

CHALLENGES OF DEVELOPING ELECTRONIC CATALOGUE OF HOLDINGS OF MARINE SCIENCE LIBRARIES IN THE WESTERN INDIAN OCEAN REGION

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ABSTRACT: The Intergovernmental Oceanographic Commission of UNESCO in 1989 initiated the programme on Regional Co-operation in Scientific Information Exchange in the North and Central Western Indian Ocean region (RECOSCIX-WIO). The objectives of the programme were to improve access of marine scientists in the region to up to date scientific literature; to publicise marine research work undertaken in the region; and to promote communication between scientists in the region, and between them and scientists from outside the region. One of the activities initiated by RECOSCIX-WIO was the development of catalogues of holdings of marine science libraries in the region so that the information in them could be accessed easily and be used as a collective resource. Nine institutions in six countries (Kenya, Madagascar, Mauritius, Mozambique, Seychelles and Tanzania) were provided with equipment and training to enable them develop their library databases. The results of this effort have been mixed. This paper presents a comparative analysis of the development of the library databases in each of the institutions and recommends measures which can be taken to improve on the implementation of the project. As a prelude to the second operational phase, the project co-ordinator and the project manager of RECOSCIX-WIO undertook a mission to Eritrea, Kenya, Madagascar, Mauritius, Reunion (France), Seychelles and Tanzania to evaluate the use and appreciation of RECOSCIX-WIO services and products and to assess the capacity available for the data management in the co-operating Institutions of RECOSCIX-WIO.

Introduction

The advancement of science is unthinkable without continuous and efficient exchange of data and information. There will not be much relevance in developing scientific programmes and in undertaking scientific research activities unless the research findings can be communicated to the scientific community. This therefore calls for the need to develop capacity in collection, analysis and distribution of data and information. Modern

scientific research basically relies on the ability to communicate; gather reliable data; have access to the relevant information. The pace and complexity of modern research have greatly increased the communication needs of researchers, and scientists. The provision of appropriate information systems and services for this group of information generators therefore becomes apparent. This can only be done through strengthening of national scientific capabilities for data collection and analysis, building of the appropriate library infrastructure, creation of national databases, linking of these databases to the existing data and information services and developing mechanisms of co-operation with a view to exchange data and information services.

A lot of initiatives have been set up out in Africa by both national and international agencies, to develop infrastructure and human capacity building in support of research and information provision. Each of these initiatives has met its own successes and challenges. This paper gives an overview of a regional project: Regional Co-operation in Scientific Information EXchange in Western Indian Ocean (RECOSCIX WIO) in trying to establish a regional database of marine literature for the collective use in the region and elsewhere. The project, however, also provides information services to the marine scientists in the region.

Network

The Western Indian Ocean region (WIO) research fraternity consists of 9 countries and nearly 300 scientists in 43 institutions. There are approximately 30 co-operating libraries in these countries and over 700 contacts in nearly 50 countries. The network is co-ordinated from the Regional Dispatch Centre (RDC) node, which manages the flow of information to and from the region. The RDC is based at the Kenya Marine and Fisheries Research Institute in Mombasa, Kenya. The WIO region is also the Science community of the member states of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean (IOCINCWIO). These include France (La Reunion), Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia (currently inactive) and Tanzania.

History of the Project

RECOSCIX-WIO Project was borne out of the Second Session of the Intergovernmental Oceanographic Commissions (IOC) Regional Committee for Co-operative Investigations in the North and Central Western Indian Ocean Region (IOCINCWIO-II) held in Arusha, Tanzania in 1987, where a proposal for the development of the project was adopted. This project was to assist in providing bibliographic search facilities and scientific literature. IOC was requested to provide support for a two-year pilot phase of the project.

The Project was launched 1989 with Kenya Marine and Fisheries Research Institute (KMFRI) as the host institution. KMFRI provided support staff and the necessary basic infrastructure. IOC provided an Associate Expert and funds to assist in developing the project. Limburg University Centre (LUC) provided crucial support in the development phase of the project. RECOSCIX started with bibliographic searches and document

delivery to the scientists in the region. In addition a newsletter WINDOW was launched to provide the scientists with a forum for exchanging ideas and getting information on marine science activities both within and outside the region.

