Harnessing ICT, Science and Technology for Development in Africa

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ECA Report on
Harnessing ICT, Science and Technology for Development (ISTD) in Africa

Introduction

As the result of the re-structuring of ECA in 2006, a new division called ICTs, Science and Technology Division (ISTD) was created. ECA’s subprogramme component on Harnessing Information for Development (and/or ICTs, Science and Technology for Development) is geared towards supporting African countries to participate fully in the rapidly evolving people-centred, inclusive, development-oriented Information Society to harness Science and Technology (S&T) to attain sustainable development.

To that end, ECA’s work under this subprogramme focused on three broad interrelated areas as follows:

- **ICT for Development** aimed at policies, plans and applications integrated into the development strategies of countries, with a focus on the information and knowledge economy and ICTs in the socio-economic sectors. This also includes the establishment of virtual libraries and specialized information centres, providing access to knowledge for countries to meet the MDGs.

- **Geoinformation for Development**, which allows decisions and plans to be made based on various types of information about the location of resources/facilities required for decision-support in the areas of natural resources, environmental protection and management, food security, land reform, transport, health and education, etc.

- **Science and Technology for Development**, the cluster will undertake research and policy analyses of Science, Technology and Innovation (STI) and development trends, so as to inform policy makers and planners, to develop and implement tools for the integration of STI parameters in development plans and strategies, and for the implementation, monitoring and evaluation of STI in development policies and activities.

**Development-oriented policies for inclusive information society, including access, infrastructure and an enabling environment**

Activities undertaken in the area hinge on the African Information Society Initiative (AISI) through which the formulation and development of national e-strategies on the continent, known as National Information and Communication Infrastructure (NICI) Plans are based.
The development of National Information and Communication Infrastructure (NICI) policies and plans is one of the most important programmes supported by AISI. The AISI provides the roadmap to guide African countries in addressing the challenges of the emerging globalization and the information age by developing and implementing NICI policies and plans within the wider national socio-economic development objectives, strategies and aspirations. NICI provides the framework within which ICTs are mainstreamed into the national planning process in order to facilitate the achievement of national and sectoral development priorities and objectives. It is an on-going process through the planning, implementation and regular evaluation of programmes and projects developed according to the needs and priorities of each country.

Policies and plans under this framework can be defined as an integrated set of decisions, guidelines, laws, regulations and other mechanisms which are geared towards directing and shaping the production, acquisition and use of ICTs. The process is therefore based on national needs and development priorities as determined by all the relevant stakeholders and with the Governments playing a central role in the creation of an enabling policy and legislative framework to promote an integrated national information and communication infrastructure. In addition, an enabling environment addresses the challenge of the massive investments required for ICT deployment in Africa. NICI therefore represents a long-term strategy to develop infrastructure, human capacity, content and applications as an integral part of overall national development.

A number of African countries have successfully embarked on NICI processes that articulate long-term policy, infrastructure, content and application strategies as an integral part of their overall national development goals. In some cases, the development and implementation of corresponding action plans has been undertaken.

African countries engaged in the NICI process can be divided into three broad categories:

- Countries that are in the process of developing their national policies and plans;
- Countries that have partially completed their policy development processes and are in some cases implementing specific initiatives or sectoral projects;
- Countries that have completed their policy and plan development processes and have embarked on the implementation process.

Since the launch of AISI, the ECA has been supporting member States to embark on the development of NICI policies, plans and strategies. The current policy status in Africa is as follows: Countries with an ICT policy (33); Countries in the process of developing an ICT policy (13); Countries which have not initiated the ICT policy development process (7).

In addition to the ongoing activities, requests on development/review of NICI policies or implementation plans have been received from the Comoros, Gabon, Guinea, Kenya, Sudan and Tanzania. A majority of the African countries engaged in the NICI process are implementing elements of the NICI methodology. Whilst most of these countries are in the first NICI cycle, some are in the policy phase with a few in the first NICI plan.
implementation phase. Rwanda is the only sub-Saharan Africa country currently undergoing their 2nd NICI cycle. Under the AISI framework the following sectorial initiatives have been undertaken:

**Development of sectoral strategies in selected areas: e-health policy development process and implementation challenges in Uganda**

The Ministry of Health has now integrated the Health Sector ICT policy into the Health Sector Strategic Plan (HSSP) II developed through the ePol-Net Africa programme. The final draft of the Uganda e-Health Policy, Strategy and a Five Year Implementation Plan are ready for implementation by the Ministry of Health (MoH) management. Thirteen (13) sensitization seminars on the use of ICTs for the delivery of quality, equitable and sustainable health services, including highlights of the e-health policy, has been undertaken to further inform the e-health strategy.

**The ICTs, Trade and Economic Growth (e-trade) Initiative**

In cooperation with the Government of Finland, ITU and ILO, ECA undertook a study in eight (8) countries on opportunities and challenges of ICTs in employment and poverty alleviation in Africa. The study examined efforts made by member States on job creation taking advantages of the potentials of ICT in developing an information economy. The study recommends that African countries position themselves especially on outsourcing, taking advantages of low wages, multi-lingual environment, favorable time zone, large pool of ICT graduates, diaspora awareness and improved ICT infrastructure. However the study identifies several bottlenecks which prevent the continent from being currently competitive, such as high licensing fees, lack of national standards for Business Process Outsourcing (BPO), high infrastructure costs, difficulties in accessing finance for start-up / expansion of BPO operations, political instability, bureaucracy, etc.

The e-Trade Project being implemented by ECA in cooperation with Industry Canada’s Canadian e-Policy Resource Centre (CEPRC) is one component of the project entitled *Enhancing the Enabling Environment in Africa: Using information and communications technologies as a catalyst for increased trade and economic growth*. The e-Trade project has, as its aim, the creation of policy environments favourable to the conduct of electronic business and trade within and amongst African countries and between Africa and the rest of the world. Following the kick-off Forum on ICTs, Trade and Economic Growth in Addis Ababa, Ethiopia in March 2006, six pilot countries were selected to undertake national studies on the current state of e-Trade for Ethiopia, Egypt, Ghana, Kenya, Senegal and South Africa to culminate with hosting of stakeholder roundtables in the six countries to discuss the national studies and to provide feedback to the consultants, and the final synthesis and development of a roadmap.

