MEA Synergies	Capacity building to reduce poverty through synergistic implementation of Rio MEAs		
UNCTAD/UNEP	Policy Coordination	Enhancing Policy Co-ordination on Trade and Environment issues; MEAs and trade-related measures		Andrew.stevenson@unctad.org

Delivering capacity building

A sampling of training delivered to developing country negotiators included an experience from a workshop in Africa, delivered by Kallhauge Gupta. The workshop drew speakers and facilitators from African countries and was closed to non-negotiators. The needs of participants were identified, including training in negotiation skills, enhanced understanding of the issues, and approaches to resolving internal differences. The workshop addressed negotiation theory and tools, constraints on negotiators preparing to participate in negotiations, an analysis of stakeholder positions, a review of the internal dynamics and politics of the G-77/China, and a review of the financial and administrative aspects of UN negotiations and issue linkages across MEAs. Chasek and Rajamani (2002) have recommended a menu of support measures for developing country negotiators, including:

- Participation Funds;
- More regional preparatory meetings for networking, trust building and forming of common positions;
- More technology/ access to computers and the internet to conduct research and stay in contact with others;
- Diplomatic training and support for learning about relevant issues, especially with regard to particular country perspectives and interests;
- Improve timeline and quality of conference documentation (in all languages);
- Strengthening of policy analysis and long-term development of positions;
- More systematic support from convention or UN secretariats; and
- Changes in structure and process of negotiations.

Chasek and Rajamani (2002) also outline the conditions for a “perfect negotiation”, including:

- Negotiators adequately trained in negotiation skills, with in-depth knowledge of topics and knowledge of connections with other MEAs;
- Familiarity with national and regional policy regarding needs, benefits of country (established through open discussion at home with civic society and parliament; informed public);
- Established coalitions with and trust in negotiators from countries with similar interests in an issue, and with a similar economic status;

- Sufficient numbers of people to go to negotiations, and maintain reasonable consistency of membership in negotiation teams;
- A division of labour across negotiating coalitions; and sufficient planning to ensure representation of the coalition at all formal and informal meetings;
- Briefings for delegations, coalitions, and from NGOs; access to ENB and associated IISD RS products;
- In-house capacity for negotiators to negotiate their own country's positions;
- Regular debriefings at home to parliament and civil society;
- Implementation of MEA in national law and education;
- Regular contact with members of coalitions;
- Regional inter-sessional meetings; and
- An ability to keep up to date with and apply scientific and other policy research on negotiating topics.

Programmes deemed most helpful to negotiators from developing countries have a number of characteristics:

- The capacity building organizations accompany negotiators from the beginning of the preparations through to the negotiations and conduct follow-up sessions afterwards (e.g., FIELD- AOSIS);
- Support and training for countries is designed to enable the subjects of the training to develop autonomously, with sufficient confidence and skills to get on with their own policy discussions; space is provided at workshops for participants to communicate with each other and in the absence of the trainers;
- Online forums are made available to ensure that newly trained negotiators can keep in touch, and obtain updated information;
- Workshops are organized on a regional basis, helping participants to identify common or similar positions from an identifiable perspective; this aids trust building and networking;
- Programmes integrate understanding of MEA issues with anti-poverty strategies; and
- Bursaries are provided to help send more than one person from each participating country.

Occasional obstacles to successful workshops and training result from the timing of workshops, too close to the commencement of a negotiation; dysfunction within the G-77/China; and failure to identify clear linkages and priorities associated with MEAs and national anti-poverty strategies.

Conclusion

Capacity building for developing country negotiators can address a wide spectrum of needs, ranging from basic language skills to sensitive policy analyses support and direct input to the preparation of regional positions to be advanced during negotiations.

As with international negotiations and agenda setting processes, those who set the question and the frame for discussion, often come out on top. The way in which we define capacity building as a problem can also influence the way in which we come up with solutions. Capacity building can be approached from an epistemological, process or

policy perspective; and the solutions and remedies advocated will often reflect our starting point.

The use of the word “capacity” can suggest that the gap in the ability of a developing country represents a “lack” or deficit in the endogenous resources available or ability of the country or countries to adequately represent their interests. A more objective approach recognizes that capacity is a function of both endogenous resources and the available opportunity structure which is largely a function of the country or region’s access to international political, economic and epistemic institutions and structures, and its geopolitical status. From the perspective of developing countries, in the case of trade and trade-related negotiations, for example, the language game is sometimes “fixed” from the outset and “incapacity” is built into the rules of the game as a *fait accompli*.

A critical issue in capacity building is “knowledge production” and dissemination, notably the political economy underlying the commissioning and publication of research and policy documents. To underline the central importance of knowledge dissemination, it is worth noting that the hegemonic rise of neo-liberal economics has been attributed, to a significant degree, to the success of a network of powerful think tanks, beginning with the Chicago School⁵. To correct for the preponderance of research and policy publications that originate from within the OECD countries, developing country representatives have a number of opportunities to access information, notably through membership and access to epistemic communities e.g., the IPCC and Millennium Ecosystem Assessment. Access to scientists and policy makers around the world can also help delegates access and efficiently distil complex, policy-relevant information in ways that that would otherwise be labour-intensive. Membership of UN bodies, commission, subsidiary bodies or other working bodies of a regime can also facilitate a useful accumulation of knowledge.

As indigenous people representatives have demonstrated at a number of negotiations, however, even the question of what counts as “knowledge” can become an issue. Grove-White (1996) made a prescient observation when he wrote that the tacit model of sustainable development on which most of the current and high profile negotiations appear to rest continues to be one defined by expert knowledge, and that such a top-down discourse of sustainability lacks appropriate public resonance. He suspects that the weakness reflects the alienating character of the tacit models of human nature and needs embedded in epistemologically realist representations of sustainability.

Capacity building raises questions not only of training and indigenous resources, but issues that go to the heart of the international negotiation processes, including the reproduction of structural obstacles to transparency, fairness and equal participation. Between the lines of negotiated text, there are inherent tensions between developed country emphases on the “green” agenda and the so called “brown” agenda pursued by developing countries, in the context of sustainable development. These tensions are

⁵ Bichler, Shimshon, and Jonathan Nitzan. 2007. “The Rockefeller Boys.” *Science & Society* 71 (2, April): 243-250. And George, Susan. “A Short History of Neo-Liberalism: Twenty Years of Elite Economics and Emerging Opportunities for Structural Change.” Conference on Economic Sovereignty in a Globalising World. , Bangkok. 24 Mar 1999.

distinct and quite separate from those that have arisen due to the sheer volume and complexity of intergovernmental negotiations.

Interventions in “capacity building” will inevitably sit somewhere a wide spectrum, ranging from direct technical and financial assistance through to more pro-active “political” support to correct imbalances in the distribution of power among negotiating blocks and countries. The latter and sometimes controversial approaches to capacity building belong to the Paulo Freire school of pedagogy, wherein the myth of “neutrality” is exposed as a ploy of the powerful.

Responses to capacity building needs

Some of the problems will not be resolved by training alone but come down to financial resources e.g., talented developing country negotiators are sometimes poached by international organizations offering attractive salary packages, thus contributing to a lack of continuity and long-term capacity building within the developing countries. A lack of resources also hinders preparations by imposing constraints on the ability of negotiators to travel to preparatory sessions e.g., caucusing at the regional level. Organizations such as FIELD are not only commended for providing capacity support at each stage of the pre-negotiation through to post-negotiation phase, but assist developing countries on a voluntary basis, by funding their work from their own project funding. The WWF also support work in the Pacific region, supporting informal electronic and other forms of discussion.

Sensitive cultural issues can also hinder countries. For example, in the Pacific region cultural norms can inhibit the ability of younger negotiators to speak, in deference to more senior colleagues.

Ownership of capacity building processes is identified as an important issue for both the recipients of training and some of the agencies involved in its delivery. One organization described a need to counter “a sort of strange, almost natural science” attitude to capacity building. Some trainers therefore take special precautions to carefully establish boundaries with their donors, thus ensuring that the interests or perspectives of trainees come first. In some instances this will mean protecting the ability and autonomy of developing country participants and enabling them to arrive at “partisan” analyses and positions; thus countering the flood of information and briefings that originate in think tanks in OECD countries.

Negotiators at different stages in their careers and skill sets require different levels of support. Junior negotiators sometimes require little more than initial and straightforward technical skills workshops. At more advanced stages, negotiators require policy analysis abilities and training in these advanced skills implies greater levels of trust between recipients and trainers. Trust building is usually a function of the level of the extent to which the host country is driving the capacity building effort.

An advocate of developing country ownership of training said: “I see it as more than just a matter of teaching negotiating techniques.” He cited his organization’s role, prior to the UNFCCC COP/MOP in Nairobi (2006), in supporting LDCs and SIDS in arriving at a position on the adaptation fund prior to the meeting. European negotiators later acknowledged that this prior intervention (i.e., capacity building with LDCs and SIDS)

was decisive in helping countries reach an agreement in Nairobi. Sometimes regarded as “pushing an agenda”, this kind of strong intervention to help build the capacity of LDC interventions is regarded as a contribution to the overall negotiation process due to the probability that under-prepared groups of countries are often tempted to simply block proposals where there has been insufficient time or scope to consider proposals on the table. One trainer observed that capacity can even be a problem in countries such as India.

To conclude, the starting point for our approach to capacity building will normally dictate the preferred remedy. Where the primary challenge is “Endogenous Resources”, the capacity builder will focus on human resources (e.g., training), language skills, financial resources, and the political context. Where transnational issues such as networking are paramount, the capacity builder will focus on promoting connectivity with epistemic communities, interaction with the academic, policy and science (natural and social science) networks, promoting membership and leadership in UN bodies, and maximising opportunities to be derived from membership of negotiating blocks. Where the underlying capacity deficit is traced back to the geopolitical status of countries or regions, the capacity builder may not only seek to build technical capacity but develop forms of direct intervention and solidarity, for example, facilitating a group of countries in hammering out of negotiating position in advance of a negotiating session.

All of these approaches are covered in the range of activities identified in the current research.

Annex I: Selected capacity building programmes and contact details

Field: Foundation for International Environmental Law and Development

http://www.field.org.uk/tisd_4.php

http://www.field.org.uk/strength_capacity.php

- Side event at World Summit on Sustainable Development, provide briefing documents, assistance during negotiations, prepare submissions to international bodies
- Strengthening Implementation and Negotiating Capacity (CC and Biodiversity): regional preparation and implementation workshops, advice and assistance through briefings and papers, negotiations training workshop. Workshop to improve national and regional co-ordination
- Capacity Building for improved policy making and negotiation on key trade and environment issues (+UNCTAD)
African meeting, project from 2002-2006
Cluster Meetings for different regions
Financed by UK Department for International Development
Follow up project to Strengthening Research and Policy Making Capacity
MEA coordinators: Ulrich.hoffmann@unctad.org nuria.castells@unctad.org
Andrew.stevenson@unctad.org
http://www.unctad.org/trade_env/projectDFIDII.asp
- FIELD + World bank: national and regional capacity in East-Africa on policy-making and negotiations, March 2004-June 2005, consensus and coalition building
- AOSIS: FIELD helped forming it: briefing material, informing and briefing between negotiations, drafting of submissions and interventions, supporting delegations during negotiations, supporting their own capacity as negotiators
- FIELD + IIED (Institute for Environment and Development): Capacity Building Workshop for junior climate change negotiators mj.mace@field.org.uk

ECBI: European Capacity Building Initiative

<http://www.eurocapacity.org/homepage.shtml>

admn.ocp@gmail.com

- Oxford Fellowship Programme for leading negotiators: trust and working relationship outside official negotiations
- Bonn Seminar
- Bursaries to attend UNFCCC sessions
- Mobile phones during UNFCCC Sessions for LDCs
- Workshop programme: regional pre-negotiation to understand issues and develop negotiation skills, enable to divide tasks among the group
- Junior bursaries to participate at workshops
- Regional Annual Workshops: Networking, not only LDC, but region

- Post-workshop mentoring and networking of participants through ecbi net
- Policy Analysis: enhance analytic capacity, training, formulation of common positions within coalitions, analysis of burdens and benefits associated with politics, ...

ICTSD: International Centre for Trade and Sustainable Development

- Southern Agenda on Trade and Environment 2002-2004 <http://www.trade-environment.org/page/southernagenda/description.htm>

Research Output: Trade and Environment Resource Book, reference tool and guide for negotiators and policy-makers, facilitating informed participation in negotiations and decision-making process + consolidated distillation

UNITAR: United Nations Institute for Training and Research

Global Capacity Building Initiative for Parliaments on Sustainable Development (+IPU) <http://www.ipu.org/splz-e/unitar05.htm>
launched in 2005

- Enhance Role of Parliaments
- Resources to enhance involvement in negotiation of MEAs
- Support parliaments with implementation of laws, see their own needs in negotiations, ...
- Support democracy

Climate Change Programme (CCP) http://www.ccp-unitar.org/rubrique.php?id_rubrique=1

- C3D training and capacity building with 3 partner institutes in Developing Countries; regional training, Online platform with video conferencing,...
- Publications: Who needs what to implement the Kyoto Protocol? An assessment of capacity building needs in 33 Developing Countries. CC and the internet, Developing Human and institutional capacity to address CC issues in LDCs

Multilateral Diplomacy and International Affairs Management e-Learning website
Online course for diplomats and people active in multilateral conferences
<http://www.unitar.org/diplomacy/elearning/>

IPU: Inter Parliamentary Union

<http://www.ipu.org/english/home.htm>

Releases information: books, handbooks, reports

Co-operation with United Nations: Specialised meetings for CC, desertification, SD,

- establishment of 5 year programme of activities aimed at building capacities of parliaments to interpret and implement international environmental agreements (training workshops, online information, thematic parliamentary workshops, publication of specialized handbooks with practical solutions)

CCKN: Climate Change Knowledge Network

Create knowledge and enhance capacity, reasonable judgments in negotiations, building capacity for internet delivery, climate compendium: overview of key topics and actors

http://www.cckn.net/capacity_building.asp

- *On Behalf of my delegation, ... A survival guide for Developing Country Climate Negotiators* by Joyeeta Gupta http://www.cckn.net/pdf/my_delegation_en.pdf
Information on CC, how to negotiate, structure of UN, rules of procedure, NGOs, Coalitions, G77,

IISD: International Institute of Sustainable Development

- Climate Change Capacity Project Africa (+ENDA-ENERGIE)
Knowledge about CC, implications for Africa, capacity to anticipate and prepare for potential conflicts and opportunities, effective interventions and decisions, facilitate working together, strengthen background in international law, negotiating skills and theory
Roundtable meeting
Communication inter-sessionally and prepare for negotiations

http://www.iisd.org/climate/cccp_africa_bg.htm
contact: John Drexhage: jdrexhage@iisd.ca

- Richard Sherman: rsherman@iisd.org
- ENB bulletin

UNCTAD: United Nations Conference on Trade and Development

Training negotiators.

