

THEME: BOOSTING ECONOMIC GROWTH & POVERTY REDUCTION:
FOCUS AREA:
**INFORMATION & COMMUNICATIONS
TECHNOLOGY (ICT)**

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Introduction

Advances in information and communication technology (ICT) over the last decade have brought dramatic improvements and unprecedented opportunities for Africa's participation in the global networked economy. The impact of new ICTs has permeated virtually all sectors of society and it is of paramount importance that African countries embrace a common vision and strategy for an information-based society that not only recognizes ICT as a tool for economic innovation but also as a platform for *socio-economic development*. Access to information and knowledge is a prerequisite to *reducing poverty* and achieving basic healthcare and education, all part of achieving Millennium Development Goals (MDGs).

Box 1: Role of ICTs

“We have said it time and again: the role of ICTs in national, regional, and continental development and, specifically, in wealth creation, employment generation, and poverty reduction, cannot be over-emphasized. Disease, illiteracy, poverty and other ills are real social challenges that must be addressed if we are to attain a good quality of life. Fortunately, ICTs present themselves as key potent tools that can be used to address a number of these challenges.”

Speech by His Excellency Mr. Paul Kagame, President of the Republic of Rwanda, at the official opening of the Regional ICT Investment Summit in Kigali, Rwanda, 4-6 May 2006

The threats posed by the digital divide calls for an all-inclusive approach that should result in improved *economic development* by ensuring equitable access to and use of ICTs. Although it is clear that there is no one single formula for a successful ICT for Development (ITC4D) programme as every ICT strategy and plan should be tailor-made to fit the particular national context, the successful deployment of ICT's will without doubt contribute to the development of knowledge societies and to bridging the digital divide and accelerating socio-economic development in Africa.

Regional and International context

The African Information Society Initiative (AISI)¹

Box 2: The African Information Society Initiative (AISI)

The AISI is a common vision for Africa's quest to bridge the digital divide. It was adopted by the Economic Commission for Africa (ECA) Conference of Ministers, in May 1996 and subsequently endorsed by the Organization of African Unity Heads of Summit meetings including the 1997 G-8 Summit. Several implementation activities have taken place in the following areas:

- Policy awareness;
- Training and capacity building;
- National Information and Communication Infrastructure (NICI) plans;
- Development information;
- Democratising access to the Information Society;
- Sectoral applications; and
- Infrastructure development and Internet connectivity.

Recognizing the important role ICTs play in facilitating the attainment of development goals and responding to the challenges of the Information age, the United Nations Economic Commission for Africa (UNECA) launched the African Information Society Initiative (AISI) in May 1996 as a common vision, not only bridge the digital divide between Africa and the rest of the world, but more importantly, to create effective digital opportunities to be developed by Africans and their partners, and speed the continent's entry into the information and knowledge global economy.

The action framework calls inter alia for: the elaboration and implementation of national information and communication infrastructure plans involving development of institutional frameworks, human, information and technological resources in all African countries and the pursuit of priority strategies, programmes and projects which can assist in the sustainable build up of an information society in African countries. It also aims to ensure that building Africa's information society will help Africa to accelerate its development plans, stimulate growth and provide new opportunities in education, trade, health care, job creation and food security, helping African countries to leapfrog stages of development and raise their standards of living.

The AISI represents a regional framework to support the implementation of the New Partnership for Africa's Development (NEPAD). Africa's commitment to ICT4D is also reflected through the NEPAD Action Plan, where ICT projects and initiatives have been initiated to speed up sub regional/regional connectivity. AISI also represents a mechanism for achieving the MDGs in Africa as seven of the eight MDGs are addressed in the AISI framework (table 1). While use of ICTs is not a panacea for all development problems, they offer enormous opportunities to narrow social and economic inequalities and thus help achieve the MDGs. Since the launch of AISI, ECA has been supporting member States to embark on the development of NICI policies, plans and strategies. Currently, more than 30 countries on the continent have embarked on such policies. ECA support has been in the form of upstream policy advice to assist countries in the design of strategic approaches to ICTs as an enabler for development with links to Poverty Reduction Strategies (PRS) and related development goals. This has been complemented by support for the priority programmes based on a multi-stakeholder approach and on innovative national and global partnerships that secure the required resources and expertise.

¹ www.uneca.org/aisi/

Table 1.: Link between AISI and MDGs

	Millennium Development Goals	AISI Challenges and Opportunities
1	Eradicate extreme poverty and hunger	Food security-related objectives
2	Achieve universal primary education	Education and research
3	Promote gender equality and empower women	Gender and development
4	Reduce child mortality	Health
5	Improve maternal health	Health
6	Combat HIV/AIDS, malaria, and other diseases	Health
7	Ensure environmental sustainability	Man-made crises and natural disasters

Source : ECA National Information and Communication Infrastructure (NICI): Best Practices and Lessons Learnt, 2008

ICTs have become an important sector of economic activity, which can achieve high rates of growth in developed as well as in developing countries. These strategic tools for promoting competitiveness and economic growth can also stimulate widespread, lower cost delivery of public services in all sectors. In parallel with the formulation of NICI policies, a number of countries have embarked on activities geared towards the translation of the NICI visions and objectives into sectoral strategies referred to as Sectoral Information and Communication Infrastructure (SICI) policies and plans. Sectoral strategies are therefore tailor-made for the specific needs of each sector and accord each sector the opportunity to build on sectoral strengths and adapt to sectoral needs. Sectoral policies have enabled various groups and sectors to identify their ICT gaps and devise the appropriate and corresponding responses.

The WSIS process

The critical importance of national ICT strategies was further confirmed during the World Summit on the Information Society (WSIS), which took place in December 2003 in Geneva. The WSIS was a bold attempt to address the issues raised by ICTs through a structured and inclusive approach and an effective means of addressing the goals of the Millennium Declaration. The Summit achieved a common understanding of the key principles that will determine the ability to harness the potential of ICTs. In Geneva in 2003, participants shared a vision of a people-centred, development-oriented and inclusive Information Society, and committed to the *Plan of Action* setting out targets to be achieved from 2003. The *Plan of Action* also emphasized the importance of developing and implementing comprehensive, forward looking and sustainable national e-strategies in developing an inclusive Information Society.

In 2005, governments reaffirmed their dedication to the foundations of the Information Society in the *Tunis Commitment* and outlined the basis for implementation and follow-up in the *Tunis Agenda for the Information Society*. In particular, the *Tunis Agenda* addresses the issues of financing of ICTs for development and Internet governance.

The Geneva and Tunis outcome (<http://www.itu.int/wsis>) entrusted ECA with follow up activities through Action Lines that were identified during the WSIS, in providing support to member States to implement the WSIS decisions. In this context one of the major areas that was highlighted concerns the development of e-strategies, including national, sectoral and regional plans on the Information Society.

During the World Summit on the Information Society (WSIS) process, the African countries coordinated their participation through two preparatory conferences held respectively in Bamako in 2002 and Accra in 2004 and yielded the Bamako Declaration and the African Regional Action Plan on the Knowledge Economy which was launched at the second World Summit on the Information Society (WSIS) in Tunis in November 2005. The ARAPKE Framework for Action defines a set of objectives, strategic actions, time frames and partners needed to achieve Africa's knowledge economy, encompassing the WSIS goals and other more specific initiatives. (ARAPKE – details of the Action Plan is available at <http://www.uneca.org/aisi/docs/ARAPKE%20doc1.pdf>), which was adopted in September 2005 by African member States.

His Excellency, Mr. Paul Kagame, President of the Republic of Rwanda, during the World Summit on the Information Society (WSIS), stated that:

“Today we all recognize that ICT is not a matter of choice; it is a necessity. It has become abundantly clear to us in Africa that ICT is an indispensable tool in the achievement of our development outcomes, as well as the Millennium Development Goals (MDGs)”².