As part of the synthesis phase of this project and in line with the project results and findings, a two-part e-Trade roadmap will be developed to capture both the content of the project and the process through which policy and program development was affected. The ultimate product will be published and hosted on the e-Pol-Net site and linked to course modules and existing documents dealing with the legal, social, economic and
technological aspects and implications of policies for the facilitation of e-business, designed for policy-makers. The content section will respond to the findings of the six country reports and will include modules on: Cyber criminality and cyber-security, Dispute resolution; Legal frameworks dealing with e-business; e-business metrics; Awareness-raising in the various regulatory bodies and Government agencies; Raising awareness and use of e-commerce in trade amongst the business community; an Perspectives and policies that support and promote marginalized groups such as women entrepreneurs and rural SMMEs (such as procurement quotas for government).

Knowledge Networks for Disadvantaged Communities

The five regional commissions of the United Nations, including ECA, launched a project for creating knowledge networks through ICT access points for disadvantaged communities. The aim of the project is to explore ways of re-designing community ICT access points in the form of nodes of knowledge networks, while continuing to operate according to a flexible structure for supporting non-formal processes as sustainable and autonomous entities. Currently, country assessments in the East African Community (EAC) comprising Kenya, Uganda and Tanzania are underway and aim at reviewing the state of the art and degree of evolution of telecentres towards knowledge hubs, including available ICT applications and services.

African Health Infoway

ECA and WHO have commissioned a joint regional needs assessment and scoping study as part of activities under the “Africa Health Infoway (AHI): A district-based Public health Information network and geospatial health system for African Health” initiative. The Africa Health Infoway (AHI) as a system will support the collection of sub national health data and statistics for analysis, dissemination and use to support decision-making in health, and strengthen capacity of African countries to use information in decision-making. This will include: data for epidemiological research; indicators for monitoring and evaluation; financial and cost reporting for clinic management; drug, equipment, and supply stock reporting for supply management. The AHI, as currently conceptualized, has three main development objectives: i) to strengthen health systems and improve health in countries by bringing ICT to bear positively on health challenges and facilitating the coordination of existing work undertaken by WHO and other development partners at country level; ii) to support WHO's strategic objective in knowledge management ; iii) to support the newly developed WHO Strategic Objectives within the Medium-term Strategic Plan (MTSP), which covers the time frame 2008-2013. The AHI has a number of strategic components, namely Infrastructure and connectivity; District health information systems, and Knowledge translation into policy and action.

The studies commissioned by ECA and WHO will review and report on the existing state of Health Information Systems, Information and Communication Technologies (ICTs), geomatics, surveying and mapping in eighteen African countries, with special emphasis on the public health sector. The countries are: Cameroon, Chad, Egypt, Ethiopia, Gambia,
Ghana, Kenya, Mali, Morocco, Mozambique, Niger, Rwanda, Tanzania, Uganda, Senegal, Sierra Leone, South Africa and Swaziland.

**e-Employment Project in Central Africa**

To benefit from the opportunities of ICT in tackling unemployment in Central Africa, ECA, through its Central Africa office (SRO-CA) and with support from GTZ, has set up a multipurpose multimedia centre in Republic of Congo to provide information and knowledge resources on employment opportunities for the youth as well as organize training and ICT capacity building activities.

**Joint ATU-ILO-ITU-ECA study on the impact of ICTs on Employment and Poverty Alleviation in Africa (opportunities and challenges)**

ECA in collaboration with ATU-ITU and ILO is conducting a study on the impact of ICTs on Employment and Poverty Alleviation in Africa with an emphasis on:

- ICT as an economic sector currently witnessing unprecedented growth and generating huge employment opportunities over the past decade; and
- ICT as a sector to leverage the growth and competitiveness of other African economic sectors

The study should seek to answer the following question:

- What jobs should be created?
- In which sectors?
- The role of Governments and the private sector in job creation?
- What strategies are needed for the creation of such jobs?
- What resources will be used to attain a given level of employment?

Report will serve as a policy guide for Members States.

**Policy-making support to African Regional Economic Communities (RECs)**

AISI has been implemented mainly through the development of e-strategies/policies to deploy, harness and exploit ICTs for socio-economic development at the local, national and sub-regional levels, including national spatial data. At the sub-regional and regional levels, the vision of AISI provides the framework for formulating policies and plans through Regional Economic Communities (RECs) to, among other things, harmonize and coordinate national efforts as an integration strategy. More specifically, ECA’s assistance concentrates on the areas of harmonization of national regulatory frameworks as countries deregulate and liberalize their telecommunication markets creation of a framework for the development of ICT infrastructure that can facilitate regional economic integration goals of the continent strengthening capacity at the sub-regional level in ICT for development and building a critical mass to facilitate regional integration through ICTs.
So far there have been major achievements and progress made in harmonizing the national ICT policies and plans as well as creating a sub-regional frameworks for regional economic integration:

An e-government strategy was completed for the East African Community (EAC). Since September 2005, the Economic Community of West African States (ECOWAS) and ECA have been working together to create an ICT policy and harmonize legal frameworks for the subregion, which would address the challenges of building the information society. In North Africa, a study is concluded in collaboration with the Arab Maghreb Union (AMU) on the status of e-commerce development in the sub-region to examine the feasibility of launching a sub regional e-commerce platform, which will facilitate business activities among member States. The draft ICT strategy for the Common Market for Eastern and Southern Africa (COMESA) was presented and discussed in February 2006 at an experts group meeting. Also, ECA has also supported the Communauté Economique des Etats d’Afrique Centrale (CEEAC) and Central African Monetary and Economic Community (CEMAC) formulate the ICT Strategy for Central Africa.

