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Digital domains and new development strategies: Revisiting ICT policy-making in the Global South

By Hopeton S. Dunn and Kwame Boafo

Abstract

National communication planning in Africa must incorporate the latest generation of information technologies, but planning must aim at concrete development results in terms of employment and incomes. For the technology to generate the best results it must be based on institutional changes such as improvement of literacy levels and a type of basic and professional education which requires active reaching out to get information to develop personal knowledge systems. Planning requires multi-stakeholder cooperation involving educational, entrepreneurial, political and community cooperation. Regulation and investment/entrepreneurial opportunities need to be far more flexible and user-friendly. Access to information in government, research centres and other institutions needs to be far more open, available and inviting.

Key words: ICT policy and planning, ICT and development, education for ICT, ICT investment and regulation.

Introduction:

We are at a another crossroads in communication policy-making globally. This presents new challenges and opportunities for countries of the global south in the on-going processes by which new and conventional media have been converging to create advanced digital applications, especially on the Internet. The key challenge of policy is now to help ensure that these processes are extended to create greater popular access to information and communication technologies (ICTs) in order to maximize business and the development opportunities.

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Reference to access here connotes not a uni-dimensional concept, but one that is multifaceted and multilayered. Critical to the success of new communications policies is the notion that effective access to the communications technologies goes beyond an individual's physical reach or proximity to particular technologies. We must recognize and validate people's capacity to use and to benefit from the financial, social, institutional, content and cognitive dimensions of ICTs. The current juncture is characterized by advanced levels of exploitation of information and converged technologies, especially in urban centers of the North and South. It is also marked by pervasive forms of mobile communication, virtual social networks, web logs (blogs) and interactive media. New externalities, both negative and positive, are associated with these technologies, as are new industry configurations, which carry significant productivity implications for national economies. New Media generate pressing demands for new approaches to training, content delivery, industry regulation, career choices and professional practice.

Another transitioning aspect of contemporary communication policy-making features the rise of next generation networks (NGNs) with their fast-paced broadband capabilities. It is NGNs that enable platforms such as Web 2.0 (second generation of the World Wide Web) for new Internet-based media which are now gaining in popularity. These networks have forged an unassailable union between the conventionally separate categories of users and creators of content. In what has been described as the "wiki world", the user and the content providers can converge into being one and same individual, posing challenges for old "editor-driven" formats. Already there are indications of a transitioning from the Web 2.0 platform to the "semantic web" or Web 3.0, which aims to make the Internet "smarter" and more intuitive. Presently, the Internet consists of data and applications which respond in a literal manner to requests for information or actions by individual users. The objective underpinning Web 3.0 to confer greater intuitive powers to web responses will enable the recognition of data or the interpretation of commands in ways that seek to automatically interpret and in turn make more accurate and valid suggestions and solutions to the demands of Web users.

At an abstract level, we may say that this increased use of artificial intelligence epitomizes Neil Postman's concept of a "technopoly" in which the machines and related applications are regarded as capable of playing a commanding and even overwhelming role in the daily lives

of human beings (Postman, 1992). But, even while taking on board this cautionary injunction, one senses that the new forms of techno-interaction promise to be more nuanced. The emerging communications technologies, while challenging conventional human societies, are yielding new hybrid forms of citizen media and improved human productivity as they become increasingly symbiotic, dialectic and intuitive.

For many developing countries, the challenge is for Internet users to become more active contributors to the global digital storehouse of knowledge, instead of continuing as net down-loaders. If we are to redress, in the Internet age, the long-standing North South imbalance in information flow, our policies should now more proactively promote a culture of uploading of content and of mutual sharing of information where appropriate, within the framework of the emerging open source and the creative commons movement. Where commercial content is being uploaded, individuals and countries should be developing a greater command of the key tenets of e-commerce transactions, intellectual property protocols and the routes to circumvent cyber crimes by enacting or supporting the necessary legislation and driving public education. While some countries and geographical regions are not yet in the full throes of this open and more liberalized transformation, the transition is rapidly advancing globally and no realistic communications policy maker can ignore these technological innovations and protocols and their implications for future national development planning.

If the previous century has taught us anything, it is that communications policy making should not be primarily driven by the inexorable roll-out of technological innovations. Policy should be needs-based and should emanate from conscious critical analyses of the strategic needs of people within their policy environments. In this regard, Stephen Miller in his still relevant 1996 book "Civilizing Cyberspace", reminded us of the imperative of designing policies to meet the economic and social requirements of specific societies.

