

# Financing ICTs for Development with Focus on Poverty

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## 1. Introduction

This paper looks at the issue of financing information and communication technologies (ICTs)<sup>1</sup> in support of development in sub-Saharan Africa from two perspectives: 1) financing mechanisms aimed at supporting the information and communication needs of the vast majority of the African poor (for poverty eradication); and 2) mechanisms aimed at facilitating the exploitation of ICTs to increase national development and economic growth rates in the region. The paper argues that ICT financing should primarily focus on the needs, aspirations, capacities and perspectives of the vast majority of poor people in Africa rather than on the dominant practice where ICT needs are articulated by ICT professionals with predetermined end products. The mainstream debate on ICT financing mechanisms should pay a great deal of attention to the needs of the poor. To define financial mechanisms and strategies, we must first address the question of “who is being served for what purpose.” Financing ICTs with a focus on poverty means scaling up ICT investment from the level of pilot projects to their integration into government services strategies, notably agriculture, education and also in support of the Millennium Development Goals (MDGs), as well as making access to information and communication affordable to the poor. Such a spirit would be important to consider the access of the poor as a public good and move the Digital Solidarity Agenda forward.

Addressing the needs of the poor is an inherently contextual exercise that requires innovative and distributed financing in the form of multiple financing instruments including resources of the poor. This cannot be achieved without understanding the nature of poverty. A systematic effort to understand the needs of the poor, their social and political contexts and the constraints placed on them due to lack of ICTs would be important so as to:

- a) make ICTs more meaningful to those who need information and knowledge the most;
- b) identify innovative approaches for making provisions for those who cannot afford access to them; and
- c) reduce wasteful expenditure in the first place by avoiding transplanting applications that worked in developed countries to the contexts of the African poor.

The focus on the poor calls for investing in traditional technologies such as phones, radios and televisions that are easily accessible to them and making the cost of mobile phones affordable. It demands facilitating unhindered access to communication and contextual information and knowledge to the poor. It calls for enhanced intermediation and promotion of access to relevant and empowering information and for supporting civil society applications that improve the conditions of the poor.

Since pillars of sustainable development such as education, good governance, social equality, health and environmental protection are essential to the empowerment of poor people, investment in supportive backhaul and local backbone infrastructure, promotion of

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<sup>1</sup> ICTs in this paper comprise a spectrum of communication and information delivery tools as well as knowledge sharing technologies ranging from radio, television, film, and the press to people, systems, institutions and infrastructure supporting them.

access to meaningful applications in these key sectors and advancement of innovation and research in ICT are as important. Just as the catalytic effects of ICTs on poverty alleviation are the result of improved earning opportunities and empowerment of the poor, the entrepreneurship that underpins the capacity to use ICTs and to tailor them to local needs is likewise important.

The potential of ICTs stems from their information processing and knowledge sharing features; and these features offer promise for empowerment of the poor. Access to the right information is important in the fight against underdevelopment and poor governance. For example, better access to information on land entitlement improves economic opportunities for the poor as does access to mobile phones. Mobile phones are being used for political participation in Africa. Internet has also become the most efficient means of communication for the transfer of remittances. An effective Internet deployment would increase earning opportunities and improve the delivery of basic services like health and education.

Yet, it is important to take note of the fact that each country and community has unique sets of ICT needs and priorities. The human resources and technical capacity needed to create applications and the content and level of policy environment varies considerably. Therefore, adequate efforts are needed to design, prioritise and implement ICT programmes and reorganise resources and needs instead of relying on predefined “one size fits all” priorities. The best option for maximizing effective use of ICTs for economic growth and poverty alleviation is to systematically and deliberately integrate them in the next round of national plans and sectoral strategies.

A very rough ballpark estimate shows that sub-Saharan African countries need US\$600-900 million beyond the resources currently available through traditional sources including foreign investment, trade, domestic resources and multilateral and bilateral funding to meet the information needs and empowerment of poor people. Such resources should be available by means of a global digital solidarity with Africa, specifically within the framework of financing public goods. While an efficient use of existing resources and the improvement of the legal and regulatory framework are important particularly to attract further donor funding and private sector investment, it is becoming increasingly apparent that new innovative sources of financing should be pursued to scale up the access of the poor to information and knowledge from where it is now to the next level.

In addition, the ability of the African poor to improve their livelihood is not only limited by lack of access to ICTs, information and relevant applications in key sectors, but also by a complex web of constraints ranging from unresolved problems of governance and injustice at the local levels to the dynamics of the global economic system<sup>2</sup>. The implication of policy and governance is far reaching. There can be no sustainable infrastructure without adequate education, food security or reliable energy sources; there can be no wide distribution of ICTs without an enabling policy and regulatory environment and there can be no enabling environment without optimal governance.<sup>3</sup>

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<sup>2</sup> Hewitt de Alcantara, Cynthia, *The Development Divide in a digital Age: an issue paper*. (<ftp://ftpserver.unicc.org/unrisd/outgoing/pp/tbs/hewitt.pdf>)

<sup>3</sup> Final Communiqué of African Development Forum: *The Challenges of globalisation and information age*. (<http://www.uneca.org/adf>)

The quality of local governance does not only determine the characteristic of the policy and regulatory environment that ideally promotes optimum private sector investment and public and private sector partnership but also affects the extent to which resources are mobilised, thus ensuring that those resources invested benefit the people who need access the most. It is more likely to find limited access to ICTs in the most corrupt institutions or countries than in those with good governance structures. Working around the governance equation would substantially increase resources for development and ICTs for development.

More widely, the participation of African countries in global governance issues, their access to trade and debt relief remain critical for their improved participation in the information society. The mainstreaming of ICTs in health and education will not make sense if the debt burden makes it virtually impossible for governments to maintain adequate programmes of public education and health in the first place. Fairer access to trade will encourage optimum use and appropriation of ICTs by those farmers whose products reach the global market.

The discussion on financing ICTs for development should, therefore, encompass a frank evaluation of the impediments associated with local governance, the global trade regime and the rules of the game, as well as broader ongoing debates on debt relief. The recent commitment to grant debt relief for a number of African countries and to increase aid and trade undertaken by G8 countries could improve opportunities for poverty alleviation in the region. A joined-up thinking in terms of mainstreaming ICTs in debt relief, aid and trade is required to maximize the benefits provided by these commitments. For example, a new school or health center that may benefit from debt relief should ideally integrate a solar panel for powering up future ICT equipment and an “e-ready” building; equally, it will be cost effective to build an inter-city fiber network along with a new road network or a water distribution system that may benefit from increased aid.

This paper will not delve into the issues of governance at the local and global levels and the implication of debt relief and aid to ICT development but rather focuses on the financing of ICTs in Africa. The text is divided into seven sections. The second part analyses the socio-economic and political context that informs about ICT financing in Africa. The third part discusses progress in financing ICTs for development with specific bias towards interactive technologies followed by a summary of lessons and issues that have emerged from experiences so far. The fifth section outlines areas for further financing requirements in support of poverty eradication and economic growth in Africa and provides some strategies as to how to estimate resources needed. The last section focuses on mechanisms for meeting the financial shortfall beyond those available through domestic public sources, development agencies and private financing.

## 2. The development context of ICT financing in Sub-Saharan Africa

Sub-Saharan Africa comprises thirty-four of the fifty least developed countries and fourteen of the thirty-two landlocked countries<sup>4</sup> that are confronted with the most daunting economic, social and political challenges – high incidence of poverty, wider income inequality, internal civil strife and external conflicts, scourge of diseases including that of HIV/AIDS, high costs of basic infrastructure (including telecommunications); limited human and technological resources; dependence on a limited export market; debt burden; low productivity; acute vulnerability to natural and environmental disasters, and more importantly over-dependence on foreign aid. Over 40% of the population in Africa earns less than US\$1 a day – below the poverty line drawn by the World Bank<sup>5</sup>.

In effect, the incidence of poverty is increasing in some countries rather than abating and the income gap is widening. For example the incidence of both relative and extreme poverty in Djibouti rose dramatically between 1996 and 2002 from 45 to 74% and from 9.6 to 42%, respectively<sup>6</sup>. So did the marginalization of small farmers, women and rural youth. Economic growth is declining in a number of countries and some countries are registering negative growth rates. A report by the Economic Commission for Africa in 2004 shows that seven countries including Zimbabwe (-11.2%), Ethiopia (-3.8%), Seychelles (-2.8%), Côte d'Ivoire (-2.3%), Guinea-Bissau (-1.8%), Central African Republic (-0.7%) and Burundi (-0.3%) have registered negative growth rates in 2003<sup>7</sup>. Notwithstanding the differences in these figures, progress made in most African countries shows that efforts to improve the conditions of the vast majority of people need to be redoubled and should be innovative, if internationally agreed targets are to be achieved.

The majority of African people live in rural areas and are dependent on fragmented subsistence farming, livestock and agriculture, and informal trading. This subsistence economy is subjected to various external shocks such as variable rainfall, pests and diseases, and price fluctuations. The rural poor lack access to inputs, advice and markets, and face high information and transaction costs due to weak infrastructure such as roads and telecommunication, as well as deficient institutions and layers of intermediaries in getting to the market. Poor people are also concerned about educating their children, and maintaining their well-being and access to money and skills in order to improve their livelihoods. If ICTs are to make a difference they will have to address these day-to-day challenges of the poor.

Armed conflicts are one of the most important determinants of poverty in Africa. Conflicts make the African region rather unique compared to other regions. Sub-Saharan Africa (SSA) stands out from other developing regions in terms of the sheer number of conflicts, their persistence and their massive impact on the lives and livelihoods of civilians as well as

<sup>4</sup> *Least Developing Countries Resources* (<http://www.un.org/issues/m-ldc.asp>)

<sup>5</sup> See, [http://millenniumindicators.un.org/unsd/mispa/mi\\_worldregn.aspx](http://millenniumindicators.un.org/unsd/mispa/mi_worldregn.aspx).

<sup>6</sup> *Djibouti ICT Action Plan*, 2003, (<http://www.mccpt.dj/Documents/Action%20plan-djibouti.pdf>)

<sup>7</sup> Economic Commission for Africa (ECA), 2004, *Economic Report on Africa, 2004*. (<http://www.uneca.org/era2004>)

combatants. Africa accounted for 53 of armed conflicts around the world in the 20<sup>th</sup> century. The region hosts some of the major hot spots ranging from the conflict in Darfour in Sudan to the instability problems in Burundi, Cote d'Ivoire and Democratic Republic of Congo. The cost of conflicts has been immense – conflicts do not only destroy the existing precarious infrastructure but also divert the precious resources that could have been spent on improving the livelihoods of the majority of people. Countries emerging from conflicts need to receive considerable support for building the ICT infrastructure and empowering traumatized people to regain confidence and shape their livelihoods. Moreover, the combined forces of major killer diseases such as HIV/AIDS, malaria and tuberculosis are taking tolls on African development. Sub-Saharan Africa has just over 10 per cent of the world's population, but is home to two-thirds of all people living with HIV<sup>8</sup>. The HIV/AIDS pandemic that killed over 2 million people in 2003 and infected well above 25 million so far has exacerbated the economic situation reversing the gains made in the 1980s and 1990s. The steady increase in the number of people living with HIV and the increasing impact of malaria and tuberculosis in sub-Saharan Africa show that far more concerted efforts are needed to intensify information, education and communication by using more innovative approaches that would encourage better information seeking and influence actions by individuals, families, communities and governments.

Although political inclusiveness and accountability are improving over the years, the quality of public sector management in Africa remains very weak.<sup>9</sup> Consistent problems of political instability and poor governance, high levels of corruption, poor service delivery, and violation of human rights still plague a significant number of African countries. The extent to which governments encourage high standard service delivery and the involvement of citizens in political and economic development, curb corruption, advance competition, promote diversity and ethics within the media, foster transparency and honour human rights will determine the space allocated to the development of the information society. It is becoming increasingly apparent that bridging the access and information gaps will be difficult without well-established governance.