LDC and UNFCCC:

http://unfccc.int/cooperation_and_support/ldc/items/2666.php

Least Developed Countries Expert Group

http://unfccc.int/essential_background/convention/convention_bodies/constituted_bodies/items/2582.php

- advice to LDCs on preparation and implementation of national adaptation programmes

UNFCCC Document

10/CO.5

<http://unfccc.int/resource/docs/cop7/13a01.pdf#page=5>

Secretariat has to organize workshops (Decision of 2001)

<http://unfccc.int/resource/docs/cop5/06a01.pdf#page=30>

Includes list of capacity building needs p. 28

- human resource development (eg including CC in curriculum -> civil society)
- national communication
- public awareness
- coordination and cooperation
- improved decision-making

UNCTAD-UNEP: CBTF Capacity Building Task Force

<http://www.unep-unctad.org/cbtf/>

Thematic research, training, networking, country projects, policy dialogue; bring people together from trade and environment fields

SACEP: South Asia cooperative Environment Programme

- Intergovernmental environmental organization
- Workshop with FIELD on capacity building : develop and refine training materials for life cycle of MEA, capacity for negotiators and trainers, regional and interest group, negotiating
- Projects on knowledge
- Facilitating ratification and implementation

Workshop protocol with all the slides

http://www.sacep.org/pdf/wspreport_mea_2005.pdf

IUCN/RBP: Regional Biodiversity Programme

<http://www.rbp-iucn.lk/>

- Implement Convention on Biological Diversity
- Capacity Building and decision-making and various levels
- Organising national preparatory sessions, promote discussions and debate
- Knowledge on Climate Change and Biodiversity

Article on coalitions in negotiations: Joyeeta Gupta and Angela Churie Kallhauge:

<http://www.cru.uea.ac.uk/tiempo/portal/archive/issue4445/t4445a6.htm>

AOSIS

OPEC

GRULAC: Latin America and Caribbean

Africa

Asia-Pacific

LDC

SIDS: small island developing countries

Least Developed Countries Expert Group

Information on how coalitions could work better

Ian Fry: ianfrey@ozemail.com.au

Chasek, Pamela and Lavanya Rajamani: Article in a book: Providing Global Public Goods: Making Globalization work for all

- ➔ no training on how to negotiate but practical training in environmental issues, esp. science, how to evaluate risk analysis
pam@issd.org

Cambio Global: www.catie.ac.cr/cambioglobal

Global Warming and the third World, Preparing for COP6 Joyeeta Gupta and Angela Churie Kallhauge

<http://www.tiempocyberclimate.org/floor0/recent/issue3637/t3637a6.htm>

Information on two workshops undertaken by IISD and Centre for SD of the Americas to train negotiation skills etc, comparison, What is needed, what could have been better

UNEP: MEA Synergies

Programme to Implement MEAs and reduce poverty

<http://mea-synergy.unep.org/>

South South North: Capacity Building for adaptation and mitigation of climate change

<http://www.southsouthnorth.org/>

Southcentre

<http://www.southcentre.org/>

Enhance cooperation in the South, share experience and knowledge
Access to Knowledge Programme (Capacity Building etc.)

Global Environment Information Centre

<http://geic.hq.unu.edu/index.cfm>

- providing information , involve civic society groups and people in environmental issues
- newsletter, information resource and networking tool
-

Inter-Linkages

<http://geic.hq.unu.edu/env/project1.cfm?type=1&ID=254>

Synergies and coordination among MEA

GEF: Global Environment Faculty

http://www.gefweb.org/Documents/Enabling_Activity_Projects/CDI/cdi.html

- funds projects
- implementation agencies: UNDP, UNEP, World Bank
- executing agencies: several Developing Banks
- 15 operational programmes for the different issues

GEF Evaluation Office

<http://thegef.org/MonitoringandEvaluation/MEAbout/meabout.html>

- independent evaluation entity within GEF to evaluate programmes
-

NCSA: National Capacity Self Assessment

<http://ncsa.undp.org/>

- assists countries to assess priority national capacity for MEAs (countries identify gaps and their own solutions)
- promotes synergy
- learning and knowledge management mechanism

- web site as exchange portal for best practises and lessons learnt, discussions
- Regional Workshops for Capacity Building
- Manual for Implementing of MEAs
- Resources on Capacity Building

ENDA-TM: www.enda.sn/energie/indexnrj.htm
Environmental Development Action in the Third World

enda.energy@orange.sn

UNESCAP + UNEP + UNCTAD + WTO

<http://www.unescap.org/esd/environment/cap/>

project to enhance capacity to formulate coherent trade and environment policies in complete and coherent context

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Joyeeta Gupta: Institute for Environmental Studies, Amsterdam:
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Annual Report of UNEP, describes IISD project
http://www.unep.org/pdf/annualreport/UNEP_AR_2006_English.pdf

Richard Sherman with Africa Regional Coverage Initiative, information for Africans and training of ENB writers

Annex II: Composition of delegations at selected negotiations

POPS INC-5 (December 2000, South Africa)	122 delegations (330 delegates)	2.7 people/ USA: 32 South Africa: 16 (host)	80 total 10 transition 67 developing 3 industrialized	91% 1: NY 4: Geneva 4: Nairobi 18: host city 2 elsewhere
Financing for Development PrepCom II (May 2001, New York)	109 delegations reporting names of delegates (390 delegates)	3.6 people/ Mexico: 12 (future host) China: 9	8 total 1 transition 6 developing 1 industrialized	Information not available
Intergovernmental Forum on Forests, 2nd session (August 1998, Geneva)	37 delegations reporting names of participants (162 delegates)	4.4 people/ Canada: 16 Brazil: 9	10 total 9 developing countries 1 transition	Information not available
Intergovernmental Forum on Forests, 4th session (February 2000, New York)	44 delegations reporting names of participants (269 delegates)	6 people/ UK: 18 Brazil: 12	5 developing	Information not available
Commission on the Status of Women (March 1995, New York)	38 delegations reporting names (279 participants)	8 people/ France, Spain, Mexico: 17 China. Philippines: 16	3 developing countries	Information not available
UNCTAD X (February 2000, Bangkok)	143 delegations (1265 participants)	8 people/ Japan: 53 Indonesia: 29*	16 total 11 developing 5 transition 1 industrialized	70% 152: Geneva 13: New York 188: host city 21: elsewhere

* These figures do not include Thailand, the host, who had a 135-member delegation.

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DRAFT

Access to Knowledge in the Information Society

DRAFT FOR DISCUSSION

Tony Vetter and Eddan Katz

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Access to Knowledge in the Information Society

By Tony Vetter and Eddan Katz
September 2007

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DRAFT

Introduction

One of the primary drivers of the access to knowledge (A2K) movement is well represented in the following new take on a familiar proverb. “Give a man a fish and you feed him for a day. Give a man a fishing rod, and he feeds himself and his family for as long as the rod lasts. Help a man develop the knowledge and means to improve the fishing rod and to design and produce new ones, and he may feed himself and his society for years to come.”¹ This proverb illustrates the intuitive and empirically proven general fact that appropriate knowledge increases the economic efficiency of an economic actor, and is essential to the full realization of human potential in almost all contemporary conceptions of human fulfillment.² In the context of the Information Society, knowledge is a central resource in the global economy and as such access to knowledge is an increasingly crucial ingredient for economic development. In this same context the A2K movement believes even more broadly that knowledge is essential for many human activities and values, including freedom, the exercise of political power, as well as economic, social and personal development.³ These same human values featured prominently in the World Summit on the Information Society (WSIS) Declaration of Principles and so naturally the aim of the A2K movement to increase access to knowledge for all was central to the declared Common Vision of the Information Society.⁴ However at the Working Group on Internet Governance (WGIG), created by WSIS to clarify the issues of the emerging debate on Internet governance, a clash became evident between traditional intellectual property right (IPR) approaches, developmental needs, and aspirations for how internet technology could further facilitate increased access to knowledge. This reflected the fact that issues relating to IPRs have long been among the most contentious in the Internet governance debate and as such, discussion of A2K and IPRs issues featured prominently at the first Internet Governance Forum (IGF) meeting in Athens, Greece.

To further this discussion this essay explores the issue of access to knowledge; why it is fundamental for the Information Society, how internet technologies can enable increasing access, and the challenges that exist to realizing this potential. The most prominent of these challenges are the barriers to A2K created by IPRs. What are IPRs, how and why they came into being, the history of their effectiveness, and how they are governed are important questions this essay will address. The answers to these questions help set the stage for the subsequent examination of the problems created by IPRs for using internet technology, how in some cases IPRs have been rendered dysfunctional by these technologies, and the lines of thought and action that have emerged in response. The essay will conclude with an examination of the emergence of the WIPO development agenda, and possible new directions forward.

¹ Cynthia Cannady, “Technology Transfer and Development”, WIPO Magazine Issue 5/2006, http://www.wipo.int/wipo_magazine/en/2006/05/article_0005.html (accessed Sept 5, 2007).

² Andrew Rens, “Access to Knowledge Too – The Yale A2K2 Report”, iCommons Lab Report, April/May 2007, <http://icommons.org/wp-content/uploads/2007/05/iCommons%20Lab%20Report%20April:May.pdf> (accessed Sept 6, 2007).

³ Access to Knowledge, Overview, <http://www.cptech.org/a2k/> (accessed Sept 5, 2007).

⁴ See §B3, “Access to information and knowledge” WSIS Declaration of Principles, Document WSIS-03/GENEVA/DOC/4-E, 12 December 2003, <http://www.itu.int/wsis/docs/geneva/official/dop.html> (accessed Sep 5, 2007).

The Challenges

When considering the issue of access to knowledge it is important to first establish why access to knowledge is fundamental to the widely held vision of the information society. The belief of the A2K movement expressed in the introduction, that knowledge is essential for many human activities and values, is based on the concept that access to knowledge is a fundamental human right. Article 19 of the Universal Declaration of Human Rights states that everyone has the right to freedom of opinion and expression and the right to seek, receive and impart information and ideas, through any media and regardless of frontiers.⁵ Respect for these rights is evident throughout the WSIS Declaration of Principles. Article 8 recognizes that “education, knowledge, information and communication are at the core of human progress, endeavour and well-being.”⁶ Further, article 24 states that the “ability for all to access and contribute information, ideas and knowledge is essential in an inclusive Information Society.”⁷ New information and communication technologies have facilitated the formation of the Information Society by enabling these rights to be enjoyed by an exponentially increasing number of individuals through the proliferation of universal and inexpensive ways of accessing and disseminating information unprecedented in human history. The sustainability of the significant economic growth taking place as a result, along with the new political and cultural activities central to the Information Society, depends on respect of these fundamental rights. Unfortunately significant barriers stand in the way for much of humanity from benefiting from the immense opportunities that new information and communication technologies made possible for individuals to participate in the Information Society. These barriers effectively deny people the opportunity to enjoy these fundamental rights, whether it be a result of inadequate infrastructure, affordability of access, content in local languages, lack of education and skills, or through proprietary control over information and knowledge.

For example, scientific data and findings are the fundamental building blocks of scientific research and restricting access to this information frustrates progress of science systematically. In many countries, the financial resources that made the scientific research possible in the first place are the government and its agencies, which is the public’s money. But the current structure for the distribution of this vital information constructs high financial barriers of access for even the experts in academic and research institutions for organized collections of basic information such as medical publications and scientific datasets. The interacting system of publishing norms and copyright laws end up locking scientific data behind expensive subscription fees that are out of the reach of all but a handful of wealthy research universities and institutes in the developed world. According to a recent survey conducted by the World Health Organization (WHO), in the 75 countries with an annual GNP per capita of less than US\$1,000, some 56 per cent of medical institutions had no subscriptions to journals over the previous five years; in countries with a

⁵ Universal Declaration of Human Rights, 10 December 1948, <http://www.un.org/Overview/rights.html> (accessed Sept 6, 2007).

⁶ WSIS Declaration of Principles, 12 Dec 2003, <http://www.itu.int/wsisis/docs/geneva/official/dop.html> (accessed Sept 7, 2007).

⁷ *ibid.*

GNP between US\$1,000 and US\$3,000, 34 per cent had no subscriptions and a further 34 per cent had an average of two subscriptions per year.⁸ It is barriers such as this that the Open Access movement, a key part of the A2K coalition has made great strides in breaking down with repositories based on norms of sharing scientific data that make access to knowledge possible.

The A2K movement, which emerged in 2004 as a broad coalition of interest groups, has found common cause with a broad range of groups working on issues like that mentioned above. Such groups include AIDS activists working on Access to Medicines, computer programmers working on open source projects, college students frustrated with copyright law coalescing around the notion of Free Culture, librarians promoting access to information, farmers' rights advocates in developing countries protesting seed patents, and others still. This diverse set of transnational activists, scholars, policymakers, and private sector innovators have converged upon a unique identity in a collective critique of proprietization and control over information in the prominent industries of the knowledge economy. Some barriers to access to knowledge have their origins in proprietization and control of the infrastructure supporting the knowledge economy as well. As Internet infrastructure has grown largely in the private sector, there are many examples of the ways in which ownership of technology that becomes a key part of the system is exploited as a business opportunity. Control over that piece of the infrastructure clogs the flow of information and excludes those without the monetary resources or technical skills to plug in. From the perspective of Internet governance, the impact of such ownership and control must inform the kind of governance structures that are established. Though intellectual property has been largely relegated to side conversation in the Internet Governance Forum and other WSIS follow-up activities, perhaps due to fear of irreconcilable controversy, there are areas of opportunity for internet governance to promote more access to knowledge.