Technical assistance in the area of regulatory reforms

Activities to promote the enabling environment of telecommunication sector are closely linked to NICI policy processes and the objective of creating a legal and regulatory framework to facilitate the ICT development. ECA in collaboration with its partners supported two countries, namely Sierra Leone and Nigeria, in conjunction with the NICI formulation processes.

Development of national geo-information policies

An important aspect of ECA’s national policy formulation is the development of national geo-information policies, as well as their integration into national e-strategies.

Building Spatial Data Infrastructures

Cartographic information used to be portrayed as maps, with limitations on the number of themes that can be incorporated into the decision and policy analysis process. In the information age, digital techniques are applied to cartography resulting in geographic information systems (GIS). As we strive to reduce the digital divide between Africa and the rest of the world, we also endeavour to enhance the use of GIS as the main technology for incorporating geoinformation in the policy formulation and implementation. However, GIS services are currently provided by 'scattered' organizations that are difficult to access simultaneously to provide a coherent set of services. African countries are going through a familiar phase that many other countries have gone through in their GIS development whereby different sectors engage in GIS activities without coordination. ECA has been providing advisory services to member States to develop spatial data infrastructures (SDI).

Progress in establishing these SDIs have, however, not matched the efforts. The implementation in many countries has stalled with the setting up of the committees.
Exceptions are South Africa, which developed and approved a National SDI Policy and strategy and Nigeria, where the National Geoinformation policy document was approved in 2003 and its governance structures are in place and functioning. Part of the reason for the slow progress is the high cost in implementing the technical aspects of the SDI. ECA is therefore moving for the integration of NSDI into NICI policies.

**Integrating NSDI into NICI Policies**

Geoinformation content should be planned for at the start of the NICI process. In this regard, ECA facilitated the involvement of the Geoinformation community in the NICI process in Swaziland. Also ECA is working with Ghana to strengthen the links between its SDI (National Framework for Geographic Information Management – NAFGIM) and the ICT for Accelerated Development policy and plan. A meeting was organized to bring stakeholders into the formulation of NICI policies in Burkina Faso. In November 2006 a joint NICI/SDI Workshop was organized for the NICI and SDI task mangers in six countries to work and share experience and develop the activity plan and road map for their various countries to review and finalize their respective NICI plans to incorporate SDI issues and components. The Swaziland NICI provided for SDI and it now remains for the full SDI document to be developed as a technical annex of the main document. Burkina is on road also to integrate National Statistics System in the process

**Building Land Information Management Systems**

With advances in ICT generally and GIS in particular, management of land-related information have been evolving the concept of the e-cadastre. However, African countries have not been involved in these developments. ECA is therefore preparing a publication on land management information systems in the knowledge economy. A symposium was organized jointly by the ICT, Science & Technology Division and Natural Resources Canada’s Earth Sciences Sector, as a prelude to preparing this publication that will be a guide for decision makers, researchers, academia and other dealing with land issues in Africa on the role of information management in formulating and implementing land policies.

**Evaluation and monitoring of the ICT sector and its impact on Information Society**

In an effort to provide African countries with a framework to identify ICT indicators and build their capacity to measure ICT4D, the Scan-ICT programme was launched in November 2000 as a collaborative project between the Acacia programme of the International Development Research Centre (IDRC) and ECA, with financial support from the European Union (EU) and the Norwegian Agency for Development Cooperation (NORAD). The Scan-ICT programme seeks to build support for the phased development of a comprehensive African capacity to define, collect and manage key information needed to support the growing investment in ICTs as well as the transition of Africa to an Information Society. The goal is to create a pan-African ICT network that would collect, analyse and disseminate all levels of ICT related knowledge in an open
manner. The first phase of the Scan-ICT programme, which involved six countries (Ethiopia, Ghana, Morocco, Mozambique, Senegal, and Uganda) ended in 2004.

The evaluation of the first phase by African researchers, regulators and statisticians has found it useful for implementation at a larger scale with full implication of National Statistical Offices. In line with this, it’s hoped that information that would be obtained from the ICT indicators gathering exercise would go beyond an inventory of the physical and infrastructure aspects of ICTs but will include qualitative data on the impact created by ICTs on the economy, labor and policy.

As a follow up to the 1st phase of SCAN-ICT, ECA with the support of the Government of Finland, is implementing the second phase of the programme with full involvement of National Statistical Offices (NSOs) in Cameroon, Gambia, Ghana, Mauritius and Rwanda. Each of the countries identified the core ICT4D indicators and the methodology as well as made the institutional arrangement to lead the process by involving all the stakeholders. At the global level, the key stakeholders involved in the statistical measurement of the information society joined forces to create a global Partnership for ‘Measuring ICT for Development’ in June 2004. ECA, together with the other UN Regional Commissions, is actively participating in the international partnership by leading the task group on e-government indicators and participating in other task groups such as ICT4D indicators capacity building and database development. Regional workshop has been organized in collaboration with UNCTAD to review progress made with regard to the implementation of Scan-ICT Phase II as well as to review the status of ICT measurement in Africa and aimed to advance the availability of comparable data on ICT in the region.

Leveraging through partnerships

Collaboration among continental institutions, UN Agencies and development partners working for Africa or in pursuit of its interests, is key to harnessing the required resources, ensuring coherence and avoiding duplication of activities. Building and strengthening partnerships in the Information Society is therefore integral to ECA’s strategic orientation.