> To serve the full range of human needs, we have to create an infrastructure that doesn't simply fall into the easiest paths to profit but one that consciously promotes values that short-term profit seekers do not always support. This is not a rejection of markets, but it is a recognition that markets are created by humans, that we must shape our markets to serve our desired goals and that we must be prepared to use non-market activity when needed. Sitting

> back and waiting for the good times to roll will not work. There is no invisible hand that will automatically bring us what we need or even what we want. (Miller, 1996, p.15)

It is against this background that this article examines development approaches to policy making, especially in the global South. In so doing, we will seek to outline a corresponding strategy and research agenda that may be adapted to inform policy-making. As part of this discussion we track certain transitions in media and communications policy-making and concept development from early perspectives to the current scenarios derived from converged technological platforms. We advance a humanist perspective on the rights of people to access and use ICTs, and the potential of ICTs to enhance good governance and democracy while guarding against technology enslavement. The conclusions are derived from both the shared and differing global experiences of the authors in analyzing and tackling ICT policy and human development challenges across continents.

Vision, Policy, Strategy

Like corporate entities do in their business plans, countries have to define their communication goals and attendant policies, and match them against available resources and time-lines to be competitive. The success or failure of public policies in the area of new media and telecommunications depends on this approach which often determines the performance of ICT businesses and of the whole economy, thereby impacting successive generations of ordinary citizens. While some approaches confine public policy making to governmental actors, our approach is to include within that framework all actors that have a significant impact on the delivery of economic and social services to the public. The implications of public policy making therefore become embedded not just in government's direct activities but also in the actions and collective impact of companies associated with these services, as well as of universities and other social, civil and corporate actors within industry and society. A crucial first step in ICT policy development is evolving a multi-stakeholder vision and identifying shared strategic objectives through consultation and dialogue. This multi-stakeholder approach was successfully employed to good effect in global policy arenas such as the World Summit on the Information Society (WSIS) and subsequently the Internet Governance Forums (IGF). These multi-stakeholder processes involve non-state actors from civil society and the business sector on an unprecedented scale. Roles

once reserved for multilateral government actors are now being carried out by consortia of private and civil society operators. Institutions such as the Internet Corporation for Assigned Names and Numbers (ICANN) also reflect increased responsibilities for technical communities and for expert individuals. Local policy making is thus often strongly infused with non-governmental voices in line with global institutional processes and research outcomes. It is a process of deepening collective choices and generating the capacity to pursue the choices made. The policy making process in each country is often assisted by the development of a network of techno-specialists with a coordinating hub led by an agency or industry champion. This, with a parallel strategy to promote both indigenous innovation and inward investment, can sometimes successfully drive the expansion of human capacity and encourage local entrepreneurship. Dunn and Duggan (2006) comment:

> While technologies and policies may change rapidly we should establish a stable ICT management process that includes (1) education to provide a baseline for continuous ICT knowledge-acquisition; (2) environmental scanning and innovation adoption to promote awareness of emerging technologies in order to reduce the elapsed time between awareness and adoption; (3) informed policy and infrastructure development and maintenance to encourage prudent adoption and diffusion of relevant technologies. (Dunn & Duggan, 2006, p. 49)

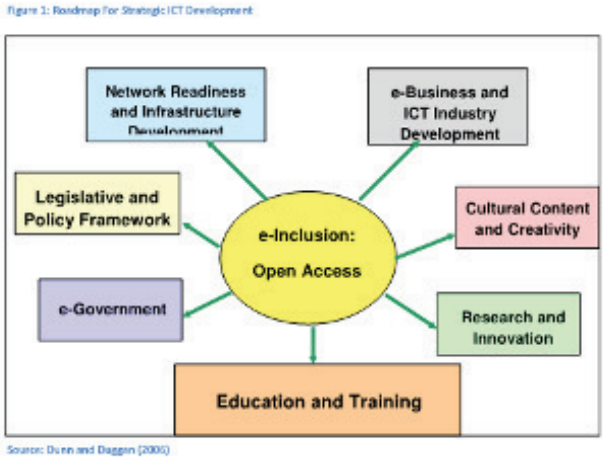
All national stakeholders have a role to play towards achieving these and other goals aimed at accelerating ICT development. In this regard, it is important to promote cultural integrity while adapting and integrating national communications policies that emanate from people's social, cultural and economic development needs.