His Excellency, John Agyekum Kufuor, President of the Republic of Ghana also noted in his address delivered at the Opening Ceremony of the Second Preparatory Conference on the World Summit on the Information Society (WSIS) that:

“It is important that we use the opportunities created through the African Information Society Initiative of the ECA to link the implementation of the African strategies to the global Action Plan to achieve the Millennium Development Goals”³.

Recognizing the crucial role that ICTs can play in facilitating socio-economic development, a number of countries have formulated or are in the process of developing ICT for development (ICT4D) policies and strategic action plans to facilitate the process of transforming economies and societies. To support these efforts, attention is increasingly being directed to the development of suitable Information Society assessment and measurement indicators. This is in response to the World Summit for the Information

² www.itu.int/wsis/ - His Excellency, Mr. Paul Kagame, President of the Republic of Rwanda, General Debate, Plenary Session 1, WSIS Geneva, 2003

³ Address delivered at the Opening Ceremony of the Second Preparatory Conference on the World Summit on the Information Society (WSIS) by H.E. John Agyekum Kufuor, President of the Republic of Ghana, Accra, Ghana, 2-4 February 2005.

Society (WSIS) Plan of Action on the development of suitable indicators to monitor and measure the development of the Information Society.

Measuring ICT indicators

The development of these indicators is essential to support and facilitate key aspects of the ICT4D process as part of efforts targeted at addressing the developmental implications of the digital divide. Appropriate indicators would also elucidate the magnitude of the digital divide in both its domestic and international dimensions and provide a baseline for regular assessment, whilst also tracking global progress in the use of ICTs to achieve internationally agreed development goals, including those of the Millennium Declaration.

To respond to the challenge of monitoring the progress in the implementation of national e-strategies, the Scan-ICT programme⁴ was launched in November 2000 as a collaborative project between the Acacia programme of the International Development Research Centre (IDRC) and the United Nations Economic Commission for Africa (ECA), with financial support from the European Union (EU) and the Norwegian Agency for Development Cooperation (NORAD). The objective of this initiative was to build the capacity of national statistical offices and research institutions in monitoring, analysing and evaluating progress achieved at the national level and subsequently attracting investment to the ICT sector. This multi-partnership initiative monitors the penetration, impact and effectiveness of ICT applications in pilot countries across Africa whilst also providing value to the AISI implementation at the national, regional and global levels. Furthermore, the programme aims at assisting member States in their efforts to develop the Information Society and economy through the compilation of suitable Information Society/ICT4D indicators that would guide ICT policy, plan and implementation processes.

The first phase of the programme, which comprised six countries, namely, Ethiopia, Ghana, Mozambique, Morocco, Senegal and Uganda, was completed in 2004. The Scan-ICT Phase II whose main objective is to ensure the sustainability of the Scan-ICT process and to integrate it as an essential part of the NICI policy is currently being implemented in Cameroon, Gambia, Ghana, Mauritius and Rwanda with financial support from the Government of Finland.

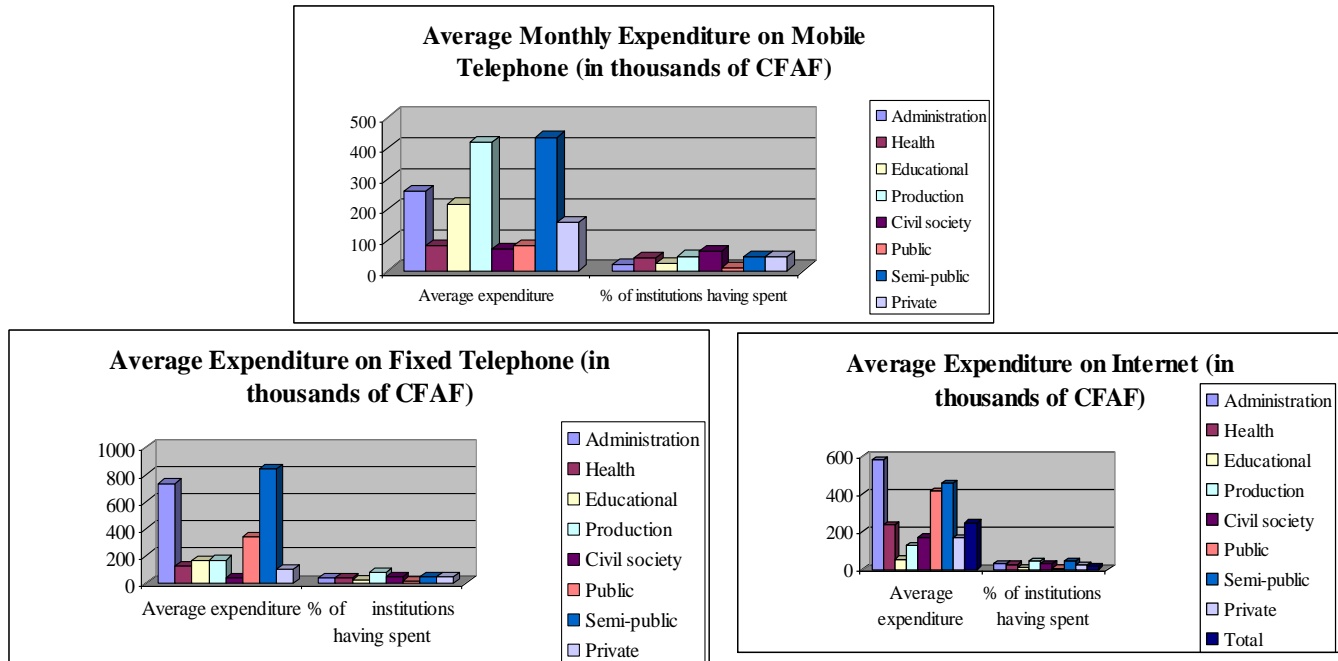
The Scan-ICT survey in Cameroon (Fig1) assessed expenditures on consumption of ICT services. The average expenditure on telephone consumption was calculated on a monthly basis. The telephone facility included both fixed telephony and mobile telephony.

On mobile telephony development, the survey results indicated that this development was at a personal level and very few enterprises included mobile telephony in their holistic communication plans. A significant number of institutions used personal employee mobile phones for official use.

⁴ <http://www.uneca.org/aisi/scanict.htm>

Expenditure on Internet services was still relatively low with only about 20 per cent of the institutions surveyed registering monthly expenditures for this facility. The low level of Internet penetration in the country accounted for the low expenditure.

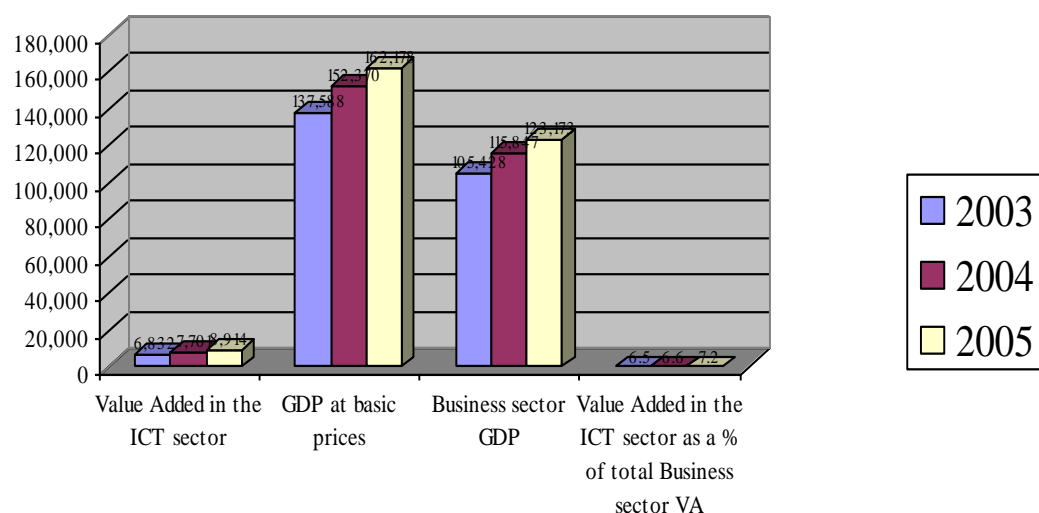
Figure 1: Cameroon: Preliminary results - Source SCAN-ICT Survey, 2006



The Scan-ICT project in Mauritius focused on assessing ICT trade, based on indicators such as value added in the ICT sector as a percentage of total business sector value added. Value added in the ICT sector is the sum of value added of all establishments falling within the sector.

