



**Report of  
The Regional Meeting on Interchange and Exchange of  
Scientific Information among  
S & T Information Centres/ Libraries of South Asia**

Organised in collaboration with  
UNESCO/ New Delhi



**29<sup>th</sup> - 30<sup>th</sup> January 2001**

**National Science Foundation  
Colombo**





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**Report of the Meeting on Interchange and Exchange of Scientific  
Information among S & T Information Centres/Libraries  
of the South Asia Region  
29-30 January 2001  
Colombo, Sri Lanka**

**1.0 Introduction**

A Regional Meeting on Interchange and Exchange of Scientific Information among the S & T Information Centres/Libraries of the South Asia Region was held from 29-30 January 2001, in Colombo, Sri Lanka. The meeting was sponsored by UNESCO/New Delhi Office & hosted by Sri Lanka Scientific and Technical Information Centre of National Science Foundation. 15 participants from Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka participated (Annex 01) at the meeting.

The main objectives of this meeting was to:

- ❖ design a mechanism to exchange information among South Asian countries &
- ❖ Promote co-operation among libraries/ information centres in the South Asia region.

**1.1 Inaugural Session**

Prof. Kapila Dahanayake, Chairman of the National Science Foundation, welcomed the participants. He said that the meetings of this nature would result in developing mechanisms to exchange information and it also provides an opportunity for librarians and the information scientists of the region to meet personally and exchange ideas and to establish contacts with each other.

Prof. Carlo Fonseka, Secretary General, UNESCO (Sri Lanka) delivering a very informative speech explained the enormous importance with the great benefits that can accrue to human kind by utilising the advance technologies connected with the dissemination of information.

Ms. Tripta Sondhi, National Officer, UNESCO (New Delhi) also addressing the audience mentioned that UNESCO was happy to initiate this meeting under the general information programme. Describing the objectives of the meeting she further said that in view of the budgetary crisis faced by international organisations, specially the UN, the meeting should explore the possibility of finding alternative means such as through bi-lateral and multi-national systems to support the scientific information interchange and exchange programme in the region.

The keynote address was delivered by Prof. N.R. Arthenayake, Secretary, Ministry of Science & Technology deputising for the Minister of Science and Technology. He mentioned that the information could be transferred into a powerful tool for the benefit of the people in our countries and in order to keep pace with the global phenomenon. Any country has to keep updating the knowledge and skills of its scientific and technical personnel on a regular basis to be in par with the developed world.

At close of the session Mr. M. Watson, Director, National Science Foundation thanked the UNESCO/ New Delhi Office for offering NSF to host this meeting. He also thanked the special guests and the participants for their presence and wished that the meeting would end up with fruitful contributions for the development of the region.

## **2.0 Working Sessions**

The activities of the workshop were conducted according to the agenda. (Annex 02) Mr. N.U. Yapa was elected as the Chairperson for the two sessions on the 29<sup>th</sup>. Dr. O.N. Chaddah was elected as the chairperson for the 1<sup>st</sup> session on the 30<sup>th</sup> and Mr. N.U. Yapa for the second session. Ms. R. Sugathadasa, Ms. N. Perera and Ms. A. Tennekoon from SLSTIC were elected as the rapporteurs.

### **2.1 Country Reports**

Each participant presented an individual country report, highlighting significant activities. Abstracts of the papers are given below. Further information is available in the full text country reports submitted by each participant. (Annex 03)

### **2.2 Abstracts of Country Reports**

#### **2.2.1 Bangladesh**

BANSDOC is the main national S&T information organization, which plays an important role for the S&T community in the country. On-line service, Document procurement service (nationally and internationally), Scientific contact service, Bibliography compilation service, Document reproduction service, Desktop printing and publication (DPP) and E-mail service and Library are the main services rendered by BANSDOC.

A project entitled "Automation and Networking of Science and Technology Libraries in Bangladesh (BANSLINK) has been implemented by BANSDOC to share the resources of other libraries, information and documentation centres. BANSDOC utilizes resources of a number of S&T libraries in the country by maintaining the National Catalogue of Scientific and

Technological Periodical holdings (STPH). The organization has a plan to establish a digital library.

### 2.2.2 Bhutan

The national library of Bhutan, established in 1967, to preserve and promote country's rich cultural and religious heritage. The following major achievements were reached;

- ❖ Over 10,000 volumes of religious texts in Choked (Dharma language) on various subjects;
- ❖ foreign collection of over 4500 English titles;
- ❖ Computer catalogue of more than 40,000 entries (developed by WINISIS);
- ❖ Archives and legal deposit act;
- ❖ Scriptural documentation survey to register the possession and locations of the rare documents;
- ❖ Research unit to carry out research and translation on important topics of national relevance;
- ❖ Newsletter - "Rigter";
- ❖ Book stall;
- ❖ Division of Information Technology was created to coordinate and oversee all IT activities in the country.

### 2.2.3 India

With a view to sustaining effectively the increased R&D activities, the establishment of institutions like Indian National Scientific Documentation Centre (INSDOC), Defence Science Documentation Centre (DESIDOC), National Medical Library, Patent Library and information Centre, the Library Bureau of Indian Standards, the Small Enterprises National Documentation Centre (SENDOC), National Information System of Science and Technology (NISSAT) are important milestones in developing documentation activities in the country.

The objective of NISSAT is to interlink and coordinate a large number of information sources, systems & services to an effective information network under an overall coordination agency.

NISSAT has taken initiatives for promoting resource-sharing activities, aimed at ensuring better utilization of information resources. Besides the development of library networks, the programme includes preparation of union catalogues.

The major resources at INSDOC are categorised in to 5 broad categories as services, products and publications, projects in competency areas, national information resources, education and training (National & regional).

National Science Library, which is functioning as a national information center, has an electronic library, one of the main assets having full text electronic journals.

The services include Chemical Abstract Keywords Index service, Contents Abstracts Photocopies service, Standing Order Abstracts Service, Bibliometric Analysis, Translation of S&D Documents, Printing and Reprography.

INSDOC offers several indigenous data bases on its online host system for public access via SIRNET. INSDOC has also been functioning as national ISSN centre for assignment and registration of Indian serials covering the entire subject field. The SAARC Documentation Centre(SDC) setup at INSDOC for exchanging S&T information among SAARC countries.

Digitization of print document, Union Catalogue of Periodicals, Union Catalogue of Books, Electronic Documents Delivery, Co-operative Collection Development are the main tools for resource sharing.

#### **2.2.4 Maldives**

The Ministry of Communication, Science and Technology was established in 1998 to develop and coordinate S&T related activities in the Maldives. Prior to establishment, there was no specific government ministry or agency responsible for coordinating and implementing S&T related activities. Interchange and exchange of S&T information within the government ministries and between the regional countries are minimal. Access to Internet though available, is constrained by the high user rates rather than the facilities available at work sites.

Presently there is one national library catering for the needs of the general public and several other libraries catering for the needs of educational institutions. There is no central library or information center which maintains S&T databases. This is partly because of the relatively small demand within the country for such services. Maldives will take the necessary steps to establish such an S&T information center once the proposed National Computer Center and the Government network of Maldives are established.

#### **2.2.5 Nepal**

Location of Nepal in the World globe and administrative division of Nepal comparatively with education status was described.

Tribuwan university central library has been functioning as a public library, special library and as the National library in the country. It has been publishing " Nepalese National Bibliography" for the last 20 years and collecting as far as possible all publications published in Nepal. General collection (books on all subjects), reference collection, periodicals collection, text books, Nepal collection, United Nations collection (depository library), American studies collection, Non-Book resources (Audio visual materials, CD-ROM, video cassettes,

Microfilm & microfiches & electronic databases) and ISBN National agency are the resources available at TUCL.

It is estimated that there are more than 1600 libraries in Nepal. RONAST, which was established under the Royal charter, is growing well to provide services to their scientists but do not have enough resources to cover nation wide services.

Networking of libraries in Nepal is at a nascent stage. Nepal Net is a collaborative electronic network involving 34 organizations governmental, non-governmental academic and research oriented in the country. Health Net Nepal is another resource sharing activity, which provides and electronic connection to the INTERNET to health workers world-wide and to new sources of health information. His Majesty's Government/Nepal recently announced its IT policy for the Kingdom. For the interchanging and exchanging of S&T information in the region, following mechanism is suggested

- ❖ Institutional frame work at the national & regional level
- ❖ Orient information professional on information literacy
- ❖ Identification electronic resources at the international level

Union catalogue, union list of scientific periodicals, union list of Medical science journals, electronic databases are the main resource sharing tools in Nepal.

In Nepal Internet services was began in 1994 and e-mail in 1993. At present 10 Internet service providers are in service.

#### 2.2.6 Sri Lanka

A suitable infrastructure for Science & Technology is necessary for the development of a scientific & technical information system for a country. The historical development for such an organizational structure can be categorised into four broad areas, which developed in parallel. These are;

- ❖ Institutional policy framework
- ❖ Research Institutions
- ❖ Professional Societies and
- ❖ Tertiary education.

Sri Lanka has professed a deep commitment to science and technology, and has recognized the importance of S & T information in several of the policy statements made during the past 30 years. The setting up of the Scientific & Technical Information Centre within the National Science Council, was a landmark in the establishment of a coordinated S & T information system in the country. Several information networks were set up under this centre in various disciplines of S & T, which then evolved into a S& T Information Network or SLSTINET. The more active of them being AGRINET (Agricultural Information Network, HELLIS (Health Science Library Literature and Information System) and ENLINET (Environmental Library Network). Several other

national information networks such as TRADENET also came into operation with time. Regional networks with the focal point in Sri Lanka were also set up and these served a useful purpose of getting access to regional publications. Examples of regional networks are APINMAP (Asian & Pacific Information Network on Medicinal & Aromatic Plants, with the focal point being the CISIR) and OSHINET (Occupational Safety and Health Information Network, the focal point being the Department of Labour) Two important milestones which accelerated the pace of information sharing in the country were, the adoption of CDS/ISIS software for library operations, and the identification of IT as a thrust area for national development. These developments resulted in the building up of national computerised databases such as the Union Catalogue of Books and the Union List of Periodicals. The networking function was accomplished more efficiently and comprehensively. Furthermore, many libraries were able to establish e-mail and Internet connections for information sharing and dissemination. Some libraries have also been able to put their catalogues on the web.

Some problems, which hinder the efficient provision of information to the users in the scientific and technical community, have been highlighted with recommendations being given wherever possible. Some recommendations have also been given for information sharing within the South Asian region.

### **2.3 Technical Papers**

The following Technical papers were presented (Annex 04) on the second day 30<sup>th</sup> January 2001.

- ❖ Use of databases on diskettes/ CD-ROMs for exchange of information - Mr. N.U.Yapa, Head Librarian, International Water Management Institute (IWMI), Sri Lanka.
- ❖ Feasibility of using full text CD-ROM collections for information exchange - Mr. L.A Jayatissa, Senior Asst. Librarian, University of Kelaniya, Sri Lanka.
- ❖ Providing online access to databases - e-Journals and using the available on-line databases - Deepali Talagala, Director Information/ Information, SLSTIC, NSF.
- ❖ Pilot project on regional database development - Mr. N.U. Yapa, Head Librarian, IWMI
- ❖ Copyright implications of document supply & exchange of information - Dr. D.M. Karunaratne, Director, National Intellectual Property Office of Sri Lanka.

After the presentations of the country reports and the technical papers participants discussed the problems and issues in the region.

One of the issues raised was the cost of electronic databases. It was mentioned that most of the countries in the South Asia region are purchasing a lot of databases, which are of high cost. Considering the economic situation of the region it was suggested to develop a cooperative programme among the countries in the region.

Supplying photocopies at a nominal rate within the region was also suggested. The possibility of exchange of periodicals in printed form was also discussed.

After discussing about Mr. Yapa's proposed pilot project on regional database, it was suggested to develop a mechanism to create a union catalogue and to create databases, which can be accessed through Internet. It was also suggested both the National Centres and the Regional Centre should fund this project until the system gets established.

The lack of trained manpower in library & information science in Maldives was a key point discussed. Mr. Yapa mentioned about the distance education programme conducted by the Sri Lanka Library Association. He further said that the course was successful only upto intermediate level and it was abandoned due to lack of funding. He stressed if the government of Maldives takes the initiative, there are other countries such as Sri Lanka, India to help them.

After discussions about these issues the following draft recommendations were produced and adopted by the participants.

### **3.0 Recommendations**

- ❖ Establish a Regional Committee to be coordinated by UNESCO/ New Delhi and National Committees in each country in consultation with the UNESCO National Commissions
- ❖ Establish a regional consortium to access S & T information in the SA region.
- ❖ Identify an institution/organisation at national level in each country to act as the clearing-house for document delivery.
- ❖ Train the trainers to facilitate training library & information professionals in information skills, cataloguing, documentation, and usage of IT at national level training
- ❖ Formulating guidelines :
  - for maintaining uniformity in data format in developing databases and compiling bibliographies, directories etc.

- to provide publications and full text documents at local rates for the member countries.
  - for producing CD-ROM data bases.
- 
- ❖ Provide free access or subsidised rates to use online databases for the member countries.
  - ❖ Identify the published and unpublished materials available for exchange within the SAARC countries.
  - ❖ Update the directories of centres of excellence
  - ❖ Compile a directory of experts (S & T) in SA region.

#### **4.0 Closing Session**

Prof. Carlo Fonseka, Secretary General, UNESCO National Commission (Sri Lanka) officially closed the sessions. Prof. Fonseka thanked all the participants for their gracious presence and requested to cooperate within the region and to make South Asia region the single most important block of land on the globe in this 21<sup>st</sup> century. He was also confident that we have the potential to realize this.

On behalf of the participants Dr. Chaddah thanked the UNESCO regional office and the National Science Foundation for organising this meeting. He mentioned that this type of meetings would encourage the information managers in the region to cooperate and enhance their activities.

On behalf of the NSF, Sri Lanka, Mrs. Deepali Talagala thanked the UNESCO regional office for giving this opportunity to host this meeting. She also thanked the participants for their cooperation in making this event a success.

The meeting concluded as scheduled on 30<sup>th</sup> January 2001, at 4.30 p.m.

**List of Participants**

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**Meeting on Interchange & exchange of Scientific Information among  
S & T Information Centres/ Libraries of the South Asia Region**

**29<sup>th</sup> Jan. 2001**

10.00am - 11.00am      Inaugural session

11.00am                Tea break

**1<sup>st</sup> session - Presentation of Country papers followed by  
questioning session**

11.30am                Bangladesh

12.00noon              Bhutan

12.30pm                India

1.00 pm                 Lunch

**2<sup>nd</sup> session - Presentation of Country papers followed by  
questioning session**

2.00 pm                Maldives

2.30 pm                Nepal

3.00 pm                Sri Lanka

3.30 pm                Tea break

3.30 pm                Discussion in groups for recommendations

4.00 pm                Presentation of the groups

5.00 pm                Close of the day

**29<sup>th</sup> Jan. 2001      7.00pm      Dinner at the Hotel.**

## **30th January 2001**

- 1<sup>st</sup> session**
- 9.30am      **Technical papers**  
**Use of databases on diskettes/ CD-ROMs for exchange of information - Mr. N.U. Yapa, Head Librarian, IWMI**
- 10.00am      **Feasibility of using full text CD-ROM collections for information exchange - Mr. L.A. Jayatissa, Senior Asst. Librarian, Univ. of Kelaniya**
- 10.30am      **Tea Break**
- 11.00am      **Providing online access to databases - e-journals and using the available on-line databases - Deepali Talagala, Director/Information, SLSTIC, NSF**
- 11.30am      **Pilot project on regional database development - Mr. N.U. Yapa, Head Librarian, IWMI**
- 12.00pm      **Group discussion on developing a mechanism for exchange of information Groups presentation**
- 1.00pm      **Lunch**
- 2<sup>nd</sup> session**
- 2.00pm      **Group presentation**
- 3.00pm      **Copy right implications of document supply & exchange of information - Dr. D.M. Karunaratne**
- 3.30pm      **Tea Break**
- 4.00pm      **Formulation of Recommendations of the workshop**
- 4.45pm      **Closing ceremony of the workshop**

**Regional Meeting  
of  
Professionals from S&T Information Centers/Libraries for the Interchange  
and exchange of Scientific Information among S&T Information  
Centers/Libraries of the South Asia Region, Colombo, Sri Lanka  
29-30 January 2001**

**Country Paper  
Bangladesh**

**Md. Shah Alam Bakshi  
Principal Scientific Officer  
Bangladesh National Scientific and Technical Documentation Centre  
(BANSDOC)  
Dhaka, Bangladesh**

## **Introduction:**

Exchange of information is essential part of any type of development. In case of Sci-Tech, that is the most important and essential prerequisite for the success of any program of scientific and experimental development. If there is any gap of appropriate knowledge and information, the outcome of any research becomes substandard and does not play proper role in the development in the concerned field.

S&T information is also needed by entrepreneurs so that they can make an objective consideration and choice of optimum technology from the perspective of technological suitability and profitability based on the country's factor endowments.

The tremendous expansion of the volume of scientific and technological research all over the world has brought up the explosion of scientific and technical literature. Every day a volume of information is being generated in different languages, in different fields and in different forms all over the world. It is difficult for any individual private organization to keep track of all such information. Yet modern technology has increased the capability of human being in handling much more information than he did before. Collection, processing, storing and retrieval of information involve specialized personnel of diverse discipline and high cost usually beyond the means of any individual R&D organization.

Here comes the importance of the S&T information centres/libraries from which the researchers, educationalists and entrepreneurs can have the latest information in their respective fields of interests.

## **Bangladesh National Scientific and Technical Documentation Centre (BANSDOC):**

BANSDOC is the premier S&T Information Organization in Bangladesh. Let us now give some idea about its capability. It is functioning in order to feed researchers, teachers, industrialists, technologists and in general, all those who are active in the field of science and technology with necessary S&T information. Initially it was assigned with the following tasks when it was an attached section of Bangladesh Council of Scientific and Industrial Research (BCSIR):

- Document procurement
- Compilation of bibliographies
- Document reproduction

In 1986 Government adopted a National Policy of Science and Technology and according to a provision of the policy BANSDOC was given independent status of a national organization. This was placed under the administrative control of Science and Technology Division under the Ministry of Education and in 1994 under the Ministry of Science and Technology.

### **BANSDOC Services:**

To achieve the goal of its creation, BANSDOC has been rendering at present the following essential services:

1. On-line Service (Cyber Centre)
2. Document Procurement Service
3. Scientific Contact Service
4. Bibliography Compilation Service (CD Search)
5. Document Reproduction Service
6. Desktop Printing and Publication (DPP) and E-mail Service
7. BANSDOC Library

## **Resources available at BANSDOC :**

BANSDOC being an information agency requires a large scale effective S&T documentation and information materials in its collection for rendering services according to the needs of the clientele groups. For this purpose the library has a national advisory Committee approved by the Government and according to the instructions and guidance given by this committee, books, serials and other materials are collected every year.

It may be mentioned here that the BANSDOC Library is an agency to supplement the resources of all the libraries by its own selective acquisition and also to act as the referral centre and clearing house for maximum utilization of the existing materials in the country. Thereby it extends its base of operations as a national library of Science and Technology.

As has been the case with all other libraries, this library also faces a two fold problem. The cost escalation of foreign periodicals and books is the main problem that has decreased greatly the volume of collection frustrating the reading circles. This problem is somewhat ameliorated by services like Document Supply service, Contents, Abstracts and Photocopy service (CAPS) etc.

The acquisition policy of the BANSDOC's S&T library is to acquire all important S&T publications as far as the fund permits which other libraries can not afford or do not collect so that maximization of the fund is ensured and duplication of resource purchase may be avoided. To strengthen its resource base BANSDOC has started subscribing for CD-ROM of foreign journals or other electronic form as far as possible.