> The developing world's fixation on reducing the digital distance with more developed countries has become a strategic imperative for global competitiveness. However, while the focus on the digital divide is new, the phenomenon is not. For various reasons, several technological innovations, such as applications of artificial intelligence and group support systems (GSS), that support knowledge management and business intelligence, though not as consequential as the Internet and the World Wide Web, have been unexploited by developing countries in the past. We must ensure that we maintain the focus, instead of several sporadic attempts at closing the existing gap and continue to expand our strategy to move

> beyond awareness and readiness to creativity and contribution. (Dunn & Duggan, 2006, p.49)

As shown in Figure 1, Dunn and Duggan (2006) identified a core set of variables, described as the roadmap, that are critical to the building of a multilayered ICT sector at the national level. This indicative framework includes the foundational infrastructure for education as well as provisions for research capabilities, policy enablement, content creation, business development and institutional development components.

FIGURE 1: ROADMAP FOR STRATEGIC ICT DEVELOPMENT



In this framework elaborated by Dunn and Duggan, it is effective inclusion and popular involvement within the information society that should consume the greater portion of efforts to articulate national information and communications strategies. Whatever the expectations, without effective e-inclusion and access, the outcomes of these efforts will be characterized by mere corporate infrastructural investments and technology elites, without the sustainable development compact which countries seek. One way of gauging the level of development, growth and sophistication of ICT deployment is to analyze the innovations and range of applications that they can facilitate over time. For instance, as Figure 2 demonstrates, global communications technologies have grown astronomically from the

innovations in the plain old telephone systems (POTS), to the now emerging next generation networks (NGNs). Less clear, however, are the development linkages between these technologies and the economic and social spheres of societies particularly in developing countries.

FIGURE 2: TECHNOLOGY TRANSITIONING

Source: Dunn (2008)

Concepts of Development

Oftentimes, there is confusion in policy-making circles between the notions of "growth" and development. This is one of the complexities that confronts development thinking in the ICT sector. We must carefully consider what really constitutes development and what is the extent of likely contribution of ICTs to development in given countries. The creation of significant employment opportunities and income generation are among the key measures of economic activity and growth. These are areas to which ICTs can contribute, particularly through the call centres and offshore data facilities that make extensive use of ICTs. It is noteworthy also that in many developing countries, it is the competitive mobile telecommunications sector that continues to

stimulate growth and employment even in times of economic downturn. But the critical policy question remains whether these activities represent development, even if they contribute to GDP growth.

Analysts once equated development with increases in gross domestic product (GDP) and other quantifiable economic variables. To contemplate alternative conceptions of development would have been considered anathema to the then canonical neoclassical and mechanical notions of economic development. Brinkman (1995) observes that up to World War II and a long time thereafter economic growth and economic development were conceptually conflated, and were often used interchangeably. He contends that the neoclassical notion of development was flawed, since it was clearly representative of abstract and illogical analysis. The Bretton Woods institutions – the International Monetary Fund and the International Bank for Reconstruction and Development, now one of the institutions in the World Bank Group –were the main institutional advocates of this flawed neoclassical ideology on growth and development.

These early conceptions of economic development and economic growth failed to explain the dynamics of transformation (development), and fell into what Brinkman (1995) described as static analysis. Outlining the distinction between static and dynamic analysis, he noted that "a static analysis deals with changes within a structure but does [not] relate to a transformation of the structure. By comparison, a dynamic analysis deals with a sequential pattern of structural transformation as a process through which one structure gives rise to the next" (p. 172). But even before Brinkman, other critical development thinkers proffered the view that the strictly neoclassical models of development were inadequate, imposed unrealistic assumptions, and thus could not explain development and growth in any society.

Simon Kuznets' seminal work *Toward a Theory of Economic Growth* (1955) and Joseph Schumpeter's works proved to be major boons for heterodox development thinking. Kuznet (1955) made an important contribution to the understanding of economic growth by noting that there are limitations to traditional economic conceptions of growth and advocated the establishment of alternative institutions. Syrquin (2005) remarks that "Kuznets maintained the impossibility of a purely economic theory of growth" (p.11). The central problem for Kuznets

was how to endogenize variables in growth models that economics mostly regarded as *a priori* or exogenously determined such as technological change, population growth rate, and institutions".

It is policy making that should transform the potential contribution of telecommunications and ICTs into measurable growth indices. The extent to which they contribute to education, to culture, to the improvement of people's social and material well-being and to the capacity of the state and non-state players to develop communities, would be key respects in which ICTs can go beyond job creation and voice telephony access. For policy to truly maximize this potential it would need to be informed by the non-traditional conceptions of growth and development.

