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Onyancha, Ms Irene

2012-06-14
http://hdl.handle.net/10539/11528

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UNITED NATIONS
ECONOMIC COMMISSION FOR AFRICA

CAPACITY BUILDING ACTIVITIES ON OPEN ACCESS: THE UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA PERSPECTIVE

Ms Irene Onyancha

Chief, ECA Library and Information Management Services
ICT and Science and Technology Division
United Nations Economic Commission for Africa

Presented at the 2nd International Conference on African Digital Libraries and Archives (ICADLA-2), University of Witwatersrand, Johannesburg, South Africa, 14th – 18th November, 2011

Abstract
The United Nations Economic Commission for Africa, through the Division for ICT, Science and Technology, and in partnership with donors and other multi stakeholders, has played a significant role at national and regional level in facilitating development and fine-tuning of policies to improve the use of ICT application and promote knowledge access for socio-economic development in Africa. In addition ECA as an Open Access publisher contributes to a wealth of knowledge detailing on important research or decisions that have been made on the economic and social developmental aspects in Africa. This has been made available through the ECA Institutional repository currently containing 17,000 metadata records with about 11,000 linked digital files. Furthermore, ECA has established the Access to Scientific Knowledge in Africa initiative (ASKIA), a framework for bringing together scientific and socio-economic information for the African community over an interactive online portal acting as a one-stop shop to such knowledge and associated information. Different modalities are proposed in achieving the goals of ASKIA taking into consideration the information needs of users, opportunities brought by new technologies and the global trends on knowledge exchange and dissemination. Capacity building to strengthen institutional capacities to capture, manage and disseminate local content is an integral part of the programme.

Background

The need for access to scientific literature in developing countries has gone unfilled for many years, as thousands of students, researchers and academics have struggled to gain access to current scientific information for reasons well documented. Furthermore, the research generated in developing and emerging countries is still currently "trickling" into international knowledge bases because of financial constraints that inhibit publishing in the main stream journals as well as distribution of information.

Consequently in recent years new initiatives have arisen that support the availability and accessibility of content online. These initiatives are made possible by changes that arise from the impact of the Internet, the World Wide Web, cyber infrastructure development, social publishing and the application of interoperability standards. Low cost technologies such as the Open Access publishing model and the Open Archives Initiative (OAI) tools are examples of such initiatives and provide an affordable model for strengthening and expanding digital libraries in developing countries. The results are seamless opportunities for managing and disseminating knowledge and even for eliminating entirely the cost barriers to scientific publications.

To this end, guided by the African Information Society Initiative (AISI) launched in 1996, the United Nations Economic Commission for Africa (UNECA)[1], through its ICT and Science and Technology Division (ISTD) and in partnership with development partners and other multi stakeholders, has played a significant role at national and regional levels in facilitating development and fine-tuning of policies to improve the use of ICT, with the aim of supporting and accelerating socio-economic development across the region.

The above factors in combination reinforce the role of the Economic Commission for Africa (ECA) in facilitating access to scientific and socio-economic knowledge for the African community. The ECA has established the Access to Scientific Knowledge in Africa (ASKIA) initiative as a framework geared towards strengthening digital libraries in developing countries and subsequently bringing together scientific and socio-economic information to the African community. The ASKIA initiative is an implementation programme for the African Virtual Library and Information Network (AVLIN) which was established as a collaborative project of the ECA, other interested regional institutions and the African library community.

[1] ICT and Science and Technology Division, United Nations Economic Commission for Africa.

This is an initiative in response to recommendations outlined in continental and global action frameworks such as the African Information Society Initiate (AISI) and the World Summit on Information Society (WSIS). Calls have also been made by experts from the fields of information management and libraries and from policy makers, who have convened in conferences across Africa to discuss strategies for promoting knowledge development in Africa. One such forum is the UNECA Committee on Development Information, Science and Technology (CODIST) conference, held in March 2007 and July 2011. The CODIST-1 report indicates the need to address issues related to knowledge and information services as a means to move forward the African development agenda[2]. This objective is further addressed again in the second CODIST conference in July 2011: a decision was taken by the Commission and participants from member states to fully implement the ASKIA initiative in the 2011-2013 reporting period.[3]

This paper discusses the work programmes of ECA/ISTD for harnessing knowledge for development and highlights the experience, lessons learnt and best practices from the Open Access activities at ECA. The paper also details ECA's support to member states and discusses the AVLIN/ASKIA initiative which is geared towards empowering libraries and information centres to capture, manage and disseminate their local content.