Library information services are further enhanced every year with the addition of new books to its stock and by subscribing to new foreign journals and periodicals. The library is organized in two sections (1) Monographs (Book) section (2) serial (Journal) section. The library subscribes about 90 titles of

national and international scientific and technological journals. There are 13 persons always rendering library and reference services according to the needs. It has now a total stock of about 16215 books and about 325 serials on different branches of science and technology. BANSDOC library is kept open to its users from 9 am to 5.00 pm. everyday except Fridays and Government holidays. The library services are open to all categories of users. The library provides only readers service.

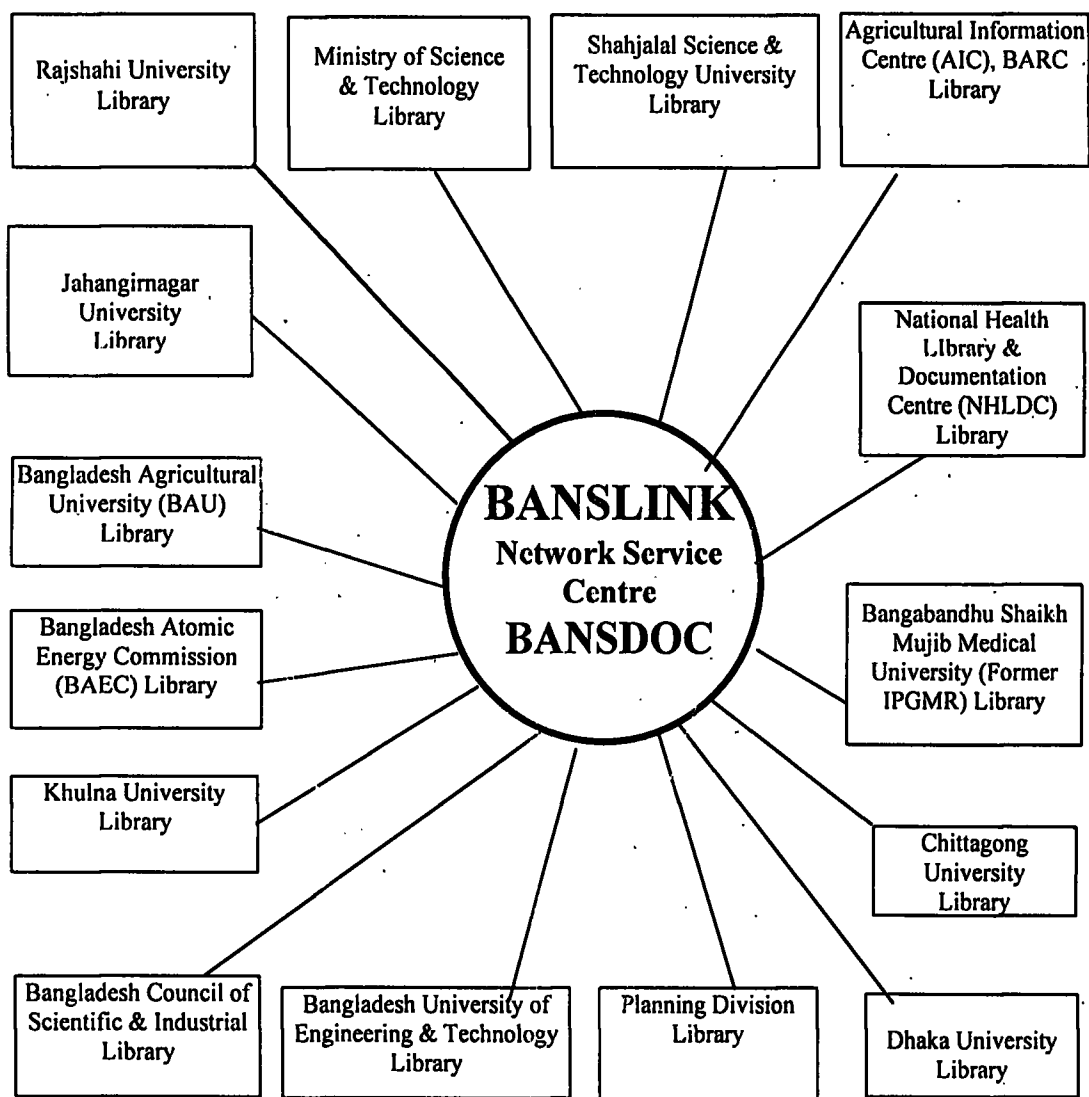
#### **Resources at other Libraries/Information Centres:**

To share the resources of other libraries, information and documentation centres, a project entitled "**Automation and Networking of Science and Technology Libraries in Bangladesh**", popularly known as **BANSLINK**, has been implemented by BANSDOC. With this implementation, a network of 15 libraries, information and documentation centres has been established. Users have got the opportunity to see the resources available in these 15 nodes from BANSDOC or any of the nodes, though the system needs upgradation. The 15 nodes of the networks are :

- 1 Bangladesh Council of Scientific and Industrial Research (BCSIR) Library,
- 2 Bangladesh Atomic Energy Commission (BAEC) Library,
- 3 Bangladesh University of Engineering and Technology (BUET) Library,
- 4 Bangabondhu Shaikh Mujib Medical University Library,
- 5 Planning Commission Library,
- 6 National Health Library and Documentation Centre,
- 7 Dhaka University Library,
- 8 Agricultural Information Centre (AIC)
- 9 Ministry of Science and Technology Library,
- 10 Khulna University Library,
- 11 Chittagong University Library,
- 12 Rajshahi University Library,
- 13 Shah Jalal University of Science and Technology Library, Sylhet,
- 14 Mymensingh Agricultural University Library and
- 15 Jahangir Nagar University Library.

The Network in Which BANSDOC Server is the Central host has the following structure:

### The Network



### Expected Contributions and Recommendations:

- Establishment of contacts and maintenance of liaison with similar bodies abroad and acting as focal points for regional and international information systems, like International Information System for the Agricultural Sciences and Technology (AGRIS), South Asian Association for the Regional Co-

operation (SAARC) Documentation Centre, International Nuclear Information System (INIS) etc. in the respective areas of specialization

- High speed data communication infrastructure should be quickly setup for speedy data transfer between Bangladesh and other countries
- Education systems should be made dynamic and efficient enough to generate computer and IT –literate manpower of international standard for home and overseas markets.
- A central Information Repository with lending facilities should be maintained in the country for institutions of higher education, research, development and planning.
- An effective information technology policy should be adopted to foster the information processing activities in the country.

#### **Present Mechanisms for Resource Sharing Nationally/Internationally:**

Access to information holds a very important key to development. This information explosion during last few years has been amazing. Millions of journal articles are being published every year in various branches of sciences. Access to these types of information in right time is of paramount importance to the progress of individual institutions and societies as well. Libraries being the store-houses of human knowledge and information cater to the requirements of different branches of knowledge. That's why information centres disseminate information and knowledge in different forms of services.

The cost of information resources has been rising with the increase of volume of information tremendously calling for heavy investment in the information centres and libraries. Consequently the buying capacity of institutions have been lowering resulting in limited access to information resources. So there is an increased demand for information which are not available in ones own institution.

BANSDOC since its inception has been offering document copy supply from different sources. Firstly it does so from its own library collection of about 325 titles of periodicals. In addition, BANSDOC utilizes resources of a number of S&T libraries in the country by knowing the National Catalogue of Scientific and technological periodical holdings (STPH) of the country. Some of the most important libraries and documentation centres in the country supplying 10% of the total demand are Agricultural Information Centre (AIC), Bangladesh National Health Library and Documentation Centre (NHLDC), Bangladesh Institute of Development Studies, Bangladesh Bank, Bangladesh Small and Cottage Industries Corporation, University of Dhaka (Library).

If the document requested is not available in the country, BANSDOC has alliances with a number of important international libraries and Documentation Centres abroad and procures it from one of these foreign libraries like National Library of Australia (NLA), British Library and Document Supply Centre (BLDSC), Indian National Scientific Documentation Centre (INSDOC) on payment basis. The payment to the supplier is made in UNESCO Dollar Coupons. Service charges at a very reduced rate are realised from the clientele whereas the collection rate is very high.

To ensure Real Time Information Services to the users BANSDOC has undertaken a program to establish a digital library. For this purpose BANSDOC has already been on the INTERNET. Quite a good number of CD-ROMs from INIS, UNESCO, EC etc. have been collected. These CD-ROM database are related to the subject of Agriculture, Biological Sciences, Physics, Chemical Sciences etc.

The procedure for procurement/collection of documents are as follows :

**Journals/periodicals**

**Internationals levels :**

1. Through Foreign Demand Draft (FDD): On Annual Subscription Basis
2. Through UNESCO Dollar Coupon: On Annual Subscription Basis

3. Through Exchange Programme
4. Through Donation/Complimentary

**National Level :**

1. Through Annual Subscription Basis
2. Through Exchange Programme
3. Through Donation/Complimentary

**Books**

Through Tendering process by local suppliers

**Concluding Remarks:**

Increasing numbers of book and journals are coming out in the form of CDs, CDs can take the advantage of the multimedia capabilities as well. Beauty of CD technology is in the major advantages in areas :

1. highly reduced physical space for storage compared to paper-based media;
2. keyword searching capability including hypertext links to related topics; and
3. the audio and movie display facilities not available in printed editions.

Significant changes have taken place in the methods of collection, collation, processing, production and dissemination of information in all fields. Traditional form of publication in print media is gradually being replaced by CDs and other computer readable media. With the advent of electronic communications networks, the Internet, worldwide web the users can now travel in the huge information round the world sitting in his place. The popular search engines (yahoo, AltaVista, hotmail, etc.) have made this task much easier for the users. Efforts and endeavours should now be directed to developing national, regional and international infrastructures in that way, specially the S&T libraries and information and documentation centres, conversion of documents to computer readable media and providing high-speed access to information stored in servers in an outside the countries.

# འབྲུག་རྒྱལ་ཡོངས་དབེ་མཛེད།

## The National Library & Archive of Bhutan

- I. **Background**
- II. **The Choeked Collections** (Note: many of the preciouese Religious Scriptures are written in "Dharma" language called Choeked in Bhutanese.
- III. **Foreign Collections**
- IV. **Computer Catalog**
- V. **Archives & Legal Deposit Act**
- VI. **Scriptural Documentation Survey**
- VII. **Research & Newsletter**
- VIII. **Book Stall**
- IX. **Information Technology**
- X. **Legislation**
- XI. **Media**
- XII. **Mission**

Dr.Karma Wangchuk  
Assistant Director/Research officer  
National Library of Bhutan

## THE NATIONAL LIBRARY & ARCHIVE OF BHUTAN

Honourable Chairpersons,  
Distinguished Delegates,  
Ladies and Gentlemen

It is a great honour and privilege for me to participate in the Regional meeting of Professionals from S&T Information Centers/Libraries for the interchange and exchange of scientific information among S&T Information centers/libraries of the South Asia Region. I am sure that this Meeting may impart special significance toward the twenty-first century and in the history of Library by sharing/networking Media and information with all parts of the world, especially within the South Asia Region.

I feel deeply honoured by this opportunity to share a brief outline of Collections and Resources in the National Library of Bhutan with eminent IT & Library Professionals and Leaders present here. As a late starter in the modernization process, Bhutan finds itself well placed to take advantage of the enormous potentials of media and IT. For a country with limited resources, the future perhaps lies in further building an open and democratic society with strong foundations in information, knowledge and skills. The Royal Government believes that appropriate application of these tools would complement Bhutan's own path to development, defined by the goal of Gross National Happiness.

### I. Background

With rapid modernization taking place, there is a threat to cultural degradation. Realizing this drawback, The Royal Government of Bhutan established a number of institutions, which would look after the preservation, and promotion of the country's rich cultural and religious heritage. The National Library of Bhutan, established in 1967, is one of those institutions.

The Library function, under the administration of the National Commission for Cultural Affairs. The current library complex, erected in 1984, comprises a towering four-storied building suitably designed as a temple (lha-khang) in traditional Bhutanese style. Foreign Collections, i.e., the works in English, are kept in the ground floor. The scriptural texts in classical language are kept in the first and second floor. The top floor is used as book museum where rare and old sacred classical texts written in gold and silver letters are displayed for visitors.

## II. Choeked Collections

The Library has over 10,000 volumes of religious texts in Choked (dharma language) on various subjects which are fundamental sources of philosophy, history, religion, mythology, paintings, astrology, culture etc. In 1997, all these texts were classified on the basis of four major sects of Mahayana Buddhism (Nyingma, Kagyud, Sakya, and Gelug) and Bon in order to make more convenient and prompt services to our readers abroad and at home.

To classify and catalogue choeked books is not at all an easy job, it takes considerable time to catalogue and classify a single volumes as there are so many sub titles and with different authors. In most of the cases, there are 10 to 15 authors and 20 to 30 different sub titles in one volume. No where in the world has been able to develop a perfect system for choeked materials.

The following are the specified Choeked collections, which the library has acquired since its inception:

### 1) Kangyur (tipitaka)

• Lhasa Kangyur	100	vols.
• Narthang Kangyur	106	vols.
• Dege Tshelpar Kangyur	108	vols.
• Darthang Kangyur	36	vols.
• Japan Kangyur	45	vols.
• Urga Kangyur	105	vols.
• Bon Kangyur	178	vols.

### 2) Tengyur (shastra)

• Dege Tengyur	225	vols.
• Peking Sercha Tengyur	224	vols.
• Darthang Tengyur	56	vols.
• Japan Tengyur	106	vols.
• Bon Tengyur	336	vols.

### 3) Scriptures wrote in gold letters.

- Gaydtongpa 5 copies of different periods
- Bum Kapa 1 vol.
- Phagpa Dho Duedpa 1 vol.
- Sangye Thendum 1 vol.

- Choeki Zung 1 vol.
- Togjod 1 vol. (Note: Most of these scriptures, written in gold are over 500 to 1000 years old.)

### III. Foreign Collections

The Library holds over 4500 English titles mainly on Buddhism, Bhutan and neighboring countries. Besides there are periodicals, magazines and news bulletins. The Library has also 40 volumes of Tipitaka in Pali (Three Baskets of Buddha's Teachings) in Burmese script and 50 volumes of Pali Tipitaka in Devanagri script. The National Library has been receiving quite regularly donations of books on different subjects from the Japan Foundation, Taiwan, Germany, Shambala publication, Diamond publication, Snow Lion publication and other countries and organizations. The management has been making a major effort to build national imprint collections as well as collection of other language materials, especially in English to meet the need of the national information.

### IV. Computer Catalog

Databank entry mask was set up in different fields to computerize library holdings under the Danida Project. Scriptural texts usually contain a number of sub-titles on different subjects depending on texts. All these sub-titles along with the main title are being fed into the databank on WINISIS programme of UNESCO. A total of more than 40,000 sub-title so-called MFN-entries has been put in or registered in the database. The classification and on line cataloguing of the collections of the National Library is in full swing and aims to complete it by next three to four years times.

The bibliographical data of the English book collection is also recorded on a computer database. Out of over 4500 books, 450 titles are already recorded whereby readers can search for titles, authors, subjects and others. After the completion of the recording, the readers or users can browse and find out information of their interest either on Choeked or English books. . The programme if proved successful will be shared with other institutions within the country and outside.

### V. Archives & Legal Deposit Act

The National Library will soon see the construction of modern archive building, to preserve and conserve valuable documents of the nation.

In July 1999, the 77th Session of the National Assembly of Bhutan passed Legal Deposit Act-1999. An Act to Collect, Preserve and Manage Bhutan's

Documentary Heritage. Under which the publisher whether Govt. or private would have to deposit 10 printed and 5 non-printed documents whereas private publishers would be obliged to deposit 5 printed and 2 non-printed documents to the National Library. Out of 10 printed materials 4 copies are allocated for the publication exchange programmes of the National and International libraries. The Library is currently exploring to establish cooperation with similar agencies within and outside the country.

#### **VI. Scriptural Documentation Survey**

In order to enhance the collections and preserve important and rare documents of the country, The National Library is undertaking a registration of manuscripts owned by monasteries and landlords under the Danida Project. Out of over 2000 lhakhangs (temple) and monasteries in the country, the survey team, initiated last year were able to manage to survey twenty-five lhakhangs and monasteries. The total of 30 books on different subjects, found in the course of surveying, were registered and microfilmed at the microfilm section. The main objective of the scriptural documentation survey is to register the possession and locations of the rare documents by the different owners at the main Library. Based on the record of its collection, the Library will prepare comprehensive catalogue that will be a starting point for the development of publication of national bibliography in the near future.

#### **VII. Research & Newsletter**

The research unit of the Library is committed to carry out research and translation on important topics of national relevance, mostly on the Bhutanese religio-cultural fields. In between 1997 to 1999 eight books were printed and published by the Library. It is sad that no research could be carried out yet, in connection to the library fields like classifications and catalogues, as a result the Library has no catalogue or bibliography in book form since its inception.

In order to share easily with our valued readers the resources and activities of the National Library, The Newsletter called "Rigter," "The treasure of Wisdom," was published biannually. The first issue was released on 13 April 2000 and the 2nd issue on 17 December 2000.

#### **VIII. Book Stall**

To generate funds for buying books for the library, the NLB has a small bookstall which sells books at a cheaper price as compared to other bookstalls in the market. The checklist for complete details of books published by the NLB and other

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agencies for sale, can be browsed through when we launch the website in the near future.

## **IX. Information Technology**

Division of Information Technology was created under the Ministry of communication on 1st January 2000 with the objective to coordinate and oversee all IT activities in the country. So far, the major IT activities undertaken under its leadership are the creation of a National Data Center and the Bhutan Center for Geographic Information System (BCGIS) in the Central Statistics offices. It will continue to work with these centers to promote proper data gathering, analysis, and sharing methods, including distribution of information on the web through a government wide Intranet and web portal.

With the introduction of the electronic communication in Bhutan on 2nd June 1999, in commemoration of His Majesty's Silver Jubilee, most of the Government offices, International organizations large Institutions and big Private firms has already established Internet Connections and e-mail. Meanwhile, The National Library will soon be launching a Homepage. It is hoped that this website will bring people all over the world ever closer to Bhutan and understand our rich intellectual treasures as well as activities of the National Library in the preservation of our national written treasures for the present and future generations.

A source sharing, like full text document supply, feasibility of using full text CD-ROM collections for exchange, use of database on diskettes/CD-ROMs for exchange of information, online access to database and Copyright implication of document supply, are yet to be started in the National Library. The Library has a provision to implement the above in the near future. In fact, we have already started a pilot project to use database on diskettes /CD-ROM while conducting a literary survey.

## **X. Legislation**

Presently, Bhutan does not have a copyright law, or any IT-related legislation. As IT develops, it will be necessary to develop appropriate legislation to protect the IT industry. The RGOB plans to draft and implement a copyright law, as well as legislation against computer crimes and indecent and illegal materials. It will also enact legislation on the use of digital signatures on official documents. It is likely to pass some of these laws in the coming session of the National Assembly.

## **XI. Media**

Ever since the passing of the LDA, the Library is getting a variety of items on media like National Newspaper, Music compact discs, Audiocassettes, Videocassettes etc. Kuensel, the national newspaper and the national radio & television services of the Bhutan Broadcasting Service (BBS) comprise the main media in Bhutan.

Kuensel is the only newspaper, published once in a week. BBS broadcasts on Short wave to the entire country and on FM to some parts. BBS television is only a year old. It was launched as a pilot station for Thimphu on 2nd June 1999 with one hour broadcast every evening. Beside, Kuensel and BBS, Film and music industries are also growing steadily in the country.