Figure 2: Value Added in the ICT sector (\$1 = 31.5 Rupees)

Value Added in the ICT sector (as a % of total business sector VA - in Rs Million



An analysis was also conducted on ICT goods imports as a percentage of total imports, and ICT goods exports as a percentage of total exports. ICT goods imports were compiled from total imports of goods from customs data based on the list of ICT goods provided by OECD (the sum of imports of all ICT goods as per OECD list of ICT goods). Similarly, ICT exports were compiled from total exports of goods based on the list of ICT goods provided by OECD (the sum of exports of all ICT goods as per OECD list of ICT goods). Imports were valued at a cost, insurance and freight (CIF) basis, whereas exports were valued at the free on board (FOB) basis. See table 2.

Table 2: ICT goods imports as a percentage of total imports and ICT goods exports as a percentage of total exports (in million Rupees)

ICT Goods	2003	2004	2005
ICT goods Imports (CIF)	3,627	4,811	12,277
Total Imports of goods (CIF)	65,942	76,387	93,282
ICT goods Imports as a % of total Imports of goods	5.5	6.3	13.2
ICT goods exports (fob)	850	1,549	8,484
Total exports of goods (fob)	50,978	52,704	59,095

ICT goods exports as a percentage of total exports of goods (%)	1.7	2.9	14.3
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NEPAD

The African Union's **NEPAD** programme⁵ is the other major continent-wide initiative, having identified ICT as one of the four priority programmes, and established a special task force to coordinate these (the NEPAD e-Africa Commission). The two major ICT projects of the e-Africa Commission are – the broadband fibre network for the continent, NBIN and the e-School initiative. In the first phase of the NBIN project, ministers responsible for ICT from Eastern and Southern African countries have endorsed the US\$2 billion UhuruNet submarine cable project for the region, and the e-Africa Commission and fibre investment company 5-P Holdings signed a Memorandum of Understanding in October 2007 to construct the cable. NEPAD's most important contribution in this context is pursuing an open access model, which means that anyone can join in as an investor in the project which will be operated on a cost-recovery rather than a for-profit basis. The e-Schools initiative, which aimed to transform African secondary schools into NEPAD e-Schools within five years of implementation start date (2003) and all African primary schools within 10 years of implementation is backed up by a commitment of US\$15 million from the private sector (chiefly AMD, Oracle, Microsoft and Cisco). This contribution is assigned to the demonstration project, whose experiences will serve as the basis for the further rollout of the initiative. The project entails provision of infrastructure in schools, training, content development and community buy-in elements such as health information access points. Of the 16 countries that have been invited to participate nine countries⁶ have so far begun their involvement with the project. Some other projects being initiated by NEPAD are⁷:

- Telecommunications device manufacturing plant: aimed at fostering private ICT industries, promoting industrial sub-contracting activities, and producing ICT equipment more adapted to the African needs and environment, in West Africa;
- DATAFRICA: the creation of an electronic database to store statistics in the fields of economics, trading, geography, environment, agriculture, health, population, ICTs and infrastructure;
- e-Justice Africa: a system to manage justice information in Africa, allowing the exchange of data between criminal justice agencies, courts, law enforcement and prosecutors;
- e-Customer Africa-ACEN: a public-private communications and data transmission system designed to track customs transactions between African countries;

⁵ Responsibility for the NEPAD implementation process lies with the Heads of State and Government Summit of the African Union (formerly known as the OAU). The Heads of State and Government

⁶ Egypt, Ghana, Lesotho, Kenya, Mali, Mauritius, Rwanda, South Africa and Uganda. Other countries planning to participate in the first phase of the project are Algeria, Burkina Faso, Cameroon, Gabon, and Nigeria.

⁷ More projects were outlined in the Conference on financing NEPAD, held in Dakar, Senegal, 15th-17th April, 2002, a list is available at: http://www.idrc.ca/en/ev-115673-201-1-DO_TOPIC.html.

- Telemedicine-AHTIS: a continental project to build high-quality, interoperable systems for health education, prophylaxis, epidemiological analysis, telemedicine operations, medical care and prevention;
- Africa shop: an electronic online store that aims to be a window on African art and culture, offering crafts, clothing, local food and jewellery.

Furthermore, the Africa's Science and Technology Consolidated Plan of Action (CPA) articulates Africa's common objectives and commitment to collective actions to develop and use science and technology for the socio-economic transformation of the continent and its integration into the world economy or globalisation. It is erected on three interrelated conceptual pillars. These are: (a) capacity building (b) knowledge production, and (c) technological innovation. In the context of the CPA Capacity building refers to the creation, improvement and mobilization of human skills, physical infrastructures, financial resources and the necessary policies for science and technology to be produced and used to solve specific African problems. Knowledge production is really about the conduct of science—the generation of scientific and technical knowledge about Africa's problems and identification of specific ways to solve the problems. This is what is often referred to as R&D. Technological innovation entails the generation of specific products, processes and services. From this outline it can be conspicuously observed that ICTs are at centre of the driving forces of development in Africa in this era of globalisation. African countries are facing new challenges to their socio-economic development as a result of this globalization process and the impact of the emerging new information age. While there has been global progress in improving access to ICTs and awareness of their potential, access to these technologies remains extremely uneven as evidenced by ICT-related growth and productivity which are, to a large extent, confined to developed economies. Therefore, the ICT cluster of the CPA programme aims at establishing a continental research network on ICTs. It will bring together leading universities and research centers to design and implement projects that generate software with African content. Its specific goals are stimulating technical change and innovation in ICTs; building skills in local software research and development; and building knowledge of Open Source Software and promoting its application in education, health and conduct of science.

An example of a multi stakeholder partnership at the international level is the **Connect Africa Initiative** which was launched in October 2007 to mobilise resources to bridge major gaps in ICT infrastructure across Africa. Recognizing the significance of building the ICT infrastructure in Africa, the recent ECA co-organised, Connect Africa summit held on 29 and 30 Oct 2007 in Kigali Rwanda under the patronage of President Paul Kagame adopted the following five goals:

Goal 1: Interconnect all African capitals and major cities with ICT broadband infrastructure and strengthen connectivity to the rest of the world by 2012.

Goal 2: Connect African villages to broadband ICT services by 2015 and implement shared access initiatives such as community telecentres and village phones.

Goal 3: Adopt key regulatory measures that promote affordable, widespread access to a full range of broadband ICT services, including technology and service neutral licensing/authorization practices, allocating spectrum for multiple, competitive broadband wireless service providers, creating national Internet Exchange Points (IXPs) and implementing competition in the provision of international Internet connectivity.

Goal 4: Support the development of a critical mass of ICT skills required by the knowledge economy, notably through the establishment of a network of ICT Centres of Excellence in each sub-region of Africa and ICT capacity-building and training centres in each country, with the aim of achieving a broad network of inter-linked physical and virtual centres, while ensuring coordination between academia and industry by 2015.

Goal 5: Adopt a national e-strategy, including a cyber security framework, and deploy at least one flagship e-government service as well as e-education, e-commerce and e-health services using accessible technologies in each country in Africa by 2012, with the aim of making multiple e-government and other e-services widely available by 2015.