AVLIN and ASKIA initiatives

The African Virtual Library and Information Network (AVLIN) was proposed as a network of Internet-based information and knowledge resources and services to form a web of virtual libraries and knowledge exchanges linking African libraries, information centres and specialized networks.

AVLIN's overarching objective is to help bridge the knowledge divide between Africa and the developed world by:

1. providing access to policy documents and reports, bibliographic databases, general information and expert and institutional profiles of African universities, research institutions, libraries and information centres;
2. building capacity at institutional, national and regional levels on development of integrated virtual library services;
3. promoting regional cooperation on standardization and virtual library system developments; and
4. facilitating research and developmental activities in both infrastructure and development of digital and virtual libraries.

[2] http://repository.uneca.org/handle/123456789/15085, pg.4

[3] http://repository.uneca.org/codist/sites/default/files/codist/Plenary/Day2_May03/Aida%20Opoku-Mensah(4).ppt , slide 18

The operational framework defined AVLIN as a collaborative project of the ECA, other interested regional institutions and the African library community, in which

1. ownership of content, hardware, in-house software, operational strategies and human resources will be vested in partners and participants. ECA's role will be facilitative and integrative;
2. membership and participation shall be voluntary;
3. implementation efforts will seek to ensure seamless complementarities with related projects and initiatives of the ECA, for example, the African Information Society Initiative (AISI) and the African Knowledge Network Forum (AKNF);
4. main focus will be on capacity building at institutional, national and regional levels; regional cooperation on standardization and system development; and the facilitation of research and development activities in both infrastructure and development of digital and virtual libraries.

The ASKIA initiative builds on to the AVLIN vision and mission and defines a framework for bringing together scientific and socio-economic information for the African community. The overall goal of the initiative is to strengthen knowledge discovery and access by tapping into global scientific and socio-economic knowledge about and from Africa. Various approaches are proposed that will work in synergy in order to fully realize the intended objective. These include:

(1) **Development of an online portal.** The AVLIN/ASKIA portal will be developed on Drupal Web Content Management system (WCMS), hosting the following: ASKIA Search and discovery application, Online Communities of Practice (CoP) for library and information managers across the continent; e-forums; RSS feeds for news and events on science and socio-economic development issues from the continent; directories of African scientists and researchers; databases on Open Source tools and information management standards; and the ASKIA blog to promote exchange of best practices. The portal will provide contextualized information on the topic of interest and a range of related information.

(2) **Development of the ASKIA federated search and discovery engine.** The federated search engine is one of the recent innovative ways of providing knowledge to users in a digital environment. The application will enable searching and collation of content on Africa across different knowledge bases, including Open Access literature, commercial databases, online journals and other resources. The federated search will provide one-stop access to knowledge including bibliographic data, statistical data, events, news and other information sources.

(3) **Development of a repository on geospatial and cartographic information of Africa***.* The repository is to manage and provide access to thousands of maps deposited in the ECA Library and other national libraries such as the National Library of South Africa. The ECA map collection is from the Map Reference Section of the Cartography and Remote Sensing Unit, which was developed through contributions from member states and purchased materials. These maps comprise topographical maps, soil survey maps and geologic bedrock maps, to mention a few, and represent an invaluable historical record of cartographic and geo-information of the continent. This is also one of the largest map libraries in Africa; despite the potentially immense value of the collection, however, it remains inaccessible in its current state because of a lack of comprehensive cataloguing and physical organization.

(4) **Capacity building activities.** Training programmes and technical assistance to strengthen and empower African libraries and information centres to capture, manage and disseminate local content are important activities that will promote the participation of more libraries of member states in the ASKIA initiative. The plight of many African libraries and information centres in documenting and disseminating their content is an issue that has been discussed in many forums. Through the ASKIA initiative, ECA envisages participation in such activities as one way of implementing the AISI framework.

(5) **The establishment of a knowledge hub on scientific and socio-economic knowledge.** The rich knowledge hub is achieved through the collation of content by the federated search and will facilitate generation of value added information services such as African theses and dissertations, news on developmental issues on Africa, country profiles, statistical data and geo-information. Furthermore the ECA plans to replicate the ECA IR at the subregional offices and the UN depository libraries, to promote access to ECA knowledge base.

Open Access activities at ECA

The ECA Institutional Repository

The ECA, in its 50 years of existence, has created and holds an extensive quantity of information and knowledge in a variety of formats, including print and electronic formats. These records represent the corporate memory, providing historical evidence of actions and decisions of the Commission. The information resources include conference papers, research reports, strategy documents, speeches, technical papers, policy reports, consultancy and mission reports as well as official parliamentary papers, all which outline important research or decisions that have been made on economic and social development in Africa.

