LINK PUBLIC POLICY RESEARCH PAPER No. 1

Creating an ICT Public Policy Knowledge Base for African Decision-Makers

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"People lack many things: jobs, shelter, food, health care and drinkable water. Today, being cut off from basic telecommunications services is a hardship almost as acute as these other deprivations and may indeed reduce the chances of finding remedies for them."
                    -- United Nations Secretary General Kofi Annan (BBC, 1999)

ABBREVIATIONS

AMTS	Advanced Manufacturing and Technology Strategy
CPSI	Centre for Public Service Innovation
DoC	Department of Communications
DPSA	Department of Public Service and Administration
DST	Department of Science and Technology
ECT Act	Electronic Communications and Transactions Act
ICASA	Independent Communications Authority of South Africa
PNC-ISAD	Presidential National Commission on the Information Society and Development
SKA	Square Kilometre Array radio telescope
the DTI	Department of Trade and Industry
UN ICT Task Force	United Nations Information and Communications Technologies Task Force

1. Introduction: The Case for ICT-Focussed Public Interest Policy Research

Driven by the two associated phenomena of digitalisation and liberalisation, telecommunications over the last two decades has been transformed from a relatively neglected national infrastructure issue into an internationally-governed "network of networks" that underpins the global economy. Once the sole concern of a single ministry or a seldom-efficient state monopoly operator, telecommunications and information technologies have not only become a major growth sector within modern economies but also provide the essential backbone for other critical economic services such as financial and banking services, supply chain management in the manufacturing sector, tourism, and government services.

Recognition of the revolutionary role new information technologies can play in the economy and society has resulted in a wave of reform in the way telecommunications is provided and regulated. Starting in the 1980s and still underway across the globe, the protection of national markets has been rolled back, allowing for the emergence of transnational operators and markets. New multilateral agencies have emerged to deal with the arising issues of transnational governance and these agencies have catalysed the reform of traditional international and national agencies responsible for telecommunications.

Countries wishing to exploit the opportunities presented by these developments have focussed on expanding their information and communication sectors and exploiting the efficiencies associated with international information and communication networks -- in order to integrate their economies into the global economy.[1] Simultaneously, these countries have evolved policy and regulatory regimes that have fostered such expansion and integration.

For developing countries, the growth of their economies and interconnection with the global economy cannot be achieved without sound public policies that significantly improve access to affordable – and, increasingly, enhanced -- communications capability for consumers, business and government. Integrated public policies are required to ensure investment in infrastructure expansion; to foster regulation that counters market failure; and to promote the creation of the skills and know-how that will enable citizens to participate effectively in the economy and society.

The design of such integrated public policies requires a multi-disciplinary approach to policy drafting, which is inclusive of, *inter alia,* an understanding of the nature, capabilities and life-cycles of information and communications technologies (ICTs); an appreciation of the current and potential institutional and sectoral (government, business or non-governmental) impact of the technologies; an analysis of the needs, interests and requirements of users and developers; an understanding of the market structures of the telecommunications industry and of those economic sectors in which telecoms and ICT have significant impact; a perspective on the interconnectedness and competitiveness of a local economy within the global economy; and an eye on the future possibilities for ICT as a cross-cutting infrastructure that can support social communication and revenue generation in a multiplicity of environments. This disciplinary range includes an engineering and technology focus; a business development and leadership focus; an economics focus; and a public policy focus.

However, drafting good strategies is only a beginning. Failure to implement such strategies effectively results not only in countries remaining on the wrong side of the global "digital divide," but also, in some cases, in the negative policy outcome of creating or exacerbating a digital divide *within* countries -- due to the uneven nature of diffusion of ICTs between urban

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[1] While there are obvious economic benefits to participation via ICTs in the global economy, see Manuel Castells (1999: Vol 1:89) for consideration of vulnerability to volatile financial flows and patterns of technological dependency.

and rural areas, amongst different segments of business and industry, or amongst different segments of the population.