The initiative aims at accelerating the implementation of the connectivity goals of WSIS, building on existing national and regional activities and priorities. Launched in Kigali, Rwanda, the Summit was organized by the ITU, the African Union, the World Bank Group and the United Nations Global Alliance for ICT and Development (GAID), in partnership with the African Development Bank (AfDB), the African Telecommunication Union, UNECA and the Global DSF. The launch resulted in investment commitments of over US\$55 billion from private and public sector stakeholders, to be spent over ICT's and the knowledge economy

ICT and the Knowledge economy

In today's global, information-driven society, economic success is increasingly based on the effective utilization of intangible assets such as knowledge, skills and innovative potential as key resources in gaining comparative and competitive advantages. The global knowledge economy is characterized by knowledge-intensive industries, producing goods and services for each and every sector. The capacity of industries and countries to manage knowledge assets has become a major determinant of economic growth and competitiveness. For improving the competitiveness of industry and its sectors in a knowledge-based economy, the impact of ICT for the acceleration of productivity growth is recognized.

The diffusion and uptake of new ICTs has resulted in enhanced growth and productivity of the economy and created global markets for goods and services. Information and knowledge-based economies are often characterized by widespread deployment and use of ICTs within the society to support, for example, the delivery of educational, health and other social services. Employment in the knowledge-based economy is characterised by an increasing demand for more highly skilled human resources for developing and maintaining a competitive edge on the global market. Educated and skilled human resources or human capital (the skills embodied in workers) become the most valuable asset and a central pillar in development and growth. The challenge for Africa is that, while knowledge and

information may be abundant, the capacity to access and use them in meaningful ways is usually scarce.

The AISI framework provides the roadmap to guide African countries in addressing the challenges of the emerging globalization and the information age by developing and implementing policies and plans set within the wider national socio-economic development objectives, strategies and aspirations of their respective countries. The NICI framework provides incentives to accelerate ICT diffusion, business adoption and instilling confidence amongst users.

In a survey conducted by the ECA (Status of implementation: NICI Process analysis – ECA, 2006)⁸ on efforts directed towards building a knowledge economy, 70% of respondents indicated that their NICI policies reflected the emergence of the knowledge economy - Burkina Faso, Gambia, Ghana, Guinea, Kenya, Malawi, Mali, Niger, Nigeria, Republic of Congo Brazzaville, Rwanda, Senegal, Sierra Leone and Tanzania.

Governments' will need to play a critical role in the creation of an enabling policy environment to enhance the penetration of ICT in business and trade as a key prerequisite for countries' transition into the digital and knowledge economy. The policy environment critical to successful use of e-business, could act either as an enabler and enhance adoption, or act as a barrier that stifles e-business practices.

In Africa, e-business will offer new opportunities to export-oriented companies, especially small, micro and medium-sized enterprises (SMMEs). Using networked ICTs, SMMEs could source production inputs more efficiently, eliminate intermediaries, shorten supply and export distribution chains and effectively reduce business transaction costs. The use of ICTs by SMMEs presents an opportunity towards the rapid deployment of ICT in economic sectors as a first step to the knowledge economy. However, while ICTs accord SMMEs the potential to compete globally, lack of infrastructure and unfavourable policy regimes hinder progress.

The policy environment – critical to successful use of e-business – can act either as an enabler and enhance adoption, or act as a barrier and stifle e-business practices. In Africa, management practices of telecommunications and transportation infrastructure, ineffective customs processing, lack of intra-governmental coordination and a lack of strategic policy frameworks, have been identified as characterizing the government barriers to e-business adoption and use.

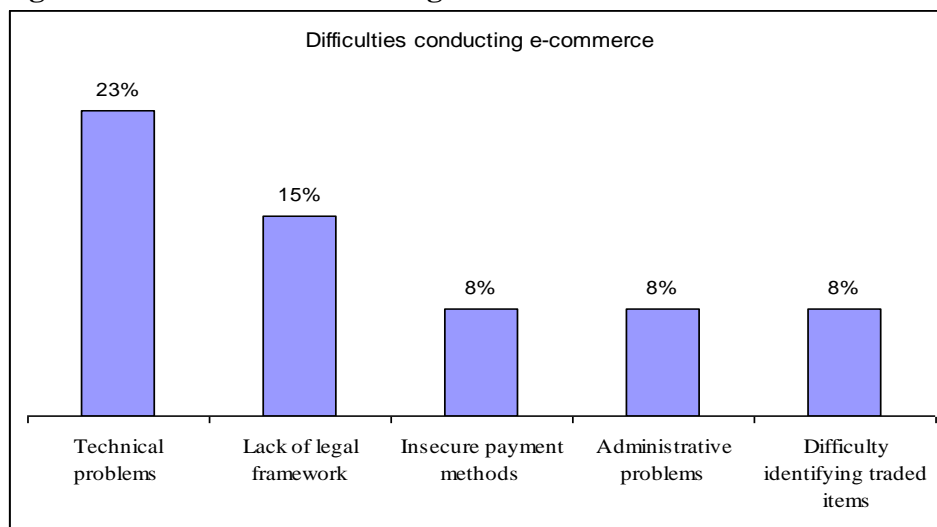
To address the role of ICTs in enhancing trade leading to economic growth, the ECA, under the auspices of the Global ePolicy Resource Network (ePol-NET), convened a study on ICTs, Trade and Economic Growth in the form of studies in six countries in Africa - Egypt, Ethiopia, Ghana, Kenya, Senegal and South Africa. This initiative was bolstered by the

⁸ “Status of implementation: NICI Process analysis - ECA, 2006 (Burkina Faso, Burundi, Cameroon, Chad, Gambia, Ghana, Guinea, Kenya, Malawi, Mali, Niger, Nigeria, DRC, Republic of Congo Brazzaville, Rwanda, Senegal, Sierra Leone, Swaziland, Tanzania and Togo)

WSIS outcomes, which called for the promotion of the benefits of international trade and the use of e-business in developing countries within the framework of national e-strategies. The objectives of the study were, the assessment of ICT and trade policy environment (including intra-African trade); demonstration of potential economic benefits of ICT utilization in the enhancement of trade; identification of gaps, if any, in the legal and regulatory frameworks and policy recommendations to governments and the assessment of the awareness and usage of ICTs in trade by exporting by SMME's.

In Egypt, the study emphasized on the gap between the ICT sector and international trade practices and proposed a need to link e-commerce applications with the various business practices in the country in a way that enabled Egyptian business to effectively engage in electronic trading. Egyptian SMME's were utilizing ICT in business, but not as much in trade as only 10 per cent of the companies that accessed the Internet from business premises were involved in e-commerce transactions.

Figure 3: Difficulties conducting e-commerce



Source: ECA study: ICT role in trade facilitation in Egypt, 2007

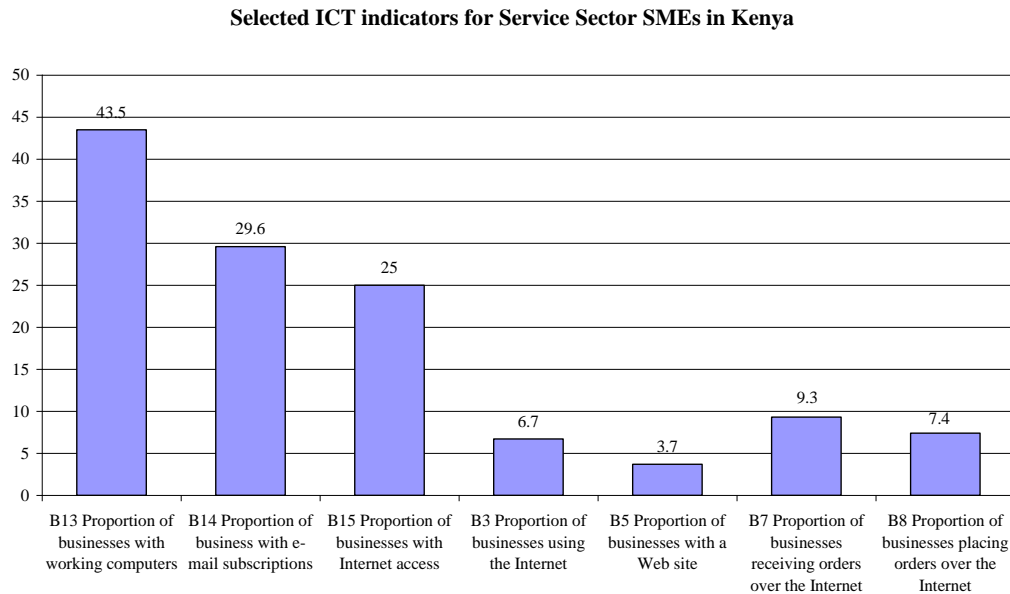
From figure 3 above, the difficulties in conducting e-commerce called for solutions which included:

- The need for educating the SMME community about e-commerce applications and the resultant benefits for their businesses;
- Maintaining quality and cost effective ICT infrastructure and continuously developing infrastructure to realize enhanced and low cost services; and
- A dynamic legal and regulatory environment that enhances trust and effective on-line disputes resolution mechanisms thereby encouraging the companies to conduct electronic business nationally and internationally.