Apart from the domestic problems of diseases, poor governance and insecurity, Africa faces significant challenges imposed by the global financial and trade regimes. Part of the forces that control Africa's destiny are beyond its sphere of influence. Despite the support from donor agencies, multilateral, regional and sub-regional cooperation arrangements that far exceed other regions, the gains in local economic development and the participation in global trade and financial regimes have been slow. The Structural Adjustment Programmes that were imposed by International Financial Institutions have not led to the desired results for fostering growth and improving Africa's access to foreign markets. In fact they had major social and human costs. Furthermore, foreign direct investment and per capita income have declined, debt has increased and debt services have mounted. The financial flow that comes either from concessional loans or grants has continued to be offset by the terms-of-trade losses due to the extreme dependency of countries on a narrow range of commodities like coffee, copper and cacao. Recent announcements by G8 countries to cut debts of a substantial number of poor African countries and increase aid have opened opportunities for addressing these complex issues that could have significant impact on the development of the information society in the region.

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<sup>8</sup> UNAIDS, (<http://www.unaids.org/en/geographical+area/by+region/sub-saharan+africa.asp>)

<sup>9</sup> UNECA, Synopsis of the 2005 African Governance Report. (<http://www.uneca.org/agr>)

Despite the grim realities of poor people's living conditions, there have been a significant number of ICT initiatives taken by development institutions and regional organizations. Some countries such as Ghana, Mozambique and Uganda have shown that high levels of economic growth can be achieved and sustained and that significant inroads into reducing poverty and integrating ICTs for development can be made. A number of regional and sub-regional structures have also been put in place to advance trade and information society issues. Regional and sub-regional structures or blocs including the Economic Community of West African States (ECOWAS), the Common Market for East and Southern Africa (COMESA), and the Southern African Development Community (SADC) focus on establishing single markets of economic and monetary union and on reinforcing regional integration and mutual support. These have programmes aimed at regional infrastructure development and ICT policy harmonization. The New Partnership for African Development (NEPAD) is the latest initiative, which aims at establishing international partnership with developed countries in exchange for the commitment by African governments to prevent conflicts, promote and protect democracy and human rights, restore and maintain macroeconomic stability, extend education and health services, and promote infrastructure development including ICTs.

NEPAD began with the South African President Thabo Mbeki's vision of the *African Renaissance*, an insight that if Africa were to unleash its economic and political energies, it could achieve accelerated development. Mbeki's vision converged with the concern of African Union leaders that the continent needed a rapid solution to its debt crisis. Nigerian President, Olusegun Obasanjo was mandated to work on this problem. The outcome was a more comprehensive version of the Millennium Partnership originally proposed by Thabo Mbeki, and specifically the idea of a double contract between African governments and their citizens, and between Africa and developed nations. President Abdoulaye Wade of Senegal whose Omega plan dealt with similar issues joined the group and mandated with Africa's infrastructure development. Wade has been instrumental in fashioning out the African information society agenda lately through his well-regarded Digital Solidarity Fund proposal.

NEPAD's spirit of making "contracts between the government and people, and between the developed countries and Africa" represents a useful framework for advancing and financing ICTs for African development. Information and communication technologies are high on NEPAD's agenda and its debate with international development actors. Recently there has been substantial interest in NEPAD's ICT infrastructure debate and programmes by different institutions and countries. For example, NEPAD's arm, the e-Africa Commission, has launched an African school network and broadband connectivity initiative to improve access to fiber networks.

However, Africa remains the least developed region when it comes to ICT infrastructure. There is a wide and uneven disparity along the fault lines of social inequality including socio-economic status, age, gender, geographic location and ethnicity. The penetration of different technologies varies considerably – with broadcasting technology more disseminated than PCs and the Internet. Of the approximately 841 million people in Africa in 2003, it was estimated that only:<sup>10</sup>

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<sup>10</sup> International Telecommunications Union, 2004, *African Telecommunications Indicators, 2004 and estimates*.

- 1 in 4 had a radio (210m)
- 1 in 12 had a TV (71m)
- 1 in 33 had fixed lines (25 m)
- 1 in 16 had a mobile phone (51m)
- 1 in 80 had access to a PC (10.3m)
- 1 in 70 had access to the Internet (12.3m)
- 1 in 360 had access to pay-TV (2.3 m)

As discussed in section 5, raising access to radio to at least 100%, television to 50%, phones to 20%, mobile phones to 50%, and computers and the Internet to 10% is required in order to achieve the same goals set in NEPAD's contract with the developed world, to contribute to poverty eradication and economic growth, and to support the achievement of the MDGs. This implies that efforts should be made to increase access to broadcasting technologies while making sure that all men and women including those in remote areas share the benefits of new interactive technologies widely. However, as access moves beyond radio and telephones to more strategic and interactive technologies like the Internet, costs will become higher, because resources are required to build broadband backbone infrastructure for the provision of network access, to pay for the electrical infrastructure that would make ICTs work, to develop skills to keep all technologies working, to improve usage skills, and to increase literacy in order to read the content<sup>11</sup>. On top, Internet's rate of penetration in Africa has been recently declining compared to the explosive growth in the past decade; a suggestion that improving access to more interactive technologies in rural areas remains a challenging and expensive endeavour.

All of the above points to the fact that ICT financing should be seen from the perspective of improving the condition of the poor - giving them voices and enabling their access to contextualised information. ICTs should also contribute to the promotion of good governance, curbing the challenges of diseases and ignorance, and enforcing peace and security in Africa as a whole. A weak information and communication infrastructure is one of the major bottlenecks for achieving improved conditions for the poor. Connectivity improves network externalities, but those in Africa with limited connection will have no access to the wide network of people and resources around the globe. Their access to trade opportunities and jobs is curtailed by lack of access to infrastructure and resources. Furthermore, to promote a virtuous circle, countries need to enhance complementary mechanisms such as education, research, investment framework, effective institutions, and create supportive infrastructure like electricity and markets. To this effect, a considerable innovation is required in terms of financing ICTs by using a mix of resources and complementary kits such as a conducive policy environment for improved competition, trade and private sector investment built on the lessons and experiences so far.

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<sup>11</sup> Heeks, Richard, 1999, *Information and Communication Technologies, Poverty and Development*. (<http://idpm.man.ac.uk/idpm/diwpf5.htm>)

### 3. Progress in financing ICTs in Africa

Africa has a relatively extensive experience in ICT financing and digital solidarity. Before 1990, the financing of the sector was focused on the development of telecommunications infrastructure. Funds from bilateral institutions and multilateral development banks were spent on the transfer of technology and the expansion of ICT capacities of public institutions to collect, store, process and disseminate information. Bilateral and multilateral donors provided support to national telecommunications infrastructure development plans while foundations subsidized champions to link academic and research institutions. The World Bank and the United Nations agencies including UNESCO<sup>12</sup>, UNIDO<sup>13</sup> and UNDP<sup>14</sup> and bilateral donors like USAID<sup>15</sup> were among the institutions that funded initial IT projects. Domestic contributions have historically been very small. External funding accounted for over half of the national equipment and technical assistance in Africa in the mid 1980s<sup>16</sup>.

At the end of the 1980s, UNESCO and the International Development Research Centre (IDRC) promoted an International Information System for the Development of Sciences (DEVISIS) model that was built around centralized inputs, centralized processing and decentralized distribution system, and which naturally mirrored the mainframe and mini-computer models of those days. In collaboration with the UNDP, these institutions financed the establishment of the Pan African Documentation and Information System (PADIS), which was later renamed as Pan African Development Information System, with the aim to develop an African central node with contributions from national and regional institutions that would maintain their own databases and exchange information with the central PADIS system<sup>17</sup>.

Those international donors that saw the long-term benefits of connectivity began to support the introduction of low cost networking technologies as early as 1989. By 1991, the Coopération Française through its research arm – the Office de la Recherche Scientifique et Technique Outre-Mer (ORSTOM) - initiated its Réseau Intertropical d'Ordinateurs (RIO) project, thus creating linking to Burkina Faso, Cameroon, Cote d'Ivoire, Madagascar, Mali, Niger and Senegal. RIO nodes were originally set up to bring electronic communications network among ORSTOM researchers. In 1992 it was decided to open the network to all those involved in academic, research and development work. Since then, the network grew substantially with nodes being established in 12 French-speaking African countries that served about 500 users in 60 organizations. RIO was able to connect outlying countries like Madagascar and Republic of Congo, and build one of the few resources of TCP/IP and UNIX expertise in Africa that were instrumental in extending full Internet connectivity to the rest of the region. The International Development Research Centre (IDRC) was another institution that supported ICT initiatives during these early

<sup>12</sup> United Nations Scientific and Cultural Organization (UNESCO). (<http://www.unesco.org/>)

<sup>13</sup> United Nations Industrial Development Organization (UNIDO). (<http://www.unido.org/>)

<sup>14</sup> United Nations Development Programme (UNDP). (<http://www.undp.org/>)

<sup>15</sup> United States Agency for International Development (US AID). (<http://www.usaid.gov/>)

<sup>16</sup> Odedra Straub, Mayuri, *Is Information Technology Really Transferred to Africa?* (<http://www.straub-odedra.de/Artikel/27%20-is%20information%20technology.pdf>)

<sup>17</sup> Hafkin, Nancy; Wild, Kate *ICT in Africa: The Challenge to Donors in the Global Information Society, In Rowing Upstream*. ([http://www.piac.org/rowing\\_upstream/chapter5/full\\_chapter\\_5.html](http://www.piac.org/rowing_upstream/chapter5/full_chapter_5.html))

years. After piloting five separate projects between 1989 and 1992<sup>18</sup>, IDRC funded a Capacity Building for Electronic Networking in Africa project in 1993 with the aim to connect 24 African countries.

A turning point to financing ICT development with focus on the Internet began in 1992, when UNESCO's Intergovernmental Informatics Program (IIP) through finance from the Italian government launched a Regional Informatics Network for Africa (RINAF). RINAF played a significant role in disseminating the concept of the Internet protocol by forging links with the Internet Society<sup>19</sup> that later emerged as key advocate to Internet dissemination in Africa. The project in collaboration with the Network Start Up Resource Centre (NSRC)<sup>20</sup> based in Oregon, USA, and the Internet Society was instrumental in introducing the vanguard African Internet Service Provider (ISP) managers to Internet protocol (IP) concepts as of 1993.

The UNDP was another agency that launched two ICT projects at that time. The Sustainable Development Networking Programme (SDNP)<sup>21</sup> was launched in 1992 aimed at promoting connectivity between the users and suppliers of information among those directly related to environment and sustainable development following the Rio Declaration on Environment and Development. UNDP also launched the Small Islands Developing States Network (SIDSNet)<sup>22</sup> in 1994 to examine the feasibility of establishing an electronic network for assisting the social and economic development of the small island nations such as Cape Verde, the Comoros, Mauritius, Sao Tome & Principe and the Seychelles. The work carried out through these projects provided the impetus for the entry of small private ISPs into the African market.

The holding of Africa Telematics Symposium in 1995 and the Information Society and Development Conference in South Africa in 1996 was instrumental in encouraging a number of partnership programmes between development agencies and the articulation of national programmes by countries. There was broad enthusiasm and solidarity at the time. Over 17 projects worth about US\$80 million were launched around 1996 by various donor agencies. The launching of the African Information Society Initiative (AISII) in 1996<sup>23</sup> with the core mission to assist African countries with ICT policy making was behind the design of a number of e-strategies. By 1999, there were ten countries formulating their national e-strategies. Over 35 African countries have now developed their ICT strategies, which expect to be financed by using a mix of sources.