ECA continues to leverage on a number of bilateral and multilateral partnership mechanisms to carry out its activities. It continues to provide the secretariat for the Partnership for ICTs in Africa (PICTA), an informal group of partners working to leverage resources and expertise to build Africa’s Information Society. ECA also serves as the Africa Regional Focal Point for the Global Knowledge Partnership (GKP), and plays an important role in ensuring African stakeholders’ participation in GKP activities on resource mobilization, poverty reduction, access to knowledge and education. ECA is also active in the work of the Partnership on Measuring ICT for Development, a global partnership initiative comprised of International Telecommunication Union (ITU), Organization for Economic Cooperation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD), United Nations Educational, Scientific and Cultural Organization (UNESCO), Institute for Statistics, ECA, Economic Commission for Latin America and the Caribbean (ECLAC), Economic and Social Commission for Asia and the Pacific (ESCAP), Economic and Social Commission for
Western Asia (ESCWA), UN ICT Task Force and the World Bank, aimed at defining and collecting a set of common ICT indicators for countries to produce information society statistics. An interregional alliance led by ESCWA, involving all the five UN Regional Commissions is underway aimed at establishing global/regional knowledge networks for community development and ICTs. Priority areas include employment, education, gender and health whereby ICT access centres will be transformed into smart knowledge hubs regularly accessed by beneficiaries to gain, share and organize knowledge relevant to particular communities.

Bilateral partnerships continued to be strengthened. For example, cooperation between ECA and Finland was strengthened focusing on policy formulation and implementation, telecommunication regulatory issues and research and innovation; with the Government of Canada on the Global Electronic Policy Resource Network (ePol-Net) project, of which ECA acts as the African regional node to support e-policy formulation and implementation. Other bilateral support has been for outreach and building stakeholdership for the Information Society from the Swiss Development Cooperation (SDC) and the Geselleschaft für Technische Zusammenarbeit (GTZ); and on land information policies and other geoinformation initiatives from the Governments of Korea and Canada. In addition, as part of the Interoperability Task Group of the United Nations Geographic Information Working Group (UNGIWG), ECA is collaborating with UNEP to pilot an innovative spatial data interoperability platform.

As part of its commitment to creating and managing knowledge in the continent, ECA continues to partner with African universities and research institutions, as well as civil society, youth, media organizations and African Parliaments around policy analysis, consensus building and advocacy in the Information Society issues. Other outreach materials and services produced by ECA to help promote public awareness on ICTs for development issues included a series of policy briefs and publications. In addition, two video programmes were produced to highlight the challenges and opportunities ICT present to Africa.

**Capacity Building activities**

Capacity-building activities remain central to ECA’s mission of promoting awareness of the importance of harnessing and exploiting ICTs for socio-economic development. Through the activities of the Information Technology Center for Africa (ITCA), an ICT-focused exhibition and learning center at ECA, a significant number of government agencies, national parliaments, academic and research institutions and NGOs in the region have benefited from training in the use and application of ICTs. The African Virtual Learning Academy (AVLAC) provides ITCA with additional means to address training needs and provide online capacity-building training to policy and decision makers, while the ECA-IDEP initiative which started in September 2005 is developing online training for policy makers on economic development and planning. Other online courses are available on Internet governance (http://www.ECA.org/itca/vlac).
Others capacity-building workshops in countries, is continuously implemented for various stakeholders including, central and local government officials, Members of Parliament, Women, Youth, Academia, Media, private actors on building the African inclusive Information Society. Many of them led to the creation of stakeholder ICTs for development networks to support the partnership development in building the Information Society.

**Science, technology and engineering for innovation and capacity-building in education and research**

**Promoting the application of science and technology for development**

Appropriate use of science and technology for ECA is essential for achieving industrialization and sustainable development of Africa especially as globalization has brought about a more competitive environment. As part of its work to promote the application of S&T for Development, ECA has continued to provide support to Members State including Nigeria, Lesotho, Ghana, Rwanda, South Africa and Uganda. Under the development Account ECA is participating in sustainable modernization of agriculture and rural transformation (SMART) initiative and working closely with Africa Union, NEPAD and the AU Ministerial Council on Science and Technology (AMCOST) for the implementation of the AMCOST Consolidated Plan of Action (CPA). It participates actively, as vice convenor and focal point, in the activities of the UN S&T cluster for NEPAD. It serves also as focal point of the science, technology and the productive sectors of the EC-ESA and in active collaboration with S&T communities, notably the African Network of Scientific and Technological Institutions (ANSTI) and ICSU-Africa.

As part of the recent ECA repositioning, more emphasis is being put on strengthening Member States' capacity to harness Science, Technology and Innovation potentials for their socio-economic development. Consequently to enhance ECA's links with the African scientific community and build consensus on emerging science, technology and innovation issues from the continent's vantage point, which in turn will serve to inform the Commission's S&T activities, a seven months of on-line discussion of more than 300 African Scientists has been implemented. The Report will be widely disseminated and serve as advisory tool on STI for development for Members State. In the same line ECA is also developing the “Access to Scientific Knowledge in Africa (ASKIA)” initiative to support and promote access to scientific knowledge by the African scientists, decision makers, students and researchers. It will mainly provide a mechanism for African scientist to tap into global scientific knowledge as well as the production of indigenously owned that supports economic and industrial growth.

ECA will continue to helping to articulate science, technology and innovation systems for Africa’s development and promoting the establishment of Science & Technology parks and incubators in member States. Research and development activities will also be undertaken on selected emerging issues and topics of importance to member States. As part of its work to promote the application of S&T for Development, ECA will provide
support to selected Centres of Excellence in the various sub-regions and facilitate networking among them.

As part of its work to promote the application of S&T for Development, ECA has continued to provide support universities, research institutions and Member States in various ICT education and research areas. Programs underway include:

**Building ICT Research and Innovation Capacity in Africa**

In reaffirming the role of African universities and research institutions, ECA created VarsityNet, which is part of the Africa Learning Network (ALN), created to build the R&D academic capacity in in the Information Society. The ALN was launched to provide a platform and space for leading African academics and researchers to enhance their role, and to reflect on intellectual issues related to the Information Society. ECA in collaboration with the Ford Foundation, the government of Finland has since taken the lead in the consultative processes with key academic figures in the African continent and launched four Academia Research Networks (ARN).

The AISI Academia Research Network (ARN) and varsityNet have been engaged in a series of research and development activities since its inception in 2003. Research and innovation activities are underway in the areas of a) African languages and content development (Cameroon), Open Source Software (OSS) localization and health & commerce information system (Ethiopia), ICT industrializations (Mozambique), and Information Society indicators (Tunisia).