If ICTs are a new source of economic growth, there is a danger that ICTs can become a further factor in the widening of income differentials between countries. Digital divides often mirror, and reinforce, the existing inequities between developing and developed countries. The rapid pace of change that is characteristic of the ICT sector is also cause for concern. There is a concern that fast-evolving ICTs may often deepen technological dependency and economic underdevelopment in poor nations, with countries that are not able to take up the challenges posed by global technological/economic trends increasingly being marginalised from the global "network economy," and thus being severely limited in their ability to deliver on developmental objectives.

In a book produced by the UN ICT Task Force in 2003, *Information and Communication Technologies for African Development*, Okpaku and others argue consistently that the success of the Task Force requires strategies that will address the challenges of affordable ICT infrastructure provision to the approximately 816 million people in Africa where, according to 2001 figures, only "1 in 4 have a radio; 1 in 13 have a TV; 1 in 35 have a mobile phone; 1 in 40 have a fixed line; 1 in 130 have a PC; 1 in 160 use the Internet" (Jensen, 2003: 55-56). With such low levels of access to networks – and, by extension, to information and markets -- capacity for local and national economic development remains very limited in many parts of Africa. Okpaku concludes that "The success of this global partnership for Africa's development is only possible, however, if Africans take charge of masterminding the strategies for such a massive effort, and direct the process. " Okpaku continues by stating that "The African people themselves are ready to play their part. Some have already been doing so and continue to do so … Pooling these efforts in some loose comprehensive set of strategies and initiatives, which reduce the waste of precious resources without stunting creative scope, freedom and ingenuity, is the challenge" (Okpaku, 2003: 286-287).

It seems clear, then, that effective design of strategy and policy – in ICT and in other fields – needs to be supported by effective public policy research.

2. The Complexities of Global Governance

The transformation of telecommunications from a prerogative of individual nation states to a strategic global resource means that policy can no longer be formulated at the national level alone. Institutions such as the World Trade Organisation (WTO), the reforming International Telecommunication Union (ITU), the World Intellectual Property Organisation (WIPO) and the Internet Corporation for Assigned Names and Numbers (ICANN) are determining, with varying degrees of formality, the rules for global participation.[2] While the biases and agendas of these various organisations have been identified and the factors contributing to the lack of effectual participation by developing countries acknowledged, the fact remains that, with the globalisation of communications, such global entities will increasingly determine the frameworks for effective participation (Cohen and Gillwald, Forthcoming 2004)

. For this reason alone, it has become increasingly important to invest resources in influencing these agendas and their outcomes in ways that represent the interests of developing countries and emerging economies.

Yet most of the understanding of the so-called "information age" comes from theory developed, and experiences gained, in the developed world. In relative terms, Africa produces little in the way of independent, primary research feeding into the multilateral ICT

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[2] For an examination of the tensions between South Africa's domestic policy reforms and international trade aspirations see Cohen, T (2001) 'Domestic Policy and South Africa's Commitments under the WTO's Basic Telecommunications Agreement: Explaining Apparent Inertia,' *Journal of International Economic Law.*

policy and regulatory processes. Unlike in other parts of the world where there is a strong commitment to participatory policy formulation, there are a very limited number of independent agencies and initiatives in Africa contributing to these processes in the broader public interest and on the basis of rigorous applied research. While there is a fair degree of activity in building ICT projects in Africa, there is little in-depth knowledge generation in relation to issues relating to ICT policy that are specifically relevant to the African context. There are major areas of the economy and society in which the impact and potential of ICTs have not been studied at all in the African context -- such as the impact of market structures and regulation on affordable access by small businesses and the poor, or the impact of mobile telephony on household expenditure. These research gaps leave African governments in a weak position in their efforts to develop policy comprehensively and to implement plans effectively (Gillwald, 2003a).

A critical component of building credible developing-country participation in multilateral fora is the development of transparent and accountable regulatory frameworks rooted in informed participatory policy processes. These participatory processes should not be pursued as simply a sop to international agencies – whose own systems of institutional governance are, for that matter, often opaque and undemocratic. In order to participate effectively in matters of global governance, countries can no longer depend on one or two government officials, who often have a mandate to protect the incumbent fixed-line operator. To be effective in global governance fora, countries need to deploy all the available human capital within the public and private sectors, from a range of policy environments (e.g., communications, trade and industry, science and technology, health and education), and from civil society, just as they need to deploy the best ICT skills available to the country to be competitive in the global economy.