## **XII. Mission**

- To establish the National Library of Bhutan as a national and international information center, especially in commercial information through linkages with local and overseas information database and vendors
- To preserve Bhutan's literary heritage as well as develop an interest and appreciation of arts through special collections and programmes
- To provide wholesome education, knowledge and research through establishing a network of libraries
- To promote literacy and enjoyment in reading
- To increase public awareness of the library needs and services

**Scientific & Technological Information in India**

**O. N. Chaddha**

**Indian National Scientific Documentation Centre  
New Delhi, India**

**Country Paper**

**Regional Meeting of Professionals from S & T  
Information Centers/Libraries of the South Asia  
Region, Colombo, Sri Lanka, 29-30 January 2001**

# **SCIENTIFIC & TECHNOLOGICAL INFORMATION IN INDIA**

**O. N. CHADDHA**

**Indian National Scientific Documentation Centre, New Delhi, India**

## **1. Introduction**

The development and growth of Science & Technology (S&T) in India is happening from ancient times. There has been a long and distinguished tradition and it has reached greater heights during the last century. The establishment of institutions like Archeological, Botanical, Zoological and Anthropological Surveys to take stock of country's natural resources and our heritage has been of great strength to the scientific activity. The scope of academic research was initiated with the establishment of first three universities in nineteenth century i.e. Bombay, Calcutta and Madras. Institutions like Indian Agricultural Research Institute, Forest Research Institute, Indian Association of Cultivation of Science, National Building Organization, Central Board of Irrigation & Power were also established. All these institutions mostly contributed to pure research. The establishment of Council of Scientific Industrial Research (CSIR) in 1942 was the beginning of research for industrial use. This was followed by establishment of thousands of research institutes in the last four decades by the Central & State Governments for conducting research in Atomic Energy, Space, Electronics, Defence, Ocean Development, Agriculture and Medical Science to meet our national needs.

The status of S&T information in India can best be appreciated against the background of R&D efforts since this activity is closely dependent on the national efforts and support. This in turn is applicable to the information generated out of these national R&D activities. In India, this close relationship has been quite evident since independence. The successive five year development plans further emphasise the scientific research activities supported by the Government and in turn on documentation and information facilities.

The need of documentation services was increasingly felt. With a view to sustaining effectively the increased R&D activities, the establishment of institutions like Indian National Scientific Documentation Centre (INSDOC), Defence Science Documentation Centre (DESIDOC), National Medical Library, Patent Library and Information Centre, the Library of Bureau of Indian Standards, the Small Enterprises National Documentation Centre (SENDOC), National Information System of Science and Technology (NISSAT) are important milestones in developing documentation activities in the country.

NISSAT programme being implemented by DSIR since 1977 envisages promotion and support to the development of a compatible set of Information Systems on Science and Technology and interlinking them into a network. The approach adopted is to bring the existing centres, systems and services to a higher level of operation so that the interests of the national community of information users could be better served. The programme also contemplates experimentation with and introduction of modern information handling tools and techniques and development of indigenous capabilities for the purpose. The main objectives are given below :

- Provision of national information services to meet the present needs of users, generators, processors and disseminators of information.
- Optimum utilisation of existing information services and systems and the development of new ones.
- Promotion of national and international cooperation, liaison for exchange of information.
- Support and provide active encouragement for the development of facilities for education and training in information science and technology.
- Support and provide for active participation in research & development, innovation in information science and communication to enhance both the efficiency of information services and quality of the information provided by these services.
- Support and promote research & development and innovation in information technology.

NISSAT established subject oriented Sectoral Information Centres (SIC) with the object of creating information awareness and to meet the information needs of scientists, technologists, academicians, entrepreneurs, management executives and decision makers. These sectoral centres are listed in Annexure I. A few of the indigenous database activity supported by NISSAT are also listed in Annexure II. NISSAT has taken initiatives for promoting resource sharing activities, aimed at ensuring better utilization of information resources. Besides the development of library networks, the programme included preparation of union catalogues.

India has declared its policy on Information Technology also during 1998 as a sequel to high powered National Task Force on IT and software development setup by the Prime Minister's office. It has unveiled a national information policy with a strategic 10 year perspective to fully harness the benefits of IT in every sphere of national life. One of the points made is to facilitate quick multiflow of

information amongst ministries, departments and key administrative functionaries through network, Internet, Intranet , extranet and local area networks. This will help the Government work faster, more efficiently and in a more pro- people manner.

## 2. Networking

NISSAT had initiated the establishment of CALIBNET in Calcutta in 1986, supported the establishment of DELNET in Delhi in 1988., PUNENET in Pune in 1992, ADINET in Ahmedabad in 1993 and BONET in Mumbai in 1994. INSDOC supported the establishment of MALIBNET in Chennai in 1993. BALNET in Bangalore was registered as a society in 1997. The UGC established INFLIBNET in 1988. This scenario of networks gained further momentum in their activities after the report of the working Group of the Planning Commission on Libraries and Informatics for the Ninth Five Year Plan (1997-2002). The national policy on Library and Information System in 1988 recommended using of information technology on a national level. A few major recommendations for the networking of libraries are highlighted below:

1. A stage has reached when the Indian libraries have to face the challenges of the 21<sup>st</sup> century due to unprecedented developments in information technology, networking and internet.
2. The resource sharing through networks have to be undertaken with a view to avoid duplication of costly documentary resources in the libraries and optimising their use and availability to scholars, researchers and public.
3. All the components of the national library system have developed in isolation so far, thereby contributing to its non-effectiveness. It is recommended that there should be a National Library System (NLS) comprising the National Library (NL), Calcutta as the National Library of India, National Depository Libraries in Delhi, Mumbai and Chennai, National Subject Libraries such as National Science Library, National Medical Library, etc. and national Documentation Centres such as DESIDOC, Indian National Scientific Documentation Centre (INSDOC), National Social Science Documentation Centre (NASSDOC), etc. and such other libraries of national importance. These should form part of one cohesive integrated system.
4. The modernisation of libraries using information technology should result in the creation of standard bibliographic databases. Necessary and adequate assistance be given to institutions for the purpose in accordance with their performance with a view to avoiding duplication of costly documentary resources in the libraries and optimising their use and availability to scholars, researchers and public. It is recommended that resource sharing through networks be undertaken.

5. The UGC should provide sufficient financial assistance to the universities and college libraries for creation of database of retrospective collections. In the first phase, priority may be given to the much used collection.
6. Each university should establish Local Area Network (LAN) and provide terminals in each Teaching Department for quick access to the resources of the Library.
7. The Information and Library Network (INFLIBNET) programme of the UGC, and Information Centres at Baroda, Bangalore and Mumbai should be made fully operational. Information Centres should be established on a regional basis and should be linked with the INFLIBNET which should function in a decentralised manner for the dissemination of information.
8. National Subject Libraries, four recipient libraries under the DB Act and libraries of national importance should merge their data in a common database following uniform standards, uniform/compatible softwares and computer systems on the pattern OCLC. This will help in ensuring quick and exhaustive access to information and also save duplication in processing of material by other libraries in the country. The database may include books, periodicals, non-book material, reports standards, etc. and also non-print material in electronic form. In this database the complete catalogue of the National Library, Calcutta in all languages should become available online using standard international format. The National Library will act as the centralised coordinating agency for such a database within the NLS.
9. All the participating libraries in the NLS should be networked for which necessary infrastructure should be developed and standardisation/compatibility of computer system (hardware and software must be ensured. The National Informatics Centre may act as the agency for ensuring development of proper facilities within the system.
10. Promotion and creation of bibliographic databases should be done in all recognised Indian languages. Expertise developed by agencies like DELNET in this regard may be utilised.
11. National Informatics Centre (NIC) of the Planning Commission be suitably financed to support the infrastructure requirements of national, regional and local networks. NIC may device ways for interlinking networks to achieve better access to resources. It will also oversee the implementation emerging periodically and device ways for the libraries to adopt it.
12. Among the different city networks, it has been found that DELNET has emerged as an operational library network in India with 103 libraries as its members. It has developed the online union catalogue of books and

periodicals. It is recommended that DELNET be supported to create National Database and develop on the OCLC pattern covering all subjects. It is also recommended that other city networks, viz. CALIBNET, MALIBNET, etc. be financially supported to undertake creation of databases at state and city levels.

13. INFLIBNET should coordinate with the existing networks and institutions so that duplication in various categories may be avoided.
14. All government libraries including research and official libraries, documentation centres and information centres, public libraries, etc. should be encouraged to join a library network and follow the prescribed standards for database creation, information retrieval, etc.
15. Library networks and institutions with requisite information technology facilities be recognised and assisted to provide short-term training courses to the staff between units ought to be encouraged.
16. Development of Information highway should be given priority so that the institutions including the libraries, information centres and individuals scattered all over the country are interlinked for teleconferencing, surfing through INTERNET, etc.
17. A National Centre on Informatics and Libraries be setup for coordination of networks at the national level.

Many of these recommendations have been implemented and are operational. Work on other areas are under active consideration of the concerned organizations. Now let us see the scenario related to the networks existing in the country.

### **3. Library Networks and Tools**

The library networks in India had however started developing after 1985. Most of them are city based but these are institutions oriented as well. A few of the existing networks are listed below:

- DELNET
- CALIBNET
- MALIBNET
- BONET
- INFLIBNET
- NICNET
- BALNET
- ADINET
- PUNENET

## **CALIBNET**

NISSAT decided to establish a network of scientific libraries in Calcutta. At a meeting in 1986 in Calcutta, DSIR initiated action for the preparation of a feasibility study for networking about 40 libraries in Calcutta. According to the feasibility study report, Rs.233.8 lakhs were to be spent during Phase I and Phase II of CALIBNET. NISSAT also contributed to the development of MAITRAYEE software package based on INGRES 5.2 for CALIBNET. There is a genuine need for developing and it is being done for Calcutta libraries. At present, CALIBNET has become a centre for CD-ROM databases which are acquired from outside sources.

## **MALIBNET**

For promoting resource sharing, MALIBNET has been created in Chennai. It has following activities:

- a) Database of current serials in 50 libraries;
- b) Journal holdings database (15 member-libraries, 500 journals);
- c) Journal contents database (1,00,000 records for member-libraries);
- d) All INSDOC databases are ported on MALIBNET; and
- e) Automative enquiry database (4,500 records besides CD-ROM search facilities, access to INTERNET).

## **BONET**

This network has been established in Bombay with the support of NISSAT. They shall be creating databases such as union catalogues and give value added services like resource sharing. At present it is offering E-mail and CD-ROM facilities.

## **DELNET**

DELNET has been in operation since January 1988 and was registered as a society in 1992. It was initially sponsored by National Information System for Science and Technology (NISSAT).

DELNET has been established with the prime objective of promoting resource sharing among the libraries through the development of a network of libraries. It aims to collect, store, and disseminate information besides offering computerised services to users, to coordinate efforts for suitable collection development and also to reduce unnecessary duplication wherever necessary.

DELNET has been actively engaged with the compilation of various Union Catalogues of the resources available in member-libraries. It has already created the Union Catalogue of Books, Union list of Current Periodicals, Union Catalogue of Periodicals, CD-ROM Database, Databases of Indian Specialists, Books in Print Database, Union List of Video recordings, Urdu Manuscripts Database, Database of Theses and Dissertations, DEVINSA Database and sample databases of language publications using GIST technology and several other databases. All the DELNET databases has been resident on DELSIS, an in-house software developed on BASISPlus, an RDBMS product of Information Dimensions Inc. of USA which has been provided to DELNET courtesy National Informatics Centre, New Delhi.

DELNET provides an array of facilities including e-mail to its one hundred ninty three member libraries including both institutional and associate institutional members. DELNET'S relentless efforts in resource sharing have proved extremely effective, which is indeed a big leap towards the modernisation of the libraries.

### **INFLIBNET**

INFLIBNET proposes to link libraries and information centres in univversities, institutions of national importance, UGC information centres, R&D institutions and colleges. One of the main objectives of INFLIBNET is to evolve a national network, interconnecting various libraries and information centres in the country and to improve capability in information handling and services. INFLIBNET proposes to fulfil its objectives by offering various services like (a) Catalogue based services (b) Database services (c) Document supply services (d) Collection development (e) Communication based services.

## **4. National Resources**

### **4.1 INSDOC :**

The major resources at INSDOC are categorized into 5 broad categories viz. Services, products & publications, projects in competency areas, national information resource, education and training. The services include Chemical Abstracts Keywords Index Service (CAKIS); Contents Abstracts Photocopies Service (CAPS); Standing Order Abstracts Service (SOAS); Bibliometric Analysis; Translation of S&D Documents; DTP; printing & Reprography. The major publications are Indian Science Abstracts; Annals of Library Science & Documentation, Directory of Scientific Research Institutions in India, Directory of Indian Scientific Periodicals etc. Many of these publications are available on CD-ROM also. Among competency areas, IT-based services including Database Design, Computer Networking, Onlice Services, Library Automation with total turn-key solutions, modularised approach and object oriented design. The National Science Library as National Information Resource has an Electronic

Library, one of the major assets having full text Electronic journals. A detailed list of databases available in the same is enclosed as Annexure-III. Union Catalogue of Scientific Serials in India (NUCSSI) as the most important link for service sharing has been maintained since its inception and is now available in CD-ROM version also.

Besides this, some of the databases are : Eminent Scientist's Publications, Directory of Research/Industrial Institutions in SAARC Region, Database on ongoing intramural R&D Project in S&T Research Institutions in India, Database on Alternative Systems of Medicine, Database on Automotive Engineering, Database of Experts in Life Sciences in India.

<sup>अथवा</sup>  
INSDOC offers several indigenous databases on its online host system for public access. At present there are 10 databases available on the host system for on-line access. INSDOC attaches great importance to mutual co-operation amongst various institutions in different countries and continuously works for its development. INSDOC is the national member of International Federation for Documentation (IFD) from India and has been actually involved in the IFD activities since 1952. INSDOC is also associated with the International Federation of Library Association and Institutions (IFLA).

National Science Library (NSL) as an integral part of INSDOC was conceived in 1964 as cooperative acquisition facility for building up a balanced collection relevant to the requirements of the country. It surveys the holdings of scientific institutions and supplement the lacunae in their collections by acquiring them itself. As far as possible duplication is avoided. It also makes special efforts to collect books by Indian authors and books and periodicals in Indian languages. In addition to Scientific periodicals including cover-to-cover translated periodicals, the National Science Library also acquires other scientific publications like reference works, research reports, conference proceedings, theses, state-of-art publications, certain costly publications.

The SAARC Documentation Centre (SDC) set up at INSDOC for exchanging S&T information among SAARC nations has been functioning since June 1994. The main objectives of the SDC are given as under:

- To meet the information needs of the scholars of the region
- To harness the applications of information technology in information management in member states, with particular reference to modernising libraries and information centres.
- To serve as a repository of all scientific, technical and developmental literature generated in the region and on the region including grey literature.

- To facilitate economic, social and industrial development of the member states by providing timely access to relevant and accurate information.
- To evolve a data network interconnecting all the SDC-NFPs, SDC, the SAARC Secretariat and other relevant regional institutions to support information exchange.
- To collaborate with international information agencies to evolve as an integral part of the globalisation process in the field of information and documentation.
- To develop human resources in the member states in the area of information science, technology, management, systems and services to prepare the region for the impending new information era.

INSDOC is the National Centre of the International Scientific Serial Number (ISSN) for assigning ISSN for serial publications in India. INSDOC exchanges publications with over 150 institutions in 44 countries in the world. Distinguished experts from other countries visit INSDOC every year.

#### 4.2 **DESIDOC :**

Defence Scientific Information & Documentation Centre (DESIDOC) came into existence as a full-fledged organization in 1970. The functions of DESIDOC include providing information to the units at the Headquarters, the Laboratories/Establishments of DRDO and other agencies of the Ministry of Defence and coordinating scientific information programme in DRDO. It is responsible for developing a data bank and an information system for defence Science and Technology. DESIDOC is to carry out R & D work in scientific information and provide training and consultancy services to TICs and other defence organizations. It is to provide translations and reprographic facilities and publish scientific and technical journals of DRDO including books and monographs.

#### 4.3 **SENDOC :**

The Small Enterprises National Documentation Centre (SENDOC) was established in 1971. This is a part of the Small Industries Extension Training Institute (SIET) at Hyderabad. The centre collects and organizes information on all aspects of small industries developed such as feasibility studies, industrial profiles and prospects, technological information etc. The centre publishes a number of bulletins regularly for dissemination of information and also issues a number of adhoc publications of interest to small industry.

#### 4.4 PATENT INFORMATION SYSTEM :

The central government has set up in early eighties a Patent Information System at Nagpur with complete responsibility for patent information for S&T in the country. The tasks set for it are :-

1. Comprehensive collection and maintenance of patents, official publications of patent offices and secondary sources concerning patent literature on a worldwide basis.
2. Offering information services such as literature search, reference service, abstracting service, current awareness service, preparation of the state-of-the-art reports, digests and back-up services such as translation and supply of reprographic copies of patent literature.
3. Compilation of union catalogue of patent literature available in the country.
4. Building up of computer-based information service for patent search and dissemination.
5. Other important activities include training to users in the patent search techniques and promotion of awareness of patent, liaison with industry and R&D personnel and cooperation with foreign patent offices, information centres and R&D establishments for exchange of Information.

Besides this, the National Information centre (NIC) has been entrusted with the responsibility of a computerised patent information system. It has multi key index directory files which facilitate the retrieval of patent documents according to IPS codes.

#### 5. Resource Sharing – Issues and Implications

Resource sharing involves exchange of information, services and material. With the onset of computerised services, on-line availability of documents and wide range clientele available over network it is very difficult to enumerate all the possible areas of application which can be accessible over the network. However, two clear cut categories viz. Internal databases and related services and, external databases and related services may be taken up.

The conventional areas of the application for resource sharing :

1. Collection development including acquisition
2. Document delivery

3. Databases and CD-ROMs  
(Bibliographic and Non-Bibliographic)
4. Union Catalogues
5. Patents Information
6. Retrospective conversion of library holdings
7. Digital and virtual libraries

The network development is obligatory to contribute to the national requirement regarding subjects of interest to a country. This lead to a national policy and a national consensus to plan and implement the policies that rationalise subject coverage in a country.

The prerequisite for any cooperative programme particularly resource sharing through networking is that not only the records must be made available in machine readable form but the same be standardised with mutually agreed upon formats. Hence, one of the major tasks is to digitize the existing print records. The changing role of librarians in shaping the haphazard order of the databases on the internet is highlighted to full text databases for their accessibility.

Besides above, the copyright protection of digital works, data security, ILL procedures and development of new standards streamlining the existing procedures and practices for economy resources are few issues where librarians can contribute much by transforming the role to information engineers and specialists with increased agenda for dissemination of specialised information and knowledge.

## **6. Future of Libraries in Internet Era**

Internet has changed the way people look at libraries and information centres. The Net is a storehouse of information which no library can match. There have been question marks about the utility of libraries and role of librarians in the emerging digital age.

Despite all the hype about Internet, the world-wide trend indicates that the use of libraries is increasing. In the cyberspace of Internet overflowing with information of all kinds and with all search engines, a user still needs a librarian to help him to get specific information of his requirement.

The role of librarian as a human search engine is becoming highly complex and challenging with the unleashing of Internet.

The free flow of S & T information on internet should aim at availability of information to

- any one
- any time
- anywhere
- any information
- any format

To meet this objective, the developing countries especially in the South Asia need to focus attention on building up National Information Infrastructure (NII). The national information infrastructure includes not only the high-bandwidth backbones for carrying information but also sharable information resources and other IT infrastructure. The exchange of S & T information at national level will be a valuable step towards global sharing of information.

The formation of a consortium should have the following activities and responsibilities for furtherance of this cooperative programme :

- Identification & availability of trained manpower and equipment
- Promoting the concept of membership for harnessing the information resources available in electronic form among various libraries.
- Database creation and development with particular emphasis on retrospective conversion, new databases & CD-ROMs.
- Running an operational network of libraries on the internet protocol with 24 hour access through appropriate fault control mechanism.