In 2009, the ECA Library implemented the Institutional Repository project with the overall objective of establishing an institutional framework, policies and guidelines, that promote the proper development, management and preservation of ECA intellectual output. Other objectives include the need to consolidate the inter-divisional activities associated with knowledge creation, management and dissemination into one unique workflow; and to establish an information service that will facilitate sharing the wealth of knowledge generated by the Commission.

Overall, the project has been successful and the ECA repository can be accessed online[4]. About 50 % of the overall work has been completed, including configuring and customizing the online platform using DSpace[5] software; populating the repository with 17,000 metadata records; digitizing about 50% of ECA documents in print; and uploading and linking about 40 % of the full text electronics files to the IR platform. The IR is highly customized with the integration of controlled vocabularies such as the UNBIS[6] thesaurus and subject categories that facilitate indexing and discovery of knowledge. The repository also uses a refined Dublin Core metadata set, the AGRIS Application profile, to support[7] import of MARC 21 format without losing data.

The IR is still under development; the first phase of the project has been completed and the second phase, for sustaining the growth of the repository and implementing all the planned activities, has been started.

Lessons Learnt

The timely availability of the project concept note and proposal were crucial in acquiring project funding; the level of funding was critical for the implementation and sustainability of the first phase of the project. The seed fund of $240,000 made it possible to implement all the planned activities of the project, despite the large volume of documents that has been published in the Commission since 1958 and the poor state of management of these documents. Sustained project funding has been facilitated by the success of the first phase of the project and good documentation motivating for the required funding.

Availability of in-house expertise in information management practices and aspects of repository development was crucial in providing in time the information resources required for software development. However, it has become clear that to manage the technical aspects of the repository, in-house knowledge of DSpace software is required to reduce

[4] http://repository.uneca.org

[5] DSpace software. http://www.DSpace.org/. Last accessed November 2011

[6] UNBIS thesaurus and Subject categories. http://lib-thesaurus.un.org/LIB/DHLUNBISThesaurus.nsf/$$searche?OpenForm. Last access November 2011

[7] FAO, The AGRIS Application Profile, http://www.fao.org/docrep/008/ae909e/ae909e00.htm. Last accessed November 2011

dependency on the service provider, which can be increasingly expensive. In addition, engaging the services of an experienced service provider for the development of the repository proved beneficial to the project, as the service provider offered solutions in good time to unforeseen problems that arose from the high level of customization requested for the ECA repository. In general, good planning and teamwork was critical for the implementation and success of the project since there were different players implementing different activities concurrently.

Currently there are about 80,000 hits on the IR repository and the top ten countries are the USA, Korea, Italy, China, Ireland, Nigeria, Ukraine, United Kingdom and France. One observation that can be made is the absence of more African countries in the top ten and therefore the need to develop alternative means of providing access to the wealth of knowledge available from the ECA.

Open Education resources /e-learning

To contribute to the realization of the African Information Society Initiative (AISI), and to address the needs of policy makers regarding the challenges and benefits of information and communication technology (ICTs) for Africa's development, UNECA established the Information Technology Centre for Africa (ITCA) in 1999. The ITCA is an ICT-focused exhibition and learning centre to demonstrate to African policy makers and planners the value of ICT for African development.

In response to the Geneva Plan of Action of the World Summit on the Information Society (WSIS) on the need for an integrated and coordinated approach, the ITCA of the ECA and UN-APCICT of the Economic and Social Commission for Asia (ESCAP) are collaborating on the delivery of the Academy of ICT Essentials for Government Leaders.

The Academy consists of a core ICT4D curriculum with eight modules ranging from basic to core advanced topics of ICT4D that can be delivered face-to-face or as online instructor-led study courses. They are stand-alone modules released as open educational resources. Officially launched on 3 March 2009 in Kigali, Rwanda, the Academy of ICT Essentials for Government Leaders aims to:

- provide a comprehensive ICT programme catered to policy makers and government leaders while ensuring the content will be mostly non-technical in nature;
- develop the content in a modular format to maximize flexibility to meet the needs of context-specific learning situations;
- develop the content for delivery over a variety of multimedia platforms to maximize learning and minimize job disruption for the participants;
- disseminate the content widely by ensuring that the course materials are developed as open courseware, whereby trainers in developing countries can take part in the

training and then have access to the courseware to guide others through the training; and
- promote South-South cooperation by encouraging the utilization of the developed open courseware to be used for ICT training of policy makers and government officials in other developing regions.