Those countries that currently are able to lobby and argue their country's positions most effectively in international negotiations rely on rigorous data collection, analysis -- and competing research from domestic academic institutions and policy institutes -- to inform their positions.

3. Critiquing Internationally-Driven Development & Growth Strategies

Strengthening institutional capacity for research, analysis and debate is an indispensable element of the construction of African "knowledge societies." In the absence of innovative, domestically-developed, organic policies, international models become the default development strategies for developing countries, often with negative consequences for local economic and social development. The conventional wisdom that developing countries should open up their markets unequivocally to the benefits of international competition provides a case in point. William Melody has pointed out that "As international economic integration expands, the impact of domestic public policies in all nations becomes more complex and their objectives more difficult to achieve" (Melody, 1988: 4).The opening of domestic markets to international investment across the globe in order to achieve national network extension and upgrading has -- while creating competition between some of the major international telecommunications operators -- generated few opportunities for new entrants, and has ultimately resulted in increased concentration of ownership by dominant global players. This trend has raised a range of governance issues for many developing-country governments. These governments, recognising that national sovereign approaches to international engagement have been undermined by international technological networks, have sometimes given in entirely to the global pressures to open their markets -- in the absence of a thorough understanding of the impact of these developments on their markets, or of an alternative framework through which to address these issues. As a result, many developing countries find themselves in a vulnerable and often defensive position.

Melody states that far from improved information flows creating more efficient global markets, "the new competition that has developed from the globalisation of markets is intensified oligopolistic rivalry among transnational corporations," which is aimed at securing entrenched dominant, long-term positions in foreign markets. Melody argues that developed-country governments have adopted national policies and engaged in international practices and lobbying that support their transnational corporations, with the result that "…the oligopolistic rivalry among such corporations involves a strong element of nationalism and direct government involvement on both the demand and supply side of the market exchange" (Melody, 1988: 6).

Critical assessment and analysis of the outcomes of these transnational and national policies and practices, often defended as being "best practice," or as being in the "national interest," or, even more misleadingly, as being in the "public interest," are essential to identifying policy failures and the points for corrective action.

Furthermore, the failure of processes such as the 2003 Geneva Phase of the UN World Summit on the Information Society (WSIS) to reach agreement on any matters of substance, either in relation to practical measures and policies for closing the digital divide, or in relation to financing ICT infrastructure development in Africa and the developing world, reaffirms, among other things, the need for African institutions to both strengthen their national policy regimes and simultaneously prepare inputs for the WSIS Tunis Phase in November 2005.

4. Developing Domestic African Policies & Projects

There is a clear need in the developing world for critical interrogation of the outcomes of failed macro policies and projects – policies and projects that have facilitated only limited deployment of ICTs. ICT projects in the developing world have tended to be small-scale initiatives or "pilots" that are not scalable or are not sustainable without donor intervention (whether to source infrastructure or to cover usage costs). "Connectivity" projects made possible by policy and legislative exemptions that enable low-cost connectivity -- or the exclusive utilisation of particular technologies by individual institutions or development projects -- do not produce the economies of scale that can be generated by wider deployment in a more enabling policy environment. While there is much that is positive in measures to foster connectivity and access to technologies, platforms and content for projects or institutions that would otherwise not have this connectivity, such initiatives are ultimately dealing with symptoms rather than causes.

Only where ICT development measures are instituted within the context of broader efforts – including lifting of policy restrictions -- to deal holistically with the fundamental determinants of user/consumer circumstances are they likely to produce positive developmental outcomes in the longer term. National and multilateral projects have tended to be preoccupied with large-scale infrastructure expansion, with little consideration for what will happen at the end of the line – i.e., how the user or consumer will access value (whether data, voice or video) -- and have generally not been integrated into broader societal developmental polices on e-commerce, e-government or e-access. ICT policy should, ideally, incorporate and attempt to balance attention to the needs of the full range of end-users, in order to create enabling environments for both economic growth and social development.