**ICT Industrialization in Ethiopia, Mozambique and Tanzania**

Mozambique (the Eduardo Mondlane University and the Mozambique Information and Communication Technology Institute), in collaboration with Ethiopia (the University of Addis Ababa) and Tanzania (University of Dar Es Salaam), is leading one of the four thematic research networks established during the ARN brainstorming, the “Industrialisation of ICTs in Africa”. Based on conclusions, from the ARN, were identified as crucial the development of the human resources both in ICT and entrepreneurship development and this can be achieved by the implementation of Centres of Excellence on ICT education and in-house software applications development. This centre of excellences will so used for the development of “flagship projects” for the future ICT entrepreneurs to be incubated within the MICTI Technology and Business Incubator.

**Promotion of Local Languages in Cameroon**

In the framework of the National Information and Communication Infrastructure Policy and Plan process in Cameroon, the need to integrate ICT in education and to promote local language in the cyberspace was addressed. The issue was also highlighted within the framework of the second phase of the SCAN-ICT supported by the Government of Finland. In response to that, the second phase of the research activities applied to
Cameroon intends to experiment a model for the utilization of ICTs in African languages, particularly in rural schools, during a period of three years.

The short-term research activities on African Languages noted that only a few African languages have online resource materials, such as dictionaries, translated documents, library content, audio files and news programmes. In fact, only 2% of the African local languages are made available online. These languages include Swahili, Hausa, Yoruba, Igbo, Luganda, Masai, Sesotho, Shona, Ndebele, Akan, Xhosa and Upkila.

Rural Electronic Schools in African Languages (ERELA) is an application to Cameroon of a part of the recommendations made by the Academia Research Network working on promoting African Language and local content in the cyberspace. Two computer based learning and teaching local language systems have been installed in the two pilots primary schools, (i) Obout based at 80 km from Yaounde and Metsa based at 350 km from Yaounde. Teachers were trained and a curriculum developed for the course.

**OSS Localization: Health & Commerce Information System for Ethiopia**

AAU VaristyNet is a research and development project implemented at Addis Ababa University, Department of Computer Science with the support of ECA’s VarsityNet programme. The project has been able to show how this new mobile telephone infrastructure can be used for two areas, critical for the development of African countries, which are health and commerce. In addition, it followed-up on researches done in the area of on-line character recognition for Ethiopic characters, which is crucial for the use of local languages on mobile devices. The research outputs are expected to be showcases that would enable policy makers to see better how the mobile telephone infrastructure can be used to address the development problems of their countries. The project has successfully accomplished its objectives and as a result has made some significant breakthroughs:

- A prototype has been developed to enable medical practitioners to enter clinical data using mobile devices as well as to access patient’s record using the same mobile devices. The prototype can be demonstrated and serve to promote the technology to be used for medical institutions (hospitals, clinics, mobile health centers, etc.). The mobile devise connects to hospital medical database and retrieves patients record requested and returns the response to the client. Then, the requested data will be displayed on the Query Result Interface of the PDA screen (see PDA opposite).

- Researches show the importance of using simplified Ethiopic script for on-line Ethiopic handwriting recognition have been completed. The research has shown that reasonable recognition rates can be obtained, in spite of the high number and complexity of the original Ethiopic script.
• A prototype for an E-payment system has been developed. The prototype system has been developed by taking into consideration all security aspects, which probably makes it a pioneer in the area. It is accessible from mobile devices as well as from a computer interface.

Overall, this project improved considerably the research potential of the researchers and the students who participated in it. It has also opened new research areas that would otherwise not have been opened without the support provided through the cooperation with Finland.

**Information Society Indicators for Tunisia**

The Academia Research Network working on the Information Society indicator o look at socioeconomic impact indicators in the Information Society by using Tunisia as a case study. So far the team has successfully established a collaboration framework with Tunisia existing statistics bodies including, the National Statistics Council, the National Institute of Statistic, Statistic training Institution and other specialized statistic bodies. This collaboration framework as requested by the TOR has set the base for useful research activities. Therefore the team has continued and successfully finalized the following four sub-research activities; these include: assessing the " state of the art and benchmarking of the indicators of impact "; define and compile " Core composite indicators for Information Society measurement and benchmarking (indicators of penetration, usage and impacts), develop a Manuel of the index cards of indicators (every index card includes a definition and the method of calculation for every indicator), develop a core : Partial Indicators and Composite indicators: definition and methodology of calculation. The team is expected to continue the data collection, treatment and analysis with support of the above institutions and conclude on socioeconomic impact information society indicators to be adopted and validated by a review workshop.

**The Inter-University Council for East Africa (IUCEA) VarsityNet R&D project**

The Inter-University Council for East Africa (IUCEA) VarsityNet project was jointly implemented by the Universities of Nairobi (Kenya), Makerere (Uganda), Dar-es-Salaam (Tanzania) and the Jomo Kenyatta University of Science and Technology (Kenya).

Activities of the first part of this phase mainly involved the establishment of a clear understanding of the requirements that will assist in developing a system to manage students’ academic records at the IUCEA member universities through consultative meetings with various stakeholders. The requirements established in the first part were then utilized in the second part to develop a software prototype for managing university students’ information systems.

The prototype has been developed by Makerere University using the requirements collected from stakeholders at a sample of universities in East Africa. The prototype developed has focused on functionalities provided by an academic records module with an incorporation of some of the features from registration and assessment modules. The
information system functionalities are grouped based on user groups such as: (i) technical systems administrators, (ii) academic topic officials or administrators, (iii) students, and (iv) lecturers. After the in-house testing in Makere Universities, implementation and testing of the software prototype was undertook in other universities. Two universities in each of the three East African Partner States country (one public and one private) have been selected for the testing and implementation phase of the software prototype. These universities include: Makerere University and Uganda Martyrs University in Uganda, Moi University and Daystar University in Kenya and Open University of Tanzania, Hubert Kairuki University in Tanzania. The system has been implemented and tested at the six universities. Two days training of trainers by developers from Makerere Universities was organised in and the system implemented in each university.