At the end of the pilot phase, a five-year operative phase of the project running from 1991 -1995 was initiated with funding from Belgian government. LUC was designated as the discharging agency of the Belgian Government. IOC and SAREC continued to provide substantial support to the project. During this phase the project provided training and equipment to the libraries of marine science institutions of the region. The project continued to provide the bibliographic search and document delivery services introduced in the pilot phase. The libraries of the co-operating institutions started in the development of catalogues of their holdings to be merged into a regional database called WIOLIB (Catalogues of holdings of marine science libraries in the Western Indian Ocean Region). A directory of marine scientists in the region (WIODIR) was also published with support from UNEP.

The third session of IOCINCWIO, held in Mauritius in December 1992, recognised the contribution the project had made to the development of marine sciences in the region and on this basis requested the Belgian Government, IOC and other countries/organisations to continue supporting RECOSCIX-WIO and assist in expanding its scope to include data management, which was identified as an area requiring critical support.

The second operational phase running from 1996 - 1999 was approved and was to address data management, and assist member states in the region to develop national oceanographic data centres and the individual scientists in accessing data available locally and in international data centres.

Objectives

The RECOSCIX-WIO was established to meet a number of objectives among which are: providing marine scientists of the WIO region with the necessary bibliographic and scientific literature, making full use of the scientific literature available in the WIO region, promoting and facilitating communication between marine scientists in the WIO region, promoting and facilitating communication in the WIO region and other regions, promoting the scientific activities of the WIO marine scientists within and outside the WIO region and providing scientific information, equipment, software and training to make full use of this information.

Activities:

In RECOSCIX-WIO I the emphasis was on library activities and building capacity in the region to administer libraries efficiently using computer tools. . Other activities led to the compilation of a list of marine scientists and institutions in the region and the publication of the regional newsletter for marine scientists. During the phase II of the project, more

emphasis is placed on the management of information and scientific data. During 1996/7 a new set of activities was undertaken, the compiling and collation of scientific baseline information. These data will be distributed, together with the earlier data products of RECOSCIX-WIO on a single CD-ROM.

The Regional Dispatch Centre undertakes a number of activities to fulfil the aims and objectives of the RECOSCIX Project. Services given to co-operating and associated institutions include document delivery and query handling. WIO Current Products are distributed in the region (WIODIR, WINDOW) (WIOLIB, CD-ROM); specific activities are aimed at enhancing communication and data exchange between scientists in the region (ODINEA). The RDC also acts as the regional input centre for Aquatic Sciences and Fisheries Abstracts (ASFA). From the onset of the project, RECOSCIX has relied on UNESCO's CDS/ISIS Software as a data management tool. Most of the databases are developed using it; training is provided to collaborating institutions to enhance their expertise, and assist them in using this software to manage their library collections.

Collective regional database WIOLIB

The development of the collective catalogue was the overriding aim at the onset of the project. This activity, which was started in 1993, saw the first CD-ROM out last year (WIOBASE). The WIOBASE CD-ROM developed with the collaboration of the experts from Antwerp has been distributed. This CD-ROM contains data and information on marine sciences relevant to the Western Indian Ocean. Part of the information is in the form of web pages, which are also accessible through the IOC/UNESCO web site (<http://www.unesco.org/ioc>). Part of the data and information has been extracted from publicly available data archives. Other datasets have been compiled at the Regional Dispatch Centre of the RECOSCIX-WIO Project. This CD-ROM contains documentation from several sources: the WIOLIB, ASFA, Antelope and WIODIR databases. In 1985 when the Kenya-Belgium Project in Marine Science (KBP) was established by the Kenya Marine and Fisheries Research Institute and the Free University of Brussels (Belgium), it was realised that lack of library facilities and up to date scientific information was a serious impediment to the on going research. It was on this note the RECOSCIX-WIO Project was established. After it was effectively launched the project undertook to develop a collective resource for the region (WIOLIB)

The development of this database was actively started in 1993. Relevant co-operating libraries were identified and the first training workshop was organised in 1992. In this training, librarians from these libraries were trained in the MIBIS library management software. In this first course they were trained on the use of MIBIS and in the follow up courses on the use of ASFISIS. The MIBIS structure was later changed to the ASISIS database structure.