Intellectual Property Rights (IPRs)

Intellectual Property Rights (IPRs), very broadly, are rights granted to creators and owners of works that are results of human intellectual creativity.⁹ The objective of IPRs, generally accepted by those debating their necessity and effectiveness, is that they are meant to achieve a balance between the need to protect the rights of creators and owners and the benefits derived from allowing the general public to access and make creative use of their work. The two sides of the debate regarding whether this balance has been achieved or is maintained can be characterized as opposing those who see IPRs principally as economic or commercial rights versus those who see them principally as political or human rights. For example, the Commission on Intellectual Property Rights expressed the view that there are no circumstances in which the most fundamental human rights should be subordinated to the

⁸ Leslie Chan, Barbara Kirsop and Subbiah Arunachalam, *Open Access Archiving: the fast track to building research capacity in developing countries*, Science and Development Network, November 2005, http://www.scidev.net/open_access/files/Open%20Access%20Archiving.pdf (accessed Sept 10, 2007).

⁹ "Intellectual Property Rights Overview", JISC Legal, 24 March 2006, <http://www.jisclegal.ac.uk/ipr/IntellectualProperty.htm> (accessed Sept 7, 2007).

requirements of IP protection.¹⁰ The commission report makes the distinction that IP rights are granted by states for limited times (at least in the case of patents and copyrights) whereas human rights are inalienable and universal. Those arguing for IPRs on the basis of economic or commercial rights make the point that many creative works and ideas that take considerable effort, ingenuity and research, in order to come into being can be easily copied. Therefore creators and owners of works and ideas need the protection of IPRs to create sufficient financial incentives to motivate them to make the necessary investments to bring the benefits of their works and ideas to society; otherwise the market would fail to deliver the benefits from such innovation. Specifically, patent laws in most countries confer twenty years of market exclusiveness to their holders. Anyone wishing to put the knowledge on which the patent is based to potential commercial use can only do so with the authorization of, and typically requested financial compensation to, the patentee. Copyright protects works for much longer than patents but does not protect against independent derivation of the work in question.¹¹ The typical term for copyright protection is fifty to seventy years after the death of the author.

In the context of the debate regarding the rights of creators and owners versus the general public it is interesting to consider the history of IPRs. The Commission on Intellectual Property Rights noted that the issue of intellectual property has historically been politically contentious. Some have argued that this is because governments have demonstrated a track record of using forms of IPRs to grant monopoly privilege and enact censorship when it suits their political needs since their origins in mediaeval times.¹² The mainstream debate however has focused on whether IPRs were a blight on free trade principles or the best practical means of stimulating inventions.¹³ Those concerned with the distribution of gains between developed and developing countries however have tended to focus more on the inequalities perpetuated by intellectual property protection, which is to benefit financially those who have knowledge and inventive power, and to increase the cost of access to those without.¹⁴ They point out that the local innovation systems in most developing countries are weak in comparison to those in developed countries. As a result there is little innovation potential in developing countries for strict IP regimes to release through the economic incentives they are meant to foster. In fact weak IP regimes have been historically used by countries to work to further what they perceive as their own economic interests.¹⁵ The Commission on Intellectual Property Rights observed that countries have historically changed their regimes at different stages of economic development as that perception (and their economic status) has changed. For example many now developed countries had policies in the 19th Century which at times exempted various kinds of inventions from patent protect in order to encourage free access to foreign technology. Many East Asian countries

¹⁰ Report of the Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy*, London September 2002, http://www.iprcommission.org/papers/text/final_report/reporthtmfinal.htm (accessed Sept 11, 2007).

¹¹ *ibid*

¹² Markus Krummenacker, *Are "Intellectual Property Rights" Justified?*, <http://www.n-a-n-o.com/ipr/extro2/extro2mk.html> (accessed Sept 7, 2007).

¹³ Report of the Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy*, London September 2002, http://www.iprcommission.org/papers/text/final_report/reporthtmfinal.htm (accessed Sept 11, 2007).

¹⁴ *ibid*

¹⁵ *ibid*

such as Taiwan and Korea used similar policies during the '60s and '70s leveraging the benefits of imitation and reverse engineering to transform their economies.

In contrast to these unilateral policies there have also been international efforts since the late 19th Century to promote the protection of intellectual property throughout the world. In 1883, 11 countries signed the Paris Convention for the Protection of Industrial Property. The Berne Convention for the Protection of Literary and Artistic Works followed shortly after in 1886. Later, BIRPI (Bureaux Internationaux Réunis pour la Protection de la Propriété Intellectuelle, French acronym for United International Bureau for the Protection of Intellectual Property) was set up in 1893 to administer the Berne and Paris Conventions. This was restructured and reconstituted as the UN agency World Intellectual Property Organization (WIPO) in 1974. However throughout this time period these Conventions still afforded considerable flexibility to countries allowing them to exclude fields of technology from protection and to determine the length of protection afforded under patents.¹⁶ This flexibility was to be challenged in the early 1980s by a strategic alliance of multi-national corporations who successfully put intellectual property on the international trade agenda. This private sector mobilization process began with efforts to influence US trade policy by agri-biotech and pharmaceutical companies such as Monsanto and Pfizer joining forces with the International Anti-Counterfeiting Coalition (protecting trademarks in luxury goods) and the Copyright Alliance (composed of entertainment and publishing companies). These US-based multi-national corporations lobbied the US Trade Representative (USTR) to negotiate increased intellectual property protection and enforcement in bilateral negotiations with US trade partners. In a period when the US trade deficit was growing, especially in manufacturing industries, this alliance was successful in convincing trade negotiators that greater IP protection abroad would provide the best means of remaining competitive in the global marketplace. Intellectual property, which had hitherto been mostly confined to the technical experts at the Copyright Office in the Library of Congress and the US Patent and Trademark Office in terms of policymaking, had become a priority issue for US trade policy. Utilizing section 301 of the US Trade Act, which enables the US government to withdraw trade benefits and impose tariffs on goods, the USTR had an important enforcement tool to pressure governments into maximizing their intellectual property laws.

The push for increased intellectual property rights around the world concentrated on the World Trade Organization (WTO) round of trade negotiations culminating in the signing of the Agreement on Trade-Related Aspects of Intellectual property (TRIPS) in 1994. The TRIPS agreement, whose provisions were rooted in the policy agenda of the multi-national corporation alliance's policy agendas, aimed to harmonize intellectual property law globally by setting minimum standards for protection by which all WTO member states have to abide. Enforced by a dispute resolution process to adjudicate claimed violations of its provisions, the TRIPS agreement covers a wide range of intellectual property protection from patents, copyright, and trademarks to geographical indications, protection for undisclosed information, and database rights. With WTO backing of these enforcement mechanisms TRIPS became the developed countries' choice vehicle for the globalization of IP protection, and some would argue that WIPO's influence has thereby diminished.. Critics of the TRIPS agreement point out that its increased standards for intellectual property have almost exclusively favoured corporations from industrialized economies.

¹⁶ *ibid.*, 170.

IPRs and the Internet

Over the past few decades the global drive for increased standards for intellectual property has collided with the Internet. The technologies that give rise to the Internet have enabled unauthorized creation of unlimited, perfect and costless copies of protected works, as well as their almost instantaneous and worldwide distribution.¹⁷ In the realm of copyright protection, rightsholders are increasingly turning to technological protection measures (TPMs), such as passwords and encryption, as a means of exercising and enforcing their rights. Another form of TPMs, Digital Rights Management (DRM) is the collective term for the technological restrictions systems increasingly embedded in digital products. The best known product with DRM embedded in it is the DVD, which contains specific code that only allows its content to be accessed by a player (i.e., DVD player, computer, mobile phone) that recognizes the DRM and its restriction systems. DRM has come under much criticism among copyright policy and consumer protection advocates because of the limited scope of the permissions enabled in today's DRM systems. The policies automatically enforced by the DRM system fall short of what copyright law would allow, for example by preventing the archiving of a back-up copy of a digital file in case of loss or damage.

Such technological protection measures have the effect of handing control over access, and use of digital content, to rightsholders. This is representative of an alarming trend noted by the WSIS Civil Society Plenary that information and knowledge are increasingly being transformed into private resources which can be controlled, sold and bought, as if they were simple commodities and not the founding elements of social organization and development.¹⁸ For example, while the ability to reproduce educational materials key to the teaching and learning process becomes more easily available, the enforcement of copyright law has grown stricter and digital rights management (DRM) systems are increasingly embedded in digital textbooks to automate even harsher restrictions than copyright demands. In the development context it is feared that such restrictions will not only prevent donations from overseas but, more importantly, also block the widespread pattern of sharing and re-using books and similar resources in poor and least developed countries.¹⁹ Though there are provisions in international agreements on copyright that allow for flexibilities to be adopted in national law to specifically enable education and dissemination of knowledge, these exceptions and limitations are generally made into law in their narrowest sense. International treaty obligations leave the inclusion of exceptions and limitations fraught with vagueness and uncertainty as to what constitutes compliance. The A2K coalition, and more specifically civil society representatives such as library associations, advocates of disability rights, and distance educators, are pushing for the adoption of a legal instrument that would

¹⁷ *ibid.*, 108.

¹⁸ "Shaping Information Societies for Human Needs", WSIS Civil Society Plenary, Geneva, 8 December 2003, <http://www.itu.int/wsis/docs/geneva/civil-society-declaration.pdf> (accessed Sept 11, 2007).

¹⁹ Alan Story, "Study on Intellectual Property Rights, the Internet, and Copyright", Study Paper 5, Commission on Intellectual Property Rights, http://www.iprcommission.org/papers/pdfs/study_papers/sp5_story_study.pdf (accessed Sept 11, 2007).

bring more clarity to the rules and standards for exceptions and limitations to copyright. Bringing the issues to the attention of international policymakers will encourage governments to adopt intellectual property legislation that is more aligned with each country's stage of economic development and ease the burden of reliance on importation and translation of educational materials to promote education.

The application of patents to internet technologies, specifically software, is also an area of concern for the A2K coalition. Computer software came under the protection of copyright during the 1980s. Under the WIPO Copyright Treaty and TRIPs, computer programs must be protected by national copyright legislation. Some critics point out that before the 1980s the software industry grew wildly on its own without patent protection. However as it became easier to copy and distribute software IP protection advocates won the right to patent software. The frustration now expressed by A2K advocates is that although the Internet has now reduced the practical cost of distributing and sharing software to zero, people can't use that knowledge to create their own software. Critics argue that the impact on software innovation has been to clog the development of new and improved products in a thicket of exclusive rights for the different component pieces of these complex systems.

The emergence of internet technologies has also created challenges for the enforcement of IPRs in many cases through the profound affect they have had on how we produce, disseminate and consume information globally. In the realm of policy-making the speed with which internet technologies are developing challenges the traditional approach of organizations such as WIPO. Even the fast-tracked WIPO Internet Treaties, WIPO Copyright Treaty (WCT) and WIPO Performances and Phonograms Treaty (WPPT), took six years to negotiate, and six years to come into force with the required 30 ratifications or accessions by States.²⁰ To adapt the WIPO has been forced to explore alternative ways of addressing the need for new IP policy and solutions in the Information Society. For example the WIPO had very little time to propose a strategy for resolving the issue of cybersquatting, the unauthorized registration or use of trademarks as Internet domain names or other identifiers of online locations²¹ typically with the intent of selling them back to the trade mark owner at an inflated price (e.g., registering <http://www.coca-cola.com> with the intent of selling it back to Coca-Cola). The Uniform Domain Name Dispute Resolution Procedure (UDRP) was adopted by the Internet Corporation of Assigned Names and Numbers (ICANN), based on soft law recommendations from WIPO following an open and transparent international consultation process, conducted both online and at publicly-reported regional meetings.²² At the national policy-making level legislators have had to come to grips with the inherently international character of the Internet, along with its potential for anonymous operation. For a right-holder to seek compensation for an IPR infringement they must be able to identify the alleged infringer. In the case of infringements occurring over the internet, service providers are often in sole possession of information that

²⁰ Online Forum on Intellectual Property in the Information Society : Weblog, *Theme Seven: How is intellectual property policy made for the information society: and who makes it?*, http://www.wipo.int/roller/comments/ipisforum/Weblog/theme_seven_how_is_intellectual (accessed Sept 12, 2007).

²¹ Anticybersquatting Consumer Protection Act, <http://thomas.loc.gov/cgi-bin/query/z?c106:S.1255.IS>=(accessed Sept 7, 2007).

²² Online Forum on Intellectual Property in the Information Society : Weblog, *Theme Seven: How is intellectual property policy made for the information society: and who makes it?*.

can identify the infringer. This has forced national legislators to attempt to strike a balance between the protection of confidentiality of information sources versus IPRs. As well suing for the infringement of IP-protected material as a result of its use over the Internet often involves cross-territorial action. This kind of legal challenge is not new. However the virtual nature of the Internet has forced legislators to rethink many complex issues of private international law and procedure.

Thoughts and Actions Emerging from A2K Movement

The A2K movement has not only challenged IP treaties and laws in the policy arena to attempt to achieve its goal, it has also encouraged open source licensing models of development in software, scientific research, and biological data, to capitalize on the new methods of innovation enabled in the information age. One such open source model is that of “open access”. The intent of “open” is to make literature freely available on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.²³ This model only asks that users of this literature maintain the authors’ control over the integrity of their work and respect their right to be properly acknowledged and cited. To make this possible an open server is made publicly available on the internet so that researchers can self archive their works. These works can then be published in open access journals which will not charge subscription or access fees, and will not invoke copyright to restrict access to and use of the material they publish. Instead they will use copyright and other tools to ensure permanent open access to all the articles they publish. The financial support for these “open access” servers and journals typically comes from foundations and government agencies that fund research, universities and laboratories that employ researchers, and endowments set up to support specific disciplines or institutions. The resources necessary to establish these services are more likely to exist in developed countries. However the academic communities in poorer countries can take advantage of servers anywhere in the world offering OAI services, without the need to set up their own independent servers or maintain them.²⁴ Despite growing evidence that citation and the impact of papers that are openly accessible are far greater than non-open access publications, critics have voiced many concerns. They include the limited financial resources for maintaining these operations, concerns about the sustainability of operations that depend on volunteer resources, Internet accessibility, concerns about potential unauthorized uses of material published online, and language concerns.