The World Bank, the International Monetary Fund (IMF) and the International Telecommunication Union (ITU) besides funding pilot ICT projects and promoting infrastructure development programmes were instrumental in financing technical assistance for promotion of reforms in the telecommunication sector, which increased private sector

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<sup>18</sup> The five IDRC projects were: 1. NGONET - linked Non-Governmental Organizations, 2. ESANET - to connect universities in East Africa including Kenya, Uganda, Tanzania and Zimbabwe, 3. ARSONET - to connect regional standards organizations, 4. HEALTHNET - to connect medical practitioners and 5. PADISNET - for connecting national and regional information centers that were part of the Pan African Development Information System at that time

<sup>19</sup> Evaluation of RINAF project by Mike Jensen available at <http://unesdoc.unesco.org/images/0011/001137/113766eo.pdf>

<sup>20</sup> <http://www.nsrc.org>

<sup>21</sup> <http://www.sdn.org/>

<sup>22</sup> <http://www.sidsnet.org/>

<sup>23</sup> African Information Society Initiative. (<http://www.uneca.org/aisi>)

investment. The efforts were generally fruitful. The first ten private investments in incumbent monopoly were achieved between 1995 and 1997. The dramatic growth of mobile penetration was partially a result of this sector's reform initiatives.

The mid 1990s saw the consolidation of ICT financing and the expansion of financing in areas other than sector reform and infrastructure. USAID funded a regional telecommunications restructuring programme in Southern Africa and launched the Leland Initiative in 1996 with a focus on the creation of enabling policy environment, strengthening the ICT infrastructure and improving the use of the Internet for development. IDRC launched the Acacia initiative - a multi-faceted program addressing policy, technology, capacity and content issues with a strong focus on research.

These and other programs seeded much valuable activity on the policy and regulatory fronts and in many application areas. They also forged partnership, alliance and solidarity among actors. The private sector seized the opportunities of policy reform and invested in Internet services, value added networks and mobile markets. The number of private Internet service providers increased from a mere 84 ISPs<sup>24</sup> in 1996 to 450 in 2000. Private investors played a key role in expanding the African mobile landscape where the cell phone penetration bypassed fixed lines in 2001. Today, there are a few African countries where purely state-run operators have mobile operations. The top six providers (MTN, Vodacom, Celtel, Orange, Milcom, and Orasom) accounted for 33 million subscribers in 2003 or a total revenue close to US\$6.6 billion.<sup>25</sup> Similar progress was made in the participation of the private sector in the Value Added Network services market covering aspects such as paging, private voice and data connections to satellite, public telephone, mobile trunked radio and other broadband services.

The process and availability of funding from different sources in the 1990s unleashed creativity in the delivery of Internet services and universal access to the poor. The setting up of telecentres and the extension of services to rural areas were among the key concepts promoted by donor agencies since the mid 1990s. The rise and fall of telecentres also evidenced the need to bring diverse sets of skills including telecommunications and content/information together with local ownership supported by applications to development sectors.

However, the approach throughout most part of the 1990s was essentially experimental and mainly underpinned by the belief that the liberalization of the telecommunications sector and the empowerment potential of ICTs would overcome the major traditional constraints on development and allow countries to move quickly into an era of greater prosperity<sup>26</sup>. This was partly prompted by the integration of telecommunications into the rules of the World Trade Organization (WTO) and the belief that market forces would lead to better access to infrastructure. However, it soon became clear that liberalization or the imposition of free-market conditions onto the inequitable conditions in the region without redress programmes would simply reinforce the iniquitous status quo<sup>27</sup> or could lead to the transfer from public monopolies into private ones. It also showed that investment in ICTs is more than opening up the telecommunications sector or establishing telecentres. It

<sup>24</sup> Jensen, Mike, *Internet Update for ISOC Geneva's DEVSIG Meeting*. (<http://www-sul.stanford.edu/depts/ssrg/africa/24connec.html>)

<sup>25</sup> ITU, 2004, *African Telecommunications Indicators 2004*.

<sup>26</sup> Wild, Kate *Notes on ICT for development, personal communication*.

<sup>27</sup> Alison, Gillwald *Policy and Regulatory Challenges of Access and Affordability*. (<http://www.lirne.net/resources/netknowledge/gillwald.pdf>)

requires regulatory capacity, political will, a competitive environment and a creative response to market failure. While mobile access grew tremendously due to limited regulatory oversight and the “pay as you go” business model that suited everyone, particularly the vast majority of African informal sectors, fixed line connectivity stagnated. The main lesson was that the barriers to ICT development in Africa are much wider than enabling policies and regulatory environments. The decade ended without making a dent in terms of universal access to ICTs and without actually attaining full liberalization and universal access in most African countries.

The end of the decade brought the promise of greater resources for information society initiatives in developing countries from G8 countries, following commitments made at their 2000 Okinawa Summit. The G8 established a Digital Opportunities Task Force (DOT) that worked on specific recommendations by involving stakeholders from the civil society and the private sector including selected members from African countries. The beginning of the new Millennium also saw the first session of the UN Economic and Social Council (ECOSOC) devoted to exploiting the potential of ICTs for development – giving the whole gamut of information and communication for development issues a higher international profile than ever before. The ECOSOC meeting was followed by the Millennium Summit that called on the UN “to play a leadership and catalytic role in helping to bridge the digital divide and to accelerate development by harnessing the development potential of information and communication technologies (ICTs)”. The UN established a Special Task Force to provide overall leadership “to formulate strategies for ICT development and putting them at the service of development for all to forge a strategic partnership between the United Nations system, the private industry and financing trusts and foundations, donors, and countries.”

The recommendations of the G8 Digital Opportunity Task Force and those of the UN ICT Task Force were taken up by some countries like France, the United Kingdom and Canada to finance ICTs for development in Africa. Canada funded a resource center for ICT strategies and launched the connectivity Africa project in 2002 while DFID resorted to a number of interconnected catalytic initiatives to promote local negotiations among civil society, regulators, policy makers and the private sector to advance ICT dissemination in Africa<sup>28</sup>. The French Government launched a project entitled ADEN aimed at lowering Internet access costs by sharing costs, in order to raise the demand for connectivity, encourage effective use of the international bandwidth, and exchange experience between countries. The DOT Force, the UN ICT Task Force and the World Economic Forum were also instrumental in forging an international coalition of representatives from the private and public sectors and from civil society. The International Telecommunications Union (ITU), the World Bank, UNDP, and an increasing number of bilateral donors have also taken the integrated approach to formulate IT strategies in Africa and to incorporate ICTs in their country assistance programmes. New players, several of whom had not been involved in development efforts previously, came onto the scene, both individually and in partnership with others<sup>29</sup>. Multinational private sector foundations such as CISCO, Kellogg, Markle and Hewlett Packard have begun financing ICTs for development. Although not well coordinated, these corporations have programmes in ICT for development in Africa.

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<sup>28</sup> see, <http://www.catia.ws>

<sup>29</sup> Hafkin, Nancy and Wild, Kate, *ibid.*

The holding of the first African Preparatory Meeting for the Geneva phase of the World Summit for the Information Society in Bamako in 2002<sup>30</sup> was useful in expanding the debate on the role of these different actors and on how to prioritise the African ICT projects. The idea of a Digital Solidarity Fund was also seeded in Bamako. Subsequent discussions focused on digesting and merging a number of ICT priorities including those proposed by the African Information Society Initiative, the Bamako Bureau list of priorities, and those put forward by NEPAD for submission of a unified African position to the first phase of the World Summit for the Information Society. As can be seen from Table 1 ICT priorities in Africa have a tendency to replicate each other.

**TABLE 1. Overlapping Priorities on ICTs in African Development**

<p><b>NEPAD Priorities<sup>31</sup></b></p>	<ul style="list-style-type: none"> <li>○ E-policies and e-strategies including facilitation of policy and regulatory reforms</li> <li>○ Infrastructure development to achieve better teledensity</li> <li>○ Facilitate the access to broadband infrastructure (East African Submarine Cable project and Broadband Access project for African landlocked countries)</li> <li>○ Special programmes with focus on youth and women</li> <li>○ Human development (e-Schools, e-Health, e-skills)</li> <li>○ Institutional Development, Capacity Building, R&amp;D</li> <li>○ Business development and entrepreneurship</li> <li>○ Establishing new regional Internet registries</li> <li>○ Harness ICTs to meet key NEPAD goals (conflict prevention, protecting democracy, human rights, macroeconomic stability, market access, human development, building capacities of the private sector)</li> <li>○ Promote local content</li> <li>○ e-Applications (e-Commerce, e-Government, e-law, etc)</li> <li>○ Internet and Software Development</li> <li>○ Improving public e-awareness</li> </ul>
<p><b>AISI priorities and ADF<sup>99</sup><sup>32</sup></b></p>	<ul style="list-style-type: none"> <li>○ ICT infrastructure development</li> <li>○ Human resources development (African Learning Network – e-schools, varsitynet, Out of School youth network)</li> <li>○ National, local and regional information and communications infrastructure plans</li> <li>○ Applications (E-governance, e-health, e-education)</li> <li>○ Promotion of content (local languages, local content)</li> <li>○ Advocacy for ICT for development and poverty reduction</li> <li>○ ICT for regional cooperation and integration</li> <li>○ Promoting partnership</li> </ul>

<sup>30</sup> <http://www.uneca.org/aisi/Bamako2002/>

<sup>31</sup> <http://www.eafricancommission.org>

<sup>32</sup> [www.uneca.org/aisi](http://www.uneca.org/aisi)

<b>WSIS Phase I African Priorities (Bamako 2002)</b>	<ul style="list-style-type: none"> <li>○ Infrastructure and maintenance of infrastructure and equipment</li> <li>○ Human resources development and capacity building</li> <li>○ Gender issues and women empowerment in ICT uses</li> <li>○ Partnership between the public and private sectors</li> <li>○ Debt conversion (to backup ICT development)</li> <li>○ Environment protection</li> <li>○ Open and free software</li> <li>○ National information and communication strategies with special support to the African Information Society Initiative (AIS)</li> <li>○ Sectoral applications</li> <li>○ Support to NEPAD</li> <li>○ Digital Solidarity Fund</li> <li>○ Technology transfer, particularly South to South transfer</li> <li>○ Research and Development</li> <li>○ Investment strategies</li> <li>○ Content development</li> <li>○ Internet governance</li> <li>○ Relations between traditional media and new ICT's</li> <li>○ Legislative and regulatory framework</li> <li>○ Intellectual property rights</li> <li>○ Security</li> <li>○ Regional cooperation</li> </ul>
<b>WSIS Phase II – African Priorities Accra 2005</b>	<ul style="list-style-type: none"> <li>○ Information Society and Regulation: Access and infrastructure</li> <li>○ Financing ICT's</li> <li>○ National and Regional e-strategies</li> <li>○ Open-Source Software and local languages/content</li> <li>○ Cyber law and Intellectual Property Rights</li> <li>○ Capacity building for policy-makers</li> <li>○ ICT applications in education, health, trade and governance</li> <li>○ ICT and Poverty Reduction</li> <li>○ Monitoring the Information Society</li> <li>○ Local governance</li> <li>○ Private Sector Development</li> </ul>

In the one hand, there is lack of consensus on what represents the African priorities for ICT development, while on the other hand, some experts began to question whether setting African priorities is actually necessary. The diversity of countries and levels of development makes setting African priorities rather a futile attempt. Nonetheless, it is possible to define broad areas of action that make a substantial difference to the poor.