In Kenya, from a sample of SME's in cities and major towns of Kenya, 43.5 per cent of the service sector businesses sampled had working computers and 25 per cent of the businesses

had access to Internet. However, only 6.7 per cent were using the Internet and only 3.7 per cent had a web presence (figure 4).

Figure 4: Selected ICT indicators for service sector SMEs in Kenya



Source: ECA study: Trade and Economic growth in Kenya: The Strategic role of Information and Communications Technology, 2007

The study concluded *“there was limited readiness and use of ICT by SMEs in Kenya because of lack of awareness of potential benefits of ICT and lack of local ICT applications appropriate for the sector. ICT policy must aim to promote new ICT facilitated business practices.”*

In Ethiopia, the response from sampled firms was generally that the absence of an online payment system and an appropriate legal framework for electronic commerce were the main obstacles to the expansion of the use of ICTs in trade. Lack of client firms and customers who were ready to use the Internet to exchange goods and services as well as the non-conformity of the products and services were cited as additional barriers to expand e-commerce.⁹

In Ghana, SMEs expressed their willingness to build their ICT skills and it was the expectation of SMEs to receive ICT training and capacity building from their business associations and public institutions. From the survey conducted for the ICTs, Trade and Economic Growth Study only 12 per cent of the SMEs acknowledged having received ICT training from their respective affiliations. To address the problem of low e-competency and capacity building for export oriented SMEs, the Ghana Export Promotion Council had

⁹ Study on The Role of ICTs in enhancing Trade and Economic Growth in Ethiopia, 2007

developed an e-competency strategy, which, if well implemented would build the capacity of SMEs to take advantage of ICTs to improve every aspect of their business. From the SME perspective, ICT facilities should be accessible and easy to operate. Convenience in using ICTs was necessary as it formed an essential part of their operations. Since SME's sought to minimize costs, 100 per cent of respondents wanted ICT facilities to be affordable and the cost of recurrent expenditure to be transparent. Among the concerns, was the issue of security and privacy in using ICTs. This also included issues such as copyright and intellectual property rights.

ICT and Poverty Reduction

ICTs are fundamental to the improvement of all aspects of developing economies and their entry into the global marketplace and are critical components of poverty alleviation strategies. While ICTs are not a panacea for all development problems, they offer enormous opportunities to narrow social and economic inequalities and thus help achieve broader development goals, such as those set by the United Nations' Millennium Development Goals (MDGs). ICTs can spur growth, create jobs opportunities for the poor, improve market access, contribute to income generation and enhance rural productivity. Through ICT's, enterprises are able to capture economic opportunities, increase process efficiency, expanded economic networks, and creating opportunities for employment.

African economies continue to sustain the growth momentum of previous years, recording an overall real GDP growth rate of 5.7 per cent in 2006 compared to 5.3 per cent in 2005 and 5.2 per cent in 2004. This strong economic performance has however not been accompanied by substantial gains in job creation and has not impacted on poverty alleviation or human development.¹⁰ There is however conscious realization that human resource and skills development are central to development in a globalized, competitive environment. Human resource development (HRD) is considered critical in the development of the ICT sector and in stimulating ICT usage in other sectors.

A joint ECA-ITU study on Employment and Poverty Alleviation in Africa (Opportunities and challenges) commissioned in five countries (Egypt, Ethiopia, Kenya, Mozambique, Senegal and Nigeria)¹¹ in July 2007, assessed the potential of ICTs in employment creation and poverty alleviation and existing challenges for ICT on the employment environment. The potential of ICTs in employment creation and poverty alleviation was an important subject high on the agenda of several government fora and global and regional initiatives. These included:

¹⁰ UNECA Economic Report on Africa, Accelerating Africa's Development Prospects Through Diversification

¹¹ ECA-ITU study on Employment and Poverty Alleviation in Africa (Opportunities and challenges), 2007 – to be published

- a) The Ouagadougou Declaration on Employment and Poverty Alleviation in Africa emanating from the Africa Union Extraordinary Assembly of Heads of State and Government, September 2004;
- b) The 39th Conference of African Ministers of Finance, Planning and Economic Development, Ouagadougou, Burkina Faso, May 2006;
- c) The outcomes of the WSIS – action lines of the Tunis Agenda and the Action Plan of the Geneva Summit;
- d) The implementation of the Regional Initiative on ICT applications adopted by the World Telecommunications Development Conference, Doha 2006.

The study highlighted a number of enabling conditions for ICT to generate more employment and have a discernible impact on poverty alleviation. These included, access to reliable and affordable telecommunications and electric power infrastructures, liberalization of the ICT sector, universal service policies, capacity building initiatives and the review of the education system to encourage entrepreneurship. The study indicated that access to reliable and affordable telecommunications and electrical power infrastructure was an important precondition for the use of ICT to generate employment opportunities. The high cost of bandwidth has been a major deterrent to ICT penetration and hence a major hindrance to the creation of jobs through ICT in most of the studied countries. A separate ECA commissioned “Report on the Economic Impact of ICTs on Trade Among SMMEs in South Africa”¹², alluded to that *“the limited use of the Internet by SMMEs was attributed to high cost of Internet service (25 per cent of the respondents believed that affirmed this However, limited usage could also be explained by inadequate skills.”*

African countries where the ICT sector have been liberalized e.g. Nigeria and Egypt exhibited higher telecommunications penetration and direct and indirect job creation rates, more vibrant economies leading to a positive impact on poverty alleviation. The impact on employment creation and poverty alleviation was less pronounced in Ethiopia and Mozambique that were still under monopoly.

Apart from Egypt and Nigeria, the study indicated that most African countries lacked the critical mass of skilled ICT manpower required to drive and grow the ICT sector. This underscored the need for deliberate policies to promote the development of the required critical mass of skilled ICT manpower in the various countries.

Regarding the contribution of ICT to poverty alleviation, the PRSP of countries should be reviewed with more emphasis on how ICT can be used as tool to accelerate the MDGs. From the Poverty Reduction or Poverty Eradication documents of the various countries it was obvious that many of the African countries just mentioned the application of ICT in passing in their poverty reduction and reform documents. ECA’s NICI policy and plan methodology ensures that poverty reduction strategies are integrated to the NICI policies

¹² Report on the Economic Impact of ICTs on Trade among SMME’s in South Africa, M. Socikwa and N. Sunker, 2006 (Commissioned by the ECA)

and plans. Policies and plans are complimentary to PRSPs as poverty reduction is a major long-term objective of the NICI processes itself.

Gender considerations

Promotion of women's entrepreneurship is thus an important priority for African economies. It is a means to alleviate women's unemployment and poverty and also to stimulate economic growth. This requires an enabling environment for the development of SMEs and also for the elimination of gender specific barriers in developing their own businesses. These include limited access to information, business networks and collateral as well as the traditional attitude towards the gender role and unfavourable social climate. Women-entrepreneurs are most often excluded from trade, business associations, access to information on credit, training opportunities, business partners and new markets etc.

Women's and men's access to and use of ICT are constrained by factors that go beyond questions of technological infrastructure and socio-economic environment. Socially and culturally constructed gender roles and relationships play a cross cutting role in determining the capacity of women and men to participate in equal terms in the Information Society.