## Sectoral Information Centres of NISSAT

S. No.	Subject Area (Acronym)	Host Institution
i.	Leather technology (NICLAI)	Central Leather research Institute, Madras
ii.	Food Technology (NICFOS)	Central Food Technological Research Institute, Mysore
iii.	Machine Tools & Production (NICMAP)	Central Machine Tools Institute, Bangalore
iv.	Drugs and Pharmaceuticals (NICDAP)	Central Drugs research Institute, Lucknow
v.	Textiles and Allied Subjects (NICTAS)	Ahmedabad Textile Industry's Research Association, Ahmedabad
vi.	Chemicals & Allied Industries (NICHEM)	National Chemical Laboratory, Pune
vii.	Advanced Ceramics (NICAC)	Central Glass and Ceramic Research Institute, Calcutta
viii.	Crystallography (NICRYS)	University of Madras, Madras
ix.	CD-ROM (Compact Disk) (NICDROM)	National Aeronautical Laboratory, Bangalore

### Indigenous Database Activities supported by NISSAT

Database Activity	Institutions
1. Database of Indian Chemical & Industries	NICCHEM, NCL, Pune
2. Directory of Manufacture of various kinds of Ferrous and Non-ferrous and Special Castings	IIF, New Delhi
3. Food Technology Abstracts (FTA)	NICFOS, CFTRI, Mysore
4. INDAB : Database of Indian Databases and Directories	ISAC-NISSAT Abstracting & Indexing Services, N. Delhi
5. Leather Science Abstracts (LESA)	NICLAI, CLRI, Chennai
6. Metal Working Abstracts	NICMAP, CMTI, Jamshedpur
7. Index of Management Jouranls (JIND)	NICMAN, IIMA, Ahmedabad
8. Oceanline	NICMAS, NIO, Goa
9. Indian Sugar Industry	VDIS, Pune
10. Texincon : Textile Information Condensed	NICTAS, ATIRA, Ahmedabad
11. Virus and Virology	NIV, Pune

**National Science Library**

**Databases Available**

1. ADONIS
2. AHEAD
3. BPO (Global Edition)
4. CA on CD
5. CAB ABSTRACTS
6. COMPUTER SELECT
7. DATAPRO
8. EMERALD
9. EXTRAMED
10. FACCTS
11. GLOBAL BOOKS IN PRINT PLUS
12. GPO (Research Edition)
13. HEALTH REFERENCE CENTRE
14. IEL
15. INDIAN STANDARDS ON CD-ROM
16. LISA PLUS
17. PASCAL
18. PREDICASTS F&S INDEX PLUS
19. ULRICH PLUS
20. US PATENTS

## Maldives Country Paper

Presented At The

Regional Meeting Of Professionals From S&T Information Centers /Libraries  
For The  
Interchange And Exchange Of Scientific Information  
Among  
S&T Information Centers /Libraries Of The South Asia Region  
Colombo, Sri Lanka  
29 – 30 January 2001

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Director  
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## **Introduction**

Maldives comprise of 197 inhabited islands scattered over a geographic area of over 90,000 sq. kilometers. Almost 80 percent of the population (and two-thirds of the labour force) lives outside the capital island. The task of providing even the most basic social services such as education, health, communication and transport is not only a difficult task, but also a major challenge.

For Maldives, therefore, science and technology issues have become more important than ever before. Interchange and exchange of S&T information is fundamental to develop and modernize the country's economy, improve social equity, raise the standards of living and to participate effectively in the emerging knowledge economy.

The Ministry of Communication, Science and Technology (MCST) was established in November 1998. The mandate of MCST includes;

- To administer and regulate introduction, adoption and use of new technologies that are suitable and appropriate to the development needs of the country;
- To promote the use and application of computer technology as a means of accelerating the improvement in the nature, quantity and quality of the services provided;
- To standardize the use and application of computer systems within the country and especially among the government units;
- To establish effective links among the government offices via a computer network;
- To promote and develop information technology as a means of promoting education, information and business in the country.

While these objectives and responsibilities are ambitious and essential for national development, they are considered as too narrow in scope than the S&T goals and objectives proposed for the Maldives. MCST is in the process developing the country's first S&T Masterplan, the draft of which has been completed in November 2000. The Masterplan will incorporate appropriate goals, strategies, time frames and resource requirements based upon broad social participation and objective analysis. It is expected that with the adoption of the S&T Masterplan by the government, MCST's mandate will be updated and extended to give MCST a greater role to encourage, facilitate and coordinate S&T activities in the Maldives. Such a move will require strengthening of the MCST in terms of the facilities, expertise, equipment, administrative capacity and funding.

### **1. Resources Available At The Participant's Workplace**

Access to telephones is provided on all inhabited islands. Likewise, electricity services are available on most inhabited islands, and for at least part of the day for 80 percent of the population.

Apart from access to these services, the resources available and hence the use of information technology within the government and within the private sector is

modest, and varies greatly from ministry to ministry and from organization to organization. Most government offices, including MCST, have acquired workstations for basic office functions such as word processing and spread sheet analyses.

MCST and many other ministries have installed local area networks and support services such as email and file sharing. A few have also developed and deployed mission support applications that automate many functions otherwise carried out by hand.

By end of January 2001, MCST will have the 'hard' component (the programs, servers and workstations) of the core information technology component in place. The education and training program - the 'soft' component, is also underway.

The proposed National Computer Center (NCC), once established, will serve as a coordinating body for the development of information technology standards and guidelines. It will also serve as the central body for developing and administering the proposed Government Network of Maldives (GNM). The GNM is envisaged as a common government network that will facilitate communication among ministries and will provide common services as a government Intranet, reducing costs and increasing decision making effectiveness.

## **2. Resources The Participants Can Access At Other Libraries/Information Centers**

While the real strength of information technology lies in the ability to interconnect different systems for the purpose of sharing and exchanging information, there are no ministries within the government that exchange information online or in real time. The atoll offices are provided with personal computers. They are generally used as stand-alone devices, and are used for word processing, spread sheets and at times for graphics.

Although libraries and information centers outside the country can be accessed via the Internet, access is prohibitively expensive, and available only through dial-up access. Communication costs and the existing regulatory environment are major disincentives for using information technology for wide area application such as e-commerce.

## **3. Expected Contributions From The Participant's Country To This Project Including Recommendations**

- Carry out focused policy and technological reviews in the Maldives
- Conduct periodic information system surveys to foster coordinated and integrated development.
- Facilitate the development and implementation of a government information system.

- Accelerate the application of electronic governance in the Maldives
- Interchange and exchanging information with other information centers.

#### **4. Present Mechanisms For Resource Sharing: Nationally And Internationally**

Nationally and internationally, the available mechanisms for sharing of information are;

- via email, fax and courier services
- through participation (workshops, seminars and conferences)
- fellowships
- training programs
- Study visits

**Regional Meeting of Professionals from S & T Information centers/libraries  
for the interchange and exchange of scientific information among S & T  
information centres/libraries of the South Asia Region, Colombo, Sri Lanka,  
29-30 January 2001**

## **CONTRIBUTORY PAPER FOR NEPAL**

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## **A. 1. Nepal in Brief:**

Nepal is situated in the central part of the Asia and in the lap of the Himalayas. Nepal's north latitude is 26° 22' to 30° 27' and East Longitude is 80° 4' to 88° 12'. Her total area is 147181 square kilo meters. This area is about 0.03% of the world's land surface and 0.3% of Asia. The east-west length of Nepal is 885 km, but the width is not uniform. The maximum width is 241 km and minimum width is 145 km. The country is sandwiched between the two most populous countries of the world. India in the east, south and west and China in the north. Nepal is a landlocked and hilly country 77% of whose surface is covered by rocks, snow, barren mountains and sloping hills. Here stands the highest mountain of the world Mt. Sagarmatha or Everest at 8848m. Nepal is home to much natural beauty and traces of old human artifacts.

### **1.2 Administratively the nation is divided into :**

- a. Development regions - 5
- b. Zones - 14
- c. Districts - 75
- d. Municipalities - 58
- e. Village Development Committees (VDC) - 3912

### **1.3 Social System:**

Nepal is a multiethnic and multilingual Hindu kingdom. Nepal is known for unity among diversity. It has developed into a multicultural society, thus creating a beautiful garland with different flowers of different cultural heritage united by the thread of Nepalese culture and the common Nepali language, the language of the nation.

### **1.4 Education and literacy:**

Nepal became independent from Rana rule in 1951. Prior to that educational facilities were available to a limited number of people. Some few people who could afford to study in India were educated there. The following table provides the current state of education and literacy in the nation.

	<u>1951</u> <sup>e</sup>	<u>2000</u>
Schools	204	34,126
Colleges	1	239
Universities	x	5
Literacy	2%	53%

Intermediate education is now considered a higher secondary education. A few more universities are in the process of being established.

## Resources at Workplace

### Workplace: Tribhuvan University Central Library(TUCL)

Tribhuvan University is the premier University of Nepal established in 1959. University has five technical institutions, namely 1. Institute of Agricultural and Veterinary Sciences. 2. Institute of Engineering. 3. Institute of Forestry 4. Institute of medicine 5. Institute of Science and Technology. There are five faculties and four Research centres in the University. There are sixty one constituent campuses and one hundred fifty five affiliated campuses scattered all over the nation. Each institute, research center and campus has a library. There is one Central Library at the University Campus established along with the Tribhuvan University.

**Central Library:** In the beginning the Library was started with 1200 volume of books. During the last forty years the library has developed reasonably and has 2,35,000 Volumes of books and other materials and has good relation with the several organisations at home and abroad. Although, it is an Academic Library but, underdeveloped stages of other types of Libraries in Nepal, TUCL has been functioning like a Public Library, Special Library and even as National Library. Because TUCL has been publishing "Nepalese National Bibliography" for the last twenty years and collecting as far as possible all publications published in Nepal.

**Resources:** Resources available at TUCL may refer to availability of space, equipments, manpower and Information materials and off Course Finance

**Space:** Several sequence of information materials and services are organized in the available space of 50, 000 sqft. area. More then 600 users can study at a time. TUCL is the Nepal's largest Library.

**Equipments:** TUCL has eighteen Micro computers of which thirteen are in the Net Work. Five of them are dedicated to user only. Five stand alone are used for publications, CD-ROM Services, e-mail, internet and for secretarial work.

**Manpower:** TUCL is managed with a total staff of ninety one, fifteen are professional Librarians. Twenty five semi professionals are assisting the Librarians. Rest are administrative and clinical staff. Department of Library and Information Science in the Tribhuvan University started study of Bachelor in Library Science (B. Lib. Sc.) since 1995. This has helped to meet Nepal's professional manpower requirement.

**Information Resources:** Information resources available at TUCL are organised in the following sequences:

1. **General Collection:** TUCL has fairly a good collection of general books on all subjects. TUCL adopt open access system except a few specialised collection. Approximately 75,000 volumes are in this collection. TUCL uses DDC, 21st edn. for the organisation of information resources.
2. **Reference Collection:** This is one of the important collection of TUCL. Large number of reference books like Bibliographies, Biographies Unabridged Dictionaries Encyclopedias, Hand- Books, Advances, Annual Reviews, Progress in .... Indexes are available in the open access. Such a large collection of reference books are not available in the other Libraries of Nepal.
3. **Periodicals Collection:** The journals, magazines newsletters & newspaper acquired through subscription and gift are processed and organised for use. In the year 2000 TUCL received 550 titles of journals published from Nepal, India, UK and USA. TUCL has good collection of Back issues of journals. They are bound, processed and organised separately. Users can locate them with the help of Periodicals Catalogue. They are above 30,000 volumes of more then 1000 titles.

## **Following giant abstracts are available at TUCL**

1. Biological Abstract 1951 onward
2. Chemical Abstract 1918 - 1982
3. Earth & Planetary Science Retires 1997 onward
4. Geological Abstract 1997 onward
5. Mathematical Review 1958 onward
6. Physics Abstract 1960 onward

TUCL has separately organised journals and News papers published from Nepal. Their important and use is more in Nepal. compilation of content page of each journals help to retrieve the desired articles from the journals.

Periodicals section has compiled following tools for speedy location and retrieval of articles form the journals available at TUCL.

### **3.1 Periodicals and Newspaper - Annual**

This is a classified list of Journals, magazines, newsletters, newspapers received at TUCL.

### **3.2 Management Index. Occasional**

This is a Classified Bibliography of articles on management and administration from the journals published in Nepal.

### **3.3 Sangalo. Occassionals**

This is an alphabetical list of Nepali language journals including their complete holding records available at TUCL.

### **3.4 Catalogue of Research Periodicals**

Alphabetical list of journals (Back-issues) available at TUCL including their holding records.

## **4. Text Books**

TUCL has managed a collection of Text Books, prescribed in the syllabus of Master Degree. Their extra copies are available in general collection. This collection is for those who cannot borrow text book, and wants to study in the Library. Text Book includes following types of materials.

- 4.1 Text Books
- 4.2 Question Papers of Master Degree
- 4.3 Syllabuses of Master Degree

During the year 1999 more than 35,000 volumes of book & other documents were used in this section.

## 5. Nepal Collection

This is a special collection on Nepal. This collection comprises.

- 1. Books on Nepal in English
- 2. Books on Nepal in Nepali
- 3. Books Published from Nepal
- 4. Ph. D. Theses and Masters Dissertation
- 5. Village Profiles

A total of 32,000 Volumes of various documents are available in the Nepal Collection.

There are three hundred above Ph. D. theses by Nepali Scholars and on Nepal. Also, we are trying to develop a textual database of Ph. D. Theses. Above four thousand Master's Dissertation are available at TUCL, although dissertation is not compulsory in all the subjects in Master Degree. It is the policy of the Library to acquire all the books published from Nepal. One copy of such publications is organised in the collection. This is a close collection, User cannot borrow books from the collection. User must produce his/her identity to make use of this collection. More than 40,000 volumes of various documents were used in the year 1999. No where such a large collection on Nepal is available at one place. IDRC, Canada provided us financial assistance to create a bibliographical database of this collection in 1993-1995. For easy access and retrieval of documents from the collection TUCL has compiled following tools.

### 5.1 Research on Nepal: Occasional

This is a classified list of Ph. D. theses, with author and subject index.

### 5.2 Bibliography of Dissertations: Occasional

This is a classified list of dissertations available at TUCL.

### 5.3 Research Papers in Botany

This is a collection of papers presented in National and International scientific gathering by Nepali scientists

#### **5.4 Research Papers in Chemistry**

This is a collection of papers presented in national and international scientific gathering by Nepali scientists

#### **5.5 Research Papers in Zoology**

This is a collection of papers presented in National and International scientific gathering by Nepali scientists.

#### **5.6 Catalogue of Nepalese Scientific Publications**

Alphabetical list of scientific books, reports, journals and articles published in Nepal.

### **6. United Nations Collections (Depository Library)**

United Nation(UN) has a policy to identify one or more libraries in a country as a depository Library for UN and its agencies publications. According to this policy UN declared TUCL as a depository Library for their publications in 1965. Until 1997 TUCL was a partial depository for UN publications. At the request of TUCL in 1996 UN declared full depository since then TUCL is receiving more UN publication. UN depository code for TUCL is DL-169. At present UN depository collection has 25,000 volume of various document. One hundred eleven titles of UN periodicals are received in the Library. Following international organisations have also declared TUCL as a depository Library for their publications.

1. Asian Vegetable Research and Development Centre, Shanhua, Taiwan.
2. Asian Development Bank, Manila, Phillipins
3. Asian Productivity Organisation, Tokyo, Japan.
4. Demographic and health survey programme Calverton, USA.
5. East-West population Institution, Honolulu, USA.
6. International committee of the Red-Cross, Geneva, Switzerland.
7. International Development Research Centre (IDRC), Ottawa, Canada.
8. International Food Policy Research Institute, Washington, DC, USA.
9. World tourism Organization, Madrid, Spain.

United Nations Publications and depository publication of above institutions are organisation at one place separately with sequence UN at the top of the call number. Documents from depository collection are not available on loan. TUCL has compiled following tools for easy location and retrieval of UN documents.

1. Catalogue of United Nations' Periodicals.
2. Manual for processing of UN Documents.
3. Catalogue of Reference Books in the United Nations Collection

This is a classified catalogue of reference books available in the United Nations Collection.

## **7. American Studies Collection**

On the auspicious occasion of 50<sup>th</sup> year of Nepal-US relation, US Government provided American Study of 1000 titles to TUCL in 1998. The cost of the collection is estimated above NRs. 4 million. Tribhuvan University is planning to conduct study on American study by next year. American government in updating the collection by providing relevant materials every year.

## **B. Non-Book Resources at TUCL**

At present one challenge to the society particularly to the Librarians is large number of information generation. We called it information age or information revolution. With the advancement of Technology, information processing, storage and communication media have dramatically developed. This is again an opportunity and challenge to the Librarians. We at TUCL, Nepal take it as an opportunity. Right now, we cannot convert such a big printed heritage into the electronic Library. But, we are convinced and educating to our authorities and user about the advantage that IT has provided to us. Our efforts to this effect are as follows:

### **1. Audio-visual Section(AV):**

Prior to beginning of this section at TUCL, blind students of Master Degree did not have any kind of resources to study, except class room lecture and their friend's oral study. We felt injustice to them. Arranged a small of budget and started preparing Audio-Cassettes of some text books from 1997. Blind students are sincerely appreciating our effort. Now we have a separate room for A/V materials and services. At present, we have 500 Audio-Cassettes of 35 text books.

## **2. CD-ROM:**

As we all know large number of information is now available in CD-ROM. We have began to develop our CD-ROM collection . At present we have some 50 CD-ROM of useful data. We have allocated one computer with CD-Drive for the CD-ROM services.

## **3. Video-Cassettes:**

Video Cassettes are now important information communication media. We have 20 cassettes of useful information. Recently we have acquired two screen and one video Dec for the Video Services.

## **4. Microfilm & Microfiches:**

We are familiar with their importance and usefulness. At TUCL more then 400 reels of microfilm and above 600 Microfiches are available for use for long time. There are films for rare books. But for last years our readers are out of order. We are trying to get new readers.

TUCL has compiled a catalogue of Microfilms at available TUCL. this catalogue helps to select, locate, and retrieve required film.

## **5. Electronic Database:**

TUCL first time acquired a 286 model micro computer with 40 MB in 1987. Hope this was the model available at that time. We still use this computer for the data entry of devanagari scripts using gist card.

As said earlier IDRC, Canada provided us financial assistance for "Nepal Collection Automation Project" in 1993 for 3 years programme. IDRC under the project provided two 486 model computer with 120MB to TUCL in 1994. TUCL achieved the objective of creating a bibliographical records of 13000 Books on Nepal on time.

Therefore, electronic database of all books on Nepal was available by the end of 1995. After completion of the project, we continued the work of creating a database for newly acquired books, using the experience and the equipments received for the project.

At present TUCL has 10,000 database of Nepali records and 25,000 database of English records.

A total number of 35,000 electronic database is now available for the user. User can browse select and retrieve the desired document from the five user terminal available at different location in TUCL.

## **6. Access to Database Abroad:**

- 6.1 TUCL is a depository Library for UN publications. UN publication have several Serial publications, which occupies large space. We wanted to discard them from the collection if they are available for electronic access. Treaty Series of more than 1500 Volume is now available electronically. Recently, Dag Hammarskjold Library, New York provided us the password for the access and we have discarded the hard copy of Treaty Series .
- 6.2 Recently EBSCO has provided us an opportunity to have access to their database as a pilot project.
- 6.3 American Centre, Nepal has provided us the addresses to the e-journals published by the US State Department.
- 6.4 We have enquired with OCLC to have access to their database. So far we are not able to access OCLC but we are looking for the opportunity.

## **7. ISBN National Agency:**

TUCL is the National agency for the International ISBN Agency. Nepal is the 153 nation to join with the agency. Nepal's area code is 99933. Mr. Girija Prasad Koirala, Prime Minister of Nepal marked the beginning of the agency on January 26, 2000. The National Agency(TUCL) has so far distributed the ISBN for more than 1100 Nepali Publications. One copy of each publications are available with the agency.