The change of direction of bilateral and multilateral agencies towards mainstreaming ICT's into the Millennium Development Goals and their re-emphasis on the establishment of policy frameworks to encourage private investment in infrastructure have recently swayed the debate on African priorities to these issues. In the interim, the deferred items of the first phase of the World Summit for the Information Society namely Internet governance and the proposal for a Digital Solidarity Fund that was launched by the President of

Senegal became the main concern among African ICT experts and institutions during 2003/2004. Financing the information society was the key agenda of the Second African Preparatory Meeting for the Tunis phase of the World Summit for the Information Society, held in February 2005 in Accra<sup>33</sup>.

A fundamental lesson is that Africa's problem regarding ICTs for development remains multifaceted and requires a mixed approach and diverse financing mechanisms and instruments spanning efficient use of existing resources, the promotion of international private capital flows and other new mechanisms such as financing ICTs within the framework of public goods. There is broad consensus in Africa that the well-publicized Digital Solidarity Fund should be supplemented by domestic and international financial resources for building the infrastructure projects proposed by NEPAD. The meeting in Accra called for "support of the Digital Solidarity Fund that would complement and not duplicate other funding of the information society," while the use of existing financing mechanisms should be "continued to fund the growth of new ICT infrastructure and services".

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<sup>33</sup> <http://www.wsisaccra2005.gov.gh/>

## 4. Summary of issues and lessons emerging from financing ICTs for African development over the last two decades

The discussion above demonstrates that ICT investment in Africa so far originated from a mix of sources. Bilateral and multilateral agencies, the United Nations bodies and foundations played a key role in advancing the dissemination of ICTs in the region and in fostering an enabling environment for the participation of the private sector in the delivery of services. Private sector investment was instrumental above all in the expansion of the cellular and Internet markets. Africa's mobile market has been the fastest growing market of any region over the last five years; mobile penetration is well over 8% of the population and coverage amounts to about 30%. The private sector has also played a key role in promoting ICT awareness, supplying hardware and software and providing training and maintenance of ICT equipment. Multilateral companies are entering the field of ICTs for development in Africa.

On the other hand, although the allocation of Official Development Aid (ODA) to the ICT sector has improved over the last decade, the contribution remained very small. The lion share of the ODA is directed to emergency and relief and administration of programmes.<sup>34</sup> The spread of ODA around issues of food security, relief and terrorism means that the ICT sector funding will remain at the bottom of the priority list of the Development Assistance Cooperation. Furthermore, there is still scepticism about the role of ICTs in traditional development sectors funded by the ODA.

Likewise, the role of regional investment banks and local private sector has so far been limited. The African Development Bank (ADB) was not a key funding source for ICT projects in the region, although it has now begun considering the support of ICT programmes particularly in integrating ICTs in its strategic plan with focus on integrated rural development, health and education, expanding rural telecommunication networks by providing loans and encouraging private sector investment. The ADB has been working on regional infrastructure plans particularly at the level of regional economic communities such as SADC, COMESA and ECOWAS. As a response to NEPAD ICT programme, it has carried out infrastructure needs assessment to understand the demand and investment requirements in the telecommunications sector. Other regional banks such as the West African Development Bank (BECAO) have not been that keen in investing in the ICT sector.

There has been a growing consensus among International Financial Institutions (IFIs) like the World Bank and multilateral donor agencies that investment in ICTs in Africa should largely be left to the private sector. Consequently, there is a shift in terms of development assistance from financing information systems or infrastructure projects to the development of policies and plans, thus building the capacities of regulatory bodies, and providing technical assistance for studying infrastructure needs, universal access, interconnection and tariff rebalancing strategies.

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<sup>34</sup> Botchwey, Kwesi, *Financing for Development Current Trends and Issues for the Future*. (<http://www.globalpolicy.org/soecon/ffd/botchwey.htm>)

The World Bank, the main trend-setter, has shifted from its traditional focus on privatisation, of fixed and mobile telephone networks, has stopped granting traditional loans and credits to monopoly incumbents and has moved on to extending access to a wider range of ICTs through technical assistance with attention to encouraging private investment in infrastructure, broadening the sector's reform and institutional capacity building.<sup>35</sup> The World Bank's recent ICT strategy for sub-Saharan Africa focuses on consolidating telecommunications sector reforms, addressing market failures by helping countries devise innovative private—public sector partnerships to close infrastructure and service gaps in key areas and promoting ICT for development applications and regional cooperation<sup>36</sup>.

The mainstream position is that the lack of an enabling ICT policy and regulatory environment is the key obstacle to attract investment into ICTs. If developing countries create enabling policy environments, then they will be able to access finance for their ICT requirements<sup>37</sup>. However, experience suggests that market forces and liberalization alone cannot lead to universal access to infrastructure, meaningful use and social appropriation of ICTs by the majority of people. Market driven approaches particularly privatisation have not solved the significant access gap in Africa. While the surge of private capital flows over the last decade and the expanding mobile sector investment did raise the hope that most of the financing needs for ICTs in Africa could be met by the normal operation of the market, universal access was not achieved as expected.

- Primarily the large flows were concentrated in a handful of countries such as South Africa, Tunisia, Egypt and Morocco where infrastructure has already been well developed;
- Secondly, as evidenced in Figure 1, studies conducted by Research ICT Africa Network<sup>38</sup> show that privatisation neither led to an automatic increase in the number of users nor reduced Internet access costs. The research ICT Africa network survey concludes that a number of factors including the disposable income that ordinary people allocate to the basket of communications and their needs should be taken into account when designing ICT intervention on a purely market basis. In most countries privatization preceded liberalization with periods of exclusivity to attract strategic equity partners. This often ended up in transferring the public monopoly into a private one- where the benefits to consumers have been mixed. The independent regulation, which would have curbed the excesses of private monopolies under such situations, has not been entirely effective due to the regulators over-dependence on governments, thus having conflicting interests as regulators and market makers. Governments continued to be a major shareholder of telecommunications services and source of finance for regulators in most African countries;

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<sup>35</sup> World Bank, *Information and Communication Technologies, A world Bank Group Strategy*. (<http://info.worldbank.org/ict/assets/docs/ExecSum.pdf>)

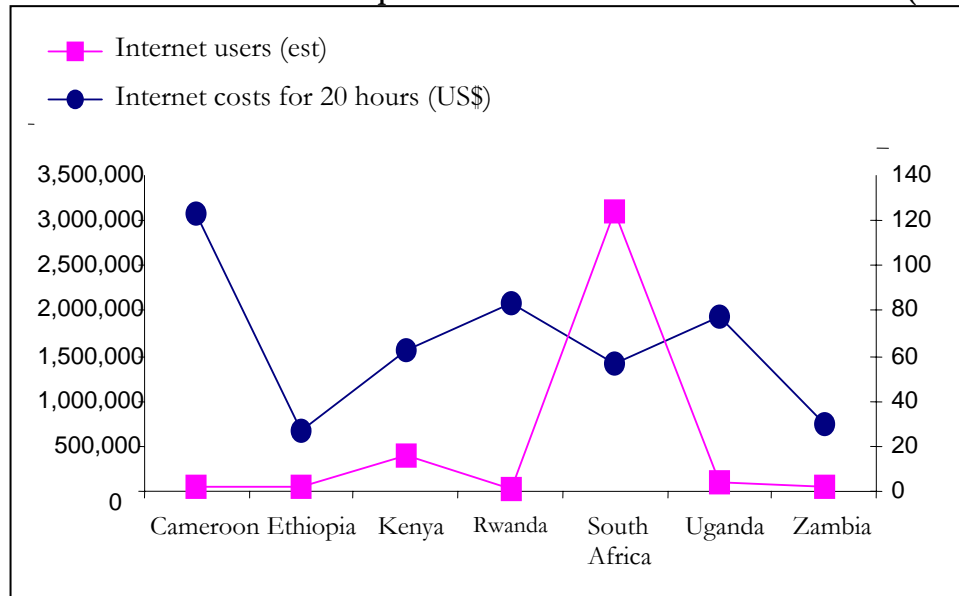
<sup>36</sup> World Bank, *Connecting Sub-Saharan Africa: A World Bank Group Strategy for Information and Communication Technology Sector Development*. (<http://www.worldbank.org/ict/>)

<sup>37</sup> Association for Progressive Communications, *Financing ICTD in Africa*. ([http://africa.rights.apc.org/index.shtml?apc=29740se\\_1&x=30657](http://africa.rights.apc.org/index.shtml?apc=29740se_1&x=30657))

<sup>38</sup> <http://www.researchictafrica.net>

- Thirdly, although competitive markets represent an alternative to promote universal service, there are always large segments of the population whose needs cannot be met by the markets.

FIGURE 1. **Internet users compared to Internet costs for 20 hours access (2002)**



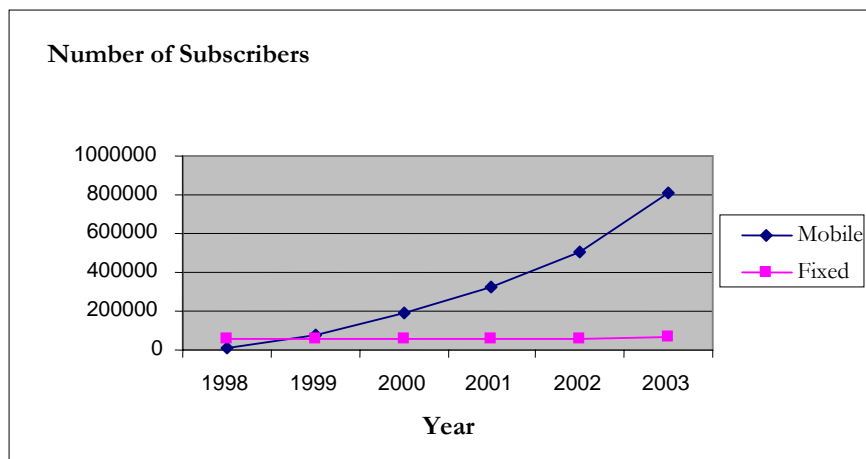
Source: ITU World Telecommunications Indicators 2003

- Fourthly, the appetite for private investment is drying out as lucrative markets in Africa are getting exhausted. Private investment figures in the ICT sector in Africa have declined within the last five years.
- Fifthly, private investment in infrastructure and liberalization neither led to automatic extension of the most important technologies such as fixed lines, radios or televisions nor reduced the cost of broadband connection that would have improved access to education, health and other livelihood contents for jobs and business opportunities. As evidenced in figure 2, a survey by the Research ICT Africa shows that although a number of countries like Uganda which have liberalized the ICT sector achieved a high level of penetration in terms of mobile phones, access to fixed lines remained stagnant or declined and broadband access costs remained excessively high. Monopoly incumbents put high price tags on their tightly control connection to broadband links such as the SAT3 submarine cables; and land locked countries like Uganda face a hard battle to have access to Submarine cable. This has made access to broadband connectivity too expensive for the majority of institutions in Africa.

The main lesson is that a good regulatory and policy environment as well as local capacity and intentions to develop and implement winning ICT strategies are as important as reform support by donor agencies. Another important lesson from the financing exercise in Africa is a constant shift in direction by donor agencies, which often leads to confusions - a shift from sector reform particularly privatization of public operators, to the design of e-strategies aimed at “bridging the digital divide.” Recently, this shift was towards mainstreaming ICTs for achieving the Millennium Development Goals and integrating them into broader development and poverty reduction strategies. While this shift has been

positive and pressing for an increased adaptation of ICTs to the needs, constraints and resources of African countries, this has not been associated with the necessary financial commitments and a good blue print. Little is known about how, where and when to mainstream ICTs in support of MDGs.