To establish basic infrastructure for the smooth start of the process, the project provided equipment to the co-operating libraries. These are the libraries which were identified to contribute towards the development of the database. Eight institutions benefited from this

venture. It is from these institutions that the librarians were also trained during the workshops. These institutions include, Kenyatta University (Kenya), University of Nairobi (Kenya), Centre National de Recherche Oceanographique (Madagascar), Albion Fisheries Research Institute (Mauritius), Instituto de Investigacao Pesqueira, (Mozambique) Seychelles Department of Environment (Seychelles), Seychelles Fishing Authority (Seychelles) and Institute of Marine Science.(Tanzania). More Institutions were later incorporated as CIs and received equipment. Most of these are research institutions have libraries with a considerable amount of marine literature.

These librarians had to foresee and develop the entries at their libraries and submit their inputs in electronic format to the RDC for merging to create a bigger collective database. The four years of the development of the WOLIB database included a lot of challenges but with effort from the RDC to keep the process going and support from agencies like IOC and LUC, most of the immediate obstacles were overcome and the development of the database continued.

The response from these institutions regarding input was varied: Most of these libraries did a considerable amount of effort to develop their databases. Both the University of Nairobi and Kenyatta University did make some progress with over 500 entries (each made using ASFISIS) submitted to RDC. But due to other duties assigned to the library staff, they had no staff dedicated to data entry and therefore this slowed down the input of records. The response from the Institute of Marine Science (IMS) was not encouraging at the beginning. After the staff who was trained left the institute, the data entry could not go because the other staff had not mastered the input procedure. This slowed down the input process. Shortly after the departure of the librarian in charge, the computer broke down and data entry was then suspended. The library contains a considerable number of documents that need to appear in the database but training is their major setback. An RDC staff was later sent to the Institute to train the staff and this was done and the input continues albeit at a slow pace due to lack of staff. The staff responsible for data input has to do other administrative duties too.

The Seychelles Fishing Authority did make good progress, first using the MIBIS structure and lately using the ASFISIS. The division of environment had their library database prepared by a UNDP consultant, who entered the entire holdings of the documentation centre using MIBIS. The library staff were not able to master the software. This led to their inability to make updates.

The University of Mauritius is currently computerising its library holdings. They do not use ASFISI since they cover disciplines besides aquatic sciences. Instead they use another end-user application based on the CDS-ISIS. Different databases available in the library will be linked and made available through the University network.

ASFISIS was not installed at the Albion Fisheries Centre because they did not have a qualified librarian. A qualified librarian was hired on contract basis to complete data entry, using CDS-ISIS based program. There is a problem in getting a good qualified

librarian at the institute since there is no career structure for them, which makes long-term employment as a librarian unattractive, but hopefully the available personnel will be able to maintain the database once it is completed.

CNRO in Madagascar are still using MIBIS structure since they were not present at the last workshop for librarians. When they submit their records the RDC has to do a conversion to the ASFISIS format. ASFISI, instructions on installation and use, were sent but the documentalists still require training to be able to work with the program.

The ASFISIS software has been installed at the IIP in Mozambique but they prefer not to use it. They are using "DocBase," another customised version of CDS/ISIS for data entry. They received training in Portugal on its use. It is not clear who did the initial entry in DocBase but new acquisitions are no longer entered into the database since apparently nobody is capable of doing this.

The RDC was not spared its share of problems. At the beginning frequent power failures hampered the data entry and the project had to budget for a generator to facilitate a continuous working environment. However, much of what is in the database is the input from the RDC.

Analysis of the problems

Despite all these difficulties these institutions managed to put together a sizeable amount of data and send it for inclusion into the collective catalogue of holdings at RDC. Most of the libraries in the region have a good amount of literature but lack the professional librarians to manage it. It can be seen that poor staff morale and deteriorating physical infrastructure are very prominent in most of these institutions. This can be attributed to the fact that governments, traditionally the main funders, have cut back severely on funding of research, partly as a response to structural adjustment. The low level of funding has had significant impact on research institutions leading to deteriorating physical infrastructure, poor staff morale, woefully inadequate research materials and inadequate funds for research. Complete lack of professionals in these libraries is a problem that will be there for a longer time to come, unless these governments change their policies towards information in these institutions. Most of these institutions which apparently fall under government ministries have low incentives in terms of salary structure for trained library staff or professional information specialists. In fact, in other institutions they do not have a salary structure for a librarian and the library is therefore left in the hands of a scientist to manage it.