There is evidence in Africa of a growing interest in effective policy design to harness the potential of ICT to accelerate broad-based growth and sustainable development, and to reduce poverty. For instance, there is much debate over what the dominant ICT strategy for Africa should be in order to confront the challenges and opportunities of globalisation and harness the potential benefits of the "knowledge economy" as illustrated in continent-wide initiatives such as the New Partnership for Africa's Development (NEPAD), launched by

African leaders in 2001. NEPAD highlights ICT as one of the key drivers of continental development, as do the African Telecommunication Union (ATU), the African Connection and various programmes of the UN Economic Commission for Africa (ECA), including the ECA's National Information and Communications Infrastructure (NICI) project.

Despite this apparent commitment to utilising ICT for development in Africa, the vast majority of African countries are still not as well-equipped as they need to be to optimise the potential of ICT. Many nations lack the critical mass of financial and human capital, and the necessary institutions to generate the research, data and analysis needed to build national capacity-building policies.

5. Evolution of the South African Policy & Regulatory Environment

In South Africa, ICT policy formulation in the period 1994-2004 has advanced sometimes slowly, sometimes more aggressively, and not always appropriately, towards creating the foundations for a "network knowledge economy."

In the telecommunications sector, the Green Paper on Telecommunications developed at a colloquium in 1995 -- and the subsequent Telecommunications Act of 1996 -- were framed in the context of protecting the incumbent operator (Telkom) for a period of five to six years while at the same time promoting universal service to telecommunications for the majority of South Africa's population. The Telecommunications Amendment Act of 2001 aimed to achieve the next phase of "managed liberalisation," providing for the introduction of a second public-switched network operator (the SNO), potentially further mobile licences, an international third-party data gateway licence for the national broadcast signal carrier (Sentech) and a multimedia licence (also for Sentech). The Act also introduced the concept of under-serviced area licences (USALs) in areas with less than 5% teledensity. This Amendment Act sought to tightly manage the liberalisation process and market developments within a global environment characterised by rapid advances in technologies and dramatic market shifts – a global environment in which it was becoming increasingly difficulty to technically enforce -- or intellectually defend – a strategy of restricting competition in order to attract investment and increase affordable access.

South Africa's draft Convergence Bill of late 2003 also sought to address some of the policy shortfalls that had emerged in the rapidly changing global environment. However, the draft legislation has engendered much confusion, due to the absence of a guiding policy. While the urgency of creating an enabling environment is understood, it may well be in the longer-term interests of the country to expend more time and resources and develop omnibus legislation that incorporates the various pieces of broadcasting and telecommunications legislation into a single, integrated statute.

The Electronic Communications and Transactions (ECT) Act of 2002 is another of the actions taken by the South African government to address the changing nature of telecommunications. The Act seeks to account for the existence of a "network of networks" and to set a course for an economy and society increasingly facilitated by electronic means. It requires that the Minister of Communications develop a three-year national e-strategy for South Africa. The national e-strategy must propose, *inter alia* (1) an electronic transactions strategy that includes national, regional (SADC), continental and international components; (2) measures to achieve universal access to electronic communications and transactions; (3) measures to promote human resource development within an e-economy; (4) programmes to develop electronic communications and transactions capacity for SMMEs; and (5) measures required to promote South Africa as a "preferred provider and user of electronic transactions in the international market" (RSA 2002a, 5:4:c: i-viii).

Implicit in these requirements for the national e-strategy is the need for a policy environment that will facilitate the growth of a new economic paradigm unfettered by high-cost telecommunications access or a lack of bandwidth and infrastructure, and supported by convergence policy that recognises technological, market, policy and regulatory convergence across broadcasting, telecommunications and value-added network services (VANS), including Internet. The drafters of the ECT Act were acting on quite a different set of assumptions from those in the period 1995–2000. Telecommunications and ICT are now seen as fundamental resources for development in every possible sphere of economic and social activity, and the national e-strategy therefore has to align itself with all of the key drivers of the national and global economy.