## **C. Resources in other Libraries/Information Centres of Nepal**

Nepal Library Association conducted a survey of Libraries in Nepal in 1997. Two hundred Libraries responded. According to the survey the stock holding section of the report cites 65 Library under survey have less than 1000 volumes and only two Libraries have more than 50,000 volumes. It is estimated that there are more than 1600 libraries in Nepal, but many library's stock holdings, staffing level, collection organisation, physical facilities, Library use and user service do not follow any standard. Some sectoral Libraries like Medical Library of Teaching Hospital under Tribhuvan University, Engineering Library at Central Campus of Institute of engineering, Forestry Library, Agricultural Libraries of Nepal Agricultural

Resource Council (NARC) and Institute of Agricultural and Veterinary Sciences are better organised libraries, but their concentration is on text Books of respected areas.

Royal Nepal Academy of Science and Technology (RONAST): Established under the Royal charter has a mandate to establish a documentation centre to collect all scientific publications from Nepal and provide services to the scientific Communities of Nepal. RONAST attempted to create a net-work of scientific libraries in Nepal in 1983. Unesco and IDRC(Mr CD. Wing and L E Samara Singhe) prepared a report for His Majesty's Government (HMG). UNDP agreed to support the programme. The programme could not success. Again a project document was prepared for the Government by RONAST in 1993. The Project Documentation was prepared by Dr. A. Lahiri, India, after exhaustive consultation with Nepali Librarians.

Now the RONAST Library is growing well to provide services to their scientists but do not have enough resources to cover nation wide services.

## **Resource Sharing in Nepal**

Demand for relevant information is increasing every day and the supply of information to meet the requirement is not enough because of several barrier such as:

- a. Barrier of the large amount of information
- b. Barrier of finance
- c. Barrier of space
- d. Barrier of language
- e. Barrier of time

Sharing of resources is one way to reduce these barriers and meet the information need of users. Networking of libraries in Nepal is at a nascent stage.

### **1. Nepal Net**

Nepal Net is an electronic network involving thirty-four organizations governmental, non-governmental, academic and research oriented in Nepal. Nepal Net is a collaborative activity between these agencies, which share Website information on focused on socio-economic development in Nepal. Nepal Net is funded by the Pan-Asia Networking Programme of the International Development Research Centre (IDRC) and is coordinated by the International Centre for Integrated Mountain Development (ICIMOD), Nepal. Nepal Net is on its way to becoming a one-stop destination for information related to sustainable development in Nepal.

Key-sectors of the Nepal Net are as follows:

1. Academic/Education
2. Agriculture
3. Environment
4. Gender
5. Communication
6. Government
7. Business, Commerce, Economics
8. Legal
9. Research
10. Technology

A free hookup to the Internet for members of Nepal Net and 36 hours a month of free access to it for two years were provided initially. The free access period expired on March 31, 1999. Thereafter members started managing Internet services on their own.

## **2. Healthnet Nepal**

Healthnet is a communication system designed by Satel Life in the USA. It provides an electronic connection to the Internet to health workers world-wide and to new sources of health information.

Healthnet Nepal is a telephone-based electronic mail network. The main objective is to link health care workers within the country and around the world and provide them access to appropriate sources of information. Healthnet Nepal was established in Nepal in mid 1992 and has 160 user points all over the nation. The node place of Healthnet is the Health Learning Materials Center (HLMC) Institute of Medicine. Action plans, fund-raising, and monitoring are carried out by a steering committee. Services offered by Healthnet Nepal are as follows:

- a. Electronic mail
- b. Access to medical databases e.g. Medline, Popline, Health Science Bibliography of Nepal (HSBN). Other local resource related health including full Internet service is provided.
- c. Healthnet News
- d. AIDS Bulletin
- e. Electronic conferencing etc.

### 3. Nepal National Library Network

The Nepal National Library was established in 1955. The library started providing access to the public in 1960. Until 1994 the development of the National Library was very slow. Due to several constraints the library was not functioning as a national library. At the request of His Majesty's Government of Nepal to UNESCO, a two-week mission was undertaken by DANIDA/UNESCO to formulate a project aimed at strengthening the facilities and core services of the National Library and the phased development of public libraries system in Nepal.

### 4. Tools for Resource Sharing

4.1 Union Catalogue: As targeted in the project the union catalogue of Nepali publications in English second edition is being recently published with the cooperation and contribution of major libraries of Kathmandu. The contribution of the Tribhuvan University Central Library to this publication is above 75% of total data. This is a very important tool for resource sharing.

4.2 Union list of scientific periodicals: RONAST has compiled a union list of scientific periodicals with the help of the Nepal Library Association. The union list covers 51 libraries of Nepal where issues of scientific periodicals are available. More than 1400 scientific periodicals are listed in the union list.

4.3 Union list of medical science journals, compiled by HELLIS network (Nepal) in 1988, covers 194 titles. A 2<sup>nd</sup> union list was compiled by HELLIS in 1995 which covers 404 medical journals.

### 5. Electronic Database Available for Resource Sharing

S. No.	Name of Library	No. of Records 1995	No. of Records 2000	Software used
1.	Centre for Economic Development & Administration (CEDA) Library	x	2500	CDS/ISIS
2.	Centre for Nepal & Asian Studies (CNAS) Library	3000	8600	CDS/ISIS
3.	Central Forest Library	8000	8500	CDS/ISIS
4.	International Centre for Integrated Mountain Development (ICIMOD)	14,900	20,000	CDS/ISIS

5.	Nepal National Library	×	11,000	CDS/ISIS
6.	Nursing Campus, Maharajgunj, Library	1000	1796	CDS/ISIS
7.	Royal Nepal Academy of Science & Technology (RONAST) Library	×	5000	CDS/ISIS
8.	South Asian Association for Regional Cooperation (SAARC) Library	1272	4000	CDS/ISIS
9.	Shanker Dev Campus Library	×	3000	CDS/ISIS
10.	TU Central Library	13,000	35,000	CDS/ISIS
11.	TU Health Learning Materials Centre	5000	9000	CDS/ISIS
12.	UNICEF (Country Office) Library	×	12,000	Card box
13.	UNICEF, ROSA Library	×	12,000	Card box
14.	UNFPA, Library	2324	6000	CDS/ISIS
15.	Water & Energy Commission (WECS) Secretariat Library	3129	4000	CDS/ISIS
16.	Central Forestry Campus, Pokhara	×	11,000	CDS/ISIS
17.	Communication, Publication and Documentation Centre, Khumaltar	×	11,000	CDS/ISIS

Mrs. Dali conducted a survey of 60 libraries in 1995. She has enumerated bibliographical records of some 16 libraries that are producing printed bibliographies. An attempt was made to update bibliographic records in July 1999 to see the pattern of development of bibliographic records. This will promote electronic networking of libraries in Nepal. This is a sample survey only. There are many libraries in the capital city as well as outside the capital that are creating a bibliographical record of their collections:

## 6. Internet and IT Policy of Nepal

History of Internet is quite young, little more than three decades. Defense Department commission ARPANET, USA initiated internet to promote networking of research on defense in 1969.

In Nepal internet services was began in 1994 and e-mail in 1993. For quite long time number of user were below 1000, but now the number has grown tremendously. There are 25,000 user who have internet connection, But more than 1,00,000 user making use of internet. Thirteen Internet Service Provider (ISP) have got permission to provide service, but

ten are actually in service. Recently a group of internet user is formed is call Nepal Internet User Group (NIUG). Large number of internet user are in the capital city only.

**IT Policy:** Last month Ministry of Science and Technology HMG, Nepal announced its "IT Policy 2001".

**Objectives are:**

1. To provide IT services to all public and generate employment.
2. To developed IT based society.
3. To develop knowledge base industries.

Seventeen policies for the IT development are announced. Some of them are:

1. Identify IT as a priority area.
2. One door system for the development of IT.
3. Priority to research on IT.
4. Internet Services to all VDC.
5. Computerization of Government offices.
6. Development of e-commerce, e-education and e-health facilities etc.

## 7. Contribution and Recommendations

Scientific information are vital for the nation's development. Poor nations are poor not only interms of money but their capacity to generate scientific information also is poor. Process of generation of scientific information is expensive, therefore they are mostly generated in the industrilised countries. Poor nation's capacity to acquire them is less. Because there are several behavior of information. They are 1. Barrier of large number. 2. Barrier of finance. 3. Barrier of Language 4. Barrier of space and time can be overcome by the application of IT. Our joint effort is the only and best way to provide to access to the large number of scientific information to our scientific communities.

Therefore, Nepal submits following area to be discuss and decided.

1. **An Institution:** Review and promote the existing SAARC documentation centres. i. e. Agreed network must be established with a strong and committed institution as a national focal point in each nations.
2. **Manpower/Technique:** The previous concept of information is power has changed and to achieve power one must have information on information, the second type of knowledge that an information scientist must have. All information scientist must be information literate. an information literate person is one who can do the following:

1. Recognizes that accurate and complete information is the basis for intelligent decision making.
2. Recognize the need for information.
3. Formulate, question-based on information needs.
4. Identify potential sources of information.
5. Develop successful search strategies.
6. Access sources of information including computer based and other technologies.
7. Evaluates information
8. Organizes information for practical application.
9. Integrates new information into an existing body of knowledge.
10. Uses information in critical thinking and problem solving.

Two strategies can be adopted to train information scientist on information literacy.

- Short term course for all as a phase wise.

- Include Information literacy in the syllabus of B. Lib. Sc./M. Lib. Sc.

3. **Information Sources:** Identify a few best electronic information resources of the world, and provide access to that resources in free for few years or in a reduced rate.

INTERCHANGE & EXCHANGE OF SCIENTIFIC INFORMATION  
AMONG S & T INFORMATION CENTRES/LIBRARIES OF THE  
SOUTH ASIA REGION

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SRI LANKA COUNTRY PAPER

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# INTERCHANGE & EXCHANGE OF SCIENTIFIC INFORMATION AMONG S & T INFORMATION CENTRES/LIBRARIES OF THE SOUTH ASIA REGION

## SRI LANKA COUNTRY PAPER

### SRI LANKA : AN OVERVIEW

#### *Land and People*

Sri Lanka is located 880 km north of the equator, adjacent to the southern tip of India. With an area of 65,610 sq. km or 6.5 million hectares, the country is inhabited by 19.04 million people who speak several languages and profess four main religions. Buddhism is the religion of the majority. The commercial capital of Sri Lanka, Colombo is situated in the western region of the country. With a per capita GNP of US\$804 in 1999, Sri Lanka is gradually approaching the income level of a middle income country. Sri Lanka has a very high rate of literacy of 88.6%, a low infant mortality rate of 1.7% and a high life expectancy of 72 years .

#### *Economic structure*

Sri Lanka has a reasonably well developed economic infrastructure whilst continuing to be an export-import economy. Although the country has a limited industrial base, manufacturing industry has grown significantly over the last few years and in 1999, almost one fourth of Sri Lanka's domestic output was derived from manufacturing (which consists of processing of tea, rubber and coconut and factory industry). The services sector where tourism and financial services play a major role contributed 50% of GDP. Agriculture, which was the mainstay of the economy at Independence in 1948 and accounted for 40% of GDP has decreased in importance over the years and in 1999 accounted for only 20% of GDP. (Chart 1)

### SCIENCE AND TECHNOLOGY SCENARIO IN THE COUNTRY

At the time of independence in 1948, science and technology in the country was in a very rudimentary state. The S & T that had been developed systematically and well was that associated with the three plantation crops , tea, rubber. However gradually, with changing political climates in the country, the economy of the country underwent considerable structural transformations, its reliance on the agricultural sector declining, and the manufacturing and services sectors becoming leading sectors on the economy, With this, the importance afforded to Science & technology increased considerably and several structural changes took place with time.

The historical development of the organizational structure for S & T in the country can be categorized into four broad interactive sectors which have developed in parallel during the last century, particularly the period after independence. The four areas are

Institutional Policy Framework  
Research Institutes

Professional Societies  
Tertiary Education

### ***The Institutional Policy Framework***

The Institutional Policy Framework is intended to promote the development of S & T and to involve the scientific community directly in the policy planning implementation process. In Sri Lanka, the establishment of the Chemical Society in 1940, was a landmark in the institutional set up and this was followed by the recognition of the scientific community when in 1942, the British Governor appointed a scientific advisory committee for the first time. This gave the impetus for the setting up of the Ceylon Association for the Advancement of Science, in 1944, and this association consisted of scientists of all disciplines in one multidisciplinary apex organization. The constant agitation and urging by this organization for the setting up a National body for the formulation and implementation of a National Science Policy and the initiation and promotion of scientific research, gave rise to the setting up the National Science Council in 1968. The council was charged with the responsibility of initiating, sponsoring, and supporting scientific and technological research and the formulation and implementation of a national science policy. This was later superseded by the Natural Resources, Energy and Science Authority, with a wider mandate in 1981, and then by the present National Science Council in 1998. The Ministry under which this and other scientific organizations were set up also evolved with time, having evolved first under the Ministry of Industries & Scientific Affairs, then moving over to Higher Education Science & Technology in 1988, and finally to a separate Ministry of Science & Technology in 1995, after several other changes.

Sri Lanka's Commitment to S & T was officially enunciated in the six prong Science Policy statement of 1978 by the President of the country. The next important landmark, was in 1985, when nine sectoral policy documents on Science & Technology Policy was laid down and given in the form of Sessional Papers by the Ministry of Plan Implementation. Then in 1991, and again in 1994, a special Presidential Task Force was appointed on Science and Technology Development, to advise the incumbent Presidents and this report laid down the shortcomings in the country relating to the S & T infrastructure, and the remedial measures to be taken. Some of these recommendations have since being implemented, one being the changing over of NARESA to NSF, and CISIR to ITI. The recommendation relating to Information will be again reviewed later on.

### ***Research Institutes***

Early beginnings of scientific research was in the field of Agriculture, Forestry and Veterinary Science during the 19<sup>th</sup> century. The 20<sup>th</sup> century saw the establishment of research laboratories for agriculture and the main plantation crops, but it was in 1955 that the seed for a concerted effort in scientific research was sown with the establishment of the Ceylon Institute of Scientific & Industrial Research, (now renamed the Industrial Technology Institute). This was a major achievement in the institutionalization of research. The National Engineering and Development Centre was then set up to conduct industry based technological research, followed by the Building Research Organization. Fisheries research was covered by the National Aquatic Research Agency, and in 1981, the Institute of Fundamental Studies was established under the President. Modern technology and Information Technology was also subsequently covered with the setting up Arthur C Clark Centre and Computer & Information Technology Council. The major crops were already covered, but Institutions on other crops were also subsequently set up. eg Sugarcane, Palmyrah. The list of research institutes can be seen in the web page of NSF at [www.nsf.ac.lk](http://www.nsf.ac.lk)

However, it is significant that while much attention was paid to setting up these research institutes the financial commitment to S & T was still woefully inadequate, been given low priority, for economic and political exigency, being 0.18 of the GNP, while India, showed a figure of 0.8 Japan 2.72 and Taiwan 1.82. Stemming from this it could be said that the S & T capability has not developed and/ or impacted in the same way as these countries.

### ***Professional Societies***

These have also proliferated with time, and most of the major scientific and technological disciplines like chemistry, physics, biology, engineering architecture etc. have set up their own professional societies. A government grant is provided to those which enacted by an Act of Parliament. Needless to say, the amounts provided is totally inadequate.

### ***Tertiary Science Education***

Sri Lanka has invested significantly in the development of an island wide network of educational facilities since gaining independence from colonial rule in 1948. The government has a virtual monopoly of educational services at primary, secondary and tertiary levels and provided education free of charge to all children since 1945.

The University system of education in Sri Lanka has undergone many vicissitudes since the first University of Ceylon was established in 1942, changing the established concept of a single university for the country. This led to the expansion of science education and four university science faculties were in existence by 1967.

By the Universities Act of 1978, six autonomous Universities were created, under the apex body, of the University Grants Commission which allocates funds to all universities and institutes in the university system, monitors and reviews the system with a view to maintaining standards and functions as the central admission agency for undergraduate courses. At present the University system in Sri Lanka comprised the following institutes

- a) National Universities - Presently there are 12 Universities, viz, Colombo, Peradeinya, Kelaniya, and Jayawardanepura, Moratuwa Jaffna, Ruhuna, and Eastern, Open University, Rajarata, Sabaragamuwa and South Eastern University college.
- b) Post Graduate Institutes - Six postgraduate institutes are in existence, namely Postgraduate Institutes of Agriculture, Archaeology, Medicine, Management, Pali & Buddhist Studies, and the newly established Postgraduate Institute of Science.
- c) Other Institutes - There are five other institutes of tertiary education in the University system, Institutes of Aesthetic Studies, Computer technology, Indigenous Medicine, Ayurvedha, and Workers Education.
- d) Technical Institutes - 31

( the setting up a Technical & Vocational Education Act of 1990, gave due importance to technical training )

To give an idea of the manpower resources in the country in the field of S & T, the output of Science graduates from the Universities are seen in Chart 2. The scientific manpower in both academic and scientific institutions are seen in Chart 3.

## **S & T INFORMATION DEVELOPMENT**

The attention of the policy makers and government of the importance of S & T information in the economic development of the country was first called when the United Nations held a "Conference for S & T Development" in 1979 with a view to bring about strategies to bridge the gap between developed and less developed nations. In the Sri Lanka Country paper presented at this conference, it was stated "adequate information dissemination can save a large amount of resources for each member country by avoiding duplication. Sri Lanka recommends that the UN establish a Global centre for STD information exchange especially for the LDCs. In addition Regional Centres should be established under the umbrella of the UN Regional commissions."

This Conference was followed by the Regional Meeting on Development of Scientific and Technological Information Cooperative Programmes in South and Central Asia, in New Delhi. One of the recommendations were the setting up of Regional Networks for Information collections and dissemination and the Asian and Pacific Information Network on Medicinal & Aromatic Plants, in mid 80s was one outcome of this meeting. Being a similar meeting, it is hoped, that something tangible would emerge from this as well.

The next important enunciation on the subject was in the sectoral policy documents, of the national Science & Technology Policy, set out in 1985. In this policy statement, Information was given due significance, where it states in that "scientists should be given access to scientific knowledge and activity in other parts of the world," and again, "to make available as widely as possible within the country the fruits of scientific and technological activity. This same document states that "Science policy should aim at solving this basic problem. The answer does not lie in attempting to strengthen a few libraries in part of the country, but in applying a bold modern technological approach to information storage and retrieval. A computer and telecommunication linked system should be established linking important R & D institutions, Universities and key Government Institutions in the country with a central system and with data banks in other countries. Development of libraries in the conventional manner is likely to be wasteful, will lead to duplication of effort and will involve considerable time lags in availability of information.

Finally, in the recently set up Presidential Task Force for Science & Technology Development, the 10 point policy statement assigns great importance to cooperation and Information, where in 8. it states "To encourage and strengthen cooperation in S & T both within Sri Lanka as well as with other countries and to provide access to global scientific and technological knowledge and activity."

## SHARING OF INFORMATION IN SRI LANKAN LIBRARIES AND INFORMATION CENTRES.

In library parlance, the terms "sharing", "interchange", and "exchange", does not vary greatly. In the Oxford Dictionary, the terms "give and take" is applicable to all three terms and for the purpose of this paper, would be taken in this context.