Much of the potential of the ICT sector to contribute to development is generated through the introduction of competition and the infusion of innovation in the areas of management and technology. However, an important tenet of policy making for the sector is the recognition that ***the introduction of competition is not in and of itself a measure of development***. It is the results or fruits of competition that constitute the basis for development and that, in any event, depends on how the returns are utilized. Investment in industry research and in information literacy and general education of the population would be key ways of fashioning ICT returns into development potential through innovative policy making.Technology-dependent countries may wish to monitor their development performance less by the intensity of telecommunications competition, or the ubiquity of the mobile phone, or even by the frequency with which they achieve approval by the International Monetary Fund. While these could contribute, it is their performance against key human development indices such as those set out in the UN's Millennium Development Goals (MDGs) that would be a better measure of ICT-assisted social progress and human development. Measuring this performance is however constrained by the research and policy-making challenges in gaining access to information and to global models to measure and disaggregate the extent of ICT therefore contribution to such development. Effective policy-making will be predicated on investment of resources to for applied research to generate policy relevant data and information.

Changing Constructs in Media Theory and ICT Policymaking

Some early media and communications scholars also articulated what they perceived as alternative pathways to development.

Daniel Lerner's classic, *The Passing of Traditional Society* (1964), and Wilbur Schramm's *Mass Media and National Development* (1964), were two of the earlier academic publications to identify explicit roles for media in redressing underdevelopment in nation states, and in helping to transition these states into what has become the contested notion of "modernity".

Everett Rogers' influential work on the diffusion of innovation, published in 1962, argued that diffusing technical and social innovations promoted modernization. Others examined the link between literacy and cultural development, in which it was believed that mass media could help to teach literacy and other life skills. Still others argued that modernization could be achieved through the media's influence on national identity. McQuail (2000), in discussing variants on these modernist communication theorists, observed that media constituted an important strand within this first wave of contributions. While the modernist orientation of these early theorists has been severely criticized, an aspect of their merit is the insistence that there are alternative pathways to development, broadly; and that there is a role for media and communications. Schramm, in *Mass Media and National Development* (1964) probed the link between national development and mass media in greater depth. With the hindsight of decades, we might be inclined to concur that even in so-called traditional societies there are explicit information roles that are essential to the existence and safety of communities. Societies have become more complex and so too have the information and communications processes. At the level of governance Schramm notes that "the job of arriving at social consensus, establishing policy, and directing action has been given mainly to government, but such organizations as political parties and the mass media enter powerfully into the process of shaping public opinion and action." (1964, p. 39).

Schramm's major contribution seeks to enhance our understanding of the role of media (radio, television, newspapers) in social change. He outlines three important communications tasks that are most important for facilitating social change through media: (i) people must have information about national development; (ii) people must be able to participate intelligently in decision making; and (iii) people must have the skills to effectively participate in the process. In this digital and networked era, these references can easily be translated

correspondingly into (i) information access (ii) informed multi-stakeholder consultations and (iii) information literacy. In this interpretation, the essence of the policy goals of over four decades ago has not altered significantly since then.

Lerner and Schramm's (1967) *Communication and Change in the Developing Countries* was another important contribution that examined the link between communications and development. The ethnocentrism of western economic theories of growth and development was a central theme of the publication, but the point was also made that media systems are the critical forces that can help in the adaptation of western-oriented theories. Dube (1967) highlighted the situation whereby many developing countries were in the process of wresting their independence from mainly European colonial masters during the post World War II period. By the mid 1960s, many of the newly independent countries were in a desperate search for an identity and for a theory of development that reflected their unique challenges and constraints. It was in this context that mass media were seen as serving as both a mirror of society and as a transformative social institutions.

In the decades of the 1970s there was ongoing research on media's role in national development, paralleled by the emergence and growth of what could be described as a search for a global communications consensus. The launch in 1980 of UNESCO's MacBride Report, entitled *Many Voices, One World* (1980) was later seen as having been commissioned out of concern about " the dominance of the industrialized countries - and especially the United States - in the production and distribution of media content" (Mansell & Nordenstreng, 2006, p. 16). Leading industrial powers resisted the recommendations of the MacBride Report by withdrawing financial support from UNESCO. This was a measure of the intensity of the battle for global control of dominant media conceptions and the evident failure of the bid for consensus.The publication, four years later, of the Maitland Report began the inexorable process of refocusing communication policy to also address issues of carriage and not just of content. This report, which came to be called *'The Missing Link'* directed attention to important gaps in global access to telecommunications services, gaps that mirrored the antecedent battle for a new information and communication order and which also foreshadowed what has become known as the 'digital divide'.The convergence of infrastructural and content aspects of the global communications