FIGURE 2. Mobile and fixed line growth in Uganda



Source: ITU World Telecommunications Indicators 2003

On the positive side, this shifting focus on mainstreaming ICTs in development has subdued the excessive enthusiasm for ICTs<sup>39</sup> and blue sky speculations about their roles in poverty alleviation. It raised the need for:

- Improving awareness and understanding the possibilities that ICTs can offer in key development sectors like education, good governance, health and livelihood opportunities (especially agriculture and environment) in Africa;
- Involving development agents and professionals in the design of ICT programmes rather than relying only on mainstream ICT and telecommunication experts. So far most ICT projects in Africa are the result of discussion among ICT professionals and a relatively small group of ICT for development specialists and government ministries representing the ICT sector such as communication, information, science and technology. Evidently, such projects failed to make a dent on development. Those who live in poverty must define their needs and ICTs should be embedded in broader efforts to improve their self-help.

<sup>39</sup> OECD, *Policy Brief: Integrating Information and Communication Technologies in Development Programmes*, OECD Observer, November 2003.

## Lessons and issues

Other lessons and issues that have emerged from the ICT financing experience so far suggest that:

- **Comprehensive information on ICT financing at national and regional levels would be useful.**

There is a serious lack of systematic information on different financing mechanisms and funding sources on ICTs for development at national and regional level. Part of the problem with ICT financing in Africa was the lack of information on what resources are available and where and when to apply for them. The ICT for development community has been ineffectual in terms of making time and resources available for the formulation of strategies to mobilise and manage resources, create a financial bridge to the private sector, work with the Official Development Aid agencies and write winning funding proposals. Governments were generally ineffective in coordinating numerous ICT initiatives.

- **ICT should be seen as a long-term investment.**

The focus so far has been on financing short (experimental) projects. Although experimentation was useful, it will not be suitable for long term ICT growth in Africa. The experience of countries such as India, Estonia, Brazil and Malaysia shows that the process of mainstreaming ICTs and building a competitive ICT sector takes decades rather than years. African ICT development programmes require a long term financing perspective. This implies that building government capacities to create environments for long term investment in ICT is just as important as seeking foreign assistance.

- **ICT financing should focus on large-scale projects.**

ICT projects in Africa tended to be small with a difficulty to scale-up. Most pilot projects were unable to solve the overwhelming needs for connectivity, content and capacity in the region. ICT projects require large-scale thinking and planning from inception. Pilot projects should be conceptualised within the broader framework of an integration into a series of interconnected ICT programmes at national level. Financing large scale projects fully mainstreaming ICTs in a sector such as agriculture requires an adequate and strong public and private sector partnership.

- **Linkages between grassroots efforts and top-down policy reform and universal service initiatives could maximize the use of resources.**

There has been significant disconnection between grassroots initiatives that aim to advance ICT applications at community levels and the top-down approach of donor agencies, governments and regulatory bodies that aim to create favourable environment and bring universal access to ICTs. A strong link between the top-down and the bottom-up approach is important in order to maximize the use of resources and to integrate various initiatives.

- **Prioritisation of ICT projects could facilitate the optimum use of scarce resources.**

There has been an evident lack of prioritisation of ICT projects at national and regional levels due to the inadequate analysis of needs, the involvement of specialists that often take sectoral views rather than a global picture, and competing institutions that set priorities at local, national and regional levels from their own vantage points. Africa has seen a number of competing institutions for framework and priorities over the last decade. The same is true at national levels where institutions ranging from science and technology commissions to departments of communications contest for leading ICT projects. The proliferation of national e-strategies that deal with every target and every point, mention every sector and design every programme has exacerbated the problem. Setting too many priorities meant paying little attention to the implementation of ICT programmes that are meaningful for poverty alleviation and economic growth.

- **Collaboration among different actors could maximize the use of scarce resources.**

The proliferation of competing priorities, studies and strategies in Africa points to the evident lack of collaboration among key national actors such as the ministries of communication, information, science and technology, ICT professionals at local levels and their development counterparts; among donors; and between regional institutions. This often leads to wastage of scarce resources and rethreading of same issues at major regional and national conferences. Insufficient collaboration for sharing learning, innovation, information and resources among these players will continue to undermine ICT investment in Africa regardless of the financing mechanism that is chosen

- **ICT financing should be anchored around the poor.**

As consistently maintained above, providing access to the poor and the marginalized remains the main challenge in Africa as those who have the ability to pay for Internet or cell phones could get hold of these tools when and where they are available. Experience shows that those who need information and knowledge are those at the periphery, the less educated, the poor and those who generally adopt innovation in the last place. In fact, evidence has already shown that access to ICTs in Africa has slowed down over the last five years, as those who can afford the services got connected. Access should be shifted to those at the next social and economic strata. Strategic interventions that promote pro-poor development should take gender aspects and the use of media and old technologies into account.

## 5. Financing ICTs in support of poverty reduction and economic growth in Africa

Financing ICT with a strong poverty bias calls for a) prioritisation of the needs of the poor in Africa so as to maximize impact b) finding out the resource gaps in order to propose mechanisms to fill them. Essentially, there is no shortage of forums, analytical tools, frameworks and studies to establish African ICT priorities. E-readiness assessments, national ICT surveys, in-depth case studies and e-strategies, sub-regional initiatives and regional conferences have been trying to set African priorities.

Between 2000-2004 a number of studies were conducted to establish ICT gaps in African countries. Some countries were studied thoroughly. Algeria, Benin, Cameroon, Egypt, Madagascar, Morocco, Mauritius, Mozambique, Rwanda, Tunisia, Tanzania, Uganda and South Africa were among the countries that were studied more than three times<sup>40</sup>. There have also been attempts to gauge the state of ICTs and gaps at the regional level. The SADC e-readiness assessment was one of those studies that recommended “establishing better policy frameworks within which business and social programmes can thrive, build the necessary infrastructure and ground-level projects to spread the benefits of technology throughout the society, and provide a critical connection between policy considerations and the grassroots community needs.”<sup>41</sup> In addition, African countries have seen a number of national and regional ICT status reports over the last ten years to support business cases and the development of national ICT strategies and policies. These have been very helpful in providing insights into the ICT gaps in those countries and areas where resources should be spent.

More importantly, there were a number of regional ICT plans and projects carried out by well established regional economic communities such as the Southern African Development Community (SADC), the Economic Community of West African States, the Common Market for Eastern and Southern Africa (COMESA), the Economic Community of Central African States (CEEAC), the East African Community (EAC) and the Inter-Governmental Authority on Development (IGAD) that seem to have had more impact, although these are less publicized at the regional and international levels. Regional economic communities will have a significant potential for advancing the development of ICTs in their respective regions. They will play a key role in the harmonization of policies and coordination of infrastructure projects. Financing mechanisms should therefore take note of the capacities of African Regional Economic Communities.

Africa has also seen regional priorities emerging from collective negotiation within the framework of the African Information Society Initiative and more recently through the NEPAD ICT agenda. The Economic Commission for Africa and the e-Africa commission are among the key players that have been shaping Africa-wide ICT priorities. The Economic Commission for Africa is implementing the African Information Society Initiative and is actively involved in advocacy work on ICT for development, the

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<sup>40</sup> Bridges.org, E-readiness Assessment: *Who is Doing What and Where*. (<http://www.bridges.org/ereadiness/tables.html#B>)

<sup>41</sup> Bridges.org and World Economic Forum, *SADC E-readiness assessment*. ([http://www.bridges.org/e-policy/sadc\\_wef/index.html](http://www.bridges.org/e-policy/sadc_wef/index.html))

formulation of broad-based national ICT policies “NICI plans”<sup>42</sup>, and fostering of partnerships among key players. The E-African Commission<sup>43</sup> oversees the development and execution of NEPAD’s flagship ICT programmes. Current NEPAD flagship projects include an East African Submarine Cable (EASSy) that intends to construct an undersea fibre link between countries running from South Africa to Djibouti, a project to establish broadband fibre optics links from landlocked countries to submarine cable landing stations, an overlay satellite network and an e-Schools Initiative to connect African schools to the Internet. The e-Africa commission has also played a significant role in measuring infrastructure needs and rationalization of various infrastructure development initiatives in the region.

At national levels, the key instrument for financing ICTs has been broad based ICT policies’ (e-strategies) master plans. E-strategies vary considerably; some influenced by development agencies and others like that of Mauritius inspired by Asian countries like Singapore and India. Two thirds of African countries have now some form of broad-based ICT policies. Annex I provides a list of major national ICT policies. These national e-strategies have been constructive in:

- Raising the awareness of policy makers and the public on the importance of ICTs as an enabling tool for development;
- Prompting a conceptual shift from traditional policy making in telecommunications and broadcasting to an integrated framework covering infrastructure, applications and content (although the shift had the negative consequence of moving away from sectoral reform and Internet development issues);
- Transforming the concept of universal access from the longstanding focus on phones to access to communications, information and knowledge through the Internet and community centres; and
- Prioritizing national ICT interventions to a certain extent.

Notwithstanding the growing enthusiasm, it is important to note that e-strategies are not the magic bullets for mainstreaming ICTs in development. The starting point for mainstreaming ICTs should be development plans. Rather than developing e-strategies for the integration of ICTs into development plans, it is better to design ICT conscious development plans.

So far, African national ICT policies and strategies vary in terms of quality and implementation. For example, Mauritius has by far the most advanced ICT policy, less dependent on external assistance both in policy development and implementation of ICT programmes. Rwanda has one of the most elaborate ICT strategies developed through external assistance with genuine government commitment. However, most ICT strategies remain too ambitious and not consistent with the reality, infrastructure, resources and capacity of institutions to implement them. The spread of e-strategies around many issues also led to lack of focus on core issues such as Internet development and competition, building effective regulatory institutions and promoting private sector investment.

Nevertheless, there has been an improvement in the quality and content of e-strategies over the last two years. Some are putting realistic implementation plans and financing

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<sup>42</sup> <http://www.uneca.org/aisi/nici>

<sup>43</sup> <http://www.eafricacommission.org>

mechanisms forward. For example, Djibouti's National ICT Strategy<sup>44</sup> and its accompanying Action Plan developed in 2003 have a proposed 7-year budget of US\$13.7 million aimed at improving the ICT infrastructure, putting a legal framework and a national ICT agency in place, and modernizing the telecommunications sector.

Locally owned and organically developed ICT policies and strategies could provide a useful framework for connecting ICTs to national development goals. The experience of Egypt, Mauritius, Morocco, Senegal, South Africa and Tunisia shows that developing ICT policies in a more organic fashion by relying on local expertise and focusing on building blocks like Internet/telecommunications infrastructure and policies, universal access strategies and human resources development could lead to better results than ambitious lists of programmes. The implementation of these policies and master plans requires leaders and champions with vision and actions to make things happen. Positively, Africa has a large number of enthusiastic people who strive to make things happen but seem to be constrained by entrenched bureaucracy and red tape. Invigorating these local leaders could actually lead to better implementation of ICT projects in Africa.

Integrating ICTs into poverty reduction strategies provides a very useful and more logical starting point for subordinating them to development goals. However, despite interests in ICTs and poverty, most poverty reduction strategies have difficulties in linking them to goals. African countries vary in their progress in achieving poverty reduction goals and in terms of the priorities they attach to ICTs. Out of sixty-four national development plans analysed by the Organization for Economic Cooperation and Development (OECD), the vast majority make only some reference to ICTs as an element of national development. The OECD study also showed that of the twenty-nine Poverty Reduction Strategy Papers they surveyed, those of Cameroon, Chad, Gambia, Ghana, Mali, Mozambique, Niger and Rwanda have some strategic interests with regards to the impact of ICTs on poverty reduction. This does not only show the consistent tension between ICT professionals with difficulties to understand the underlying development challenges and the struggle of development professionals for identifying the potential of ICTs in poverty eradication, but also points to the need for cooperation between the two groups in order to map out the full range of economic and social challenges, articulate their information, communication and knowledge dimensions, and identify ways in which ICTs address these challenges<sup>45</sup>.