Sri Lanka being one of the so called less developed countries, have common constraints like, lack of the critical manpower in S & T, lack of resource and infrastructure, and most importantly, inadequate financial input. However, one positive factor it does have is the relatively small area it covers, and this consequently allows communication and concerted action in any field. This no doubt brings in the idea of networks. The term network has taken on many meanings throughout the ages. However, in my mind networking essentially means the getting together of a set of persons or organizations with a common goal or set of objectives, for the purposes of sharing each others resources for greater effectivity with a consequent saving of resources both human and financial. By networking the resources of a participating organization, could be made available to all others in the network and this is the very essence of what sharing is. In the early times, networking essentially was between participating organizations in fairly close proximity or accessibility, but the advent of advanced information technologies has changed the scenario, such that now networking has the connotation of being linked physically through communication technologies, also mentioned in the policy statement given earlier. We will take the Sri Lankan scenario, keeping these two distinctions in mind.

### *Basic Resource Sharing Activities*

One of the first information centers in S & T to be set up was the Library and Information Centre of the Ceylon Institute of Scientific & Industrial Research, which was set up in 1955. The resources of the centre was made available to not only the institute staff but to any scientist or technologist in Sri Lanka. However, while serving the S & T community of the country, it did not have the mandate to be National centre in the field, this being given to the National Science Council (1968 now the NSF (1998).

The seed for library cooperation in S & T was sown with the establishment of a central organization for S & T information. This was the Sri Lanka Scientific & Technical Information centre which was set up in 1977 under the National Science Council with assistance of the UNDP. The basic objectives of the centre was to collect, process and disseminate information relating to S & T. Being the National centre, it also had the mandate to coordinate with other libraries, and for this purpose, the centre established the SLSTINET in 1979, which is the Sri Lanka Scientific & Technical Information Network. This network, intended to be the national focal point for information networks in S & T, originally commenced with 30 libraries and now has a membership of 120, comprising of 12 government, 19 University, 68 special and 21 miscellaneous type of libraries such as NGOs and private sector organizations. The full list can be seen on the web page of NSF, [www.nsf.ac.lk](http://www.nsf.ac.lk). SLSTINET provides access to a wide array of library products and services, and acts as a catalyst, through which S & T libraries can pool their resources and address problems collectively. SLSTINET thus became the umbrella under which other networks in specific subject areas were established. Some of these library networks initially established had fluctuating fortunes, during the last few decades. Some of them flourished while others died a natural death, while others were revived under different umbrellas. The first networks to be established were

the Agricultural Information network, which is operating successfully, and the now defunct Renewable energy information network

The Resource sharing activities of SLSTINET are.

- Development of a Union catalogue of books - UNICAST
- Development of a Union Catalogue of periodicals - UNILIST
- Cooperative acquisition for Abstracting and Indexing journals
- Inter library loans
- Dissemination of S & T information.
- Conduction of training programmes , workshops etc.

## **INFORMATION NETWORKS**

### **AGRINET - Agricultural Information Network (AGRINET)**

This was formed in 1982 as a sub-network of SLSTINET. Subject coverage is Agriculture. The network activities were first coordinated by NARESA and from 1995 Council for Agricultural Research Policy Library (CARP) serves as the focal point of the network. Having commenced with 24 participating libraries it has now increased to 35. Services provided are Selective Dissemination of contents page (SDCP), provision of photocopies of journal articles, Inter library loans, literature search services, compilation of specialized subject bibliographies, user seminars, rationalisation of periodical purchases, conduction of meetings, seminars and workshops. Publications on selected crops and bibliographies are also published with the cooperation of all the network libraries.

### **HELLIS - The Health Science Library Literature and Information System**

This was organised by the World Health Organisation (WHO) as an information project for the developing countries, in 1979.. Each country was required to organise a national network under the project, and although funded by WHO, this network also came under the SLSTINET umbrella. The University of Colombo, Medical Library (UCML) is the focal point of the network. Subject coverage is Medicine and Health. Network consists of 20 libraries. Some activities of the network are: collection and dissemination of health information; provide access to information on Health Research, Health Policy and Plans, Medical Information Reports and bibliographical data; provide access to literature on Allopathy and Ayurveda, Community Health and Health Education; referral services, photocopies of articles on request, Inter-library loans, Selective Dissemination of Information (SDI); access to MEDLINE (Medical Literature Analysis and Retrieval System), compilation of bibliographies and Indexes; training courses, workshops and seminars for librarians and users in the HELLIS Sri Lanka Network.

### **ENLINET - Environmental Library Network (ENLINET)**

This network was formed in 1994 as a sub-network of SLSTINET, by the Central Environmental Authority (CEA) Library. Subject coverage is environment and the network consists of libraries attached to organizations interested in environmental matters. The CEA library functions as the focal point. At present the network consists of 19 libraries. Development of Union Catalogue of Environmental Books (UNICEB) database and Union List of Environmental Periodicals (UNILEP) database, compilation of Contents Page Bulletin, Selective Dissemination of Contents Page (SDCP) service, conduct meetings, seminars and workshops are some of the network activities.

Publications of the network are Union Catalogue of Environmental Books, Environmental Contents and Newspaper Article Index on Environment.

Apart from these networks directly associated with SLSTIC other information networks and cooperative programmes also operate. Some of these are not strictly within the gambit of S & T and will only have a passing reference.

#### ***Tradenet – Trade Information Network***

This Network, which is made use of by industrialists and technologists as well as policy makers. It is coordinated by the Export development Board, which is an organization under the Ministry of Trade. The objectives of Tradenet are the development of a computerized trade information service, with a computer network linking up several organizations who have information related to trade and commerce, with them to provide accessibility to the information available at Tradenet and also to access the information available at these centres. Internet services are also available through the network, the network operates a Bulletin Board Services for clients for a fee.

#### ***Inter University Committee of Librarians***

This is a fairly recent association, aimed to coordinate the activities of the Universities, such that that information could be readily shared. Decisions regarding software and hardware requirements and other technical matters also come under discussion with a view to standardizing purchases better. Development of university libraries with a view to providing more effective services is the ultimate aim of this association.

#### ***Association of Public Libraries – Sri Lanka (APLS)***

The Association of Public Libraries, Sri Lanka was established in 1995 as a professional association of Public Librarians in Sri Lanka. The main aim of establishing this association was to strengthen the librarians and libraries in the local government sector. It has been announced that the librarians and library assistants in the public library sector with professional qualifications can become members of the association. Information that is shared is more on the professional aspects rather than resources.

#### ***Banking and Financial Information Network (BFIN)***

The Central Bank of Sri Lanka with its library as the focal point is in the process of establishing a network for information sharing in banks and other financial institutions. The broad objectives of the network are to establish a formal relationship among the libraries in the field, with a view to supporting the information needs of the participating libraries and to promote resource sharing through the compatibility of infrastructure between banks.

20 banking, financial, development and research institution libraries have been identified as participating centres of the network.

#### ***INNESS- The Information Network in Social Sciences (INNESS)***

This was formed in 1991, mainly for the non-governmental sector, enabling the collaborating libraries to share their resources related to social sciences.

#### ***National Information Network on Education in Sri Lanka***

In order to fill a gap for the long felt need of an information network in the field of education in Sri Lanka, the National Institute of Education (NIE) initiated the establishment of the National Information Network on Education in Sri Lanka in 1995.

The main objective of the network is to strengthen information exchange in the field of education.

### ***Role of the National Library in Library Cooperation***

The National Library and Documentation Centre is the premier organization in the country which has a mandate through an Act of Parliament to develop and coordinate all the activities of libraries. It also plays thus plays a key role in library cooperation and is responsible for maintenance of the National Union Catalogue and the National Bibliography. It has now taken over this role for UNICAST as well, since this would otherwise be a duplicative activity.

Network activities being rampant The National Library has now set up Natnet Lanka which will be the umbrella network for all library networks in the country. The objectives are, improving cooperation among library networks, assisting new and weak networks and assisting networks to improve their activities. A newsletter is published to give publicity to network activities in order to give maximum benefit to the potential users of these networks.

## **REGIONAL NETWORKS**

### ***APINMAP***

Asian-Pacific Information Network on Medicinal and Aromatic Plants (APINMAP) was established in 1987 as a Regional based network funded by UNESCO. It was primarily designed in assisting the member countries to improve their capability in collecting, processing, disseminating and using research information and data on medicinal and aromatic plants. The APINMAP Regional network Centre was the Agriculture Information Bank for Asia (AIBA) in Philippines and it consisted of 11 countries. The National Focal Point of Sri Lanka is the Ceylon Institute of Scientific and Industrial Research (CISIR), now ITI. Each National Focal Point has the mandate to create bibliographic and factual databases on Medicinal and Aromatic plants within their countries, and the information is sent to the regional network centre for consolidation and integration. Although the information is still available at ITI, the network is not functioning due to lack of financial support.

### ***OSHINET***

Occupational Safety and Health Information Network (OSHINET) was established in 1995 as an Asia Pacific Regional Based Network. The Libraries and Institutions related to the field of Occupational Safety and Health are the members of this network. The Regional Focal Point is the International Labour Organization (ILO) – Asia-Pacific Regional Programme on Occupational Safety and Health (ASIA-OSH) in Bangkok. The National Network consists of 14 participants. Library of the Division of Occupational Hygiene of the Department of Labour is the Focal Point of the network. Publications: the Sri Lanka Occupational Safety and Health Information Network Newsletter and the Organizational Profile of the National Network participants.

### ***IMIN – Irrigation Management Information Network***

This network is coordinated by the International Water Management Institute which is a non governmental organization based in Sri Lanka. It The network has build up a database with contributions from participating institutions from 1986 and it serves as a centre for exchanging information among the collaborators of the network. It offers computer search services, and publishes a bi annual bibliography.

**DEVINSA**

Development Information Network on South Asia. Focal point is an NGO, Marga, but again the network is not active now.

**CINSA**

Cultural Information Network for South Asia. SAARC based, and coordinated by the Central Cultural Fund.

**APINESS**

Asia-Pacific Information Network in Social Sciences. The National Library acts the focal point of the Network.

***Impact of Advanced technology.***

Two significant milestones which accelerated the pace of information sharing in the country were, the designation of NARESA as the national distributor of the Unesco software package CDS ISIS, and the identification of IT as one of the major thrust areas for national development by the government.

With the introduction and distribution of CDS/ISIS, the network activities took on a new twist. Most of the participating libraries were provided with the software, and therefore, manual data entry was done away with. Uniform formats were devised such that participating libraries could send in their data in diskettes and integrated databases were built up. Both UNICAST and UNILIST were made available in computer files. The building up subject bibliographies and compilations were also made much faster through the use of the software. According to statistics, 209 libraries in the country have obtained CSDS/ISIS and are using it for resource control activities. Local databases are also being developed using the latest version of CDS ISIS which could support local area network operations.

The LEARN project which was launched in 1990, is another cooperative venture which has great impact on the information field. This is the Lanka Educational Academic and Research Network which interconnected educational and R & D institutions across the country. Initially it provided the participating institutions with dial up e-mail service and now both e-mail and dedicated Internet. This was supported by the Information Technology Council CINTEC and Lanka Academic Network Lac Net. SLSTIC uses the network to disseminate and provide S & T information to the academic community

In this scenario, funding was provided by SAREC, Sweden to SLSTIC to develop the National information Network and to establish a wide area computer network with links to each other and with SLSTIC as a gateway to the online databases outside the country. SLSTINET also intends taking on the role of a service provider to the S & T community.

These activities were made possible with IT being given high priority in the country, and the telecommunications infrastructure taking on new dimensions. Other than Sri Lanka Telecom which held total monopoly previously, several leading telecommunications companies entered the market. ISDN enabling simultaneous transmission and reception of voice, data image and video at a high bit rate, and end to end digital connectivity was introduced. Sri Lanka telecom's switching transport network supported by national and international telecommunication links serve as the foundation for all other telecom

venture companies. With these developments, over 20 licensed Internet Service Providers Operate.

With state support thus given , it was possible for the Libraries and Information Centres in the state sector to justify their need for Internet and e- mail connections for information activities. Within a short span of five years or so, we see over 35 libraries having Internet access , and over 40 with e-mail connections. Three libraries so far have also put in their catalogue on the web, and many of the Libraries have their own website maintained under their parent organization. In addition, two University libraries and two research organizations have their catalogues on line, on the web. This is indeed leapfrogging in to next decade, when considering the status of the libraries a few years back. According to recent statistics, over 65 libraries use computers for sort of library activity, 11 have dedicated lease lines, 26, dial up connections. 13 have local area networks through which catalogues can be accessed.

### ***The Effectiveness of Resource Sharing Activities***

Being a relatively small country with limited resources, the concept of sharing and rationalization of resources with regard to information, have been buzz words and the subject of several for a. In this background comes the personal relationships established between the information community of the country. This is the key to network related activities. Notwithstanding this, even though two of the leading S & T libraries do not use CDS/ISIS for their catalogues, they have taken steps to convert the data into the necessary formats, to facilitate input into the network data base. Most of the state libraries also make their resources available to the S & T community particularly with regard to expensive secondary sources such as Chemical Abstracts, Science Citation index, Current contents, CAB databases, and now recently the TEEAL database. Searches are undertaken either free of charge or for a nominal amount. Few organizations limit the usage , but through the formal networks, information could be accessed. Some centres are members of international information centres, such as RERIC and ENSIC, Thailand and obtain some assistance, as part of their membership rights. Focal points of regional information centers are also able to obtain information through the network from International organizations such as WHO (HELLIS) , NAPRALERT (APINMAP), AGRIS (Department of Agriculture), INFOTERRA (ENLINET).

When on the subject of sharing and interchange, mention must be made of the somewhat abortive attempts made in the past, by various funding organizations to set up National information networks in S & T related information centers.

The first of these was the one funded by the International Trade Centre to the EDB, in the early 90s.. Here the intention was to set up a network of trade related organization through physical connections . This failed due to connectivity problems, as the telecommunication infrastructure was somewhat in its infancy at the time. . Next came the joint project between UNDP/UNIDO and the Ministry of Industries ; Science and Technology to set up an Industrial Technology and Market Information Network (ITMIN) which was conceptualized to be a heterogeneous, decentralized, network primarily aimed at the private and public sector, to enable the access and sharing of information available at the individual centers. However, although ITMIN, was set up it has not achieved it objective of forming a network of information centers, but is merely a Internet provider and training centre with centralized sources of information.

The next initiative was taken by the Chamber of Commerce, when they signed a contract with the Government of the Federal Republic of Germany, under its Technical Assistance programme in 1998, for the setting up of an Enterprise Information project (EIP) the objective being to implement a demand oriented information system for the promotion of micro, small and medium enterprises to improve their competitiveness through an effective enterprise information system. It was intended through this project to link up all organizations relating to technology. Although preliminary studies were conducted, and agreements with individual organizations signed, work seems to be in abeyance. It is interesting to note that all these attempts have been in the trade and technology sphere.

## **PROBLEMS AND RECOMMENDATIONS**

Although, as mentioned in the paper, several policy makers have highlighted the importance of S & T information for national development, no coherent policy has been set down formally put into the legislative machinery. This is important, to ensure the cooperation of all information generating organizations.

With the advent of Internet, the networking function is very easily accomplished. What is then important is that each library should develop their own in-house databases so that they could be made accessible through the web. Special attention should be paid to the report literature and unpublished literature within each organization. In this context, professional associations have a significant role to play, by recording and conveying the results of their deliberations to a central body like the NSF or National library.

Steps should be taken to provide at least e-mail facilities to all libraries to facilitate the better functioning of networks. The national focal points could bring about an awareness of its importance to policy makers. For this purpose, public sector libraries should be given increased budgets and facilities

The non-availability of full text copies of articles is a severe problem to scientists. After having identified the necessary publication from the secondary sources available within the networks, it is not always possible to obtain the full text article at a reasonable cost. At least within the region, an efficient interlibrary loan service should be established through the networks to facilitate this.

Patents and trade literature are not effectively covered in any Sri Lankan centre. There is a high demand for this type of information.

Standards and specifications which are an essential prerequisite to the manufacturing and trade sector, are available only in two institutions in the country, and the ban on obtaining photocopies of these pose quite a problem. A subsidized rate for dissemination of this information should be devised.

Many Sri Lankans have studied in foreign countries and have a good knowledge of foreign languages, but, translation services from foreign languages are not available. Similar, information in the vernacular languages is also not available.

## **CO-OPERATION WITHIN SAARC COUNTRIES**

Training courses in Information science: short-term, long-term and in-service training, with funding for travel and subsistence, should receive priority. Exchange programmes would also be helpful in creating better understanding among the countries.

Publications available for exchange within the SAARC region should be identified and listed, such that they could be readily acquired.

Regional publications should also be sold within the region at local rates.

A Directory of Centres of excellence and expertise in SAARC countries., could be compiled, including services which the centres can provide to other countries. Lists of publications available on exchange could be indicated.

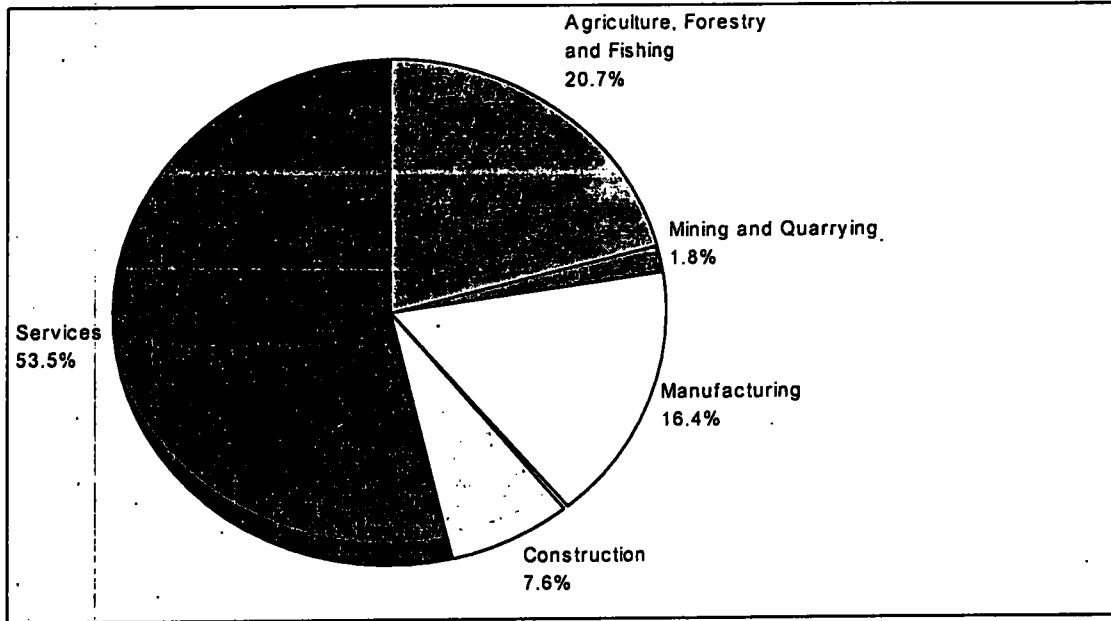
Faster and cheaper reprographic services from Asian countries, should be encouraged.

## **ACKNOWLEDGEMENTS**

I would like to thank the NSF and UNESCO for hosting this workshop, my colleagues at the Information Services Centre of the ITI, Deepali Talagalla of NSF, Amara from the National Library for providing assistance in getting material for this paper, Charuni for helping in preparing the presentation, and finally all you present for your patient hearing.