industry gave credence to Marshall McLuhan's idea, concisely represented by the maxim "the medium is the message" (1964). This idea found expression in the battle for control of the channels through which both mass media content and personal messages travel. The ultimate "medium", the Internet, as the innovation encompassing the vast range of content on the World Wide Web, has further diversified already ambivalent perspectives on whether the predominant transformative role is that of the medium or of the message. With the emergence of narrow-casting, new delivery platforms and radical network reforms, the notion of "mass media" has been re-configured into ideas of disaggregated audiences, individual message reception and targeted niche marketing. Academic and training units have also mostly re-branded their institutions as offering "media and communication" services, with telecommunications and personalised ICTs acquiring a new centrality. Many government-owned, cash-strapped broadcasting organizations have failed to navigate the new challenges to public service broadcasting and those arising from more demanding audiences as well as from the privatization and liberalization lobby. Equally, the long-held (mis)conception of a natural monopoly as being essential in the delivery of telecommunications services has almost everywhere also been successfully dethroned.

A brave new world: Markets, wireless networks and mobility

Important structural and ideological changes in the global communications sector are also reflected in the exponential growth of mobile telephony particularly in the first decade of the 21st century. This trend has placed the "plain old telephone" on life support in many markets, as demand for personal and individual mobile access burgeons. ICTs, as they continue to advance, are changing the nature of communications processes and of media. The technological platforms and capabilities, and the operational and functional shifts are reshaping the material basis of society as the network society is created. (Castells, 1996). Communication concepts and policy-making approaches are subject to these forces and accordingly must change to be relevant and effective in the current environment. Beyond inter-linkage, the social and economic externalities associated with increasing rates of access to communications services have helped the industry to become highly lucrative, generating for many governments significant revenues, such as those from the sale of telecommunications licenses, regulatory fees and spectrum auctions. India, for example, earned over US$14 billion,

from the sale of 3G licenses to Vodafone Group Plc and Bharti Airtel Ltd. [1] Vietnam, a fast- rising developing country, also gained significant revenues from its sale of four 3G licenses in May 2009.

To illustrate further, Jamaica, known globally for its rapid growth in mobile penetration during the first decade of the 2000s, received significant net foreign exchange earnings of approximately US $199.2 million between 2001 and 2005. Exports from its call centres were also significant, recording revenues of between US$300 – US$400 million from the 22 call centres operating in the island during the same period.[2] But, in addition to the positive economic outcomes, social benefits from the communications sector are also eminently desirable. In studies conducted in the Caribbean region, mobile telephony was documented as being critical to the livelihoods and overall social and economic existence of many low income citizens. According to a 2008 study:

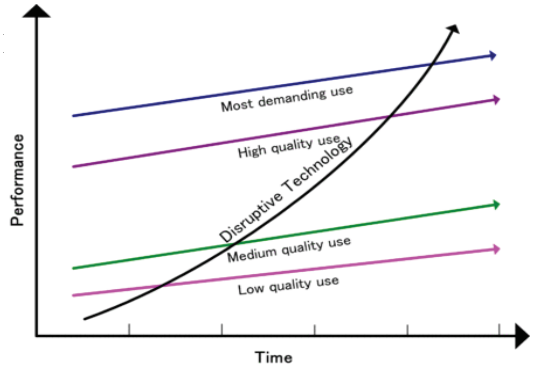
> One resounding message out of the focus group discussions was the revelation that possession of a mobile phone among persons from disadvantaged communities was regarded as "a kind of passport to better opportunities". For many of these persons, the cell phone accords them an "address anonymity" which was advantageous in their telephone-based searches for jobs, schools and other upwardly mobile opportunities. (Dunn, 2008, p.33).

The important link between mobile telephony and people's dependence on overseas remittances was also underscored.Through the mobile phone, people were attending to each other's financial requirements across borders as part of the strategy to sustain their daily lives. With access to mobile phones many low income citizens were better able to negotiate their needs, as well as the uncertainties and complexities of a brave new inter-connected world. On the African continent, information and communications technologies found widespread applications across social and economic sectors as demonstrated through satellite downlinks and other unique innovations such as the tele-medicine programs that were being pioneered by the International Telecommunications Union (ITU), and the Economic Commission for Africa. These programs have assisted thousands of Africans from poor backgrounds, whose access to affordable and sophisticated medical care was impeded by distance and economics.[3] According to evaluative reports Ethiopia was among those countries that reaped some success in health care delivery through these programmes. Agriculture is another area in which ICTs are being

applied to improve the economic and social lives of many throughout the African continent. In his edited publication, *Tam Tam to Internet: Telecoms in Africa*, Ras-Work (1998) presented very interesting and insightful examples of the use of both traditional and modern communication facilities.