Another such open source model is that advocated for by the American charitable organization, Creative Commons. In 2002 Creative Commons launched a set of copyright licenses covering the full spectrum of possibilities between full copyright—all rights reserved—and the public domain—no rights reserved.²⁵ Offered free of charge, their licenses allow people to customize their copyright protection while inviting certain uses of

²³ Budapest Open Access Initiative, <http://www.soros.org/openaccess/read.shtml> (accessed Sept 12, 2007).

²⁴ Chan, Leslie and Kirsop, Barbara (2001) *Open Archiving Opportunities for Developing Countries : towards equitable distribution of global knowledge*. Ariadne(30), <http://eprints.rclis.org/archive/00002609/> (accessed Sept 12, 2007).

²⁵ Learn More - Creative Commons, <http://creativecommons.org/learnmore> (accessed Sept 12, 2007).

their work. Some critics have reservations regarding Creative Commons, in that by reducing the cost of licensing, it makes licensing more accessible to individual users, thereby strengthening the hold of copyright in our everyday life.

The final open source model described here is one that has become internationally recognized through prominent examples such as Linux, that being free and open source software (FOSS). FOSS developers make their source code freely available for anyone to distribute, copy, and modify. This makes modifying a computer program, making a new version of it, or using bits of it in other programs, much easier. The philosophy of the FOSS movement is summarized by Christopher May where he notes, “The free software approach is a politicized critique of software ownership based on its utility; software should not be owned because like language, it is foundational to the society that uses it.”²⁶ In the development context there has been concern that IPRs might impede localization efforts necessary to adapt proprietary software to local language and cultural orientations. Plus given the monopoly rights enjoyed by the patent holders of proprietary software, their pricing is often out of the reach of resource constrained organizations in developing countries. As such, the Commission on Intellectual Property Rights has recommended that developing countries consider low-cost and open-source software in their software procurement processes.²⁷ However critics have raised a number of concerns including the compatibility issues that Linux users are encountering with business partners’ standards. Empirical evidence suggests that because of their lower bargaining powers, firms from developing countries are forced to comply with the technologies used by their trading partners in advanced countries.²⁸ Some also argue that FOSS software is often less user-friendly than proprietary software, and less responsive to consumer needs. As well, software patents present a particular danger to FOSS initiatives; a FOSS programmer or user could unknowingly infringe on a software patent in a FOSS program. This has forced the adoption of “terminator clauses” to prevent patentees from placing non-FOSS compatible restrictions on the use of a FOSS program.²⁹

The WIPO Development Agenda

WIPO serves a key function in propagating the implementation of treaties such as TRIPs by providing developing countries with “technical assistance” to bring their laws into compliance with international standards. As intellectual property has emerged as the legal regime most immediately governing the information economy, the technical expertise propagated by WIPO is at the crux of establishing global policies impacting access to knowledge. Having gained a reputation during the 1990s for primarily serving the interests of multi-national corporations benefiting from strict intellectual property protection, the

²⁶ Christopher May (2006) Escaping the TRIPs' Trap: The Political Economy of Free and Open Source Software in Africa, *Political Studies* Vol. 54 Issue 1 Page 123.

²⁷ Report of the Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy*, London September 2002, http://www.iprcommission.org/papers/text/final_report/reporthtmfinal.htm (accessed Sept 11, 2007).

²⁸ Nir Kshetri (2004) Economics of Linux Adoption in Developing Countries, *IEEE Software*, Vol. 21, No. 1, pp. 74-81, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=847185 (accessed Sept 12, 2007).

²⁹ Mikko Valimäki (2004) A Practical Approach to the Problem of Open Source and Software Patents, *European Intellectual Property Review* 26, 5, http://www.valimaki.com/org/os_patents.pdf (accessed Sept 12, 2007).

mission of WIPO had begun to be questioned. Its mandate, as set out in its founding 1967 document, is “to promote the protection of intellectual property throughout the world through cooperation among States and, where appropriate, in collaboration with any other international organization.”

At WIPO’s General Assembly in 2004, Argentina and Brazil introduced a proposal for the “Establishment of a Development Agenda for WIPO.” Referring to the great “knowledge gap” and “digital divide” that pervades many parts of the world, the Friends of Development (FOD), a group of 12 countries, insisted on attention to the “development dimension” in the promulgation of intellectual property law. The declaration criticized the stated mission of the organization as promoting intellectual property as an end in itself, rather than purposes such as the progress of science, enabling innovation, and encouraging creativity. They also criticized the push for harmonization of global intellectual property standards as inconsistent with the notion of law tailored to fit countries in different stages of development. They pointed out that WIPO’s technical assistance generally did not include guidance on taking advantage of the flexibilities within TRIPs and other binding agreements.

In the third meeting of the Provisional Committee on the Development Agenda (PCDA), February 19–23, 2007, a first set of proposals was agreed upon. The proposals were separated into five clusters of focus: (A) Technical Assistance and Capacity Building; (B) Norm-Setting, Flexibilities, Public Policy and Public Domain; (C) Technological Transfer, Information and Communication Technologies (ICTs), and Access to Knowledge; (D) Assessment, Evaluation, and Impact Studies; and (E) Institutional Matters Including Mandate and Governance. Collectively, the proposals agreed upon so far indicate a firm commitment to reform the orientation of WIPO to include the “development dimension.” Ranging from a pronouncement for preservation of the public domain to a call for assessment studies of the economic, social and cultural impact of intellectual property on developing countries, these proposals comprehensively challenge seeing WIPO’s narrow mission as solely promoting intellectual property. The impact of the adoption of these proposals on particular intellectual property policy remains to be seen, but the momentum towards a more balanced intellectual property policy is now in full swing. The A2K coalition and Internet governance bodies such as the Internet Governance Forum and ICANN should take the paradigm shift of intellectual property policy currently underway at WIPO as a signal for the framing of policy issues.

Possible New Directions Forward

In addition to the open access and WIPO reform activities discussed in previous sections, governance of information technology standards-setting and best practices for Digital Rights Management (DRM) permission systems are two specific areas of opportunity to minimize the negative effects of intellectual property in the core information infrastructures that underlie the information society.

Standards-setting plays a central governance role in the information society by serving as the bridge that makes interoperability of separately created technology possible. The A2K issue with technical standards arises when a company that takes part in a standards-setting process

owns patents on aspects of the standard that would require the payment of licensing fees on any technology built on it. The licensing fees can be waived and they can be based on a reasonable and non-discriminatory (RAND) fee, but there is little structured safeguards to keep a company from exploiting their patent in the standard. Sometimes they do this without revealing their patents during the standards-setting process and sometimes its accomplished by disclosing the patents, but in a setting dominated by friendly interests. Internet governance bodies have an opportunity to minimize this practice by setting up a system of accreditation for standards-setting bodies with best practice policies. These best practices can include a requirement to disclose patents, encourage the waiver of licensing fees, or at least provide some measure of what constitutes RAND pricing.

Regarding Digital Rights Management, the A2K issue that arises in relation to Internet governance concerns the network effects and technological mandates that are required to enable the information environment to read and abide by the DRM rules, not just in information appliances but in communication networks as well. The control over DRM in the digital media file extends most obviously into all the machines that could play back the movie or music or other kind of media. Controversies over broadcast industry initiatives such as the Broadcast Flag for digital television in the US or the Broadcast Treaty proposed at WIPO suggest that the demand for security and protection of media files against the possibility of piracy can seep even deeper into the core of our information environment. By mandating the signal to contain DRM, the networks through which it travels and all the electronics devices that could read it must be re-architected in order to abide by the DRM in the media file. The A2K coalition connected to the Internet Governance regime could call for best practices of DRM systems to promote more options to consumers and facilitates more permissions than rule-based restrictions.

In the short term, a focus on standards-setting processes and digital rights management systems offers the best opportunity to promote policies that improve access to knowledge. The A2K movement should take advantage of the multi-stakeholder nature of new Internet governance bodies to bring together the governments, companies and civil society that are aligned on these issues.

Traditional Knowledge and Sustainable Development

DRAFT FOR DISCUSSION

Ashish Kothari

September 2007



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The International Institute for Sustainable Development contributes to sustainable development by advancing policy recommendations on international trade and investment, economic policy, climate change, measurement and assessment, and natural resources management. Through the Internet, we report on international negotiations and share knowledge gained through collaborative projects with global partners, resulting in more rigorous research, capacity building in developing countries and better dialogue between North and South.

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Traditional Knowledge and Sustainable Development

By Ashish Kothari
September 2007

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DRAFT

Introduction

Humanity's troubled relationship with the earth has raised a series of questions on how to change our behaviour. How can we live more sustainably, and with greater sensitivity towards our fellow creatures? How should our economic activities be altered, to reduce and eliminate our negative impacts on the environment? Do we have with us the necessary wisdom and knowledge to make this happen?

Increasingly, it is being realized that answers to these questions will have to come from a variety of sources. While earlier it was thought that modern science and technology will provide the answers, it is now more than ever clear that traditional knowledge also has critical insights and practices to offer....some say even more so than modern science, if the much longer history of responsible use...that traditional peoples have demonstrated is to be taken as an indicator.

This paper will examine the claim that traditional knowledge is critically relevant to the human quest for sustainable living on earth. It starts by examining the concepts of “traditional knowledge” (TK) and “sustainable development” (SD). It goes on to show the essential links between the two and contributions of TK to various sectors of human welfare and development. It then looks briefly at the loss of TK, and ways to revive or maintain it within the context of the overall need for securing the integrity of its holders. This paper does *not* deal in any detail with the protection of TK in the face of current intellectual property rights regimes, as this is an issue that has been adequately debated and discussed in academic and popular literature around the world.

The Terms

“Traditional knowledge” and “sustainable development” are contested terms, with widely varying definitions and interpretations. In this paper I do not attempt to go into these contestations, but only briefly provide some broad idea of the terms to set the background for the rest of the paper.

Traditional knowledge (TK) (or other co-terminous terms such as **indigenous knowledge**, and **local knowledge**) generally refer to the long-standing information, wisdom, [traditions](#) and practices of certain [indigenous](#) peoples or local [communities](#). In many cases, traditional knowledge has been [orally passed](#) for [generations](#) from [person](#) to person. Some forms of traditional knowledge are expressed through [stories](#), [legends](#), [folklore](#), [rituals](#), [songs](#), art, and even [laws](#). Other forms of traditional knowledge are often expressed through different means. One distinction that is often made between TK and modern or “western” knowledge is that unlike the latter, TK does not separate “secular” or “rational” knowledge from spiritual knowledge, intuitions, and wisdom. It is often embedded in a cosmology, and the distinction between “intangible” knowledge and physical things is often blurred. Indeed, holders of TK often claim that their knowledge cannot be divorced from the natural and cultural context within which it has arisen, including their traditional lands and resources, and their kinship and community relations.

It is important to emphasize that TK is not, as often perceived, a static phenomenon, but one that is constantly evolving with changes in the internal and external environment of the community concerned.

The term “sustainable development” (SD) first came to vogue in the report of the World Commission on Environment and Development, *Our Common Future*. It was here defined as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”. Many limitations of this definition have been pointed out, including that it is predominantly anthropomorphic (focusing only on how development should sustain human needs, and not considering the needs of other species), that it does not adequately take equity into account, and that it is in this form not possible to operationalize. A more detailed definition is that it is a collection of methods to create and sustain development which seeks to relieve [poverty](#), create equitable standards of living, satisfy the basic needs of all peoples, and establish sustainable political practices, while ensuring that there are no irreversible damages to natural resources and nature. Whatever the definitions, countries and communities realize that SD can be operationalized only through a set of indicators and criteria for assessing the impact of development processes and projects. Following up from a number of international conferences and treaties on the subject, several countries have begun to use these to gauge whether they are on the path of sustainability (e.g., for United Kingdom, see <http://www.sustainable-development.gov.uk>).

The Relevance of Traditional Knowledge to Human Welfare and Development

The realization that TK has not become redundant in today’s world, is increasingly widespread. The Rio Declaration, the Convention on Biological Diversity, the documents coming out of the World Summit on Sustainable Development, and a whole host of other international instruments and forums have emphasized the current (and future) relevance of TK. Institutions such as the World Intellectual Property Organisation, the International Labour Organization (especially Convention 169), the Food and Agricultural Organization, the World Health Organization, UNESCO, UNEP, UNDP, the UN Commission on Human Rights, and a number of other international organizations have similarly given it importance.

The World Conference on Science, organized by UNESCO and the International Council for Science (ICSU), in its Declaration on Science and the Use of Scientific Knowledge, explicitly recognized the importance of TK and the need to respect and encourage its use for various forms of human endeavour (ICSU 2002).

The UN Declaration on Indigenous Peoples, endorsed by the UN Human Rights Council in June 2006 with a recommendation for the UN General Assembly to adopt it (<http://www.ohchr.org/english/issues/indigenous/declaration.htm>), recognizes “that respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment.”

It is particularly instructive that the United Nations Committee on Trade and Development (UNCTAD), which essentially deals with international economic relations, has also given TK

considerable importance. Since 2000 when its member States decided to address the issue of the use and protection of TK, it has promoted work on the subject, including bringing together 250 experts from 80 countries in October-November 2000, to deliberate on the subject. The book coming out of that has a series of articles dealing with diverse aspects of the role of TK in human welfare and sustainable development (Twarog and Kapoor 2004).

Most commonly accepted is the role of TK in the “traditional” or primary sectors of the economy: agriculture and pastoralism, forestry, fisheries, water, and products made from natural resources such as crafts, furniture, housing, and so on (Posey 1999). Given the fact that a majority of the world’s population remain dependent on these sectors for their survival and livelihoods, and for various aspects of shelter, the contribution that TK makes and can continue to make towards sustaining billions of people is quite clear (though not necessarily acted upon in policies and programmes of most countries).