ECA has been committed to tackling these challenges through the building of capacities and by creating and strengthening networks for exchange of information and partnership among women entrepreneurs, and between women entrepreneurs and other stakeholders working in enterprise development in the framework of the Enterprise Development Facility (EDF). EDF aims at providing web-based resources on women entrepreneurs in Africa and on other institutions and structures that provide technical assistance to entrepreneurs, facilitating women entrepreneurs' access to information related to trade and markets, trade fairs, judicial and institutional frameworks, capital markets and prices, organizing capacity building activities for members of the EDF on various issues and creating a learning process/framework for technical apprenticeship and coaching.

Integrating gender considerations into national ICT policy and implementation will not be achieved without strong, effective leadership from the state. African governments should play a leadership role in articulating a clear vision and strategy for ICT development which takes account of their local contexts and legitimate demands for gender justice. consultative mechanisms to ensure that all key actors are actively involved in the process of policy formulation, implementation and review need to be developed.

The AISI Framework is particularly strong in arguing for and demonstrating the potential benefits of this approach to undertaking ICT policy planning and implementation. In Egypt, women participation in ICT is very pronounced. Several government ministries have been assisted to develop sectoral gender sensitive policies that address the identified gender gaps in their respective sectors. This exercise is seen as a window of opportunity to engender the national ICT policy in recognition of the fact that the national gender machinery was not actively involved from the inception in the policy formulation process. The Rwanda second NICI process (NICI 2010) has highlighted the relevant ICT and Gender policy action issues

to ensure the implementation of a Gender Specific Project to facilitate active involvement of women in ICTs.

The AISI and its subsequent implementation in national and sectoral e-strategies, accorded priority to disenfranchised groups, in particular women and youth. The ECA has demonstrated willingness to bridge these institutional boundaries and emerge as a source of expertise for African countries. Several gender workshops have been organized for the purpose of developing a framework for a Pan African Action Plan for Gender and e-Government.

ECA together with the Regional Commissions ESCWA, ECE, ECLAC, and ESCAP is undertaking a project “Knowledge networks through ICT access points for disadvantaged communities”¹³ with the main goal being that of empowering poor and disadvantaged communities through the transformation of existing ICT access points in selected countries into knowledge hubs of global knowledge networks. The project aims at increased engagement of target beneficiaries in disadvantaged communities (with an emphasis on women) in these knowledge networks. This involvement will serve to deploy relevant knowledge pertaining to key areas of sustainable development such as employment, education, gender and health.

The need to strengthen the African ICT Infrastructure

Despite challenges, Africa is striving to embrace the convergence of telecom and IT which is critical to boost Africa’s socioeconomic development and growth because it can shape the delivery of government services (including education and health), redefine the way businesses operate and provide individuals with as yet unimagined information and communication services. As much as African countries adapting to convergence, they ensure an expanded access to communications with reduced costs, which in turn stimulate economic growth. Adapting to convergence is also becoming a condition for full and effective participation in the global economy and information society which has been defined in the UN’s World Summit on Information Society (WSIS) of ‘bridging the digital divide by 2015’.

As the underlying platform for the provision of access, **infrastructure** is always the initial focus of any ICT discussion. While ICT infrastructure mainly refers to the networks, cables, wireless links or satellite dishes, other important elements related to infrastructure include the optimal use thereof (interconnection of different networks or the management of the frequency spectrum) and its maintenance. ICT infrastructure in Africa has increased over the past years, in spite of the challenges of low population density, low incomes and large rural populations. Particularly noteworthy is the virtual explosion of mobile phones in many African countries, which surpassed 200 million subscribers in early 2007 and continues to grow at higher rates than any other region. This has been particularly beneficial for rural areas. It is estimated there are around 400’000 localities in Sub-Saharan Africa, of which

¹³ Knowledge networks through ICT access points for disadvantaged communities – a joint UN Commissions project (2006 – 2009)

99% are villages. Less than 3% of these have a fixed line telephone connection, while 7% of rural households had a mobile service subscription in 2006.

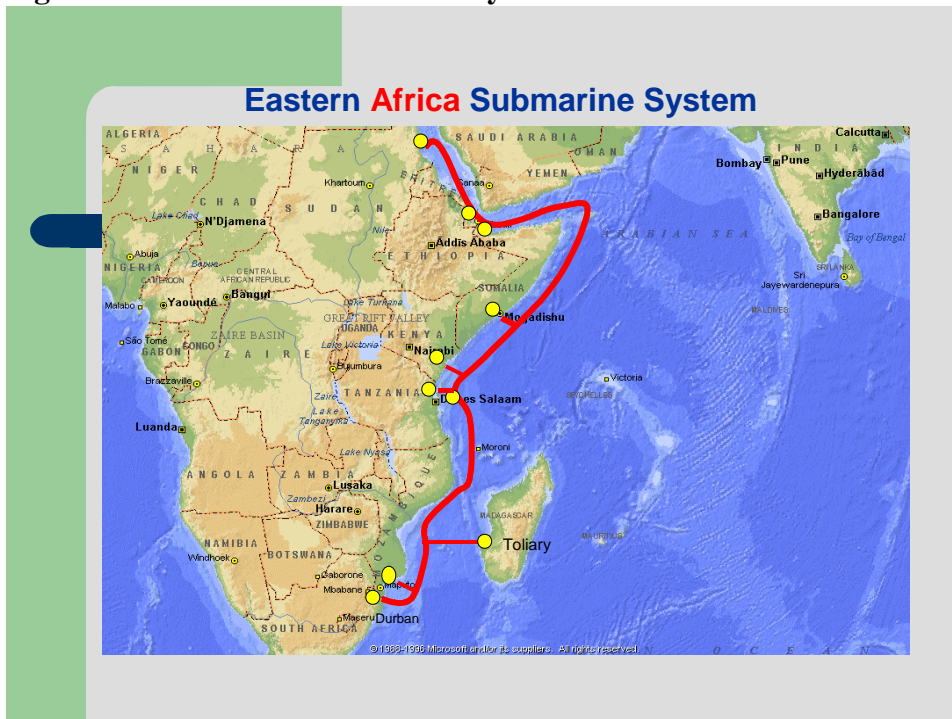
There is an overall trend across the continent toward use of wireless technologies that explains the relatively slow growth in fixed lines, which remains virtually static, at 28.5 million main lines in 2006. This is about six times lower than the world average¹². This, along with high tariffs relative to income levels and low domestic PC usage, has led to relatively slow rates of **Internet and broadband** uptake – by the end of 2006 there were only 44 million Internet users and 1 million broadband users (3.8% and 0.4% of the world total, respectively).

A number of initiatives are now taking place which will help accelerate the broadening of ICT uptake and smooth out the variations in access to ICT infrastructure within and between countries. The most notable are the various international fibre projects which will vastly improve the availability of **international and cross-continental bandwidth** over the next 2-3 years.¹⁴

In this regard, there is a positive development that aims to bridge connectivity of the Africa sub-region to the rest of the world. Among others, the Eastern Africa Submarine System (EASSy) cable project is worth mentioning. The project will establish a fiber optic undersea cable system connecting the region with the rest of the world. As the international traffic being expected to grow substantially as a higher quality, more reliable, and lower cost undersea system, this project will help to address the limitations of traditional satellite communications. Countries participating in this project include South Africa, Mozambique, Madagascar, Tanzania, Kenya, Uganda, Rwanda, Malawi, Botswana, Djibouti, Ethiopia and Somalia. NEPAD has identified EASSy as a priority project for the enhancement of ICT infrastructure in the region.

¹⁴ Intercontinental capacity is expected to increase from the current 354 Gbps, to at least 30 Tbps.