The use of mobile telephony in education is another area in which adaptations of information technology are supporting development in African countries. As an example, the "Dunia Moja" pilot project in which students pre-recorded lectures and lecture notes using mobiles, was implemented among undergraduates at Makerere University of Uganda, Mweka College of African Wildlife Management in Tanzania, and the University of Western Cape in South Africa with the support of Stanford University in the United States and local telecom service providers.

These initiatives would suggest that cross-cutting linkages between the ICT industries and other economic and social sectors transcend the intrinsic contribution of ICTs to economic growth. National communications policies should reflect these economy-wide linkages even while identifying the dedicated development contributions of the sector itself. More than any other technology, the mobile phone has been the technology of choice for the majority of people throughout the world. That the mobile phone is being increasingly applied in helping to solve social and economic problems reflects its core characteristic as a "disruptive technology". As Figure 3 demonstrates, the mobile phone essentially uproots other traditional communications technologies such as fixed telephony, largely as a result of its portability, decreasing computing costs, increasing software capacity and pent-up public demand for low cost voice communications.



Source: Christensen and Bower (1998)

National Communications Policies – Key Components

The formation of policies to guide public communications has been a concern of most countries over decades. Boafo (1986) and UNFAO (2002)[4] outlined some of the basic tenets that should underpin a national communications policy and the objectives to be achieved. The main attributes of such model national communications plans can be abstracted as follows:

- Support of national development programs by facilitating systematic and effective use and coordination of communications and information strategies;
- Provision of a framework for the investment and integration of ICTs toward achieving national development objectives;
- Provide or outline a plan of action for enabling effective access to ICTs among all citizens in rural and urban areas;
- Help in the preservation of cultural identity as well as providing avenues for greater cultural expression and the development of artistic capabilities;
- Outline strategies for the building of human competences in ICT policy and engineering or general human resources development;
- Articulate an explicit role for indigenous knowledge systems and information channels; and
- Provide frameworks for greater involvement of citizens in national decision making processes.

Boafo (1986), also observed that any comprehensive national communication policies formulated in Africa should account for the increasing influence of international factors. These policies should seek to further national and regional partnerships among all communications-related agencies and sectors within and outside of the African continent. To be comprehensive, the 21st century national communications plan should also span the converging dimensions in the communications space: Internet policy, text, radio and television broadcasting and film, whether exhibited through traditional or new media. The transition of broadcasting from analogue to digital formats

should also be embodied in such plans, with appropriate decisions on the cut over timelines and technical standard to be adopted. These are indeed important considerations that should inform national communications policies through any era. In the discussion that follows we examine some other core issues relevant to the successful formulation and implementation of national communications policies, and development strategies in general. These are also important focal points for a global research agenda, including in countries striving for ICT-assisted economic and social development.

Restructuring and Strengthening Institutions

Successive World Information Technology Reports list the jurisdictions that are regressing in global ICT performance indices over recent years. Many of these countries have not built sufficiently robust internal institutions and operational capacity and the necessary protocols to compete globally. By institutional protocols we mean, broadly, the set of rules, norms and conventions that establish and govern standard behavior of the leading industry players in the particular societies. These norms and rules help to shape and structure incentives, and therefore can be determinants of economic and social outcomes. As it relates to national communications policy, references to institutions apply to "concrete organizations with names and addresses, as well as legal concepts such as the institution of property as conventionally defined" (Wilson, 2006, p.56).

To contextualize the role of institutions in ICT development and reform, it is pertinent to note Wilson's observation that "the information revolution is an institutional and political revolution more than a technical revolution. We open ourselves to profound analytical errors if we concentrate on the technical aspects of these epochal changes" (Wilson, 2006, p. 56). In other words, the factors that account for the inertia in some African and Caribbean communications industries following the rapid growth experienced during the earlier years of the first decade of the 21st century have less to do with technical innovations than with institutional and political constraints.

Education and training are core institutional requirements of development. However, inadequate planning and financing of education in the years between the start of communications liberalization to the present is combining with other societal factors such as the increased incidence of public corruption and cyber-crimes to constrain further ICT growth and development in many countries.

The neglect of education and training is best demonstrated through the overwhelming emphasis that is placed on supply side communications policies in the developing south. That is, the mechanistic and determinist notion that once people are given physical access to ICTs then there should be automatic transformations, leading both to the individual's intrinsic development and to national development. This was the primary mistake made by many of the diffusion theorists of the 1960s, mentioned earlier.