However, the role of TK in the secondary and tertiary sectors of the economy too is becoming clearer. A whole range of industrial products are dependent on or use TK in varying ways. This is true for sectors like textiles, pharmaceuticals, household good, and so on. Health care, through all systems of medicine, is to varying degrees of extent dependent on TK, or on combinations of TK and modern knowledge. According to the World Health Organization (WHO), the majority of the world’s population (in areas like Africa, up to 80 per cent of the population) is dependent for varying degrees on medicinal plants through traditional health care systems (www.who.int/mediacentre/factsheets/fs134/en/). Numerous studies have demonstrated the contribution that TK also makes to the modern pharmaceutical industry and modern health care, a contribution that may only increase as people in the western world (including westernized people in the “developing” countries) become more conscious of plant-based cures. The WHO estimates that 25 per cent of modern medicines are made from plants first used traditionally.

Services like food distribution, education, climate forecasting and warning, and community care also continue to be performed through institutions using traditional means, and in some cases even modern institutions of the government or corporate sector are discovering the value of this. In a Food for Work programme in Nepal, significant losses of food in the distribution system were reduced when the programme switched to the use of local technologies and networks (Gorjestani 2004). Rates of maternal mortality at childbirth were reduced significantly when traditional institutions (including the traditional birth attendant) were used in combination with modern communications (Musake 1999, cited in Gorjestani 2004).

The trade sector too has seen a significant and continuing contribution of TK related products and services, as recognized by institutions such as UNCTAD (Twarog and Kapoor 2004).

Though much more recent, there is now a growing recognition of the role that TK could play in humanity’s response to the gravest threat it now faces: climate change. The fact that communities have for centuries and millennia adjusted their behaviour and strategies and knowledge systems to changes in their surrounds, is central to this realization. Communities adjust their agriculture/pastoralism/fishing and hunting-gathering to subtle or not-so-subtle changes in climate, to threats from other communities or invasions, to disease and

epidemics, and so on. Traditional systems appear to be static, but they are indeed dynamic in making such adjustments. Such adaptability could be a key factor in the response that we give as a species, to the impacts of climate change....and TK's role in all the sectors named above could provide the alternatives needed to build towards a more sustainable way of dealing with our atmosphere. As an example of the potential of this (as yet considerably under-utilized), researchers, government agencies, and indigenous peoples of Canada are collaborating in research and action related to climate change that brings together TK and modern knowledge (see <http://www.itk.ca/environment/climate-change-index.php>; and Birkes and Jolly 2001). Parties to the CBD are also beginning to highlight this issue, as pointed out by its Executive Secretary Ahmed Djoghlaif at the "International Expert Seminar on Indicators Relevant to Indigenous Peoples, the Convention on Biological Diversity and the MDGs" (Banaue, Ifugao, Philippines, 5 March 2007) (<http://www.biodiv.org/doc/speech/2007/sp-2007-03-05-ind-en.doc>).

A key scientific question that faces us today is: how does one assess unsustainability? What indicators and criteria and methods can be used for this? Here too, TK has a vital role, for traditional peoples and communities have used a wide range of their own indicators and methods to get an idea of sustainability. Water flows, the presence/absence or appearance/disappearance of certain species, the behaviour of domestic or wild animals, and other kinds of changes in their surrounds are used in myriad sophisticated ways to learn about ecological changes that may be detrimental or beneficial).

The Erosion of Traditional Knowledge

More than ever before, TK faces serious levels of erosion. As the peoples and communities holding TK themselves face a range of threats from outright annihilation to "assimilation" into "mainstream" society, the knowledge they hold also slips away. A clear and alarming indicator is the threat to languages, with some scholars estimating that half of the around 6,000 languages spoken today may become extinct by 2050 or 2100 (http://www.en.wikipedia.org/wiki/Endangered_language; <http://www.ogmios.org/manifesto.htm>; <http://www.wholeearthmag.com/ArticleBin/325.html#top>). A language (oral or written) is not only a means of communication between members of a people or community, it also contains within it the essence of considerable information and knowledge and wisdom of the people or community. Its loss is therefore a loss of TK. The threat is greatest in the case of TK that has passed down and evolved orally, since it disappears with every generation that has not been able to hand it down to the next one.

Across the world, as one model of modern education and means of mass communication spread, newer generations of traditional peoples are simply not imbibing TK in way that their parents or ancestors did. As growing demand for natural resources from a greedy global economy touches every community, elements of TK that managed to maintain sustainable levels of harvest become redundant or sidelined, and soon forgotten. Most of all, as the people in such communities themselves get amalgamated into urban-industrial sectors, they no longer have a need for TK....at least not for a while till many of them find themselves cast out of the economy and adrift, but now without even their TK or without any natural resources to fall back on.

Reviving, Encouraging, Using TK

The realization of TK's importance to SD, and growing concern about its continued erosion, have prompted a number of countries to adopt policies and programmes recognising and promoting it. International agencies, NGOs, and indigenous peoples or local communities themselves, have also initiated a number of measures.

In Uganda, the National Council of Science and Technology has initiated a process to highlight the importance of TK in agricultural and health sectors. A national workshop on the topic resulted in a Kampala Declaration on Indigenous Knowledge for Sustainable Development, and steps to integrate TK into the country's Poverty Eradication Action Plan and other official processes (Gorjestani 2004). In the Philippines, a law relevant to the protection of TK has been promulgated, though implementation lags (<http://www.grain.org/brl/?docid=767&lawid=1469>). In India, the Biological Diversity Act contains a framework provision for TK protection, but the government has been dragging its feet in making this provision operational (Apte 2006). In many countries, the government and/or NGOs are helping promote TK-based products and services, including forest and agricultural products, herbal medicines, cultural heritage or traditional health-based tourism, ecotourism, and handicrafts.

Some international agencies have also proposed or adopted principles for the use of TK in relation to SD. The International Council of Science and UNESCO, for instance, propose the following principles (ICSU 2002):

- Ensure the full and effective participation of traditional knowledge holders during all stages of elaboration of sustainable development policies, plans and programs, alongside the scientific and technological community;
- Acknowledge and respect the social and cultural bases, including the authority structures within which traditional knowledge is embedded;
- Recognize the rights of traditional people to own, regulate access and share benefits of their unique sets of knowledge, resources and products
- Ensure that traditional knowledge holders are fully informed of potential partnerships and that these are only entered into with prior informed consent;
- Promote models for environmental and sustainable governance that incorporate principles of genuine partnership and collaboration between scientific and traditional knowledge;
- Promote training to better equip young scientists and indigenous people to carry out research on traditional knowledge.

Considerable discussion and a number of resolutions under the CBD have also dealt with TK. These related to both its role in conservation and development, as also issues regarding its protection. Article 8j of the CBD mandates that countries “respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices”. How

precisely this is to be done, has been the subject of negotiations and discussions at several sessions of the CBD Conference of Parties as also its various sub-groups. One of the arenas where this discussion is on-going are the negotiations relating to the “access and benefit-sharing” provisions. The CBD-generated “Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising Out of Their Utilization” (<http://www.biodiv.org/decisions/default.aspx?m=cop-06&d=24>), specify the following: “Respecting established legal rights of indigenous and local communities associated with the genetic resources being accessed or where traditional knowledge associated with these genetic resources is being accessed, the prior informed consent of indigenous and local communities and the approval and involvement of the holders of traditional knowledge, innovations and practices should be obtained, in accordance with their traditional practices, national access policies and subject to domestic laws.”

UNCTAD’s *Biotrade* initiative has been developing principles and tools in relation to “those activities of collection, production, transformation, and commercialization of goods and services derived from native biodiversity under the criteria of environmental, social and economic sustainability.” (<http://www.biotrade.org/Intro/bti.htm>). An informal meeting of experts in 2006 came up with some objectives and elements of BioTrade guidelines on benefit-sharing, which includes transparency, adequate compensation and other benefits (monetary and non-monetary), recognition of TK, and empowerment of local communities to handle negotiations and implementation of benefit-sharing arrangements (http://www.iisd.org/pdf/2006/abs_btfp_biotrade.pdf).

The fear that a number of indigenous and local communities have, however, is that even well-meaning initiatives such as the ones under CBD and UNCTAD, may encourage the kind of commercialization of life and knowledge that may be unacceptable. While in theory such processes are open to non-monetary benefit-sharing including political empowerment, in practice, most negotiations may restrict themselves to monetary transfers. To quote the International Indian Treaty Council (IITC): “For us, “trade” is an equitable exchange relationship between individuals, communities, or peoples, but we point out that there are aspects of material or immaterial elements of the indigenous peoples that under no condition --- we repeat, under no condition --- can be sold or exchanged, and we also ask that this be respected.” (Ibarra 2004). Moreover, indigenous peoples have pointed out that Bonn Guidelines and other ABS documents or recommendations emanating from CBD and other international forums, are incomplete without the recognition of a number of rights: to self-determination, to their territories and resources (including restitution of resources taken away in the past and kept in international or national gene banks or museums), to their knowledge and practices, to prior informed consent, and others (http://ipcb.org/pipermail/ipcb-net_ipcb.org/2006-February/000043.html). Without such recognition, they say, the principle of “equitable benefit-sharing” is toothless.

The UN Declaration on the Rights of Indigenous Peoples, adopted in June 2006 by the UN Human Rights Council (but continuing to struggle to find adoption by the UN General Assembly), stresses that: “1. Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts.

They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions; 2. In conjunction with indigenous peoples, States shall take effective measures to recognize and protect the exercise of these rights.”

Traditional peoples themselves, or sensitive scholars and NGOs who have worked amongst such peoples, have articulated a number of visions and practical measures for sustaining TK (see for instance, Posey and Dutfield 1996, GRAIN 1995 and GRAIN 2004, Singh 1998). Most of these reject the view that conventional intellectual property rights (IPR) regimes can help protect or promote TK, and instead assert that what is needed a holistic system that includes rights and responsibilities to natural resources, knowledge, and culture. A crucial message contained in these approaches, one that even the sensitive modern worldview often misses out on, is that TK is not something that can be saved in isolation of its holders. It is so integrally connected to the way of life of the traditional peoples themselves, that it only makes sense *in situ*, when used and evolved by such peoples. Documenting TK through ethnobiology and other means of study may be important, and may contribute to its continuation, but this can never substitute for the live propagation and evolution of the knowledge through its holders themselves. As the IITC states: “we believe that in order to protect the light, one should not only protect the light bulb; it is also necessary to protect the cables that transport the power and, above all, to protect the source that produces or generates said power.” (Ibarra 2004).

Indeed in the absence of the central involvement of the knowledge-holders, documentation of TK could become a threat by opening it up to biopiracy. In India, for instance, the move to document TK through Peoples Biodiversity Registers (or Community Biodiversity Registers) is rapidly gaining ground, but a number of community organizations and NGOs have raised concerns about whether it could open up even oral TK to piracy if the PBRs/CBRs are not given adequate protection. On the other hand in cases where it is being carried out under the control of communities themselves, it is acknowledged to benefit them in various ways including the revitalization of knowledge that was otherwise dying out.

A corollary to this is that TK can be meaningfully used and propagated only if the natural and physical environment in which it has evolved, is sustained. A forest-dwelling community that has developed a range of TK elements relevant to living with the forest, may remain a community in many senses of the word even if the forest were to disappear or if it were to be alienated from such forest, but it would lose its forest related TK as surely as it would if the community itself was to disintegrate. Environmental movements and the movements for the survival of indigenous peoples and local communities are therefore natural allies.....though the two do not always realize it and are sometimes at loggerheads due to certain narrow visions of environmentalism or human rights.

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Sustainable Development and ICT Indicators

DRAFT FOR DISCUSSION

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Sustainable Development and ICT Indicators

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September 2007

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DRAFT

Sustainable Development & ICT Indicators

A holistic picture needs to be considered for measuring the access, usage and impact of ICTs on sustainable development (SD). The purpose of this paper is to provide a brief overview of the current state of ICT indicators and their relationship to SD indicators and to suggest ways in which they can be made more reflective.

About indicators in general

Indicators aggregate, quantify and simplify information. They help us to measure the status quo or progress towards some objective and to evaluate vast amounts of information by looking at few simple figures. Indicators can be used to benchmark one country against another or one income or demographic group against others. Indicators can provide guidance, goals and objectives. When developing, measuring and analysing indicators several things need to be borne in mind:

Measure the right thing

There are no bad or good indicators, there are merely useful and less useful ones, with the use being determined by the link between the indicator and the phenomena to be described. Indicators chosen for a global benchmarking might be more or less useful for national policy making in individual countries. A useful indicator for water supply for rural Namibia, for example, could be households with access to drinking water in walking distance (ie 5 -10km). An equivalent water supply indicator for the UK could be less than two hosepipe bans a year.

Keep it simple

Albert Einstein coined the phrase: Everything should be made as simple as possible, but not simpler. This is in particular true for indicators. Aggregating information too far might result in us not seeing the link between the indicator and the phenomena it is supposed to inform about. When Deep Thought¹ gave 42 as an answer to the ultimate question of life, the universe, and everything, after several million years of computation, it might have been the right answer to the wrong question or the answer was simply too aggregated for anyone to make sense of it. The further condensed an indicator is, the more information has been lost on the way.

Make it practical

- Data availability: How easy is it to collect the information needed to compile an indicator? Do institutions already collect the data or would primary data collection be required?
- Data frequency: How frequently is the data available—monthly, annually, occasionally?
- Data reliability: How reliable is the data collected? How representative is the data? Is it hard data or perceptions?
- Link between an indicator and the phenomena to be observed: Does a change in the indicator reflect a change in the observed phenomena? Could a change in the observed phenomena take place without the indicator changing value?

¹ See Douglas Adam's Hitchhiker's Guide to the Galaxy

About ICT indicators

An important distinction to keep in mind when considering ICT indicators is the one between access, usage and impact. Access indicators measure what people or businesses have in terms of ICTs or how many exist in a country. Usage indicators measure how and for what ICTs are being used by households, individuals, businesses or governments etc. Impact indicators capture the impact of access and usage on economic growth, employment creation, improvement in public service delivery on a macro level; and company performance, household poverty levels and social inclusion on a micro level, to give just a few examples. Impact indicators are usually derived from analysis of primary or secondary data. This is the level at which ICT indicators link to sustainable development. This does not mean, however, that access or usage indicators are not useful to measure sustainable development. All that needs to be demonstrated is the link between access and usage indicators and the impact. This link is likely to be a different one across countries.

Another distinction can be made between demand and supply side indicators. Demand-side indicators are based on information collected from users of ICTs and supply-side indicators on information from service providers. Mobile subscribers per 100 inhabitants can, for example, be computed using data from household surveys (demand side) or by adding subscribers of all operators of a county and dividing the sum by the total population of that country (supply side).