Various government strategies and initiatives require an enabling ICT policy environment. Seeking to give citizens access to government services "any time, any place," government has embarked on an E-Government Strategy, establishing government service centres with electronic access in a number of areas with low teledensities and low income levels.

In the economic policy sphere, the quest for 4-6 % growth rates, the Department of Trade and Industry's *Vision 2014* calls for a "an adaptive economy characterized by growth, employment and equity, built on the full potential of all persons, communities and geographic areas" that requires, *inter alia*, "An extensive ICT and logistics system capable of speed and flexibility" (DTI, 2004b). South Africa's National Research and Development Strategy of 2002 and the Integrated Manufacturing Strategy of 2004 also both envisage an economy in which ICTs in particular -- and science, technology and innovation in general -- play a pivotal role.

South Africa is a major bidder for the Square Kilometre Array radio telescope, a highly sought-after international project that aims to further science and innovation in the field of radio astronomy. The economic multiplier effects from this project are potentially numerous. The project would establish South/Southern Africa as a destination for major space science programmes and contributions to global knowledge and innovation, and would attracting international expertise and investment in radio astronomy to the sub-continent. However, given the high data transfer speeds required to download and transport images across the world, South Africa's bid may be undermined by a scenario in which "information transport costs may dominate processing costs" (Hall, 2004). A more competitive telecommunications infrastructure sector with more competitive pricing models would increase the chances of successful bids for projects such as the SKA, as well as generally reducing the costs of e-commerce and e-government platforms.

It is clear that the national e-strategy, due to be completed by the end of 2004, must respond to the objectives and projects developed in the various economic sectors, as outlined in the above discussion. In particular, the strategy is required to advise government on "existing government initiatives directly or indirectly relevant to or impacting on the national e-strategy" and "the role expected to be performed by the private sector in the implementation of the national e-strategy and how government can solicit the participation of the private sector to perform such role" (RSA 2002a: 5:4:c: v-vi).

A series of policy workshops aimed at forging an open policy debate on the "network knowledge economy" could bring great value to facilitating the next challenge – the implementation of the e-strategy. Such workshops would need participation from the major policy departments – Communications, Trade and Industry, Science and Technology, Health, Education and Public Service and Administration, as well as the regulators ICASA and the Competition Commission. Involvement would also be needed from the Parliamentary Portfolio Committee on Communications, the Universal Service Agency, the State Information Technology Agency (SITA), arivia.kom, and from the private sector, trade unions, development agencies and policy research institutes

Such a platform, a South African E-Economy Forum, could form a place for negotiating the many and complex implementation issues and could address the need expressed in the ECT Act to solicit the participation of the private sector. While the Competition Commission and the Parliamentary Portfolio Committee on Communications would be observers rather than participants at such a forum (given their oversight role), they would nevertheless be well-informed on the policy debates and societal realities when contemplating any matters placed before them.

While the South African social and economic policy environment has undergone significant development in the years since 1994 (as illustrated above), there is still misalignment across the different strands of policy activity, notably with reference to telecommunications and ICT policy. Policy institutes such as LINK, TIPS and others can provide a policy research resource to inform these policy debates and forums through regular production of policy research papers such those in this series.

6. African Perspectives on ICT Policy & Regulation

The e-Africa Commission is responsible for formulating a broad NEPAD ICT strategy and comprehensive action plan, including the policy, legal and regulatory environment needed for "accelerating the development of African inter-country, intra-country and global connectivity, and promoting conditions for Africa to be an equal and active participant in the Global Information Society" (e-Africa Commission, 2004). The commission is responsible for setting the strategy and recommending the policy, legal, regulatory and commercial environment conducive to implementation of the strategy.

In their undertaking to document and analyse "IT Opportunities and Higher Education in Africa," Mandil, Gordon and others raise critical questions about policy-making in African countries (Beebe *et al.*, 2003). Mandil, writing on eHealth in Africa, states that "The tariffs and costs of the telecommunications services are also an important consideration and, in much of Africa, are a key impediment to eHealth" (Beebe *et al.,* 2003: 188). Gordon, commenting on government intervention and ICT policies states that "There is a consensus, among those who write about the use of ICTs in developing countries, that strategic use of technologies has to be guided by a policy and strategic framework" (Beebe *et al.,* 2003:121). In support of this statement, Gordon cites, among others, the work of Crede and Mansell (1998), who write about the UN Science and Technology for Development Working Group view that developing countries may misdirect their limited financial and other resources by investing in new technologies in the absence of careful planning.