In large measure, the same mistake has now come to plague many developing countries that boast high levels of mobile penetration but a dearth of broadband and effective access. The result is sometimes very low levels of advanced ICT services in e-commerce, online education, and e-government services. The practical and policy limitations for the uptake of these advanced communications services are not just caused by low penetration levels and the expense of broadband access, but also by illiteracy, including the inability of large numbers of lo-income people to communicate using online narratives, educational data-bases and even SMS messaging.

Literacy and ICTs

As a practical case in point, Dunn's 2008 study disclosed that many Jamaican youth in poor inner city areas had an overwhelming preference for voice telephony because they were constrained by illiteracy in using SMS and other text-based communication utilities on their mobile phones.

> We found that an unusually high proportion of poor rural and inner city youth were opting to use voice calls instead of "texting". Further investigation indicated that illiteracy among these groups was a real impediment to use of text messaging. It would seem that while older users were put off by the manual dexterity required for texting, many younger users who would normally be expected to use this message delivery method were not able to do so as they could not read or write to the required standard for these text-based usages to become widespread. (Dunn, 2008, p. 109).

Public policy will need to address basic literacy and information literacies as a critical step towards information competencies and greater involvement of youth in the digital space. Achieving global competitiveness in ICT industries means building the inherent capacity of citizens to interact within the information economy at higher cognitive levels. National communications policies in the 21st century should, therefore,

articulate feasible and practical policy pathways for achieving universal education as a development goal even in the context of tight fiscal and other economic constraints. Additional research and pro-poor government policy interventions are needed to develop and advance initiatives that make the communicative link between oral and folk expressions among large numbers of citizens and economic sectors such as agriculture, tourism, information technology and education as an avenue for both training in formal literacy skills and for economic empowerment.

Regulatory Capacity and Governance

At the height of the liberalization movement that ushered in mobile telephony among all strata of society, there were beliefs among many policy analysts and communication researchers that mobile telephony could help developing countries to leap frog particular stages of growth and development. While there have been successes in terms of increased mobile telephony access for all social groupings and new innovations such as the Grameen Banking model in East Asia, to a large extent, the form of societal transformation and human development that was envisioned remains elusive. Effective regulation has emerged as being integral to moving countries into this further stage of techno-economic transition.

Progressing ICT Reform

Regulatory and legal reform of the ICT industry remains a pressing need in many countries including several in the Caribbean and Africa. In these countries existing telecommunications laws, as well as legislation on cyber crime and electronic transactions where they exist, are generally outdated, and the policy environments are particularly fragmented. According to the World Bank (2008) only about 35 per cent of incumbent telecommunication providers in Africa have been released from state ownership at the start of the second decade of the 21st century, and management remains a problem in these organizations. The Bank notes that:

> Governance remains the key challenge to ICT policy and regulation in the region. Institutional arrangements in many countries continue to make regulators in African countries highly dependent on governments for their operations and consequently they have limited legitimacy or autonomy. The market continues to be

> dominated by incumbents (fixed line now joined by mobile) and by information asymmetries between operators and regulators. There are few civil society organizations that are able to influence policy and regulation. (2008; p.14)

While regulators and institutions are fairly autonomous and independent in the Caribbean, the central challenge is the fragmentation in the regulatory space with the resulting uncertainty among investors and consequential under-investment in ICT infrastructures. The recognition of these challenges where they exist, the use of international bench marking and application of home-grown remedies are recommended. Strategic solutions must be reflected in national communications policies and in the research agenda in the affected regions.

Culture, communications and trade

For many developing countries, culture, as emanations of the creative imagination, forms an important part of national life. It is also a key marketable commodity that can accord competitive advantage in global trade. These prospects have been identified by the World Trade Organization (WTO). As the economic value of cultural products and services increase, developed countries and some developing countries are leveraging culture as part of building their competitive advantage. Most have also acknowledged the currency of ICTs in facilitating growth in cultural industries and adding value to cultural products and services. Extracting the potential economic value is often pursued through commercial and cultural exchanges as well as through regional trade agreements (RTAs).

The WTO notes that there has been a surge in RTAs from the 1990s to the present, with some 462 RTAs being notified to the WTO up to February 2010[5]. With the exception of the General System of Trade Preferences (GSTP) among developing countries, there are approximately 17 extra-regional RTAs involving individual African countries and the European Union. Within Africa, there are seven RTAs, five of which are customs unions and the other two are free trade areas. The Caribbean similarly has its main RTAs with the European Union, and one intra-regional customs union, the Caribbean Community (CARICOM).