# SECTORAL COMPOSITION OF GDP

## Chart 1



# OUTPUT OF GRADUATES 1996

## Chart 2

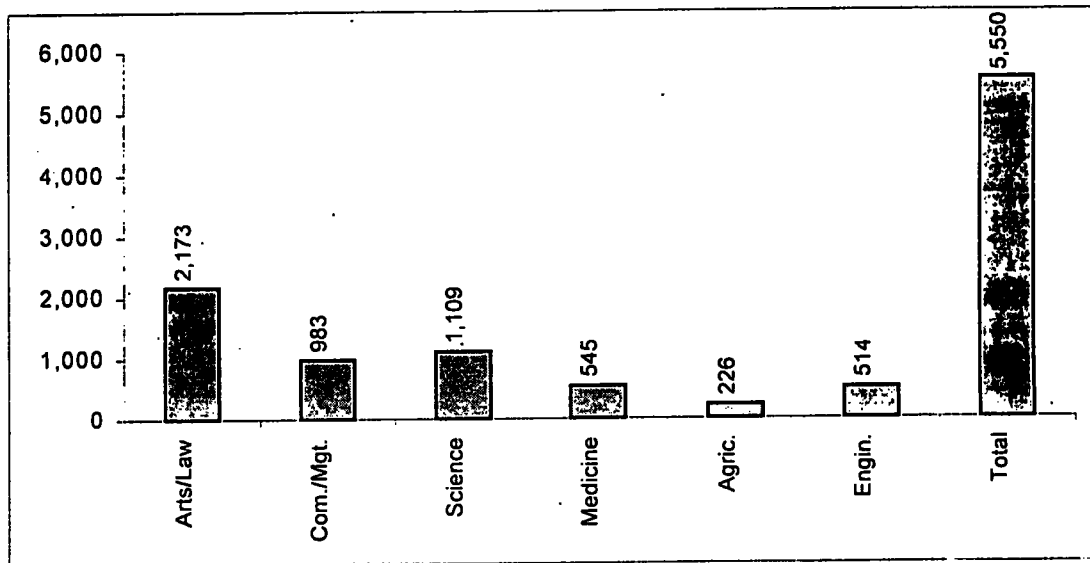
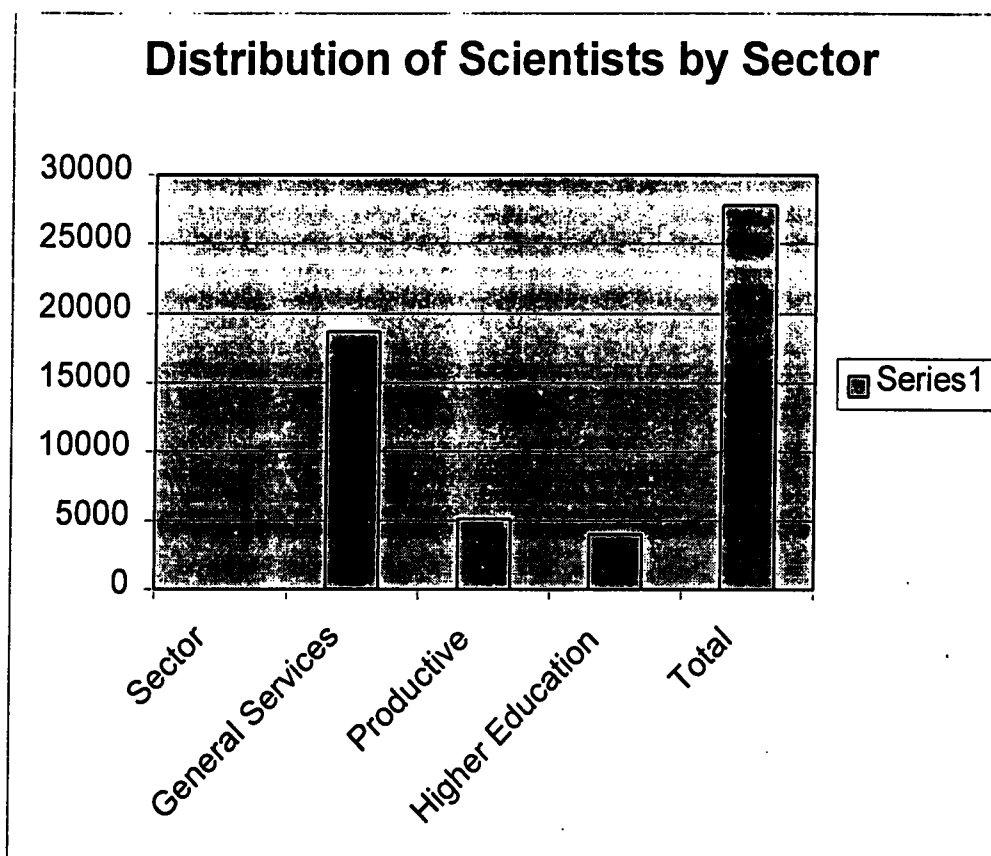


Chart 3



## Use of CD ROM and Disk media for database development

N.U. Yapa\*

### File transfer

Libraries and Information Centres that participate in cooperate programmes for the creation and development of databases need to exchange data among them. The Central Library that undertake the responsibility of compiling the cooperate database receives contributions from the participating libraries from time to time. Different media, both paper and electronic, depending on the technological capabilities of the participating libraries, are used for data transfer. Three options are available for data transfer in electronic media: disk (diskette), CD-ROM and e-mail. Paper media is the traditional method of file transfer. Many regional and global databases used paper media to exchange data at the start as there was no other method available. This was followed by magnetic tapes, which gave birth to MARC.

Although data transfer process becomes time consuming and cumbersome, paper media is still used in cooperate programmes. It should be realized that not all libraries/information centres in the region use electronic media. Even in Sri Lanka, paper media is accepted as an exchange media as the contributions of some libraries without computer facilities cannot be ignored. The UNICAT project (compilation of the national Union Catalogue of Books) of the National Library & Documentation Centre of Sri Lanka (NLDC) is a good example. NLDC accepts catalogue entries in cards or even as lists. These data is entered to the UNICAT database by the NLDC staff. This is a time consuming task but NLDC is keen in capturing data from as many libraries that it can. On the other hand, the Agricultural Information Network (AGRINET) operated by the Council for Agricultural Research Policy accepts only diskette as the transfer medium. This is not a problem as almost all AGRINET libraries have computer facilities.

Instead of re-typing data it is possible to optical scan the paper records to create digital files. A smart scanner plus standardized document would help speedy conversion of paper media to electronic media. Once the document is digitized it could be converted to a file that could be exported to the required database. This process pass through several technological gates which needs special technical skills and equipment to handle. The central library that develop the database should have adequate resources to undertake this responsibility.

Out of the electronic media for data transfer, e-mail method is the most effective and efficient. The communicating libraries should be linked to a wide area network. If the libraries are connected to Internet, data transfer can be exercise through out the world. For data transfer through out the region, Internet would

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\* Head Librarian, International Water Management Institute, Sri Lanka

be most convenient carrier. It should be realized that only a small percentage of libraries in the region are connected to Internet, not to mention the percentage of libraries having access to computer facilities.

CD-ROM is a convenient medium for transferring large data files. In the implementation stage, it could be used to transfer large data files and in utilization stage to store large outputs. CD ROM is not effective for transferring data files smaller than 5 megabytes. CD ROM becomes the most effective carrier for transferring databases that have a large volume of data. E-mail is a convenient and popular method for online file transfer. However, this method would create problems with respect to large data files.

Diskette has special features that make it a convenient and efficient file transfer medium under certain circumstances. It can be used effectively to transfer small data files where online facilities are not available. Particularly, the libraries which are not linked to Internet use diskettes to send their contributions to compile central databases. Output files of central databases are sent to participating libraries on diskettes.

Relationship between library facilities and transfer medium is shown below:

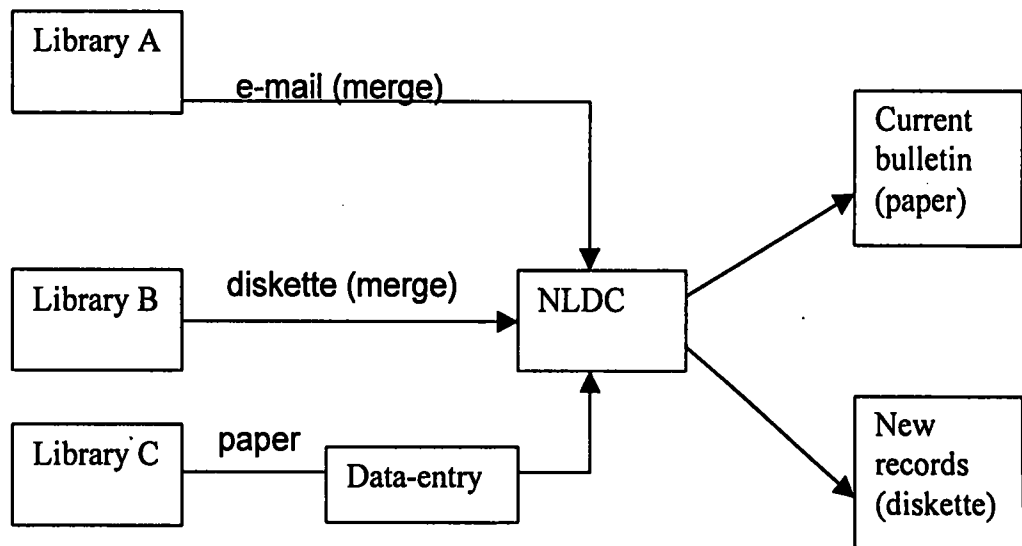
<b>LIBRARY <u>facility</u></b> <b><u>medium</u></b>	without computer	with computer	CD writer/ reader	WAN/ Internet
Paper	X	X	X	X
Disk		X	X	X
CD-ROM			X	X
Online				X

Above table shows the usability of different media by libraries having IT facilities

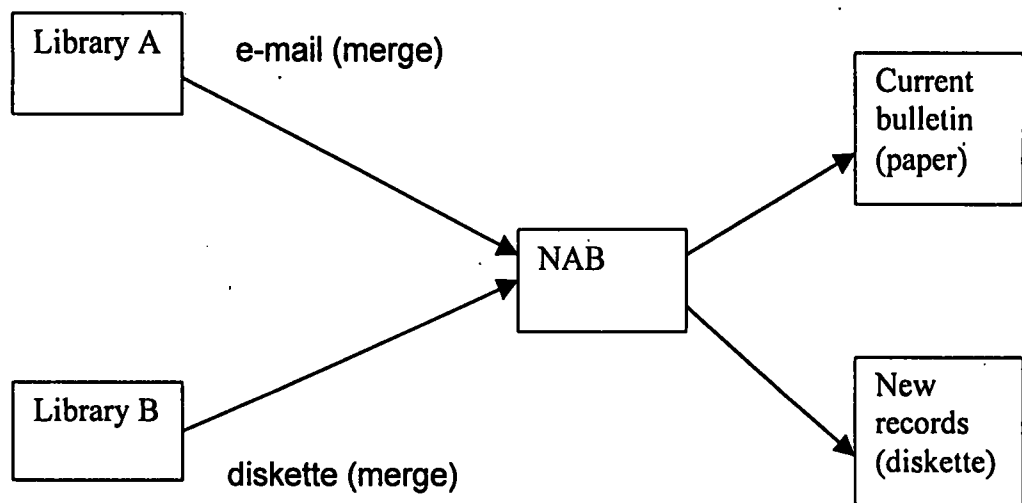
### **Cooperative Programme in Sri Lanka**

Libraries in Sri Lanka operate cooperate programmes to compile central databases. Participating libraries send their entries to the central library, which develop the cooperate database by merging the data files and by keying data. The cooperate database or its products are returned to the libraries for in-house use. Following cases show how data transfer facilities are used by libraries in Sri Lanka.

**Case I: Union Catalogue of Books (UNICAT) compiled by NLDC.**



**Case II: National Agricultural Bibliography (NAB) compiled by the Agricultural Information Network (AGRINET)**



In both cases, the central database is created by adding data records received from the participating libraries. UNICAT accepts records on paper. These records are entered into the database by typing. NAB accepts only electronic files.

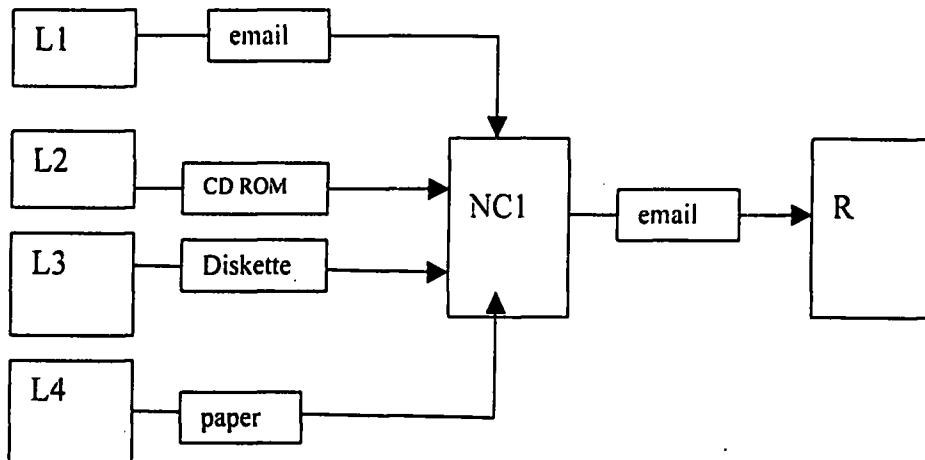
Both projects currently output database products on paper. They plan to use CD ROMs in the future.

### **Regional Databases**

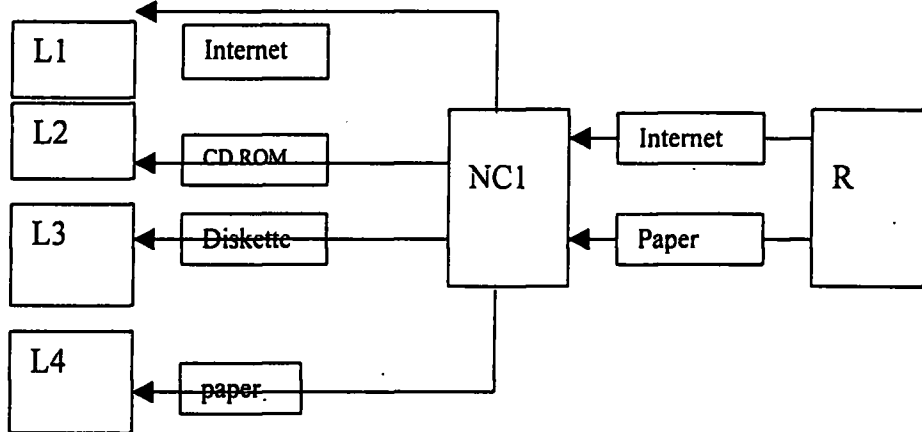
It would be necessary to use all methods of data transfer for the development of regional databases by the South Asian countries. In reality, more than 80% of the libraries in South Asia do not possess computers and associated electronic equipment. In many parts of the region, telecommunication facilities are not adequate and reliable to operate online data transfer.

Data gathering for the development of regional databases should be operated at two levels. At the local level, data from local libraries to be collected by a national centre. As the technological capabilities of the local libraries would differ widely, all methods of data transfer namely, paper, diskette, CD-ROM and e-mail, may have to be used. The national center will compile a central data file by merging the data received from the local participants. At the regional level, the national centers will transfer data collected by them to the regional center, email could be used as the transfer medium. Digital files received by the regional center will be merged to develop the regional database. It may be necessary to have an intermediate level with respect to a country like India which covers a vast geographical area.

In the dissemination process too, different media have to be used to cater to all types of libraries. The data base products should be made available in paper, CD ROM and online (Web site).



Above diagram shows data transfer in the Implementation Stage of the regional databases



Above diagram shows how data is transferred in the Dissemination Stage of the regional database development.

**Development of regional databases**

The research and development issues in the region are common to all countries. Problems associated with agriculture, fisheries, forestry, environment, health and industries in the region are similar in nature. A problems faced by a country would have been already solved by another country, while some problems could be handled more effectively by countries, by pooling their resources. ASTINFO concept of exchanging and sharing experiences and information would be beneficial to all countries. It is recognized that some countries would act as givers and some as takers. This fact has to be accepted in the region where skills, knowledge and information resources are unevenly distributed and developed.

Database development is carried out in three stages: *Planning, Implementation and Utilization*

Planning stage involves policy making; defining objectives; systems analysis and systems design; standardization of software and data formats; compilation of procedures and guidelines; decision making with respect to the methodology of data collection, analysis and organization; infrastructure development; establishment of networks for cooperate activities, etc.

Implementation stage involves data gathering, validation, analysis, repackaging and organization. Transfer of data should be monitored.

Utilization stage involves production of database outputs and making them accessible to the users.

A regional committee comprising of the national centres should be appointed to plan and monitor the cooperate activities.

### **Issues**

users: who are the users of the database? (general public, research workers, administrative staff, media personnel or extension workers)

Subjects: agriculture, forestry, fisheries, water resources, environment, ecology, industries, health, mineral resources, natural hazards, weather, etc. There are some special subjects that are peculiar to the region such as tropical diseases, traditional farming, indigenous medicine, herbs, cottage industries etc.

Data: bibliographic, numerical, statistical, graphical, geographical

Language: English

Standardization: cataloguing, indexing, classification, software, data formats

Data gathering: library networks, monitoring and reviewing activities

Training: Staff and user training

Promotion: publicity, marketing

### **Pilot Project**

It would be useful to launch a pilot project on a subject that involves all South Asian countries.

**Feasibility of using  
Full Text CD-ROM Collections for  
Information Exchange**

Paper presented at the Meeting on Interchange and Exchange of  
Scientific Information Among S & T Information Centers/Libraries  
of the South Asia Region, 29-30 January 2001

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# **Feasibility of Using Full Text CD-ROM Collections for Information Exchange**

## **1. Introduction**

The recent progress in Information and Communication Technologies realizes the possibility of digital or electronic libraries. As we are aware, the emergence of the Internet and the transformative character of the World Wide Web technology, has changed the ground rules for the production of and access to scholarly communication. During the recent past, we have witnessed an ever-increasing use of electronic means in scholastic publication. Availability of primary and secondary research literature in machine readable texts and in other forms such as page images, audio and video clips and hypertext have made possible the full text CD-ROM publications a commercially viable venture.

This paper attempts to focus on key issues related to the feasibility of using full text CD-ROM collections for information exchange. However, it is not aimed at investigating in detail of the full text information sources available in both forms-online and CD-ROM versions. It would briefly outline the important aspects in regard to the availability of such materials in the context of this presentation.

## **2. Availability of electronic full text information sources.**

The electronic publication of journals started in the early 1990's while the appearance of electronic books is a recent phenomenon. The electronic publishers are comprised of several broad categories, which includes the following.

- ❖ Commercial publishing houses such as Elsevier Group, Academic Press, Blackwell Scientific, Oxford University Press etc.
- ❖ Learned Societies such as the American Chemical Society, the American Mathematical Society, the Royal Society etc.
- ❖ Commercial online services such as ADONIS Electronic Journal Subscriptions Service, OCLC Electronic Journals Online, EBSCO, Bell & Howell Proquest etc.
- ❖ University digital library initiatives such as WWW Prototype of the Alexandria Digital Library at the University of California at Santa Barbara, Mandala Library, at the Nara Institute of Science and Technology, Japan and the HARP integrated digital library, at the Nanyang Technological University, Singapore etc.

The close examination of these sources reveals that they attempt to cover core journals and other important sources of information. Basically, these source could satisfy most of the information requirements of the average library user. However, one visible handicap

is the lack of coverage in respect of original research findings generated at the South Asian regional level. For example, information pertaining to research work associated with the Masters and higher degree programmes are not well publicised even within the respective country (in the region) where these programmes are conducted.

It is important in noting here that the research work undertaken in the regional neighborhood has a high degree of relevance and appropriateness due to similar or parallel situations common to us.

### **3. Suitability of electronic information**

Electronic or digitized collections are now becoming an attractive option for libraries and information centers due to several factors. Some of the most prominent reasons for the popularity of these sources are:

*Economic reasons:* The print based journals are caught on an ever upward cycle of price hikes. The journal publishers have got in this vicious cycle of cancellation of renewal of subscriptions by libraries which in turn forces the publisher to increase subscriptions rates and so on.

Further, all libraries and information centers in the region are continuously facing the enormous problem of devaluation of the local currency in terms of the US Dollar. Annual increase in library budgets more often does not compensate for the loss in real terms, thus leaving libraries with no option, but cessations of subscriptions.