The best option for financing ICTs in development would be to design upcoming development plans and sectoral strategies with ICTs in mind. In fact, as local ownership of the design and implementation of ICT programmes improves, and particularly as the participation of development professionals, the civil society and the private sector increases, African ICT priorities will move away from a purely technology-centred strategies identified by ICT experts and from stand alone-pieces of projects, towards those adapted to the needs and circumstances of resources and constraints of countries. If ICTs are to become means for improving the economic conditions of the poor, financing mechanisms should address the needs of poor people, women and marginalized groups such as people with disabilities, and make sure that policies and strategies at macro and international level initiatives are supportive to the micro and meso level initiatives.

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<sup>44</sup> Djibouti ICT Action Plan, 2003. (<http://www.mccpt.dj/Documents/Action%20plan-djibouti.pdf>)

<sup>45</sup> OECD, Policy Brief, *ibid*

A recurrent theme that has been emerging from experience and the analysis of national e-strategies and position papers points to five key areas that should be taken into account when developing development strategies and thereby financing ICTs:

- Promoting access to and empowering the vast majority of the African poor;
- Facilitating the diffusion of modern and interactive ICTs by building regional, national and local backbone infrastructure;
- Investing in human capacity to foster innovation and entrepreneurship so as to increase usage and develop applications to solve development problems and create wealth;
- Mainstreaming ICTs in key development sectors;
- Supporting initiatives that promote enabling policy and regulatory environments.

### **Promoting access to and empowering the vast majority of the African poor**

If poverty is the target and the concern is about bridging the digital divide, promoting access to and empowering the vast majority of the African poor deserves more focus. However, the mainstream ICT for development debate has not made concrete proposals as to how to address the information and communication needs of the poor of which 50 to 80% live in rural areas, depending on the countries involved. These poor people are generally illiterate and speak one or a few local languages with different dialects. Half of the poor are women.

There is no doubt that ICTs provide a potentially enabling environment for alleviating the living conditions of the poor, but ICTs cannot deliver anything on their own and the poor do not have the time, knowledge, capacity and resources to apply information and communication technologies. However, the poor make decisions about seeds, soil, family size, children's education, etc; and others also make decisions on behalf of the poor. As Melody (2003) argued, economic and social benefits come in the form of improved decision-making of all kinds throughout the society<sup>46</sup>. Increased use of information and its effective communication contribute greatly to the decisions that poor people and their leaders make. Improving or altering information “density,” its structure and distribution could greatly contribute to the expansion of the stock of knowledge a society depends on. ICTs facilitate the spread and “distribution” of knowledge throughout society as well as a rapid generation of new knowledge.

The distribution of potentially empowering information through print, TV, radio, Internet, etc. would be important to improve the conditions of the poor in Africa. Observation shows that African countries whose knowledge flow and communication are difficult and/or intentionally constrained tend to evidence low economic and social development. Those with little flow of information are not only caught in poverty traps, diseases, environmental degradation and corrupt government institutions, but also create grounds for hate and extremism. In fact, governments in many poor countries in Africa are poorly placed for systematically disseminating information to the public due to the lack of internal transparency and a high level of corruption. Corruption thrives along with information asymmetry and poverty exacerbates disparities. Poverty is a double-evil; it places a

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<sup>46</sup> Melody, William, *Policy Implications of the New Information Economy*. (<http://lirne.net/2003/about/papers/ToolBook-NIE.pdf>)

restriction on access to information that is critical to eradicate it and makes the poor weak to seek and have access to empowering information.

Therefore, the spotlight on ICTs for the poor should not be concerned about technology per se but rather about communication, information transfer and sharing of knowledge. It should not focus only on affordable access to information but also on widening opportunities for better income, giving poor people more voice and improving their capacity to make use of potentially empowering information. If poverty is the target, focus should be placed on expanding access both to rural areas and deprived people in urban areas.

This makes old technologies such as the radio that conveys information less expensively in local languages to a large number of people more appropriate. The quest for making information accessible to the majority dictates that the focus on old technologies such as the radio, television and fixed and mobile telephones should be integrated to the Internet at community levels. This bias towards the poor and old technology raises a number of issues including the need for pro-poor radio programming, development and implementation of pro-poor broadcasting policies, building the capacities of independent media to integrate new technologies into the old ones so as to increase access, and adapt globally/locally available information to the needs of the poor.

Phones should be next on the list of ICTs for the poor. Studies conducted by the Research ICT Africa and DFID show that the African poor travel a long distance to make regular telephone calls to towns and abroad, often to request the transfer of remittances from a member of the family. However, despite plummeting costs and advances in wireless technologies, investors and financial institutions are generally reluctant to get involved in rural telecommunications in Africa. A wide variety of universal service options ranging from the popular reverse auction (where bidding firms compete for subsidies of the fund based on the lowest subsidy requested or greater investment commitment to provide services in a designated area) to rural cooperatives should be explored in order to expand both fixed and mobile phone access to rural areas. Universal access should also be linked to wider access to new information, communication technologies and public services and information. Moreover, pro-poor intervention should combine radio, TV and telephones with community based bottom-up interactive services built around emerging technologies such as the Wireless Fidelity, which is driven by open source software running protocols such as VOIP that makes telephone calls affordable.

Raising access to radios to 100%, television to 50% and phones in rural areas to 25% is required to promote meaningful information and communications in support of the Millennium Development Goals over the next ten years. Additional work is required in promoting universal service and encouraging policies that support experimentation with new bottom-up wireless technologies to build ad-hoc community networks that could be integrated into the broadcasting media. However, expanding access to radios and telephones should not be seen as the panacea for overcoming poverty. Impacts depend on sets of other inter-related factors ranging from infrastructure, applications, strong commitment to education and capacity building to enabling policies.

## Building regional, national and local backbone infrastructure

The growing convergence between voice and data and the increasing need for multimedia-intensive applications for health, education and other sectors makes broadband connectivity a pre-requisite for establishing the information society and improving the conditions of the poor in Africa. However, access to backbone infrastructure is limited in Africa. The continent has the lowest international bandwidth per capita. In addition, the per kilobyte/month cost is exceedingly high compared to that of developed countries, and this is often passed to users. A 2 Mbps satellite connection in West Africa costs 18 times the price in the United States and a similar fibre capacity costs as much as 32 times the price paid in the US<sup>47</sup>.

Over-reliance on satellite backhaul connection, lack of competition and accountability in service delivery, weak policy in regulatory frameworks, ownership of fibre links by monopoly incumbents, and inadequate diffusion of infrastructure to rural areas exacerbate the bandwidth problem. Most available infrastructure is concentrated in urban areas. In some countries 60 to 70% of the switching capacity is concentrated in the capital. Broadband penetration is concentrated mainly in urban areas and the use of it is limited to international institutions, wealthy residential markets, cyber cafés and a few small and medium enterprises. Besides, there is limited inter-country and inter-regional connectivity. It is generally difficult to connect between most neighbouring countries in Africa.

Regional connectivity is limited and concentrated at the bottom tip and in the west (Southern Africa and West Africa). However, there are some initiatives by power and railway companies that are beginning to rollout fibre trunk lines attached to their networks. For example there are sub-regional optical fibre cable projects laid along the power network of Manantali dam linking Mali, Mauritania and Senegal. The South African power company ESCOM has also a similar plan to connect southern African countries. The Regional African Satellite Communication (RASCOM) has also a plan to launch a satellite to meet the growing regional connectivity needs.

International connectivity in Africa is mainly provided by satellite although fibre optics is gaining grounds where available. The South African Far East cables, West African Submarine Cable (SAT3) and Atlantis II are the main cables providing fibre connectivity in the region. Djibouti is connected to the SEA-ME-WE cable that runs from East Asia to Western Europe. The SAT3 provides most of the connectivity and has links to Angola, Benin, Cameroon, Cote D'Ivoire, Gabon, Ghana, Nigeria, Senegal and South Africa. Nine countries including Congo-Brazzaville, Equatorial Guinea, Gambia, Guinea, Liberia, Mauritania, Namibia, Sierra Leone and Togo are not connected to it. Altogether 28 African countries have no direct connection to International fibre links; the majority of these are in East Africa and West Africa.<sup>48</sup>

An ICT Infrastructure Investment Options study by the Department of International Development (DFID) estimates that an investment of up to US\$1 billion is required to connect countries that have not yet been connected to fibre optics particularly the Indian

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<sup>47</sup> Spintrack, *Technical Manual for Investors: Bandwidth Capacity distribution ventures*, November 2003. ([http://www.spintrack.com/itadvice/reports/Spintrack\\_Technical\\_CDE.pdf](http://www.spintrack.com/itadvice/reports/Spintrack_Technical_CDE.pdf))

<sup>48</sup> DFID, *African ICT Infrastructure Investment Options*. (<http://www.afriigital.net/downloads/DFIDinfrastructurerep.pdf>)

Ocean bordering eastern and southern African countries stretching from Mozambique to Djibouti, to provide links to west African countries that have not connected to the SAT3 cable, and to complete various proposed infrastructure intra-regional projects such as the South African Regional Infrastructure Initiative (SRII) and the COMTEL project proposed by the Common Market for Eastern and Southern Africa. Table 2 provides a list of major regional and international broadband infrastructure projects that are currently underway.

TABLE 2. Major broadband infrastructure projects and proposals

Project	Countries	Progress
Intelcom II	Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leon, Togo	Underway
SADC Regional Information Infrastructure (I-III)	Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia Swaziland, Tanzania, Zambia, Zimbabwe	Underway
Chad- Cameroon Pipeline project	Cameroon and Chad	Underway
COMTEL	COMESA countries –Angola, Burundi, COMOROS, DRC, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe	Not started
EASSy, East African Submarine Cable	South Africa, Madagascar, Tanzania, Kenya, Djibouti, Seychelles	Not started
NEPAD ICT/1	West Africa	Under plan
East African Digital Transmission Project	Kenya, Uganda and Tanzania	Uganda and Kenya have completed; Tanzania has yet to build
Central African Digital Transmission link	Cameroon, Chad and Nigeria	Not completed

Source: DFID, African ICT Infrastructure Investment Options Study

In addition to the above projects there is a need for:

- Establishing Internet exchange points to keep local and regional traffic local.
- Providing the right regulatory and policy framework to facilitate private investment in infrastructure and innovation in new technologies;
- Promoting the building of dark fibre infrastructure at the level of municipalities
- Rolling out a variety of broadband distribution networks including DSL, cable modem and terrestrial broadband networks to extend access further from traffic concentration centres, and expanding backbone access to rural areas using a mix of wire-line and wireless technologies;
- Building the backbone infrastructure for broadcasting and signal distribution.

There is no doubt that the bulk of the African infrastructure gap could be met through private sector investment. However, there are always high-cost low-income potential user

areas where private funding is not that attractive. Besides, there are other infrastructure and service related factors that influence the use of backbone infrastructure. Among others these include availability of electric grid, transportation means and security. Public and private resources should be raised through innovative mechanisms to bridge the infrastructure gap in the region including supportive infrastructure such as rural electric grids. Additional funding is required to carry out studies and promote an environment for public and private investment in broadband infrastructure.

### **Mainstreaming ICTs in key sectors to facilitate wider access to services**

The provision of backbone infrastructure is a key step, but access to affordable bandwidth and empowerment of the poor will not be complete without a significant investment in applications and ICT programmes in key sectors such as health, education, agriculture, environment and public services. The aim of mainstreaming is to promote the achievement of sectoral development goals rather than goals defined in terms of distribution and access to telephones and the Internet.<sup>49</sup> Mainstreaming of ICTs in key development sectors could be achieved by systematically integrating them at the project levels or at the development plan levels. For example, key sectors like education could identify the information and communication dimensions of the delivery of programmes at national, regional and local levels and then integrate ICTs at each corresponding level.