Even though countries of the Caribbean and Africa share historical similarities, this has not been transformed into any systematic form of

economic cooperation to date. Instead, trade patterns still ape the entrenched triangular trade regime established during the era of European mercantilism. As an alternative approach, developing countries stand to benefit from repositioning and realigning their cultural and ICT strategies towards greater South-South co-operation. Such cooperation could be equated with Dunn's concept of"globalization from below" (2005), or the collective empowerment of subordinate players by enhanced collaboration, communication, trade and resource sharing. "The forces and technologies deployed in a process of globalization from below are effectively a countervailing culture, created to advance people's development goals" (2005, p. 358).

There are practical benefits for pursuing more harmonized policies globally across developing regions. Regions would have a stronger negotiating voice in international trade. In this way, the kind of balkanization or "divide and conquer" approach that was evident in the European Union and the African, Caribbean and Pacific (ACP) trade agreements could be mitigated in future trade negotiations, since each region would speak with a voice unified with others or at least all would speak from some common ground. In addition, benefits could possibly include new markets for some countries as well an increased contribution of the African diaspora to the continent's struggle for growth and sustainable development. This approach would advance trade generally and the culture and ICT sectors specifically.

Externalities: ICTs and the environment

While ICTs have been identified throughout this article and elsewhere as having possible beneficial impacts on sustainable social development and individual empowerment, these goals cannot be pursued without an appreciation of the potentially negative impacts of ICTs on the natural environment. The accumulation of e-waste such as old mobile phones, computers, scanners and printers, as well as the increasing demand for energy to feed power-hungry data centers and household ICTs constitute the main negative environmental effects of these technologies. Notwithstanding these negative contributions to environmental degradation, ICTs also hold significant promise for helping industries and individuals globally to mitigate the ill effects and reduce the size of the industry's carbon footprints. Applications such as telework, intelligent transportation systems and dematerialization are

just a few of the possibly helpful approaches. The environmental impact must constitute an indispensable part of the national strategy as societies move forward into another phase of the global information economy.

Conclusions

What we now glibly refer to as the global information and communications technology (ICT) sector is the result of a continuing process of change, bestowing increasingly new opportunities but also new challenges. The outward radiation of these technologies to increasing circles of access is a necessary but not a sufficient basis for developmental claims about ICTs. Forward-looking strategies must privilege not just access but effective access, including the know-how to manage and effectively use the technologies. An important impediment to this effective access is the challenge of literacy, among both the young and the older people, in developing countries. However, as we have seen, the technologies themselves can be deployed to enhance deficient educational systems that have created citizens who are dysfunctional in a digital age. Instructors have to be trained in both technology use and new approaches to pedagogy.

Many jurisdictions have adopted international mandates to liberalize their telecommunications and ICT industries, creating new investment opportunities and introducing competition into formerly monopoly-driven or government-controlled markets. However, competition must not be seen as an end in itself, but as a means to create human development and improve people's standard of living. Important as it is, more mobile talk-time or Internet access does not automatically translate into real development outcomes. These tools must be re-purposed to better address education, information literacy, enhanced cultural expression and improved economic conditions. And conditions such as improved literacy will not happen unless there are significatant changes in the power structure in Africa and a development process which responds to the initiatives of the grass-roots population.

These are the same values we recommend for inclusion in national strategic development plans. The extent of ICTs' contribution to societal change and development will depend on the degree to which communication strategies, facilities and processes are systematically and consciously integrated into overall national development plans. By way of process, the multi-stakeholder consultative approaches modeled

by global forums such as the WSIS and its offspring the IGF should find expression in regional and local ICT policy-making.

In these processes, the social impact and economic externalities of the industry cannot be left unaddressed. Environmental implications should become a more significant component of planning and licensing for the industry. The harmful detritus of a burgeoning carbon-consuming ICT industry must be mitigated before it becomes a millstone around the necks of future generations. Public policies for disposal and waste management as well as corporate and civic responsibilities should be invoked through legislation, regulation, incentives and public education. Applied research and product innovation are essential tools of renewal and re-invention.

For Africa and the Caribbean, as for all other global regions, the agenda of action is beginning to be more clearly defined. Whether through existing research, international co-operation or already defined national policy frameworks, the recurrent priorities include improving education, promoting effective technology access, driving information literacy, organizing switchover from analogue to digital broadcasting systems, empowering electronic commerce, combating cyber crimes, developing M-services for banking and trade, creating opportunities for e-learning and e-health as well as managing the effective disposal of digital debris.

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