Member Universities recognise that the Students’ Information Management System (SIMS) is an integrated application software for managing Student Academic and Curriculum data, Degree Programmes, Academic Departments and Academic staff data. It has been accepted because it is developed using the Open Source software, so there is no need of licenses.

These activities in particular and the project at whole have enhanced the research capacities of universities, especially with respect to software development using open source software (OSS). It has assisted in the development of cost-effective software systems that solve real problems at the universities. The IUECA Community of developers have been established to maintain and upgrade the system.

**Progress made in the implementation of and follow-up to the World Summit on the Information Society outcomes at the regional and international levels.**

ECA has been instrumental in coordinating the participation of African countries in the two phases of the World Summit on the Information Society (WSIS) process, and ensing that Africa’s concerns and views were adequately reflected in the Summit proceedings.

During the WSIS process, ECA and its partners organised two preparatory conferences held in Bamako in 2002 and Accra in 2005 respectively, and yielded the Bamako Declaration and the African Regional Plan on the Knowledge Economy (ARAPKE), which was adopted in September 2005, few weeks before the Tunis phase of the Summit. The Geneva and Tunis documents as well as ARAPKE entrusted ECA with follow up activities, especially through promotion and coordination of African efforts in the post summit process and provision of support to member States to implement the WSIS decisions.

In this context, ECA has organized and participated in several workshops, coordinated Africa’s participation in several forums and spearheaded finalization of the ARAPKE document. Key activities in relation to ECA’s direct involvement and participation in WSIS follow-up include:
Meetings / Workshops on Internet Governance, held respectively in Geneva, Athens, Addis Ababa and Cairo
• Conference on Access to Information and Knowledge for Development held in Addis Ababa
• Follow up of selected WSIS decisions in fora organized in Marrakech and Tunis
• Implementation of ARAPKE

Internet Governance

Following adoption of the Tunis Agenda for the Information Society at the second phase of the World Summit on the Information Society (WSIS) held in Tunisia in December 2005, the United Nations Secretariat organized consultations on the convening of the Internet Governance Forum (IGF) as requested by world leaders. In Tunis, the Summit decided to keep in place existing arrangements for Internet Governance (IG) and stressed the need for a transparent, democratic, and multilateral process, with the participation of governments, private sector, civil society, international organizations and all stakeholders. It was in this context that several consultations and meetings were held and led to the first Internet Governance Forum (IGF) convened by the United Nations Secretary General in Athens in October 2006 (www.intgovforum.org).

It is worth to note that the mandate of the IGF was set out in Paragraph 72 of the Tunis Agenda for the Information Society adopted by world leaders at the second phase of the WSIS held in Tunis in December 2005.

Consultations on Internet Governance, Geneva, 15 - 17 February 2006

The aim of the consultations was to develop a common understanding among all stakeholders on the nature and character of the IGF. Participants discussed the IGF's scope of work, themes and priorities as well as aspects related to its structure and functioning. Participants also discussed the convening of the inaugural meeting in Greece and the priority agenda, which would be addressed.

Africa’s participation in the IGF consultations

Africa’s participation in the consultations was limited, with only a few countries and two civil society organizations attending. Hence, in order to bridge the gap caused by the absence of African delegates, and upon the request from Ghana, which serves as Chair of the African Ministerial Committee on Information and Communication Technology (ICT), ECA played a key role among African delegates and held online consultations with key African stakeholders in order to prepare a contribution on behalf of the continent.
The First Meeting of the Internet Governance Forum

The IGF was expected to be development-oriented in order to take care of the concerns, needs and expectations of developing countries.

Themes of the first IGF

As decided by the Tunis phase of the Summit, the overall theme of the first year of the IGF was "Internet Governance for Development", with an agenda structured along the following broad areas: (i) Openness: Freedom of expression, (ii) free flow of information, ideas and knowledge, (iii), Security: Creating trust and confidence through collaboration, (iv), Diversity: Promoting multilingualism and local content, (v) Access: Internet Connectivity policy and cost.

Objectives of the first IGF

The main objective of the meeting was to enable exchange of information, experiences and best practices among various stakeholders in order to advance the Internet Governance agenda at global level, with the aim of imparting knowledge and skills to participants, especially those from developing countries.

The different themes of the meeting were cast in panels with an innovative format of interactive, questions and comments from the audience in the room and with remote participation via blogs, chat rooms, and email. There were also 36 workshops that were held in parallel to the main sessions themes attended by over one thousand two hundred participants.

Meeting of the African Group

ECA organized the meeting of the African Group on 1st November 2006 under the chairmanship of the Egyptian Minister of Communication, to exchange views on IG issues and discuss the way forward. The main objective of the meeting was to exchange ideas on African participation on the IGF, and post-Athens future perspectives for adequate responses to African issues.

The meeting emphasized the importance of the Forum in the Internet Governance process and the necessity of continued collaboration of all stakeholders on the continent for a better synergy, underlining the fact that Internet Governance requires participation of all actors. Participants recalled the fundamental of the IGF itself, which is a new process to install dialogue on Internet Governance and put emphasis on the key role of the African business and industrial sectors in making the Internet a solid vector for a complete overhaul of life and living in the continent. They also believed that the IGF process would deepen understanding on issues that are of priority to Africa like security, spam, exchange points, privacy, freedom of expression, diversity, access, multilingualism,
capacity building, etc. The meeting agreed that these Internet Governance issues could only be resolved through a multi-stakeholder cooperation.

Training course on Internet Governance for African Policymakers, Addis Ababa, Ethiopia.

The lack of ICT awareness among African policy makers is one of the daunting challenges of Africa’s participation in global information society. The region needs well-aware and visionary policy makers on ICT and development. This can be achieved by building the capacities of policy makers and other stakeholders that are involved in the African socio-development process. Strengthening a mutually beneficial and sustainable relationship between policy makers and other stakeholders is essential.