A network of African researchers, such as the Research ICT Africa! network (RIA!, 2004) can contribute to the policy formulation resource for the e-Africa Commission and for policy initiatives in individual African countries. The LINK Centre and the RIA! network are also responsive to the training and research needs of the regional regulatory associations that have emerged to support each other in the development of appropriate African policy frameworks. The Telecommunications Regulators Association of Southern Africa (TRASA) early on sought to develop models of ICT policy and regulation that would align the previously uneven policy development in the region. This initiative was followed by those of the Association of Regulators of Information and Communication of East Africa (ARICEA) and the West African Telecommunications Regulators Association (WATRA).

One of the major challenges to the development of appropriate policy by these regional bodies is the lack of basic data and analysis to assess the state of play and the impact of reform to date, and on which to base visionary yet realistic policy. The collection of data and presentation in a variety of formats including a public policy research series can also provide

the local content for policy training programmes at African universities, such as the NetTel@Africa programme.

7. Conclusion

The central public policy challenge facing African decision-makers responsible for information and communication technology (ICT) remains ensuring affordable access to services. This has to be achieved, however, while at the same time creating the conditions for the development of the information infrastructure -- seamless integration of networks, services and content -- needed to operate a post-modern economy and participate effectively in global developments.

On top of the telecommunications research, policy and regulatory challenges posed by the seamless, converged reality, an entirely new set of policies and regulatory skills are increasingly required -- in the areas of privacy, surveillance and intellectual property. Developing countries may tend to believe that they have more fundamental concerns and cannot be deploying resources towards what may now appear esoteric policy debates, powerful developed-country interests are currently busy entrenching the terms of engagement for the next generation communication networks – which will yet again leave developing countries marginalised, unless the necessary policy capacity is developed to effectively defend developing-country interests.

While there may indeed be tensions between the objectives of poverty reduction and access to basic services on the one hand and fostering the conditions for economic growth on the other hand, at various points in the development of an "ICT economy" or "information society", these two goals should not be viewed as contradictory. Without an integrated strategy to achieve both developmental and growth objectives, neither will be achieved. The opportunity costs of not developing appropriate policy and regulatory frameworks are high and are globally evidenced in what has been termed the "digital divide."

However, ICTs are not a panacea for all our needs and can have a range of net effects. It is important, therefore, to evaluate the factors that will lead towards both ensuring access to ICTs and maximising the positive impact for development of the technologies put in place. Ongoing African research based on a sound body of data, information and analysis is needed to assess the issues and inform African decision-making in relation to policies, regulation and investment. The LINK Public Policy Research Paper and Seminar Series arises from the growing demand for the information and analysis required for appropriate policy formulation and effective regulation of telecommunications regime reform.

The objective of this public policy series is to contribute to the development of a rigorous and relevant African ICT policy research base, which policy and regulatory decision-makers can use to make informed decisions, with the ultimate goal of contributing to the widespread diffusion of ICTs in a manner that reduces the digital divide and moves towards the continental goals of achieving information societies and highly productive networked economies. Specifically, the series seeks to provide African researchers, governments, regulators, operators, multilateral institutions, development agencies, community organisations and trade unions with the information and analysis required to develop innovative and appropriate policies, effective implementation. and successful network operations.

The LINK Centre is also working with its partners in the Research ICT Africa! network in order both to expand policy capacity -- by increasing the knowledge of actors and developing new capacity for research and analysis -- and to broaden the policy-making horizon, by introducing new concepts and stimulating dialogue among decision-makers. By building an

enabling environment for influencing policy, the network hopes to ultimately have direct impacts on ICT policy regimes in Africa – through provision of a base of independent, objective, public interest-oriented research.

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