One can similarly talk about macro and micro indicators. Macro indicators could be ratios of macro economic variables like total factor productivity, GDP and Investment. ICT investment divided by total investment in a country could be such a macro indicator. An equivalent micro indicator would be the average ratio of ICT investments to total investment at firm level. One could even talk here of a meso indicator for the same ratio at industry level.

A further distinction could be by users of ICTs: household indicators, individual indicators, business indicators, school indicators, health indicators, government indicators, trade indicators, ICT sector indicators, gender indicators etc. Adding to this complexity would be any combination of these distinctions, resulting in many permutations. The figure below demonstrates the indicator space for just three distinctions:

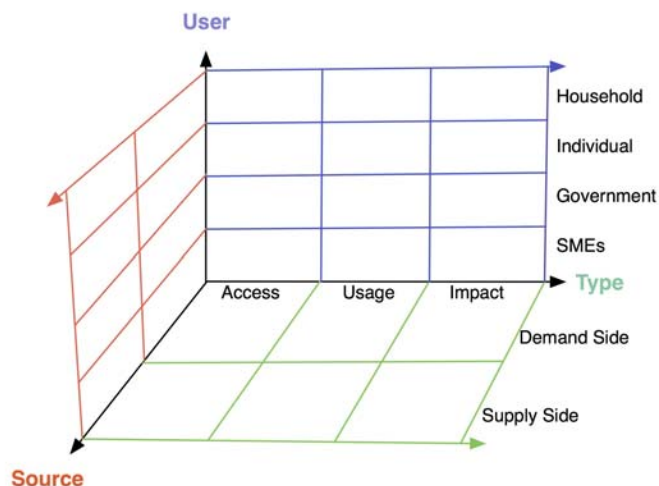


Table 1: Example of Household indicators

	Indicator	Demand side	Supply Side
Access Indicator	Mobile Penetration	Mobile subscribers per 100 inhabitants—as determined by household surveys?	Mobile subscribers per 100 inhabitants: Sum of all subscribers of all operators divided by population
Usage Indicator	Mobile Phone Usage	Average money spend on mobile phone usage proportional to disposable income	Total call minutes billed by operators
Impact Indicator	ICT investment and economic growth	Magnitude and significance of coefficient for ICT investment and ICT expenditure on profit, sales and labour productivity using firm-level data	Strength and lead and lag of link between ICT investment and GDP using Granger causality ²

ICT indicators in practice

While these distinctions may seem simple and obvious, combining them into useful indexes or models that reflect the overall state of ICT development and its contribution to sustainable development is a challenging task. A good example for this is the way the International Telecommunications Union (ITU) is measuring the information society. Its ICT Opportunity Index (ITU, 2007) is based on ten indicators and uses the conceptual framework of George Sciadas's (2005) Infostate Model. It distinguishes between Infodensity and Info-Use. In the initial model Infodensity is the sum of all ICT stocks (capital and labour); Info-use the consumption flows of ICTs for a certain period and the Info-state, the aggregation of Infodensity and Info-Use. The ITU splits the Infodensity indicators into network and skills indicators and the Info-Use indicators into Uptake and Intensity indicators (see table below).

Table 2: ITU - ICT Opportunity Index

Info density	Networks	Main telephone lines per 100 inhabitants
		Mobile subscribers per 100 inhabitants
		International Internet bandwidth
	Skills	Adult Literacy rates
		Gross enrolment rates (primary, secondary, tertiary)
Info Use	Uptake	Internet Users per 100 inhabitants
		Proportion of households with a TV
		Computers per 100 inhabitants
	Intensity	Total broadband Internet subscribers
		International outgoing telephone traffic per capita

² See Granger (1969)

The indicators chosen for the sub-indices are somewhat unfortunate. Main telephones and mobile phone subscribers per 100 inhabitants say little about the network. These could better be described as access indicators and would better be placed under Uptake indicators. Equally, the broadband Internet subscribers could better be categorized as an Uptake rather than an Intensity indicator.

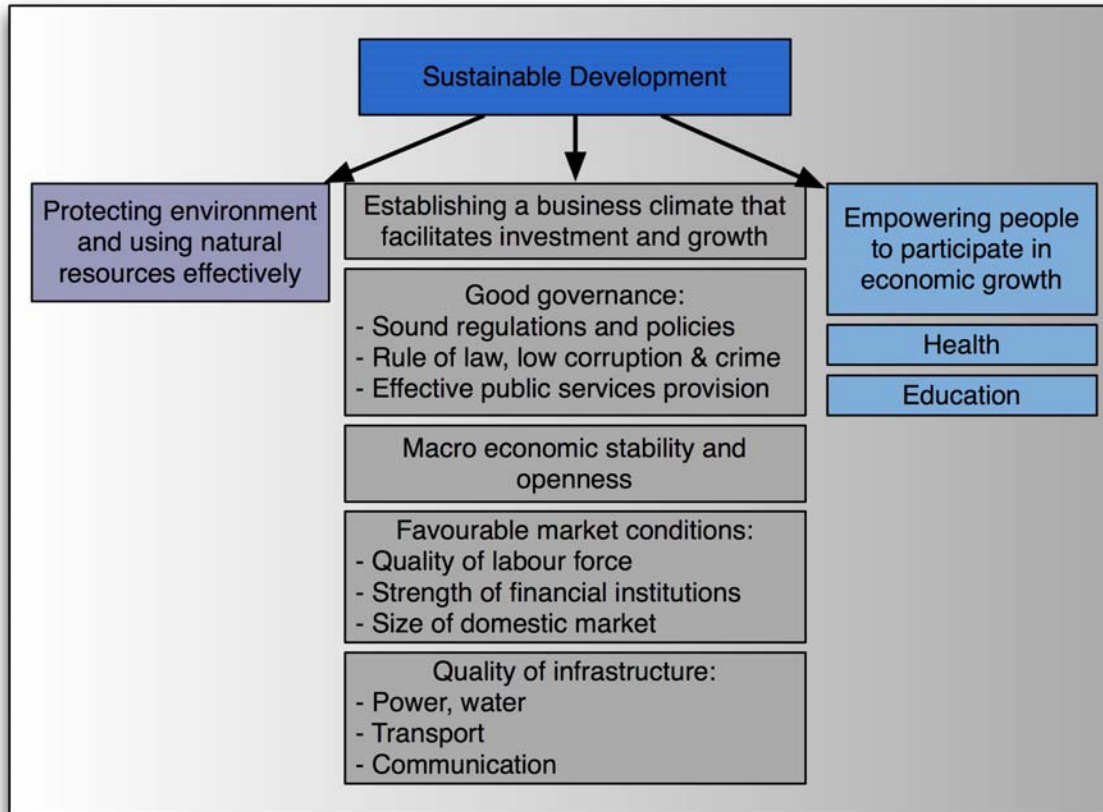
Stork & Esselaar (2006) provide an alternative model that defines intensity by usage divided by access. On a micro level that can be an index of activities for which ICTs are being used by a household divided by what a household has in terms of ICTs. On a macro level an example for an intensity indicator could be call volume divided by subscriber lines.

Measuring only the one side

Measuring ICTs only from one side might bear the risk that progress is being observed without it actually taking place. The number of mobile phone users stated by operators often seems questionable, for example. Using household data help to check on these figures, aligning the supply side and demand side indicators. A holistic approaches to ICT indicators that reflect all dimensions is hence of importance.

Link between sustainable development (SD) and ICTs

Sustainable development can only be private sector driven. Private sector driven sustainable development depends in turn on human capital, good governance, an effective use of natural resources and the protection of the environment for future generations (see Stern 2002). ICTs can contribute to improve all these factors.



Several sources collect indicators useful for the analysis of sustainable development. The World Bank collects various types of indicators for business climate in its Doing Business Survey (World Bank 2005). The Global Competitiveness Report from the World Economic Forum (Lopes-Claros et al. 2007) benchmarks countries based on indicators mainly derived from perceptions of business leaders. Index of Economic Freedom from the Heritage Foundation (Miles et al. 2006) focus also on the private sector aspect of sustainable development using secondary data from the World Bank’s Doing Business Survey, and many other sources.

The Human Development Report (HDR) and human development index (HDI) of the United Nations is an indicator set for the human development pillar of sustainable development as depicted in the graphic above.³

ICT indicators are often included in development indicator frameworks. Millennium Development Goals contain three ICT indicators as part of goal 8, “Develop a global partnership for development”. The UN Commission on Sustainable Development equally uses ICT indicators for the sustainable development indicators, and so does the HDI. The table below lists some of the SD indicator frameworks and the ICT indicators used for them including classifications.

³ <http://hdr.undp.org/hdr2006/statistics/>

Table 3: ICT indicators used in the sustainable development context and their classification

	ICT Indicators	Classification	Source
Global Competitiveness Report (WEF)	Technological readiness Firm-level technology absorption Laws relating to ICT Government Prioritization of ICT Government success in ICT promotion Quality of competition in the ISP sector Extent of business Internet use	Demand side Impact Indicators	Survey: Perception of business leaders
	Cellular mobile telephone subscribers per 100 inhabitants Internet Users per 10,000 inhabitants PCs per 100 inhabitants Internet hosts per 100,000 inhabitants	Supply side Access indicator	ITU
	Internet access in schools	Access indicator	
MDG	Goal 8 - Develop a global partnership: Fixed line and mobile phone subscribers per 1,000 people Internet users per 1,000 people Personal computers per 1,000 people	Supply side Access indicator	ITU
UN Commission on SD	Internet users per 1,000 people Main telephone lines per 1,000 people	Supply side Access indicator	ITU
UNDP: HDI	Internet users (per 1,000 people) Telephone mainlines (per 1,000 people) Cellular subscribers (per 1,000 people)	Supply side Access indicator	ITU

The UN Statistical Commission has just (14 Mar 2007) endorsed a core list of indicators on information and communication technologies (ICT), which were developed by the UNCTAD Partnership on Measuring ICT for Development.⁴ These indicators are grouped into four categories:

- Technology infrastructure and access
- Access and use of information and communication technology by households and individuals
- Access and use of information and communication technology by businesses
- Information and communication technology sector and trade in information and communication technology goods

⁴ http://new.unctad.org/templates/Page_____847.aspx

Table 4: UN Core Indicators - Technology Infrastructure and Access

ICT Indicators	Classification	Source
Radio, TVs, fixed telephone lines, mobile cellular subscribers, computers, Internet subscribers and broadband Internet subscribers per 100 inhabitants International Internet bandwidth per inhabitant	Supply side Access indicator	ITU
Percentage of population covered by mobile cellular telephony Internet access tariffs (20 hours per month), in US\$, and as a percentage of per capita income Mobile cellular tariffs (100 minutes of use per month), in US\$, and as a percentage of per capita income Percentage of localities with public Internet access centres (PIACs) by number of inhabitants (rural/urban)	Supply side Access indicator	Operators

Table 5: UN Core Indicators - access & use of ICTs by Households and Individuals

ICT Indicators	Classification	Source
Proportion of households with a radio, TV, electricity, fixed line telephone, mobile cellular telephone, computer and Internet access Proportion of individuals who used a computer (from any location) in the last 12 months Proportion of individuals who used the Internet (from any location) in the last 12 months Proportion of individuals with use of a mobile telephone	Demand side Access indicator	Household survey
Location of individual use of the Internet in the last 12 months (at home, at work, place of education, at another person's home, community Internet access facility, commercial Internet access facility)	Demand side Access indicator	Household survey Operators School survey
Internet activities undertaken by individuals in the last 12 months like getting information, communicating, purchasing or ordering goods or services, Internet banking, formal education or training activities, dealing with government organizations/public authorities and leisure activities. Frequency of individual access to the Internet in the last 12 months (from any location)	Demand side Usage indicator	Household survey

Table 6: UN Core Indicators - access & use of ICTs by Businesses

ICT Indicators	Classification	Source
Proportion of businesses using computers and the Internet Proportion of employees using computers and the Internet Proportion of businesses with a Web presence, an intranet Proportion of businesses receiving orders over the Internet or placing orders over the Internet Proportion of businesses using the Internet by type of access	Demand side Access indicator	Business survey

Proportion of businesses with a local area network (LAN)		
Proportion of businesses with an extranet		
Proportion of businesses using the Internet by type of activity	Demand side Usage indicator	Business survey

Table 7: UN Core Indicators – ICT sector and trade in information and communication technology goods

ICT Indicators	Classification	Source
Proportion of total business sector workforce involved in the ICT sector	Macro-economic data	Labour force surveys
Value added in the ICT sector (as a percentage of total business sector value added)	Macro-economic data Impact indicator	National accounts
ICT goods imports as a percentage of total imports ICT goods exports as a percentage of total exports	Macro-economic data	Trade statistics

The ICT core indicators, developed by the UNCTAD partnership and approved by the UN Statistical Commission are useful for international benchmarking. The access and usage indicators classified as core indicators are undoubtedly useful indicators of development. However, the information required to compute many of these indicators is not available for most developing countries. Household income and expenditure surveys do not collect the required information on ICTs in most cases and the lack of business registers means that representative sampling of businesses is impossible for most countries.

Consultations with national statistical offices to include key ICT indicators in national statistical frameworks such as income expenditure surveys and censuses are ongoing to address some of the issues. In other cases one might have to look for alternative indicators. Complete business registers cannot be expected anytime soon for many developing countries, for example, in particular not ones that also include the informal sector. Business related micro indicators might hence be not suitable and could be replaced by macro indicators, in particular impact indicators (effect of ICTs on total factor productivity, for example).

ICT indicators for sustainable development

Ample evidence from around the world for the positive impact of ICTs on economic growth and development exists. The ICT sector is an input sector for any economy such as the transport sector or water and electricity. The fixed-line network belongs to infrastructure as roads do.

A common problem that developing countries face is that of trade-offs and development priorities. Should more international bandwidth be bought or inhabitants in a shanty-town be supplied with clean drinking water? However, in many developing countries considerable potential for improvement exists due to imperfect regulatory and policy environments. An efficient regulatory and policy environment would not require diverting resources from other important development projects—since it would lead to private sector investment and development, thereby freeing up scarce public resources and development assistance funds for investment in public goods and areas of market failure. The experience of the past two decades has conclusively demonstrated that ICTs are an area in which appropriate policies and regulations will lead to development through private investment and competitive market forces, while protecting essential public goals and values.