It was in this context that ECA, in the framework of the United Nations Development Account, launched a series of training courses on Internet Governance for African policymakers, supported by the Diplo Foundation of Malta, the Canadian e-Policy Resource Centre (CePRC) and ICANN. The first training course was held from 2 - 6 July 2006 in Addis Ababa.

Objectives

The main objective was to build the capacity of African policy makers to facilitate their participation in the debate on ICT for Development at the national, regional and international levels, including meaningful contribution in the Internet Governance Forum.

Expected impact of the training course

African Anglophone Permanent Secretaries, Diplomats, Directors and Advisors from 19 countries took part in the training course. It is expected that the capacity building exercise would enable African policy makers to be aware of the ICT policy issues at all levels: national, sub regional, regional and international levels.

At the end of the training, participants discussed Africa’s participation in the Internet Governance Forum and adopted recommendations.

Developing online courses for policy makers

As the on-site workshop was limited to few policymakers from selected countries, development of online courses would be instrumental in reaching as many policymakers as needed from all the member States. Hence, during and after the training course, an online curriculum for capacity building of African policy makers and other stakeholders on ICT policies and strategies, especially on Internet Governance was put in place. The course module was added to the African e-Learning Initiative of ECA’s Information Technology Centre for Africa (ITCA) to enable African policy makers gain access to the online manual from their respective locations (www.epolafrica.org/elearnafirca).
Establishment of an online discussion forum

Before the training course, an online discussion forum for policymakers on Internet Governance was established to exchange views on the training activities and discuss follow up activities after the end of the course. The address is: aisi-ig-l@dgroups.org.

African Preparatory Meeting on Internet Governance, Cairo, 18-21 September 2006

As a recommendation of the training course on Internet Governance for African policymakers held in Addis in July 2006, the Egyptian Government and ECA convened the African Preparatory Meeting on Internet Governance in Cairo.

Objectives

Organized under the title “Africa on the Road to Athens”, the aim of the meeting was to consolidate views of African stakeholders before the Athens IGF. Over 100 Government officials, private sector, academia, civil society and international organizations operating in Africa attended the meeting.

Output of the meeting

The meeting highlighted the significant importance of Capacity Building at all levels, inclusive access to the Internet as well as security, diversity and openness of the Internet. The meeting recommended the annual convening of an African Internet Governance Forum (AIGF). In this regard, participants underscored the importance of concerted African efforts and coordinating African stances at all levels to address common challenges ahead. The meeting further recommended the establishment of national taskforces and the inclusion of Internet Governance in the national ICT strategies. Participants adopted a Communiqué, which is in annex 2. More information on the Cairo meeting is available at: http://www.tra.gov.eg


The Conference was organized by ECA, in collaboration with the IFLA Government and Official Publications Section (GIOPS) and Committee on Free Access to Information and Freedom of Expression (FAIFE), to fill a big gap between the recommendations stemming from the WSIS and the current state of readiness of African information and knowledge services institutions.
**Objective**

The main objective was to brainstorm on issues and methodology for the development of an action framework for implementing the recommendations of the WSIS in Africa in the spheres of access to information and knowledge for development in Africa.

**Outcome**

Over 80 librarians and information specialists, including national librarians and library association presidents, from 18 countries and 10 regional organizations took part in the conference. Eighteen presentations were made. The topics included: WSIS outcomes related to libraries, and access to information and knowledge; information access in development strategies; advocacy for effective information policies and strategies; African libraries as access centres for information and communication technologies (ICT), and local content in physical, digital, hybrid and virtual formats; freedom of access to government and inter-governmental information; and institutional digital repositories and open access to e-content.

The outcome included:

- an agreement on the relevant elements of an action framework for local, national and pan-African strategies and activities;
- the creation of a model resolution for introduction of the issues at the various national political levels; and
- the formation of an action network: and the Access to Information Network - Africa (AINA).

The above activities will complement efforts already underway by ECA Library through the African Virtual Library and Information Network (AVLIN), within the guidelines provided by the sub-committee on Knowledge, Libraries and Information Services for Development (KLIS).

**WSIS follow up fora in Marrakech and Tunis**

Funding for Information and Communication Technologies for Development (ICT4D) was one of the two most important issues addressed by the participants in the second phase of the WSIS. One of the major breakthroughs at the WSIS was the agreement reached on the issue of funding mechanisms, which was the major contentious issue during the first phase held in Geneva. However even though the Digital Solidarity Fund was accepted as an innovative funding mechanism that complements existing ones, there were no commitments from Governments and stakeholders in contributing to it. Moreover the chapters on funding mechanisms listed a series of options and challenges for closing the digital divide. These remain, however, at the level of recommendations, with no obligation attached. Following the last phase of the WSIS, the two following meetings were organized at the African level to review funding of e-strategies and make recommendations.
International Forum on Information Strategies and Investment, Marrakech, 1 – 3 March 2006

The International Forum on Information Strategies and Investment (IFISI) held in Marrakech in March 2006 is expected to be organized annually to contribute to finding solutions to the issue of funding of national, local and corporate ICT projects by bringing together project proponents and investors.

Objectives

The goal of the 2006 forum was to enable countries and organizations to present business plans of their ICT investment projects and strategies to a varied audience of venture capitalists, private equity funds, and other capital providers. The forum was also convened to provide networking opportunities for interaction between organizations seeking capital and prospective investors. Moreover, it provided a forum to showcase ICT investment projects at an exhibition area.

Participants included ICT Ministers, Trade and Industry Ministers as well Secretaries of State, Heads of Investment Promotion Agencies, Presidents of Chambers of Commerce and Industry, senior representatives from the United Nations, the World Bank, national and international organizations, coordinators of incubators, science and technology parks and ICT start-ups.

Outputs

The organizers had reserved adequate space and appropriate rooms in the Conference centre to cater for negotiations between participants in order to broker cooperation arrangements between funding institutions and requesting countries/institutions. In addition during the plenary and parallel sessions, several success stories and best practices were presented to enable participants learn from each other’s activities and benefit from proven experiences.