Figure 5: East Africa Submarine System



Source: Project Secretariat, Kenya Telkom, 2005

Currently international fibre only lands in a small minority of countries, and where it does, suppliers are able to charge prices hundreds of times higher than elsewhere due to lack of choice: E1 (2 Mbps¹⁵) circuits from Africa to the US or Europe currently cost more than US\$5000/month. By comparison similar cross-Atlantic links between North America and Europe can now be obtained for US\$10-20/month, and US\$15-30/month on international routes in Asia. For the end user this means that monthly Internet access in Africa costs 170% of gross national income – compared to the world average of 62%. Cross-border links are also still scarce and as a result, most international traffic is carried over equally costly satellite links, which usually land in North America or Europe, resulting in costs of about US\$400 million paid to foreign operators for traffic between African countries. To address these problems NEPAD has established the NEPAD Broadband ICT Network (NBIN) initiative, which aims to ensure that all countries on the continent have access to at least two independent international fibre cable links. In the first phase of the project a US\$2 billion network called Uhuru- Net has been proposed to cover Eastern and Southern Africa with onward links to Europe, Asia and South America, supported by a policy and regulatory framework called the Kigali Protocol, which came into force in February 2008. Seven countries have ratified it so far.¹⁶

¹⁵ Megabits per second, unit for measurement of electronic data traffic.

¹⁶ Lesotho, Mauritius, Rwanda, South Africa, Tanzania, Zimbabwe and Malawi.

Although governments' financial contribution to ICT sector has generally been inadequate in most cases, a number of countries have instituted programmes addressing infrastructure deficiencies - the prerequisite for the creation of an information-based economic structure.

In Uganda, the Government has recognized the role of ICT in national development and transformation programmes. In the financial year 2007/2008-budget statement, the priority area that will have the first call on all new resources is ICT, Science, Technology and Industrial Development. The full liberalization of the telecommunications sector has led to more investors in the sector. The Government has embarked on a National Data Transmission Backbone which links districts using fibre optic cable to high-speed connectivity for both voice and data exchange. The project also includes the linking of all Government Ministries and agencies using fibre optic technology.

“The 2007/2008 budget includes Shs. 5 billion (\$3 million) to fund the construction of a National Data Transmission Back Bone to enhance Uganda’s domestic fibre-optic network and wireless capability. This counterpart funding will supplement a \$30 million loan from the Peoples’ Republic of China”¹⁷ (10 per cent counterpart funding).

Box 3: Infrastructure deployment: Uganda Telecom

French based Alcatel-Lucent last week entered into a \$20 million (Ush 35.6 billion) contract with Uganda telecom to increase the latter’s network and over all service quality.

Providing hardware, software, and services to telecom service providers and enterprises in over 100 countries, the company will extend Uganda telecom’s GSM/EDGE mobile network and deploy the first third-generation (3G) UMTS/HSPA network in the country.

“The enhanced network will enable Uganda telecom to expand its service offerings with high-quality, mobile voice and high-speed broadband data services such as video streaming, access to corporate e-mail and intranets and many other new applications that can help generate additional revenue,” a joint statement issued after the Kampala signing said.

The new systems will be ready and capable of handling the needs of both existing customers and guests at the Commonwealth Heads of Government Meeting to be held later this November in Uganda.

All three active mobile telecoms providers in the country have over the last two quarters invested substantial resources into enhancing their communications infrastructure.

About two months ago, Uganda telecom contracted Chinese high-tech enterprise, Huawei Technologies at a cost of \$50 million (Ush 89 billion) to augment its GSM network to 70% per cent national coverage by November. (East African Business Week, 27/08/07):

http://www.busiweek.com/index.php?option=com_content&task=view&id=3922&Itemid=9

¹⁷ Budget speech Financial Year 2007/08 - Uganda, Theme: Re-orienting Public Expenditure Towards Prosperity For All.

In the Gambia, ICT continues to be a catalyst for socio-economic development and the Government has established a new ICT Directorate to implement Government's priority policies and strategies. The Government has embarked on a number of equipment and infrastructure projects at a cost of US \$10 million, both in the short and medium-terms, with the objective of providing country-wide universal access, and the enabling environment, to promote operator competition, thus satisfying the high expectations of customers.

In Kenya, the Government intends to develop and support an efficient ICT infrastructure and facilitate the completion of the ongoing ICT infrastructure expansion in order to improve broadband connectivity whilst also providing easy access to international and national networks. This will be achieved through investment in an undersea fibre optic cable and the development of a National Fibre Optic Network.

In his 2007/2008 budget speech statement, Kenya's Minister of Finance stated, "*I have allocated KShs.1.0 billion (\$ 15 million) towards The East African Marine System (TEAMS) project, whose completion by mid next year is expected to provide cheaper and faster Internet connection with the rest of the world.*"¹⁹³²

In Botswana, the draft Information and Communications Technology Policy to be presented to Parliament recommends appropriate legal and regulatory changes critical for the realisation of an e-business environment and e-government services. The major initiative will be the 'connecting communities' project, which will involve the provision of ICT access points in rural areas across the country.

Capacity to implement NICI programmes: financial resources

Countries generally face a number of socio-economic developmental challenges characterized by low growth rates, poor infrastructure development, heavy debt burden as well as perennial epidemics. These developmental challenges inadvertently require substantial financial resources to address, and this has tended to relegate the ICT4D agenda to the lower rungs of the resource prioritization ladder. This has negatively impacted on the capacity to implement and the translation of policy into plan implementation is occurring at a snail's pace.

On the allocation of funds for 1st NICI Cycle implementation, from a 2006 ECA survey²⁰, only 55 per cent of governments' allocated part of their national budgets for ICTs (figure 6). These countries include Burkina Faso, Ghana, Kenya, Malawi, Mali, Niger, Nigeria, Republic of Congo Brazzaville, Rwanda, Senegal and Tanzania, according to the ECA status report. The method of allocation was either through directly allocation to the lead

¹⁹ Budget Speech 2007/2008 – Kenya, Hon Amos Kimunya E.G.H., M.P. Minister of Finance, 14 June 2007.

²⁰ "Status of implementation: NICI Process analysis - ECA, 2006 (Burkina Faso, Burundi, Cameroon, Chad, Gambia, Ghana, Guinea, Kenya, Malawi, Mali, Niger, Nigeria, DRC, Republic of Congo Brazzaville, Rwanda, Senegal, Sierra Leone, Swaziland, Tanzania and Togo)

Ministry or as a portion of the general budget distributed across the board to all the Ministries (figure 7).

However, upon closer examination of specific ICT budget allocations in some African countries, it is clear that the amounts allocated to the ICT sector not only represent a small percentage of the total budget, but are also a fraction of allocations to the other sectors. This allocation is often inadequate to meet demand and this has resulted in the need to solicit for funds from other sources as represented by the 45 per cent in figure 6.

Figure 6: Allocation of funds for 1st NICI Cycle implementation

Allocation of public funds to NICI implementation

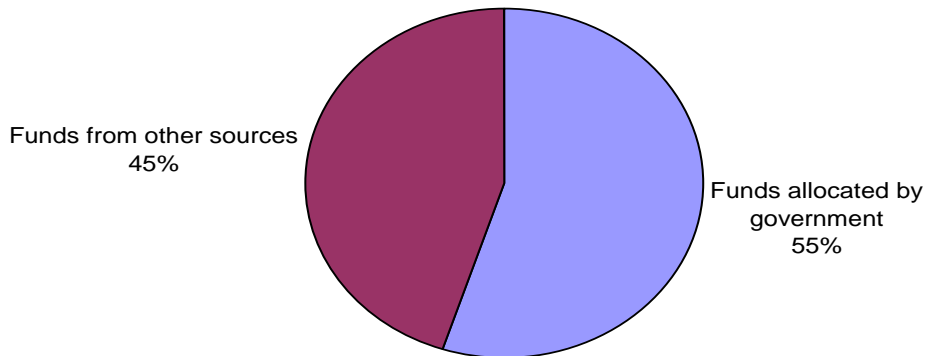
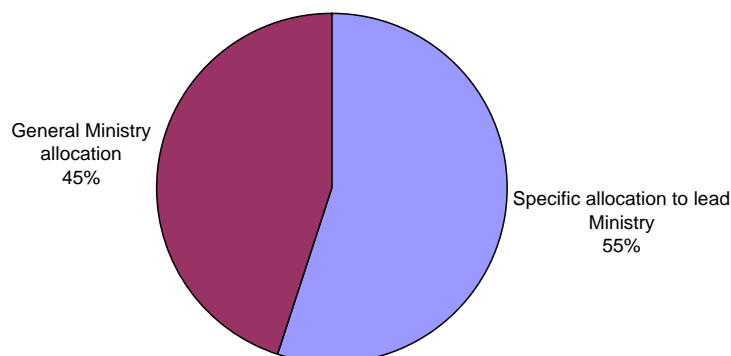