The Academy is offered on ECA's an online platform – the African e-Learning Initiative[8].

Open access to geospatial data

Geospatial data has been at the forefront of open government data because of the attractiveness to consumers and developers, particularly for location-based mobile services. At the ECA, the concept of Open spatial data is conceptualized through the paradigm of "making geospatial information use explicit, quantified and commoditized for decision makers and the community when they need it; where they need it in a form it can be used".

At policy level, the ECA is providing assistance to member states to develop spatially-enabled government services. Through the National Spatial Data Infrastructures (NSDI) committees that have been established in many countries on the continent, the aim is:

- developing geo-information policies that provide access to information either free or at a reasonable cost, so that users are able to utilize it for decision-making purposes;
- building consensus among the national data providers about the need to designate custodians of national geospatial data and information resources (the common production and use of data).

At the technical level, the ECA has set up Online Metadata Clearinghouse Registry services which offer a platform to discover and access existing geo-information resources on the continent.

Support to the member states

The ECA deploys several modalities and services to support its member States: policy analysis and advocacy; enhancing partnerships; technical assistance; communication and knowledge sharing; and supporting subregional activities.

Policy analysis and advocacy

Analytical work relevant to policy is central to the overall work of the ECA. Within Africa, it involves promotion of sound policies and dissemination of best practices in economic and social development. For example ECA/ISTD is facilitating the development of NSDI and

[8] http://www.uneca.org/elearnafrica

National Information and Communication Infrastructure (NICI) to promote use of ICTs and access to knowledge.

Over 43 countries adopted NICIs by end of 2010 and a further six countries are in the process of developing one. Many countries have also moved from policy formulation to implementation by putting in place sectoral strategies in key priority sectors such as e-government, education and health.

Enhancing partnerships

While the ECA is uniquely qualified to serve Africa in certain areas, it is fully aware that it lacks the capacity to address the full range of development challenges on its own. As such, partnership based on comparative advantage and pooling of resources has always been recognized as being critical to maximizing impact on African development. ECA/ISTD is working with several partners to assist member states develop and fine-tune their policies to improve ICT applications in governance, education, health finance and trade. The ECA is forging partnerships to facilitate training programmes and technical assistance, to strengthen and empower African libraries and information centres in capturing, managing and disseminating local content

Technical assistance

To help design and implement policies and programmes aimed at meeting clearly defined development goals, ECA/ISTD provides technical assistance on ICTs and information development and dissemination to African countries and the regional economic communities (RECs). The assistance is delivered through various mechanisms, including on-demand regional advisory services, training workshops and seminars, and fellowship and internship programmes involving visiting scholars and researchers.

Communication and knowledge sharing

Addressing Africa's development challenges requires the full participation of all stakeholders in national decision making and development planning. Based on its policy analytical work, ECA/ISTD engages with the full range of African development stakeholders, through the dissemination of policy knowledge in printed form as well as electronically. Value-added products such as radio programmes and CD-ROMs are also being developed. As described above, the ECA has recently developed an Institutional Repository which offers online access to the ECA knowledge resources published since 1958.

Supporting subregional activities

The five subregional offices (SROs) of the ECA serve as vital links between policy-oriented analytical work generated at headquarters and policy making at the subregional level. They undertake subregional preparation for major regional forums and serve as hubs for the

dissemination of the ECA's policy analytical work-employing workshops, training, data collection and knowledge sharing.

Conclusion

The dual role of the Economic Commission for Africa as a regional arm of the UN and part of the regional institutional landscape provides a vantage point from which to harness resources and make a unique contribution to assist the efforts of member states to address their development challenges. The ECA leverages this position to take a leading role in promoting access to knowledge for the African community through various targeted activities. The capacity-building approaches described in this paper respond to different needs of the member states for accessing and disseminating knowledge. Although there has been progress in this area, more still needs to be done to push the continent towards a knowledge economy. Through the AVLIN/ASKIA initiative the ECA envisages a significant push toward making content from the continent available through online access.

Some of the lessons learnt however include the need:

- to share best practices on information development and dissemination practices such as the development of institutional repositories between the libraries of member states;
- to bring coherence to various continental initiatives geared towards access to knowledge;
- for partnership to gain on comparative advantages and pool resources to support information development and dissemination activities on the continent;
- to replicate the ECA Institutional Repository at SROs & UN Depository Libraries across Africa, because of connectivity problems. Currently the top nine countries accessing the IR are from Europe, Asia and America;
- to incorporate sustainability strategies in project planning and implementation. Good project planning is critical in the implementation of information development and dissemination activities in African libraries because of limited funding.