IFISI was considered as a meeting point for ICT project stakeholders and investors. It facilitated discussions between potential investors and project recipients in form of round tables and panels, informal discussions and an exhibition for projects and technology. Information is available at: http://www.virtualis-net.com/ifisi/

Tunis +1: ICT Investment in Africa, Hammameth, 26 –27 October 2006

The Government of Tunisia convened in Hammamet, Tunis, a conference entitled: “ICT 4ALL, Tunis+1: ICT investment in Africa”.
Objectives

The forum aimed at contributing to the discussion on policy and strategy to channel domestic and foreign investment in Knowledge Economy development in Africa, one year after the Tunis Summit.

The forum brought together more than 60 participants including five (5) Ministers, from ten (10) African countries. Also representatives of regional and international organizations, domestic and international private sector actors and civil society organizations participated in the forum.

At the end of the forum, participants adopted a set of recommendations including the following:

- Sustaining Tunisia’s initiative in the organization of this forum «ICT4ALL» and in its commitment to make of it a periodic forum to address various questions related to ICT development in Africa;
- Promoting inter-African cooperation toward sharing experiences and creating ICT development synergies at the level of the continent, in line with the WSIS-Tunis decisions;
- Establishing an African strategy in order to sensitize the international community to the necessity to step up efforts for Africa and to promote investments in the ICT sector;
- Inviting donors to study the possibility of promoting regulations in order to ensure a greater participation of local/regional enterprises in implementing projects they finance in African countries;
- Promoting South-South regional cooperation at the level of techno parks as well as the mutualization and sharing of resources, in order to promote the exchange of experiences between enterprises and research institutions in various countries, and to facilitate the creation of regional multidimensional techno parks.
- The forum was opportune, since the financing of the Information Society constitutes the main challenge of African Countries, and many governments, looking at innovative solutions, encourage the private sector to invest in ICT sector by providing concessions and providing a level-playing field.

African Rio Internet Governance Preparatory meeting

From 28 to 29 October 2007, as a pre-event of “Connect Africa Summit”. The ECA organized African preparatory meeting of Internet Governance to be held at Rio. The meeting aimed at deep Africa position on previous discussed issues.


At the occasion of the Second anniversary of the second phase of the World Summit on the Information Society (WSIS) held in Tunis in 2005, the Tunisian Government is organizing the ICT 4 All Forum at the Medina Conference Centre, Hammamet, Tunisia.
The event, which includes a forum and a technological exhibition, puts together high-level policymakers, government officials, representatives from the private sector, potential investors as well as experts from international organizations.

The Forum addressed the issue of Public Private Partnership (PPP) in Information and Communication Technologies (ICTs) as a tool for development through:

- Exchange of best practices and experiences in PPPs
- Exhibition of products and services of ICT companies
- Presentation of models, approaches and national strategies for establishing successful PPPs
- One to One meetings with private sector and international organizations to discuss and explore business opportunities

The Forum is in line with paragraph 98 of the Tunis Agenda for the Information Society adopted by the WSIS in Tunis in 2005, which states:

"We encourage strengthened and continuing cooperation between and among stakeholders to ensure effective implementation of the Geneva and Tunis outcomes, for instance through the promotion of national, regional and international multi-stakeholder partnerships including Public Private Partnerships (PPPs), and the promotion of national and regional multi-stakeholder thematic platforms, in a joint effort and dialogue with developing and less developed countries, development partners and actors in the ICT sector."

The African Regional Action Plan on the Knowledge Economy

The African Regional Action Plan on the Knowledge Economy (ARAPKE) was requested through a recommendation of the Second African Regional Preparatory Conference for the WSIS, held in Accra, Ghana from 2-4 February 2005. In addition, the Khartoum Summit of the African Union also urged the continent to develop an Action Plan on the WSIS. The above decisions prompted ECA to start working on ARAPKE.

The Action Plan is based on the “Accra Commitments for Tunis 2005” and the vision defined by both the African Information Society Initiative (AISI) and the New Partnership for Africa’s Development (NEPAD), under the political leadership of the African Union. The Regional Action Plan was prepared to implement the WSIS recommendations for rolling out the information society in the continent for the next 10 years. With the aim of improving the life of African populations, it is expected to contribute to the realization of the Millennium Declaration Development Goals (MDGs) and the NEPAD Goals.

ECA prepared an ARAPKE draft framework, which was discussed in several meetings and circulated in various discussion lists to seek contributions and views of stakeholders. By the end of December 2005, 89 project proposals were received from African
stakeholders and regional / international organizations for inclusion in ARAPKE for funding.

The Conference of African ICT Ministers held in Cairo on 20 April 2006 decided to select a limited number of projects from ARAPKE for submission to a resource mobilization conference. Following this decision two ARAPKE meetings were convened by Egypt in September and November 2006 to adopt criteria for selection and follow up of ARAPKE projects and to review the various project proposals. Eleven flagships projects were selected and will be implemented.

Other main WSIS follow-up program, in which the Commission was involved, is the launching of Connect Africa initiative from 29-30 October 2007 in Kigali, Rwanda.

Connect Africa was organized by the International Telecommunication Union, the African Union, the World Bank Group and the United Nations Global Alliance for ICT and Development, in partnership with the African Development Bank, the African Telecommunication Union, the UN Economic Commission for Africa and the Global Digital Solidarity Fund. It is a global multi-stakeholder partnership initiative to mobilize the human, financial and technical resources required to bridge major gaps in information and communication technology (ICT) infrastructure across the region, with the aim of supporting affordable connectivity and applications and services to stimulate economic growth, employment and development throughout Africa.

Substantive financial supports from various partners were made to achieving the following agreed goals:

- Interconnect all African capitals and major cities with ICT broadband infrastructure and strengthen connectivity to the rest of the world by 2012.
- Connect African villages to broadband ICT services by 2015 and implement shared access initiatives such as community telecentres and village phones.
- 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.
- 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.
- 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.