Figure 7: Method of allocation of public funds for 1st NICI Cycle implementation

Method of allocation of public funds for NICI implementation



During the financial year 2005/2006, ICT sector allocations, as a percentage of the total budget for the following countries were, South Africa (0.28 per cent), Mauritius (1.89 per cent), Botswana (1.27 per cent), Ghana (0.07 per cent) and Lesotho (1.47 per cent). In the Ghana 2007 budget, there has been an increase to 0.38 per cent. With due consideration of the programmes detailed in the ICT4D Plan, there will be funding gaps in the process of realizing the plan.

The “total resource envelope for the 2007 budget is projected at ₵54,315.9 billion (\$6 billion), and an amount of ₵207,682 million (\$23 million) has been allocated to the Ministry to carry out its activities in 2007, from Government of Ghana, ₵60,283 million (\$7 million), IGF, ₵0,856 million (\$94), donors, ₵126,543 million (\$14 million) and HIPC, ₵20,000 million (\$2 million).”²¹

In the 2006/2007 budget, for Botswana, the allocation is 2.75 per cent of a proposed development budget of P5.8 billion (\$1.2 billion).

“The remaining P894 million (\$195 million) or 15 per cent of the total development budget is shared among Ministries with the Communications, Science and Technology Ministry allocated, P154 million (\$ 33 million).”²²

There is clear evidence of the importance of ICTs in delivering sustainable economic development. Investments in the sector offer opportunities for employment generation,

²¹ Budget Statement and Economic Policy, 2007: Growth with Stability – Ghana.

²² Budget Speech, 2006 - Republic of Botswana.

creation of new sources of innovation and enhancement of industrial competitiveness. Inadequate funding has resulted in uncoordinated activities and isolated islands of technology. Governments' not only play a unique role in the diffusion of ICTs but are also leading consumers of ICT products and services. It is therefore imperative that the correlation between ICT investment and positive economic results is recognised. ICT investments produce impacts that can be measured in three quantitative ways, contribution to Gross Domestic Product (GDP), productivity and employment.

In Gambia, during 2006, real GDP grew by 7.7 per cent. The 2007 Budget Speech stated:

“The Communications Industry registered the highest growth of about 18 per cent. The growth in communication is attributed to expansion of telecommunications activities and the rapid internalization of ICT activities nation wide. National policies will continue to facilitate development within the ICT Sector to ensure faster socio-economic development, and optimize benefits from globalization”²³

From the foregoing, it is clear that the potential of ICTs to transform social and economic activities and ways of working is recognized. Sustained investment in the sector is key, as seen in Mauritius where investment in the ICT sector, a key pillar of the economy, has led to increased growth, despite the decrease to a 0.5 per cent, allocation, about 314,913,000 rupees (\$10 million), from a total budget 60 billion rupees (\$2 billion).

The Ministry of Information Technology and Telecommunications (MITT) is finalizing a comprehensive 5-year National ICT Strategic Plan (NICTSP) to implement the Government's strategy to make the ICT sector the fifth pillar of the Mauritian economy, position Mauritius as a regional ICT hub and provide equal ICT opportunities to citizens. The NICTSP will set the framework for Government intervention along the following main priorities:

- Promote development of the ICT industry (both for domestic and export uses; and
- Leverage the use of ICTs within Government and for government services to businesses and citizens (e-government).

Growth is on a rising path. Foreign direct investment is flowing in at an unprecedented rapid pace. .. the ICT sectors are doing well.”²⁴

For other countries, the government contribution, albeit small, is across all Ministries and is embedded under administration that is complex to quantify. The Government of Rwanda established a set of quantified development objectives for the years 2010 and 2020 in the Vision 2020 document. The Long-Term Investment Framework (LTIF) led by the Ministry of Finance and Economic Planning (MINECOFIN) to support Vision 2020 has been built on the six pillars of the Vision, which are:

²³ Budget speech 2007 – Gambia, Programme-based budgeting for efficient resource allocation and use with a Poverty reduction dimension

²⁴ Budget Speech 2007/8 – Mauritius: Consolidating the transition and securing full employment

- Good governance and a capable State;
- Human resource development and a knowledge-based economy;
- Private sector led development;
- Infrastructure development;
- Agri-business development; and
- Regional and international integration.

In addition, the framework considers three “crosscutting” development issues, namely gender equality, natural resources and the environment; and science, technology, and ICT. In the 2007/2008 Budget, this is translated into a visible and significant ICT allocation, not only in the parent ministry, but also distributed across all ministries, clearly indicating government’s resolve to push the ICT agenda forward.

Box 4: Rwanda cited as an ICT success story in East Africa

Rwanda has been named East Africa’s number one ICT nation by the United Nations Conference on Trade and Development (UNCTAD). According to UNCTAD, the country’s current ICT sector budget is at par with nations of the Organization of Economic Cooperation and Development (OECD), a grouping of 30 rich nations, at 1.6 per cent, far above the African average.

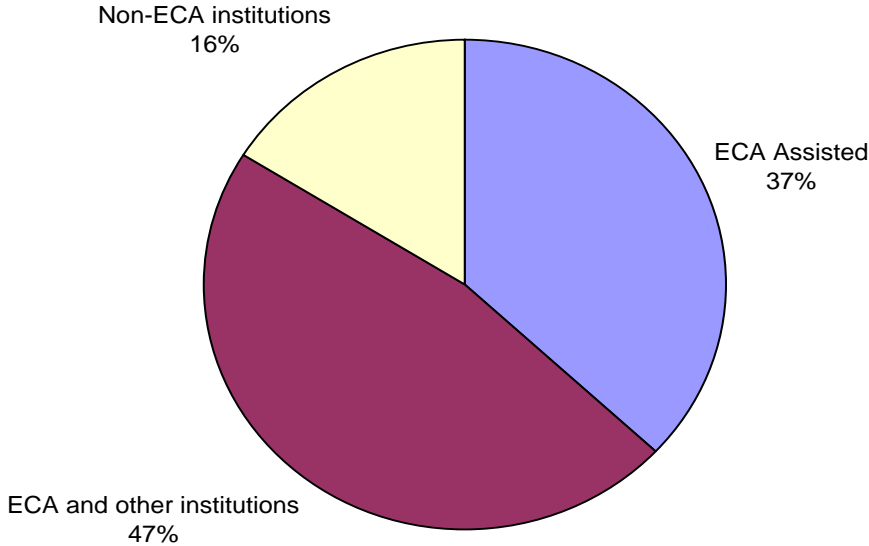
Source:

http://www.ceprc.ca/africa/africa_e.html

The funding gap in a number of countries has in most cases been filled through the active involvement of partners as shown in figure 8. According to the ECA, 2006 survey, 37 per cent of the countries received ECA assistance in the NICI process, while another 47 per cent from ECA and other institutions, including UNDP, World Bank, EU, and French Cooperation, among others. Sixteen per cent was received independently from other institutions including UNDP, EU, and UNESCO.

Figure 8: Involvement of partners in the funding of the NICI process

Involvement of partners in the funding of the NICI process



It is important that governments' adequately commit financially to realize the benefits of the Information Society Innovative financing mechanisms should be explored (e.g. PPP's, BTO's, BOT's, BOO's, BOOT's etc) and these should include leaning on best practice approaches, especially from within the continent, in view of similar challenges.