Analysis of progress so far in Africa shows that education, enterprise development and public services have received relatively better attention when compared to mainstreaming ICTs in the health and agriculture sectors. This is awkward because the agriculture sector employs the majority of the population while the health sector absorbs most part of the government's budget. These sectors deserve more attention. Mainstreaming ICTs in key development sectors in Africa would require:

- **Empowering development professionals so that they align ICTs to their day-to-day activities** - Development professionals that are intended to benefit from ICT require training, affordable access and user support environment. This implies that agricultural extension workers, nurses and teachers should be trained on the capabilities and limitation of ICTs and how ICTs can be applied to improve their work and their support to individuals and communities. These skills should also include information seeking and use as well as content development and dissemination.
- **Providing the necessary tools for development professionals** - Meaningful and productive use of ICTs requires computers, software and applications in local languages and suitable tools to create and disseminate content. This involves increased connectivity at workplaces and at public outlets such as libraries, clinics and schools and a focus on providing access to useful applications such as online education materials, health and public service forms, etc.
- **Imparting high-level knowledge on long-term goals of ICTs for development** - At a higher level, the mainstreaming of ICTs requires the capacity of policy makers to “think wider” as well as their ability to integrate, streamline and prioritise ICT programmes in major sectors. The experience of African countries that have

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<sup>49</sup> OECD Development Assistance Committee – *Donor ICT Strategies Matrix – 2003 Edition*, December 2003.

made headway such as Mauritius shows that the governments' capacity to develop long-term ICT strategies is critical.

- **Increasing capacities for implementing programmes** - The ability to absorb resources and implement programmes is another factor for the successful mainstreaming of ICTs in development. The more countries lack the ability to develop prospective ICT strategies, the more difficulty they have in absorbing additional resources. The expansion of donor activities into ICTs for development will put considerable pressure on scarce skills in many countries. Both specialized ICT skills and more generic planning, project management and implementation skills are needed.
- **Fostering entrepreneurship to facilitate the development of applications in key sectors** - There have been sufficient innovations in ICT for development but these were unable to scale up and solve the wider development challenges facing the poor in Africa. Countries need broad-based research and development capacity to develop applications and content suitable to local contexts and languages.

It is difficult to put a price tag on mainstreaming ICTs in key sectors in Africa. Countries need to establish development strategies that integrate ICTs.

## Human Capacity Development

While mainstreaming ICTs in key sectors contributes to the development of ICT skills at the workplace, a concerted effort is required to educate and train young people and university cohorts in Africa. Skilled people are the engines of the information society. Unfortunately, despite significant growth in the number of people that have gained ICT skills mainly through private sector efforts, the quality and quantity is not adequate to drive the information society in the region. The brain drain is another significant problem in the ICT sector, as the most skilled move to developed countries regularly. Brain drain is not entirely a negative trend, but should be supplemented with training of a critical mass of highly skilled network engineers, applications developers, analysts, project managers and large-scale programme implementers.

Developing skilled people involves a set of interrelated tasks such as:

- Promoting ICT education in schools and colleges,
- Improving literacy and numeracy including information seeking skills,
- Building stronger scientific, mathematical and engineering education,
- Improving ICT professionalism and increasing professional education and standards,
- Fostering research, innovation and entrepreneurship of a higher calibre so as to support the development of applications aimed at solving local problems. This is an important area since smart software and applications developers and those who produce interactive digital content in local languages are in short supply in Africa,
- Building advanced ICT infrastructure to enable researchers to share access to research resources including equipment,
- Creating incubation centres that would enable entrepreneurs to translate ideas into projects and businesses.

Investment in human capital in Africa demands a good ICT research infrastructure, new approaches to teacher training and expansion of educational content. Public policies on taxation, competition, health and immigration are also important to attract and retain the bright people that drive the information society.

There is no systematic analysis of the costs of building skilled human resources in the ICT sector in Africa. Experience of recently established advanced ICT graduate schools indicates injection of up to US\$500,000, which is useful to take them off the ground. It is estimated that the cost per student for an IT classroom excluding training, housing and recurrent costs is about \$141<sup>50</sup>. These figures indicate that building skilled human resources for knowledge economy will remain the most expensive endeavour in Africa. The traditional public funding should be augmented with innovative financing to strengthen research and education in the ICT field and build open content that facilitates teaching and learning throughout the region.

### **Policy and regulatory environment**

It is well established that ICT interventions at the micro and meso levels, infrastructure development and human capacity building cannot succeed without a broad policy support. African countries have seen a significant external support in the ICT policy development front particularly in defining broad-based ICT policies and liberalization of the telecom sector; however, there is still a significant gap between what new and old information and communication technologies can deliver and what the public policies promote. There is also an evident lack of technical capacities among regulators and senior policy makers particularly in emerging areas such as electronic commerce, Intellectual Property Rights (IPRs), network security, the development of IP networks and wireless technologies. Coupled with lack of integration between different policies, the regulatory environment in most countries remained weak and unable to promote competition and well crafted universal access strategies.

Following the end of the exclusivity period of traditional incumbent telecoms, many African countries have embarked on telecommunication sector policy reviews. These reviews provide ample opportunities for revising the policy and regulatory frameworks to promote multi-layer competition and to define and implement realistic universal service strategies. Building the capacities of regulators is therefore important to enrich legal and regulatory mechanisms, to promote competition and fair interconnection, and to enable them to design universal access strategies that balance private sector incentive and public access requirements.

The recent focus on mainstreaming ICTs into the Millennium Development Goals and poverty reduction strategies has opened up opportunities for revisiting traditional ICT strategies and NICI plans. This would allow development professionals to define strategies that integrate ICTs appropriately into development and enable countries to move away from e-strategies that focused on infrastructure and sectoral projects to those that take the

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<sup>50</sup> Kenny, Charles; Navas-Sabater, Juan; Qiang, Christine Z (2001), *Information and Communication Technologies and Poverty in the World Bank* (Ed) Poverty Reduction Strategy Sourcebook, Washington DC: World Bank. (<http://www.worldbank.org/poverty/strategies/chapters/ict/ict.htm>)

needs and capacities of countries and stakeholders and the potential of the old and new technologies into account.

Regional harmonization of policies and improving African countries' participation in the global ICT regimes remain important activities in Africa, as global decisions continue to affect local progress. Capacity building should not simply end at providing support for attending regional and international conferences, but rather enable people to analyse issues and positions and contribute to the debate and if possible sway decisions to the benefit of African people.

Since policy advice is the top priority of development agencies, it is expected that there will be no shortage of financial resources in this relatively "hot" area, except for policy development capacity, which requires serious research and analysis of the issues at stake. Capability for ICT policy research is missing in Africa except for the effort of networks such as Research ICT Africa that aims to build the capacity for independent ICT policies and regulatory research and analysis. African countries need a significant amount of resources to build the national capacity for ICT policy training and research.

## 6. ICT financing in Africa within the Digital Solidarity Agenda and Global Public Goods framework

Empowering the poor through increased access to information and making their voices heard, building the human resources capacity, mainstreaming ICTs in key sectors, and building backhaul and local backbone infrastructure require a significant amount of resources that cannot be fully met through traditional public, private and donor financing. Domestic resources are historically strained. African governments are increasingly being confronted with competing priorities but also lack the requisite resources to commit to implement their national ICT strategies or rollout capital-intensive broadband infrastructure even when the benefits are becoming apparent. The international and regional financial institutions such as the IMF, the World Bank and the African Development Bank have a strong bias towards supporting the private sector initiatives. While private sector investment is important, it will be inadequate to meet the needs of the vast majority of poor people or compensate for market failure.

Moreover, there are insufficient domestic resources in Africa. Most private enterprises are multinational and the number of local entrepreneurs remains small to make any significant contribution. On the other hand, there has been a significant reorientation of United Nations agencies towards policy advice and the development of regulatory environments and e-strategies in Africa. Even when available, these funds were minimal compared to the extent of needs in Africa. The ODA may provide part of the ICT financing but the scepticism about the implication of ICTs, and the transaction costs in securing bilateral resources makes it less forthcoming. However, ODA will play a key role once development strategies in Africa begin to integrate ICTs.

Improving the policy and regulatory environment could further facilitate the attraction of investment and the use of already existing financial resources. However, there is always a shortfall to meet requirements beyond the borders of the market. Based on the ballpark estimates above, African countries need at least US\$600-900 million dollars of additional financing, which is well beyond what is available from the public, private and development finances and what could be achieved through development strategies integrating ICTs in order to make a dent on the information and communication capacities needed to integrate them into development priorities in a shorter term. These resources should be available within the Digital Solidarity Agenda specifically within the perspective of global public goods (GPGs).

The idea of digital solidarity with Africa has already gained roots in the continent through the announcement of a Digital Solidarity Fund (DSF) by President Abdoulaye Wade of Senegal. Although there is no consensus as to what the Digital Solidarity Fund will do, the announcement made by President Wade has stirred significant interest in pursuing innovative financing mechanisms around the world. In February 2003 at the Preparatory Conference for the first phase of the World Summit for the Information Society (PrepCom 2), President Abdoulaye Wade introduced the need for transferring resources from developed countries in the North and South to developing ones, particularly to Africa, within the framework of digital solidarity with the South. The Fund aims to support the development of infrastructure, human resources and applications, particularly projects that focus on “community development, cultural diversity and local content, targeting women

organisations and using micro-credit strategies, such as projects seeking to address insolvent demand, with a view to creating new businesses and, in the long term, new markets”. The Fund, which was established as a legal foundation in Geneva, has secured contributions from cities and local authorities. It has raised over 5 million Euros in early 2005 and aims to collect more through levies on ICT company contracts procured by participating government entities. As municipalities represent the largest contingent of DSF members, emphasis has been placed upon collaborative relationships and consultations in ICT applications among municipal governments in developed and developing countries.

While the enthusiasm for the Digital Solidarity Fund was high particularly at the level of African organizations and some countries, there is a growing uncertainty about the underlying priorities, (e.g. whether there is some analysis about where the resources should go in the first place), the governance, management and administration framework and strategies for disbursement of the funds. The division between those promoting the Digital Solidarity Fund and others who encourage the use of existing mechanisms and other innovative mechanisms has been apparent in Africa as demonstrated by the resolution of the African Preparatory Conference for the second phase of the World Summit for the Information Society. The meeting called for both the “support of the Digital Solidarity Fund that would complement and not duplicate other funding of the information society,” and the use of existing financing “to fund the growth of new ICT infrastructure and services”. There is a growing concern within the donors’ community about the risk of diverting resources to ICT for development from more proven areas of development intervention and the desirability to establish another independent sectoral institution to manage interventions aimed primarily at mainstreaming development goals<sup>51</sup>.

Moreover, as one member of the African Information Society Initiative mailing lists observed, the DSF may not be able to secure sufficient funds to meet the overwhelming needs. There is concern about the fact that the DSF may be subject to fragmentation into projects that will not be sustainable. “The problem always is that with pent-up needs, everybody wants a piece of the action and yet there is never enough to go around”, he observes. Nevertheless, there is a feeling that the DSF should be given a chance to prove itself especially in terms of exploiting its strong alliance with local governments.