Looking at this from another perspective, one needs to ask what really needs to be measured. Access and usage of ICTs in a country is a function of many variables and past developments. What would be of most interest for sustainable development is how progress can be achieved with the fewest resources given the status quo.

Hence what should be measured as ICT indicators for sustainable development are the competitiveness of the ICT sector and the effectiveness of the regulatory environment. Nominal and relative prices are important indicators for that. Prices can generally be seen as impact indicators since they are the result of the access, usage and regulatory environment. Prices also work the other way round: Lower prices will lead to more access and usage. In a competitive environment prices should be lower than in a non-competitive environment.

Focussing on prices is a very effective way of “keeping it simple” and thereby meeting one of the key tests of effective indicators set out in the introduction. However, this is by no means a simple task.

Price indicators are always relative and the only way of making them comparable across countries is by defining user baskets and pricing them for each country. The OECD devised benchmarking tools for mobile and fixed telephone usage based on such user baskets.

**Cost of cheapest prepaid available in a country for the OECD User
Baskets in US\$, converted using nominal end of year 2006 exchange**

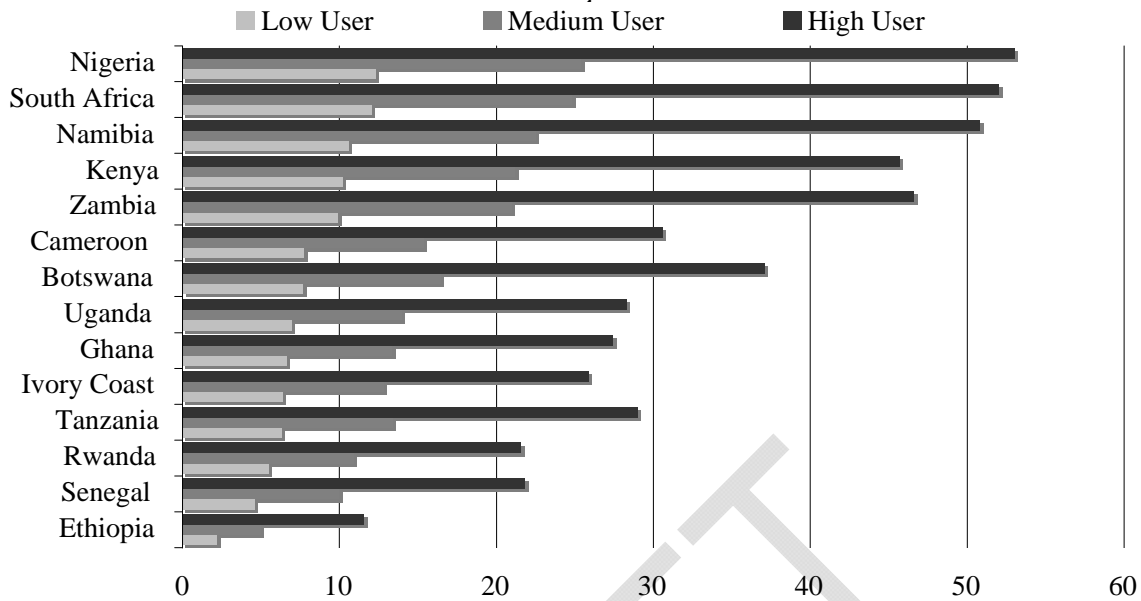


Figure 1: Mobile price comparison for 2006 using OECD basket methodology and nominal exchange rates

The OECD defined three users, a Low User, a Medium User and a High User and based its assumptions on usage (minutes and SMS), time-period of calls and call destinations on information submitted by member countries. The OECD mobile price-benchmarking basket was last revised in February 2006.

What is clear from figures 1 and 2 is that one needs to use nominal as well as ppp⁵ price indicators in parallel. Uganda, Ghana and Rwanda moved to the top of the most expensive countries for prepaid mobile usage when pricing the OECD user baskets in US\$ using implied ppp conversion rates.

⁵ ppp = purchasing power parity

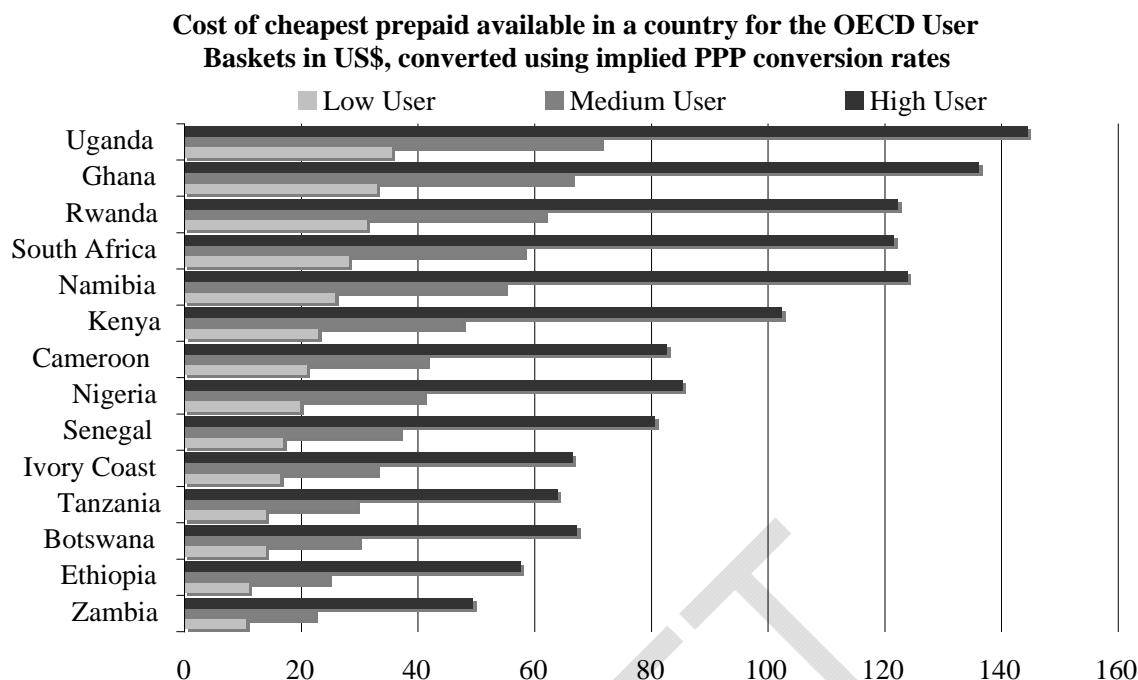


Figure 2: Mobile price comparison for 2006 using OECD basket methodology and implied ppp conversion rates

Price indicators, however, would not be enough for measuring sustainable development and to assess the competitiveness of the sector since they themselves do not indicate whether or not there is effective competition, the basic driver of ICT sector development and the source of much of ICT's contribution to SD.

The number of operators in a country is not necessarily positively correlated to increase in competition, for example. On the one hand, effective regulation could translate into lower prices. High prices on the other hand do not necessarily mean that the regulatory environment is ineffective since many other factors are in play (e.g., import duties). Price indicators need therefore be complemented by other indicators that help indicate the extent to which there is effective competition in a country's ICT sector, such as concentration measures and accounting indicators for operators (the return on equity, profit margin, asset turnover, financial leverage and many others).

Conclusion

ICT indicators are commonly used in sustainable development frameworks. The most frequent indicators found are supply side access indicators collected by the ITU. These indicators are usually the most easily obtainable, which explains their preponderance in ICT measurement literature. A holistic picture needs to be provided for measuring the access, usage and impact of ICTs, rather than just a focus on supply side indicators. This means that different measurement tools need to be used, such as household surveys. In addition, a new set of indicators is proposed that would provide information about the effectiveness of the regulatory environment and the competitiveness of the ICT sector. This integrated approach

would go some way towards providing useful indicators for measuring ICT progress across countries.

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Creating Indicators of Sustainability

A social approach

DRAFT FOR DISCUSSION

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Creating Indicators of Sustainability: A social approach

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September 2007

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Introduction

Since the publication of the final report of the World Commission on Environment and Development, *Our Common Future*, sustainability has occupied a prominent but contested place on the public agenda. While few question the fundamental idea that human life on Earth must ultimately be sustainable, the precise definition of this term remains subject to deep disagreements—as do policies for implementing it. There is a key need, therefore, for more specific frameworks for interpreting and implementing sustainability if sustainability is to acquire significant meaning for human communities.

Consider, for example, the question of sustainability as it arises within one of the most central sectors of human society—agriculture. On the one hand, the continued, long-term ecological and economic viability of agriculture is obviously essential to the future of human civilization (to attach a common connotation to sustainability). A sufficient food supply is necessary in order for people to eat. Yet, it is also clear that when people talk about living sustainable lives, they don't mean doing so on a marginal, subsistence diet made up of the same foods everyday. Indeed, various groups associate a wide array of other important values with agriculture that inevitably factor into debates about agricultural sustainability.

- Beyond having an adequate aggregate food supply, each individual should also be entitled to receive an adequate food supply (i.e., the distribution of food must be sustainable in addition to the supply).
- Available food should also supply each individual with adequate nutritional intake.
- As a technology, agricultural production should not degrade the natural resources (soil, water, etc.) necessary to maintain its productivity over the long-term.
- Agricultural production should not unnecessarily degrade other valued aspects or features of the environment, for example, through excessive conversion of natural areas into agriculture or through pollution generated by agricultural technologies.
- Agricultural production should recognize proactively and make preparations to accommodate long-term changes in the environment that could alter the supply, distribution, or cost of food (e.g., climate change).
- Production and consumption of agricultural commodities should be secure from use as an instrument of terrorism.
- Production and consumption of agricultural commodities should also be carried out so as to avoid unnecessary health risks
- Production and consumption of agricultural commodities should be carried out so as to achieve one or more additional, important community values:
 - Support for family farms and farm families
 - Local, regional, or national food self-sufficiency
 - Low consumer prices for key items such as milk or bread
 - Over-sufficiency of production to prevent shortages, famines, or price spikes as a result of production contingencies (e.g., weather-related crop failures)
 - Maintenance of cultural traditions in foodstuffs
 - Consumer choice
 - Fresh fruits and produce in all seasons
 - Availability of organic foods
 - Ability to purchase from local producers
 - Rural development

- Etc.

Faced with divergent and sometimes contradictory goals like these described for agriculture, many communities have turned to indicators of sustainable development (ISD) as an approach to establishing a more specific framework for defining and implementing sustainability policies. Indeed, at least in part as a result of this advice, the ISD movement has become one of the most significant social movements of the last ten years. Hundreds of towns, cities, and counties in the United States have created lists of sustainability indicators identifying and defining the particular aspects of sustainability of importance to their community. Working with the United Nations and the World Bank, many countries throughout the world have established national indicators of sustainable development. A number of nongovernmental organizations have also established programs to create ISD for the planet as a whole, such as the World Wildlife Fund's Living Planet Index: a composite measure of biodiversity losses in freshwater, marine, and terrestrial ecosystems.

Yet, within the ISD movement, a key question arises. How does one define the set of indicators and measures to be used? My goal in this report is to briefly describe indicators of sustainability, to discuss why a community might wish to establish its own sustainability indicators, how it might approach that task, and what criteria it might use to evaluate the results.

Indicators of Sustainability: What are they and why create them?

Generally speaking, an indicator is anything that gives an indication to its reader of a key feature or state of a human or environmental system. Moreover, a good indicator provides information valuable in the making of important decisions. Two commonly referred to examples of well-known indicators are the speedometer on an automobile dashboard and the growth rate of the gross national product. When driving, the speedometer provides the driver with a rough estimate of the speed he or she is traveling, providing input into decisions about whether to speed up or slow down in a wide variety of circumstances. Likewise, the growth rate of the gross national product provides input to decisions by federal reserve officials regarding the monetary supply, elected officials regarding taxation and spending, investors regarding investment choices, etc.

Most frequently, indicators of sustainability take the form of quantitative measures of key features of human or environmental systems that relate to the long-term viability of human communities. The goal of creating ISD is often instrumental: to better inform consumers, citizens, public officials, scientists, or others who make decisions about aspects of sustainability so as to improve the choices they make. Most frequently, the approach taken to developing ISD is to revise or supplement other forms of knowledge, such as economic or environmental statistics or local knowledge, so as to make it possible to tie choices to the achievement of different goals or values than are traditionally pursued.

The instrumental approach to creating ISD has a number of weaknesses, however (Miller 2005a). The most important is that decision-making systems often form relatively closed

loops. People who make decisions regularly do so on the basis of knowledge and information from a fixed set of sources. Elaborate institutions are often in place to make sure that the knowledge used is readily available, reliable, and informative. A great deal of effort is often required to get new information or indicators into settings where decision-makers will see it, to get it there in a timely fashion, and to provide it in a form that they can make sense of and relate to the decisions they need to make. Moreover, decision-makers must often learn how to make sense of and use new indicators. In the process, it is sometimes even necessary that they rethink the process they are managing before it will be possible to make use of new information.

A second problem for the instrumental approach to ISD is that indicators go unused because they ultimately fail to align with community values. In part, sustainability has become an important topic because of perceptions of environmental degradation. It has also become salient, however, because people have become dissatisfied with the quality of life in their communities. Part of any ISD project must therefore involve defining what sustainability means for the relevant community. What is important or valuable to people in terms of their quality of life? What vision do they have for their future? The process of creating indicators of sustainability can be important, therefore, if it helps a community to operationalize its ideas about sustainability, to turn them from vague conceptions into somewhat more concrete realizations. The translation of broad goals into specific criteria is also an important purpose for ISD. A community that values nature preservation within its jurisdiction still needs to make important value decisions about what kind of indicators they consider sufficient to assess efforts to achieve that goal. Will it be enough to measure acres of greenspace within the community, or must explicit species counts be regularly conducted?