Complete dedication of the available staff to the duties of the library another problem that is very prevalent in some of the institutions. Due to the fact that these libraries are understaffed, the available staff have to attend to other duties.

The RDC does not have a reliable direct connection to some of the institutions through the telephone. Relevant infrastructure has been installed in these institutions to enable fax

communication and even email communication but the poor state of telephone lines makes it very difficult to establish these links. Telecommunications is a public (government) property in many countries. Government owned telecommunication operators are usually inefficient. Commercial service providers have not been allowed to provide value-added services until very recently. Some institutions in the region were not able to send their participants for training because information could not be communicated in time.

Some countries in the region use other languages other than English as their official language. In Madagascar and Mozambique, the fact that ASFISIS is fundamentally in English is a problem. Librarians in both countries requested that a translation of the ASFISIS thesaurus be done to enable them do the coding easily. Madagascar and La Reunion are mainly French speakers and in Mozambique they use Portuguese. Language is a barrier in regions like La Reunion (which is a protectorate of France) where they use French and English is a big problem to them. They require in this case French manuals and the thesaurus should be in French. Training has been offered in English, therefore this requires more training in French, specifically for the French-speaking region.

One of the fundamental problems in some institutions is the lack of the culture for sharing information. Most scientists keep in their custody a considerable amount of literature and data with them. In the recent past effort has been made to encourage them make these records available for processing especially for the ASFA database.

Recommendations

Strengthening of regional research networks like RECOSCIX-WIO needs a collective effort from all the participating institutions and governments. It should not be left to the project alone to face all the challenges of developing such a network.

The research institutions should realize the importance of these initiatives. They should consider the time-consuming nature of setting up these networks and the costs involved and render support and also make good use of these networks. They should encourage staff on a permanent basis to support tasks like the database development that will go a long way in assisting the research work in the region.

The institutions of the region should, as a collective venture, assess existing networks and exchange views and ideas on possible modalities for closer co-operation. They should promote informed debates on the relevance of these initiatives and raise awareness, especially on the governmental level.

Governments should play a more active role in supporting the initiatives in establishing these networks and have a view to take them over after the duration of funding has ended. They should work towards establishing firm library structures in these institutions, hire professional staff and boost staff morale to discourage staff mobility.

There is a need for forums for African leaders to promote a dynamic change in the information and help in repositioning policies to facilitate African countries' participation in the information society.

The Project and collaborating agencies should continue to invest in continuous training of staff and consider sending professionals to individual centers to carry out training on site.

There is a need for national policy and sectoral workshops to intensify policy dialogue on obsolete regulatory frameworks. At the national level, workshops should be held for senior policy level demonstrating the development potential of computer networking, to examine policy restraints in regulatory and pricing areas, taxes and monopolies on equipment, staffing, training and discuss current policy constraints.

The funding of the project by the Belgian government is decreasing, however IOC has offered to support a number of activities and this is a very healthy gesture for the project. The World Bank and other donors with issues of African continent's information technology high on their priority lists should be approached to offer support.

Conclusion

Many African nations continue to suffer from badly performing economies, high foreign debt, declining resources and social infrastructures, These have direct implications for the implementation of initiatives to foster establishment of both manpower resources and other enabling factors and can be seen to be the major problems that need long term planning to solve them. Most of the current constraints to African entry into the global information society lie in the area of policy, human infrastructure and culture. There is a need for visionary leadership to seize available opportunities and avoid increasing marginalization. There is a constant need to train personnel to operate and utilise the new systems that are being introduced. Changes are also necessary in attitudes about information and its use- creating cultures that are information hungry and information sharing.

A combination of new policies and direct support by regional and international institutions will make the efforts of regional projects in developing lasting networks a great success. The rationale for such support can only be strong if the countries of the region become full actors in the initiatives and also in the global information revolution. An increased flow of information and access to relevant data will greatly enhance the research capabilities of the region. It will also contribute to the also increase in Africa's participation in the global dialogue on environmental issues.

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