Consequently, there is a growing consensus that African countries should heed to the creation and contribution to the Digital Solidarity Fund as much as they should participate in the global debate on strengthening the effectiveness of existing financial mechanisms and the creation of new ones. The United Nations’ Task Force on Financing Mechanisms that was set up to investigate among other things the feasibility of the Digital Solidarity Fund recommended “increasing the effectiveness of existing ICTD financing mechanisms to raise additional resources by reaching out to new constituencies and/or more effective leverage resources through putting in place a variety of cooperation and coordination mechanisms.”<sup>52</sup>

Recently, Africa has been the subject of significant debate for increasing access to resources available from traditional funding sources, aid, trade and debt relief, although

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<sup>51</sup> Souter, David, (2004), *African Participation in WSIS: review and discussion paper*, Prepared for the Association for Progressive Communication (APC). (<http://rights.apc.org/documents/governance.pdf>)

<sup>52</sup> Task Force on Financing Mechanisms, *The Report of the Task Force on Financial Mechanisms for ICT for Financing ICTD: A review of trends and an analysis of gaps and promising practices*, December 22, 2004. (<http://www.itu.int/ws/is/tffm/final-report-executive-summary.doc>)

ICTs were not on the priority list of discussions. The announcement by the G8 to increase aid and cut debt in favour of a substantial number of African countries should encourage policy makers to design development strategies that integrate ICTs so as to reduce poverty while also approaching their population towards a knowledge economy.

The deliberate integration of ICTs into development policies implies that the access to ICTs should be regarded as a public good. The public goods framework posits that<sup>53</sup>:

“Extending access to the Information Society in developing countries is a global public good that benefits everyone because of the value of network externalities. The value of the global information network increases in value as more national networks and business and individual users are added. Since the global economy runs on global information networks to create a global marketplace, the private sector in developed countries stands to benefit from the extension of ICTs in developing countries and should help pay for ICTs for development as a global public good. Therefore, a Global ICT Fund should be established, similar to the Global Environmental Facility, which could raise funds through a global tax on microchips, for example. The proceeds of the Global Fund would be directed towards building information societies and economies in developing countries.”

Access to ICTs and knowledge, particularly for the poor in Africa meets these main characteristics of trans-national public goods. Universal access to ICTs “can be considered as a global public good in that it is theoretically and practically both non-rival (one person’s consumption of the good does not diminish the amount available to others) and non-exclusive (no one can be excluded from access)<sup>54</sup>. Moreover, access to ICTs and networks makes the delivery of a wide-range of services possible, thus enhancing other public goods.

The overwhelming financial burden for bridging the digital divide will not be adequately addressed by individual African countries or entities acting alone, but it will be best addressed collectively on a multilateral basis. It means that once a government begins to deliberately integrate ICTs into development plans (for example in integrated rural development that builds schools along wireless towers, or water distribution systems along fibre optics cables), ICTs will become a public good. The public good perspective provides a framework for securing resources to achieve integrated development in Africa where ICTs become one of the key constituents.

In addition, the global public good framework creates a new incentive for the participation of African countries in international financing negotiations that have enormous impact on the well-being of the majority of the population. Although the modalities for collection and management of a public good or “tax” have yet to be defined, African countries could play a key role in designing development plans for transferring resources from the global public good to actual projects and identifying those targets that need access the most. Furthermore, the global public good framework would enable Africa to move away from piecemeal approach to ICT for development projects to tackling the symptom (digital divide) in a more integrated fashion.

Therefore, the participation of African countries in the GPG debates is essential. Historically, African countries were largely excluded from intergovernmental decision-

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<sup>53</sup>Association for Progressive Communication, *Financing ICTD in Africa*. ([http://africa.rights.apc.org/index.shtml?apc=29740se\\_1&x=30657](http://africa.rights.apc.org/index.shtml?apc=29740se_1&x=30657))

<sup>54</sup> Accuosto, Pablo; Johnson, Niki (2004), *Financing the Information Society in the South: A Global Public Goods Perspective*. (<http://rights.apc.org/documents/financing.pdf>)

making due to the limited technical and policy capacities, lack of financial resources and inadequate information and the inefficient working methods of the global governance system.<sup>55</sup> There is also an evident lack of awareness of global public goods and the role of ICTs in development. Coupled with ineffective coordination among different groups dealing with international policy issues particularly between the ministries of cooperation, foreign affairs, transport and communications, the regulatory bodies dealing with telecommunications and broadcasting, and the inadequate regional cooperation, the participation of African countries in the global governance regime is limited. It is, therefore, important to ensure the maximum involvement of African countries in the global debate on public goods. It is also essential to encourage the involvement of African researchers in carrying out studies around the concept of public goods.

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<sup>55</sup> Commonwealth Telecommunications Organization and Panos London, 2002, *Louder Voices: Strengthening Developing Country Participation in International ICT Decision-Making*. (<http://www.panos.org.uk/resources/bookdetails.asp?id=1065&null=1002>)

## 7. Conclusion

African countries will benefit from a well-intentioned and crafted dual financing mechanism that helps the mobilization and use of existing domestic and international resources and promote private financing while at the same time advances new innovative financing within the framework of the digital solidarity agenda specifically within a global public goods framework. Altogether a significant effort is still needed to improve domestic financial management and create an enabling environment to attract investment and to use existing resources optimally.

Innovative financing mechanisms should also be pursued to bring universal access to the poor. The proposed global tax on trans-national companies could facilitate the generation of US\$600 to US\$900 million required to advance access to the poor, to mainstream ICTs in key sectors and to enable countries to build human resources and open up avenues for entrepreneurship and innovation. Imposing a tax on the manufacturer's end would also put an end to the fear of some countries regarding the risk of diverting resources, particularly the ODA, from financing traditional sectors and priorities such as the reduction of the burden of HIV/AIDS.

On their part governments should encourage ICT financing with a focus on poverty.

### Recommendations

Governments should:

- Create an enabling legal, institutional and policy environment for increasing access and effective use of available financing mechanisms;
- Remove barriers so that access as “public good” will be available to everyone;
- Create innovative policy models that would promote the participation of non-profit operators in the deployment of ICT infrastructure and the development of bottom-up ICT infrastructure using innovative wireless technologies;
- Embrace universal access strategies using locally available resources and innovative financing mechanisms such as universal service funds that employ methods such as the minimum subsidy auction or community-driven approaches such as rural cooperatives;
- Promote access to alternative and innovative financial resources including remittances. Remittances represent a significant resource and rely on moral contracts that promote the spirit of the public good;
- Design and implement development strategies that integrate ICTs within the spirit of public goods, for example, by promoting an integrated planning of ICT with health, road, energy and other infrastructure at local levels;
- Support effective use of existing finances by enforcing proper management of resources;
- Encourage the participation of local researchers to develop and implement the concept of global public goods;
- Highlight ICT and access dimensions in the global debate on public goods and broader issues on financing development.

In sum, for reasons of exceptional financial scarcity, growing development challenges and weak prospects for integration in the knowledge economy, specific attention should be given to the poor. Poverty is very real and daunting. Inspiration and empowerment are critical for bringing about sustainable development, because it is the poor who have the capacity and the drive to break the cycle of poverty. Inspired people with innovative ideas could make great difference on poverty. Increasing and nurturing human capability remains a fundamental but steep challenge for Africa. The technologies that facilitate the flow of potentially inspiring and empowering information and knowledge should not necessarily be new. A well-crafted mix of old and traditional technologies adapted to local settings would be important.

Similarly, financing mechanisms that bring a mix of effectively used traditional sources together with new mechanisms within the global public good and digital solidarity tag are essential. In one hand there is a need for greater coordination to align sources of finance with enabling policy environments, and on the other hand, new financing mechanisms within the public goods framework should be pursued to bridge the access gaps of those who are below the poverty line. Governments play a key role in enriching development strategies with ICTs. Regional organizations such as the African Union and programmes such as NEPAD should also play a key role in studying new mechanisms and synchronizing existing sources of finance with enabling policy environments so as to enhance the impact of ICTs on most African people.

## Annex I: Broad-based ICT Policies and Strategies in Africa

Country	ICT Policies	URLs
Angola	National Commission for Information Technology, Strategy for the Development of Information Technology 2000-2010	<a href="http://www.cnti-angola.gv.ao/strategy.htm">http://www.cnti-angola.gv.ao/strategy.htm</a>
Cameroon	NICI Cameroon	<a href="http://www.uneca.org/aisi/docs/CameroonNICIplan.pdf">http://www.uneca.org/aisi/docs/CameroonNICIplan.pdf</a>
Djibouti	Strategie TIC Djibouti, 2003	<a href="http://www.mccpt.dj/Documents/Strategie%20TIC%20Djibouti%2020030311%20AM.pdf">http://www.mccpt.dj/Documents/Strategie%20TIC%20Djibouti%2020030311%20AM.pdf</a>
Ethiopia	Ethiopian Science and Technology Commission, National ICT Policy	<a href="http://www.telecom.net.et/~estc/ICTPolicy/index.htm">http://www.telecom.net.et/~estc/ICTPolicy/index.htm</a>
Madagascar	Politique Nationale des Technologies de l'Information et de la Communication pour le Développement, Janvier, 2004.	<a href="http://www.caes.mg/downloads/PNTIC-D-2004.pdf">http://www.caes.mg/downloads/PNTIC-D-2004.pdf</a>
Malawi	The Malawi ICT Policy	<a href="http://www.malawi.gov.mw/finance/DISTMS/TheMalawiICTpolicy.pdf">http://www.malawi.gov.mw/finance/DISTMS/TheMalawiICTpolicy.pdf</a>
Mali	Rapport du Séminaire sur NTIC, 1999	<a href="http://www.uneca.org/aisi/docs/mali-ws-Rapport.doc">http://www.uneca.org/aisi/docs/mali-ws-Rapport.doc</a>
Mauritania	Ministère de l'intérieur des Postes et Télécommunications. Plan de développement de l'infrastructure nationale d'information et de communication (1999-2002)	<a href="http://www.univ-nkc.mr/it-plan/">http://www.univ-nkc.mr/it-plan/</a>
Mauritius	Ministry of Information Technology and Telecommunications. National Telecommunications Policy (2003).	<a href="http://www.intnet.mu/icta">http://www.intnet.mu/icta</a>
Mozambique	National ICT Policy Commission, ICT Policy Implementation Strategy	<a href="http://www.infopol.gov.mz/simposio/politica/policy.doc">http://www.infopol.gov.mz/simposio/politica/policy.doc</a> <a href="http://www.teledata.mz/simposio/discueng.htm">http://www.teledata.mz/simposio/discueng.htm</a> <a href="http://www.infopol.gov.mz/pdf/strg_eng.pdf">http://www.infopol.gov.mz/pdf/strg_eng.pdf</a>
Namibia	Miller, Esselaar Associates, Draft ICT Policy for Namibia Full Report	<a href="http://www.milles.co.za/downloads/Namibia%20Final%20Report.pdf">http://www.milles.co.za/downloads/Namibia%20Final%20Report.pdf</a>
Nigeria	Nigerian National ICT Policy	<a href="http://www.jidaw.com/policy.html">http://www.jidaw.com/policy.html</a>
Rwanda	Government of Rwanda, An Integrated ICT-led Socio-Economic Development Policy and Plan for Rwanda 2001 - 2005	<a href="http://www.uneca.org/aisi/nici/Documents/rwanpap2.htm">http://www.uneca.org/aisi/nici/Documents/rwanpap2.htm</a>
Sudan	Ministry of Information and Communication, National strategy for information society, 2003	Unpublished

South Africa	Telecommunications Act, 103, 1996 E-commerce Legislation	<a href="http://docweb.pwv.gov.za/">http://docweb.pwv.gov.za/</a> <a href="http://www.ecomm-debate.co.za/docs/comprehen.html">http://www.ecomm-debate.co.za/docs/comprehen.html</a>
Tanzania	Government of Tanzania, National ICT Policy, 2003	<a href="http://www.tzonline.org/pdf/ictpolicy2003.pdf">http://www.tzonline.org/pdf/ictpolicy2003.pdf</a>
Togo	Ministère des Mines, de l'Énergie et des Postes et Télécommunications, Stratégie Nationale de l'Information au Togo	<a href="http://www.cafe.tg/carlbro/pages/doc2/index.html">http://www.cafe.tg/carlbro/pages/doc2/index.html</a>