Finally, instrumental approaches to creating ISD run into problems when unsustainable practices or activities reflect structural features of the community: institutional arrangements that accord power to certain groups, a lack of engagement or sense of community among residents, jurisdictional boundaries that inhibit coordinated policies, or simply poor priorities. Better information cannot fix this sort of problem. However, the process of creating ISD can help to address some of these problems—if implemented with this goal in mind. My research suggests that ISD have become an important tool for communities to restructure political relationships, especially between experts, citizens, and public officials. Traditionally, when making decisions, public officials have relied heavily on statistical databases defined and produced by experts. In many cases, citizen-initiated projects to develop ISD have empowered citizens to define measurements of their own, in effect resorting priorities and re-establishing the role of the public as active participants in designing the future of communities. If designed well, the process of creating ISD could serve to aid in empowering consumers to set new priorities, in engaging citizens in processes of governance, and in realigning institutions, practices, and maybe even jurisdictions toward alternative visions of production and consumption.

Approaching the Creation of Sustainability Indicators

There is often a kind of inertia when a community begins to think about indicators of sustainable development to want to call in a group of experts. Experts, after all, are the

repository of specialized skills and knowledge in modern, scientific societies. They have often studied an issue extensively and are familiar with existing databases and environmental monitoring programs. It is also easy for groups to look good using experts. For a relatively small investment of money, they hire a specialist or two who prepare a report that can be circulated to the media, put up on the internet under a banner headline, and so on.

As I've tried to suggest above, however, indicators are not merely technical measurements—they are hybrids that meld technical considerations with human values (Miller 2000). To get people to use sustainability indicators requires investing those indicators with meaning to the people who will have to use them, and that means adopting a different approach to creating them in the first place. Experts can and probably should be involved in that process, both as citizens in the community and to help facilitate the development of good indicators as community members begin to articulate the kinds of things they particularly care about.

Unfortunately, I suspect that there is no single answer for what the process of creating new ISD should look like. Each community is different. Many communities have adopted a community visioning approach, although the precise format often differs from place to place, and what works well in one community may not work at all in another. Other communities have taken a legislative approach, working through duly constituted political institutions. The key is finding an approach that community members will see as credibly and legitimately incorporating the breadth of their concerns about a sustainable future for them and their children.

What Makes for a Good Indicator?

In 2000, the International Institute for Sustainable Development, one of the world's leading NGOs supporting the development of indicators of sustainable development offered the following guide to useful criteria for judging the value of a given indicator:

- **Policy relevance**
Can the indicator be associated with one or several issues around which key policies are formulated? Sustainability indicators are intended for audiences to improve the outcome of decision-making on levels ranging from individuals to the entire biosphere. Unless the indicator can be linked by readers to critical decisions and policies, it is unlikely to motivate action.
- **Simplicity**
Can the information be presented in an easily understandable, appealing way to the target audience? Even complex issues and calculations should eventually yield clearly presentable information that the public understands.
- **Validity**
Is the indicator a true reflection of the facts? Was the data collected using scientifically defensible measurement techniques? Is the indicator verifiable and reproducible? Methodological rigor is needed to make the data credible for both experts and laypeople.
- **Time-series data**
Is time-series data available, reflecting the trend of the indicator over time? If based

on only one or two data points, it is not possible to visualize the direction the community may be going in the near future.

- **Availability of affordable data**
Is good quality data available at a reasonable cost or is it feasible to initiate a monitoring process that will make it available in the future? Information tends to cost money, or at least time and effort from many volunteers.
- **Ability to aggregate information**
Is the indicator about a very narrow or broader sustainability issue? The list of potential sustainability indicators is endless. For practical reasons, indicators that aggregate information on broader issues should be preferred. For example, forest canopy temperature is a useful indicator of forest health and is preferable to measuring many other potential indicators to come to the same conclusion.
- **Sensitivity**
Can the indicator detect a small change in the system? We need to determine beforehand if small or large changes are relevant for monitoring.
- **Reliability**
Will you arrive at the same result if you make two or more measurements of the same indicator? Would two different researchers arrive at the same conclusions?" (IISD 2000).

I like IISD's list, but I also think it needs to be supplemented. While the list briefly discusses the issues of policy relevance and simplicity, it does not include any consideration of either what might be termed the motivational value of indicators or the process of creating the indicator. A given indicator, if created by a small group of experts and offered to citizens and public officials, may be of far less value than the very same indicator arrived at via a process of community dialogue. This will be especially true if the latter process gets citizens active in the pursuit of sustainability or creates new institutions that pursue sustainability on their behalf. On the other hand, a different indicator, based on ad hoc, potentially unreliable data of questionable scientific validity, may nonetheless be of considerable value if it motivates citizens to take action. To be sure, scientific rigor is better than not, but if it means long delays or if it is simply impossible to collect data of sufficient quality, pragmatism may demand going ahead with the data one has. And quite often, communities may be working from intangible observations or evidence that is difficult to concretely articulate when they sense that something is wrong with their wellbeing. This kind of "local knowledge," which may be hard to replicate scientifically, may also be invaluable in moving a community toward sustainability.

Put another way, IISD's list assumes that the purpose of an indicator is to provide what web designers call content and the rest of us call information. On the basis of this new information, the argument goes, people will be able to make different choices. But good indicators don't always function in this fashion. Experts agree that the gross national product (GNP) could be substantially improved upon as a measure of national wellbeing. Yet, people continue to invest meaning in GNP. Why is that? Partly, it's historical inertia. People have learned to look for changes in the GNP, and it's now an ingrained habit. Even more, they generally think they know what the dips and rises in GNP mean for themselves, their families, their businesses, and their communities. They also know that the government uses GNP when making important policy decisions. In other words, GNP has become part of the social fabric of the nation and to change that would require an immense amount of

work, re-educating people, changing laws, etc. That can be done, but generally such work will precede the development of a new indicator not drive it.

Let me expand on this example. Over the past decade, countries from around the globe met as part of the London Group on Environmental Accounting to develop a standard metric for changing the calculation of GNP to incorporate changes in natural capital. Unfortunately, after negotiating for over ten years, they gave up, instead creating a handbook that lists lots of different approaches to environmental accounting. At the end of the day, they could not reach agreement on a single best approach that would work for all governments. Some wanted to “green the GDP”. Others wanted to understand the environmental impacts of industrial sectors. Both are potentially valuable goals, but they require quite different metrics of environmental accounting (Bandhauer, Curti and Miller 2005).

What I take from this and other examples is that good indicators rarely if ever lead the way to good policies. In fact, historically, it has often been the other way around. People have decided on new policy courses and, in the process of developing and implementing those policies, have set up indicators that work for their purposes. Over time, these indicators have acquired a great deal of social meaning and resonance, like the GNP now has, but they were not the drivers of the policy process. Rather, the process worked the other way around. The central banking system in the United States was developed, first, in the 1910s and 1920s as part of a broad policy effort to curb wild swings in the economy. It was not until 1942 that the GNP and the system of national accounts on which it is based was created (by Wisconsin Senator Robert La Follette). Another widely cited example of a good indicator—your car’s speedometer—likewise developed almost ten years after the introduction of the automobile and the first speeding laws, and didn’t become a standard feature on automobiles until sometime after that.

I am tempted, therefore, to add additional criteria to my own list of what makes for a good indicator based on the social outcomes it achieves:

- **Meaning** – Does the indicator have meaning for people? Does it motivate them to want to change the way things are currently done? Does the indicator communicate more than just its factual content? For example, the gross national product also communicates the idea to people that they are part of a nation that is spatially co-extant with a national economy. Likewise, Metropatterns, a form of indicator set for metropolitan regions, is specifically designed to get multiple jurisdictions to see themselves as part of a regional community.
- **Good Governance** – Did the indicator emerge from a process that engages people in defining and implementing sustainability in their own lives or communities? Does the indicator contribute to the creation of new communities or institutions that further sustainability agendas?
- **Local Knowledge** – Does the indicator mesh with lay people’s sense of what is happening in their own lives and the lives of others in their community? Do those who are considered locally knowledgeable concur with its indications?
- **Historical Weight** – Have people had time to get to know the indicator, to learn what its fluctuations imply for their own lives and businesses, and to recognize its value as a guide to improving their wellbeing and that of their communities? Or are

- plans in place for allowing this kind of historical settling to occur? Perhaps with the opportunity for renegotiation and reconfiguration of the indicator?
- **Adaptability and Flexibility** – Communities are unlikely to get indicators just right the first time. As they work with efforts to achieve sustainability, they may acquire new values, learn new things, or find better measures. Is the system of indicators flexible and adaptable enough to change, too?
 - **Institutionalizing Knowledge Production** – Does the process of indicator development lead to the creation of new institutions or the modification of existing institutions that continually produce new knowledge and information about community sustainability issues?

Finally, it is worth pointing out that, despite many people's presuppositions, good indicators do not have to be quantitative measurements. The sense of force that you feel when driving around a corner is, for many people, a reliable indicator of whether the car is moving too fast. The "BGH-Free" label on a gallon of milk is also a good indicator. Both of these communicate the kind of information necessary for people to make decisions, even though they're not numerical. On the whole, American culture tends to see quantitative data as more scientific and therefore more trustworthy and reliable, but that does not preclude the use of other kinds of indicators.

The Social Approach at Multiple Scales

I have focused above primarily on community-based ISD, where much of the original activity surrounding the social approach to ISD development has taken place. It is also worth noting that the social approach to ISD developed primarily in US and EU contexts. There are good reasons to believe, however, that the general principles associated with the social approach to ISD development are also applicable in other cultures and at other scales of political organization. In each case, however, the precise methods and processes used will need to be adapted.

One interesting example of the application of the social approach to ISD development at a national level has taken place in Canada, where Statistics Canada pursued a long-term program for the development of environmental accounting practices that included a substantial process of engagement with a wide range of regional and national stakeholders. Through this process, they succeeded in building significant support for their proposed approach to environmental accounting both among stakeholders and among politicians. By contrast, in the US, a similar effort to develop an environmental accounting program has run aground. Notably, this effort, led by the Bureau of Economic Analysis, was assumed to be a technical problem that the Bureau could handle in house (for details of the comparison, see Bandhauer, Curti, and Miller 2005).

When thinking about national application of the social approach, it is essential to attend carefully to cross-cultural factors in the arrangements of citizens, experts, and policy that will necessarily impact both the process and content of ISD (Miller 2005b, Miller 2006). Cross-cultural variation in civic epistemologies (the ways that political communities reason about

and create knowledge regarding problems) will be crucial, for example, impacting such questions as problem framing, who is considered to have relevant expertise, norms for weighing different kinds of evidence, and other factors (Miller 2005a; see also Jasanoff 2005). Also problematic will be power relationships among citizens, experts, and the state that constrain the ability of communities to create and implement ISD independent from the politics of national sustainability policy. Given that the social approach to ISD challenges the authority of experts and the state to determine key elements of sustainability policy, it may be more difficult to pursue and achieve in political cultures where the rights of citizens and local communities are not strongly upheld.

Perhaps the most complex challenge of all is developing ISD for the planet via a social approach. At this scale, we have few exemplars of successful socially-derived indicators to work from. Indicators such as WWF's Living Planet Index or Conservation International's development of the idea of biodiversity hotspots, for example, have been created to satisfy the values of particular stakeholder groups (Miller 2003). Likewise, United Nations statistics are by-and-large the product of government statistical experts, while the graph of rising planetary temperatures emphasized by the IPCC is a product of scientific research.

Interesting illustrations of the social approach in action at the global scale include the original Bruntland Commission, which invented the term of sustainability, and the more recent World Commission on Dams, which offers another fruitful illustration of the value of the overall social approach for pursuing sustainability goals. In neither case, however, were the commissions oriented toward establishing crucial indicators of planetary sustainability that could achieve widespread buy-in.

The closest examples we have to global ISD developed via a more engaged social process are the Millennium Development Goals. Here, though, we see the great difficulty of abstracting sustainable development objectives for the planet. While the Millennium Development Goals represent important aspirational statements, they are far from deeply integrated into policy. Part of the problem, in fact, with all global ISD, is that the globe is not a homogeneous place and therefore we must find ways, within the sustainability agenda, to acknowledge and accept diversity within the concept of ISD—and yet continue to work toward the development of global approaches to policy reasoning. The most intriguing experiment in trying to build diversity into a global scientific assessment that I have witnessed were the sub-global assessments of the Millennium Ecosystem Assessment, which I believe could serve as a very interesting model for moving forward toward the creation of a global ISD via the social approach (Miller and Erickson 2006).

Conclusions: A social approach to sustainability indicators

I believe strongly that indicators of sustainability will be essential features of the political landscape of the 21st century. The conviction that many people have that new ways of knowing are key to new ways of governing our relationships with nature is, in my view, absolutely correct. What history shows us, however, is that the creation of robust, reliable

policy indicators is the upshot of robust political processes, not the other way around. Sure, the plots of the average atmospheric temperature created by the Intergovernmental Panel on Climate Change (IPCC) have helped lead people to become persuaded of the need to address climate change. But we should not forget that the politics of climate change was over two decades old when the IPCC was first established. And, to make the point even more clearly, when push came to shove, images of melting glaciers and starving polar bears turned out to be at least as important as indicators in tipping US political culture over the edge.

If, on the other hand, we take a social approach to sustainability indicators, I think we have a good shot of moving in the right direction. Indicators can be powerful tools for helping us to see our lives and our practices in new and productive ways. But we expect too much of them if we expect them to act, in and of themselves, as instruments of policy transformation. Rather, we should learn to see the demand for new indicators of sustainability—and the process of creating them—as opportunities for political engagement. It is therefore not only the ISD indicators but also the processes of ISD construction, interpretation, and application that are the engines of political and policy change.

Put differently, carried out successfully, the social approach to ISD is an opportunity to strengthen democracy in local and global communities (Miller and Erickson 2006). To accomplish this will require considerable capacity building, not only in developing countries but also in the US and EU. Few communities start out with the requisite skills and organization necessary to pursue a social approach to ISD construction and use. But, even more importantly, ISD construction and use is an opportunity for capacity building for a much larger task, that of identifying, deliberating, reasoning about, and solving collective social problems related to the sustainability of individual and social life. Learning how to accomplish this larger task is what is truly critical for all communities, from the smallest village to humanity in its entirety. A social approach to ISD is valuable not only because it produces good indicators that are helpful in this larger task but also because the process of carrying out the social approach helps to build capacity for doing sustainability policy well.

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