*Decreasing availability of shelving space in libraries for print media:* with tight budget cuts in government spending, most libraries are compelled to make maximum utilization of available space. In view of this situation, electronic means are best suited for holding archives of back issues.

*Thefts and wear and tear of heavily used material:* electronic means offer a number of avenues to meet these problems mostly inherent in heavily used high demand print material.

*Versatility of electronic media:* the fact that the ability to access these sources of information at the users' own work environment and also to manipulate and incorporate data extracted from these sources conveniently in their publications has made electronic media a popular type of information sources. With increasing computer literacy and skills, users may resist print based services, thus compelling the library professionals to make available electronic media.

#### 4. Administrative / financial considerations

##### *(i) Formation of national/regional networks*

The concept of exchange of information resources-print or electronic across borders could not be translated into reality without a properly organized networks of libraries/information centers. These networks have to be established at two levels.

- ❖ *At the national level:* all participating libraries/information centers should have affiliation to the library network envisaged for this purpose. Some of the active Sri Lankan library networks important in this respect are,

SLSTINET : Sri Lanka Scientific and Technical Information Network

HELLIS : Health Literature, Library and Information Services Network

AGRINET : Agricultural information Network

LEARN : Lanka Educational, Academic and Research Network

- ❖ *At the regional level:* the existence of a regional network coordinating the work of national networks is required for the smooth functioning of a regional resource sharing program. Some of the existing international networks currently functioning in our region are,

ASTINFO : the Regional Network for the Exchange of Information and Experiences in Science and Technology in Asia and the Pacific. This network covers the Asia-Pacific region.

APINESS : the Asia-Pacific Information Network in Social Sciences

DEVINSA : Development Information Network in South Asia

##### *(ii) Formulation and ratification of a joint strategy*

The dissemination of S&T information has been identified as one of the most essential elements in development of any country. As such, there are separate government ministries/departments/key organizations entrusted with the responsibility of ensuring the streamlining of smooth flow of information across the country. With the identification of such institutions, efforts must be made to form a joint regional steering/work group of key personnel with the aim of formulating policy guidelines and coordinating the work of national bodies. Subsequently, such policy guidelines have to be ratified at the government ministerial level, empowering networks to act as legally constituted entities.

***(iii) Establishment of a secretariat and focal points.***

Early action has to be taken to identify a key organization in each country to act as focal point. In Sri Lanka the National Science Foundation is ideally suited for this purpose. Out of this group one such organisation, with the concurrence of other participants could be designated as the secretariat. One of the noteworthy points to be raised in connection with the operation of this type of a project is that these programs require continued sponsorship from the government(s). As we have witnessed in Sri Lanka the concept of library cooperation has been achieved mostly by voluntary means. Although voluntary involvement is essential to make these programmes successful ventures, it is common experience that voluntary mechanisms more often do not yield best possible results all the time.

***(iv) Assessment of manpower requirements***

The success of high technology library applications are largely dependent on the quality of manpower envisioned in such projects. Therefore, the assessment of skills required in the use of IT based library and information services followed by a manpower survey can be considered as an important step in establishing networks. Depending on the availability of suitable professional staff in service training programmes and refresher courses have to be included in the programme.

**5. Technical considerations**

'Information' has been regarded as the most important resource today. As such, information processing, storage and communication has assumed greater significance in the use of leading edge technologies. This situation makes it absolutely necessary for libraries and other information professionals to address all issues connected with the information and communication technologies. The following considerations are important in this area:

***(i) Selection, installation and maintenance of systems***

The selection of full-text CD-ROM products with the aim of wider usage spanning beyond political and geographical borders needs careful planning and assessment of systems requirements. Most effective and efficient usage method of these sources over a long distance is remote logging, the other option being the individual processing and transmittal of individual requests in-house. The former method requires sophisticated hardware and licensing fees several times that of the single user or somewhat restricted LAN usage. Therefore, special attention must be made in identifying the optimum solution.

***(ii) Identification of user requirements***

In selecting the CD-ROM products suitable for acquisition, user requirement assessment is essential. Following factors are significant in this respect.

- ❖ Identify core materials required for the S&T personnel within each country.
- ❖ Identify core materials already available within the S&T libraries/information centers.
- ❖ Identify the materials coverage in the proposed CD-ROM products
- ❖ Work out the most cost-effective method along with the timeliness of the information contents of CD-ROM products.

**6. Conclusion**

Rapid advances made in the fields of information and communication technologies have revolutionized library and information services. The increasing availability of electronic information has required libraries to make difficult decisions regarding library services and collections. Further, the library and information professionals should be prepared to meet the demands of technologically sophisticated patrons who are frequently knowledgeable about new resources and their capabilities, at times even before library staff becoming aware of such services. It is clear that library and information professionals are required to assume greater responsibility in keeping pace with the advancing technology.

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# Providing online access to databases, e-journals and using the available on-line databases<sup>1</sup>

## Introduction

As an alternative to traditional scholarly publication, computerized models of scholarly publication began to be pursued in earnest in the late 1980s and in to the 1990s. With the development of the World Wide Web in the mid 1990s, the trend toward electronic publishing has accelerated tremendously.

The standard conventions, which operate in the Web environment, allow publishers to mount digital versions of their journals in files, which can be linked easily from library or university web pages with stable URLs that allow for cataloging and Linking. All of these capabilities have caused publishers to dive into Web publishing for their journals in a manner inconceivable only a short few years ago.

We are still too rooted in traditional structures. When we mount digital journals, we base them fully on a print model. We have begun to think of new models, but we have no consensus yet and the technology to allow us to be innovative and change the system in fundamental ways is only now emerging.

There has been a great paucity of literature in the S & T fields in the developing countries in general and the SAARC region in particular. It is, therefore, necessary to develop a collection of bibliographic literature on these, which will be very useful to researchers, academicians, and policy-makers, etc.

## Electronic Journals

It is useful to think about how quickly the number of scholarly electronic journals(i.e. digital versions of print journals or electronic only scholarly journals) has proliferated. The Association of research Libraries (ARL) has tracked this development in its annual Directory of Electronic Journals, Newsletters and Academic discussion Lists since 1991. In that year, there were 110 journals and newsletters available online, but few if any of these were refereed, scholarly titles. Most were fledgling efforts at promoting the idea of sharing information with colleagues, and not true journals. By 1994, there were 443 journals and newsletter entries in the directory, but only 11 were web-based (a fairly new phenomenon at that time) and 74 were refereed in any way. That number reached 675 one-year later in 1995, with a count of 142 refereed e-journals. Clearly the World Wide Web had an impact on these electronic publications. The impact of the web on this level of electronic publishing is clearly seen in the entries for 1997 and 1998. By 1997, 3,400 e-journals and newsletters were published and the very next year that number had jumped to over 6,000.

In this profession about how the transition from print to electronic -based publication will occur or on what timetable these major paradigm shifts will happen is unpredictable.

There are several advantages of the electronic journal over the equivalent printed journal such as:

- Publication is quicker without the delays inherent in printing and postal delivery.
- Cost are lower, the price of paper, for example, has been rising faster than general inflation for many years.
- Modern user-friendly software enables academic editors and referees to undertake themselves tasks that used to require skilled craftspeople such as compositors.

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<sup>1</sup> Deepali Talagala, Director/Information, SLSTIC, NSF, SRI LANKA

- New facilities can be incorporated into journals, such as hypertext links both within and between paper and reader, and the inclusion of multimedia features such as animation, video clips and sound into papers.

Presently there are two main types of scholarly electronic journals:

- One is newly founded published by its academic editor, and issued free of charge over the Internet. And uses software such as electronic mail, telnet ftp, gopher and/or WWW to distribute papers to users with varying degrees of technological sophistication.
- The other is typically the electronic equivalent of an established printed journal, is published by a commercial publisher (for profit or not- for profit), and requires a subscription that to the printed version.

The number of electronic journals is increasing rapidly and is therefore difficult to estimate; it seems likely however that about 2250 electronic periodicals were available free of charge over the internet(December 1996).Most of these are newsletters or "zines" rather than refereed journals, but probably 10% or more of the total are scholarly. During 1995 -1997 however, many of the substantial commercial publishers of scholarly journals. Especially those in the scientific, technical and medical (STM)fields, have started providing their existing titles in electronic form for a fee and a number of these services are now running on a routine basis.

These journals originally relied solely on a standard web browser such as Netscape for access. Although in early stages it was largely textual but many took advantage of HTML's ability to include graphics. Few included sound or animation, either of which was possible, although most used the hypertext link facility.

In Sri Lanka there are no online full text scientific journals. National Science Foundation only provides the contents pages online. Recently the journal "VIDURAWA" is available online. Although the target client group for this journal is the teachers and A.L. students, it can be considered as a landmark for future developments in the e-publishing in Sri Lanka. There are many Newsletters including NSF Newsletter available online.

Nepal and India has many online journals which are freely available on Internet. Some of the important URLs providing journals information are given below.

#### **Electronic Journals: A Selected Resource Guide**

[http://www.harrassowitz.de/top\\_resources/ejresguide.html](http://www.harrassowitz.de/top_resources/ejresguide.html)

#### **Electronic Journals on Information Systems in Developing Countries EJISDC**

<http://www.unimas.my/fit/roger/EJISDC/EJISDC.htm>

#### **Journal Tracker - Table-of-contents alerting service**

<http://www.isinet.com/jtrack/>

#### **Journals - Library & Information Science available on the Web**

<http://www.nsf.ac.lk/links/journals.htm>

#### **List of high priced journals**

<http://db.ari.org/journals/>

## Electronic Databases

Online library catalogs and databases are prerequisites for a digital library; they are not sufficient to qualify a library as "digital". Because they most frequently serve as pointers to documents, they do not meet the fundamental goal of the digital library, which is to deliver the full content of library materials to the desktop.

The most common software for database management systems in the developing countries is the CDS/ISIS. The new developments in the CDS/ISIS have made it possible for librarian to provide online databases. Java/ISIS and web interfaces such as WWW/ISIS; WEBSIS; and IQUERY are some new developments. In Sri Lanka majority of libraries use CDS/ISIS for database development. Although many libraries have computerized databases they have not been able to provide them online on Internet. In 1996 Sri Lanka Scientific & Technical Information Centre of the National Science Foundation made available three databases online using IQUERY. These were the first online databases in Sri Lanka. SLSTIC now offers to host databases as a service. As a result 'Sri Lanka Standards Database' of the Sri Lanka Standards Institute is hosted online by SLSTIC/NSF. Presently few more databases can be accessed online on Internet.

- IWMI library catalogue
- ITI library catalogue
- University of Moratuwa library catalogue
- University of Ruhuna library catalogue

All these are bibliographic databases. There are no online full text databases in Sri Lanka. SLSTIC/NSF has subscribed to DELNET online databases. DELNET offers more than 25 databases, including Union catalogue of books (15,00,000 records), Union list of periodicals (17,000 titles), Articles database etc. DELNET also entertains online ILL requests for books and documents.

**Some important URLs with respect to online databases are given below.**

- List of databases, which are for the use of La Trobe University staff and students and may be accessed from any La Trobe University Campus computer.  
<http://www.aw.latrobe.edu.au/DEPART/library/online.htm>
- The online Bibliography of Asian Studies (BAS), referencing western-language monographs, articles and book chapters on all parts of Asia published since 1971, is available via library subscription.  
<http://ets.umdl.umich.edu/b/bas/>
- The alphabetical list of the entire main online databases available in the LRC. Access to some additional databases of a more specialist nature is possible via the subject links.  
<http://www.tees.ac.uk/lis/electronic/online/online.htm>
- InfoWatch - Tracking Networked Scientific Information Sources and Services (An electronic update service brought to you by NCSI)  
<http://www.ncsi.iisc.ernet.in/ncsi/infowatch/iwcurr.html>
- This bibliography presents selected articles, books, electronic documents, and other sources that are useful in understanding scholarly electronic publishing efforts on the Internet and other networks. Most sources have been published between 1990 and the present; however, a limited number of key sources published prior to 1990 are also included. Where possible, links are provided to sources that are available via the Internet.  
<http://info.lib.uh.edu/sepb/sepb.html>

- Web based catalogue <http://www.icrisat.org/text/partnerships/srls/srls.asp>  
The Union List of Serials compiled by CGIAR libraries (including IWMI). The database is done in CDS/ISIS. Journal articles can be requested online. SRLS (Union Catalog of Serials in International Agricultural Research Centers)

The present SRLS database on the Internet consists of 6294 serials holdings in the libraries of the different International Agricultural Research Centers (IARCs). The backend database is MS Access 97 and the Search front-end is developed in Visual Interdev environment using ASP. The opening page provides options for

- Searching the SRLS database, and
- Sending a reprint request.

Selecting Search option takes you to a screen that allows searches on words/phrases in the title, on keywords, and on ISSN number (if known). The output is displayed in the following manner.

Key Title : African Journal of Agricultural Sciences

Publisher : Association for the Advancement of Agricultural Sciences in Africa

Place of publication : Addis Ababa

Country of publication : ETH

Language : MUL

Holdings : CIAT: 4, 1977+[6(1-2)] ICARDA: 8, 1981 - 11, 1984 ICRISAT: 5, 1978 - 5, 1978 IITA: 5, 1978+

Selecting Reprint Request option opens the reprint request form, wherein you need to fill-in certain fields. Other than the Journal title, other mandatory fields to be filled-in are marked by a red star. On pressing Locate, the system will display full details about the journals title along with a control number, which is hyperlinked. On clicking the number, a screen is displayed listing libraries holding the title (preceded by a radio button) along with a form for filling the details of the requesting library. Mark your preferred library by clicking the radio button against the library name and fill-in the other details on the page - Name of the person requesting the reprint, Dept/Program, email address, postal address, and the format in which the reprint is required. [Please note - the format option is being corrected to include electronic format] Pressing Send button will execute your request and an email will be sent to the library selected by you.

- The Core Historical Literature of Agriculture (CHLA) is a core electronic collection of agricultural texts published between the early nineteenth century and the middle to late twentieth century. Full-text materials cover agricultural economics, agricultural engineering, animal science, crops and their protection, food science, forestry, human nutrition, rural sociology, and soil science. Scholars have selected the titles in this collection for their historical importance. Their evaluations and 4,500 core titles are detailed in the seven volume series *The Literature of the Agricultural Sciences*, <http://chla.mannlib.cornell.edu/>

- ENVIS database <http://discussion.teri.res.in/docdata/envis.asp>

The TERI ENVIS database has been collated and compiled mainly from literature in the fields of environment and sustainable development on and from the SAARC region. The database has been built up by analyzing the literature. A number of articles, which have been received from the authors, are also included in the database.

The database includes bibliographic information from the year 1991 onwards, covering over 5000 records at present. About 50 national and international journals are scanned and the database updated regularly.

The TERI ENVIS database broadly deals with all environmental issues with special reference to biomass application, climate change, environmental economics, environmental planning/policy, environmental laws and regulations, hazardous wastes and their management, pollution and control technology, renewable energy and environment, sustainable development etc. It also includes global environmental issues pertaining to other developing countries relevant to this region.

- TERI Information Monitor on Environmental Science (TIMES)  
<http://www.teriin.org/envis/journal.htm>

Since its inception in 1984, the Centre has published the half-yearly journal, EEM (Energy Environment Monitor), and from 1996 onwards a new journal titled TIMES (TERI Information Monitor on Environmental Science: two issues a year; in June and December). TIMES was bifurcated from Energy Environment Monitor with an aim to expand its scope and make it a complete information product on Indian environmental issues as well as that of other SAARC countries. Each issue of TIMES contains 100 abstracts on environmental literature on India and other SAARC nations, a review article with bibliography, and book review(s) relevant to the scope of the journal, apart from such other regular features as news briefs and calendar of events. An additional feature, namely web site abstracts on environment, was included as a regular feature from 1998. Another new section, abstracts on CD-ROMs on the subject, will be added in the near future.

- Thai Index Medicus <http://md3.md.chula.ac.th/thaiim.html>  
is a collection of documents published in Thai medical journals from 1918 to current year. It is a bilingual (Thai / English) database and maintained by the Medical Library, Faculty of Medicine, Chulalongkorn University, Bangkok Thailand.
- World Guide to Doctoral Dissertations in S & T <http://ifla.inist.fr/ifla/V/wgddst/wgddst.htm>

### Major Recommendations

- Bandwidth: high bandwidth is needed for fast transmission of data nationally and internationally
- Training of LIS personnel in developing databases and e-publishing
- Software: software should be able to provide web interface to provide online databases
- Document delivery: enhanced electronic transmission
- Standards: uniform standards in developing databases should be maintained to make it possible for exchange of information
- Union catalogues: all types of union catalogues should be developed to provide information for the scientific community.

# Database of Insect Pests in the South Asian Region

N.U. Yapa

## 1. Introduction

Pest management is a vital aspect in agricultural production. South Asian countries, which base their economy on agriculture, pay a special attention to pest management. The Region spends substantial amount of money to prevent pest damages, which cause low yield and loss of agricultural products. On the other hand, methods use to control pests have degraded the environment of the region creating health, economical and social problems.

'Insect Pests' is selected for the pilot project to narrow down the subject area to a manageable size. With the experience and knowledge gain in implementing the pilot project, the scope of the subject could be widened.

## 2. Planning

It is proposed to create a regional database with the inputs from the region. Bibliographic, numeric and graphical information relevant and useful to all those who concerned with 'insect pests' will be collected. Information in the database will be disseminated within the region.

A regional network will be created. The library/information centre, which hosts the regional database, will be selected as the Regional Centre (RC).

A library/information centre which has resources and which is interested in the subject will be selected as the National Centre (NC), in consultation with the ASTINFO Coordinating Unit of the country. NC is responsible for creating a national network of libraries/information centres. Information and documents generated in the country are collected at the NC using the national network. NC will create a national database and a repository of documents with the help of the national network.

Two types committees, Regional and National, will be appointed. The Regional Committee will be convened by RC and will be comprised of representatives from NCs. E-mail will be the main mode of communication of the Regional Committee. A National Committee will be appointed by NC to operate activities of the national network. The National Committee will meet from time to time.

## 3. Policy

The Regional committee with the advise of ASTINFO will make policy decisions. Defining objectives, formulation of standards and procedures are the responsibilities of the Regional Committee. It will also determine the methodology of collection, organization, storage and dissemination of information and document delivery.

WINISIS (windows version of CDS/ISIS) developed by UNESCO will be used for database creation.

#### **4. Implementation**

The participants of the national network send information on information sources relating to the selected subjects. A prescribe input sheet will be used to maintain uniformity of the entries. Those who use CDS/ISIS will be provided with a data format to structure the output files. The output files are sent by email or are hand delivered on diskettes to NC.

NC will develop a national database by inputting the entries. It will develop the database by merging the ISIS files (after reformatting if necessary) or by direct data entry.

Records from the national database will be e-mailed to RC from time to time. This information is merged by RC to develop the regional database.

#### **5. Utilization**

A web page will be created. This will link the regional database, which could be searched online. Links to RC and NCs and also to libraries, organizations and experts associated with the subject will be established. RC will issue a Quarterly Bulletin (printed) containing new additions.

The Regional Database will be available on CD ROM. New additions will be e-mailed to NCs, which create if necessary mirror sites of the regional database.

#### **6 Data Base**

The proposed regional database would help sharing information on insect pests and their management. Pest control, use of pesticide, pest damages, effects of chemicals on the environment, production of pesticides are some of the key issues relating to pest management. The database will capture experiences and knowledge on the subject and make them available to those who are concerned.

The database will provide information on:

- a) monographs, reports, journals, newsletters, journal and newspaper articles, conference papers
- b) laws, regulations, patents, standards
- c) statistics and data
- d) photos, charts, slides, video and other AV material
- e) bibliographies, directories, databases and other reference sources.
- f) experts, research personnel

- g) organizations, companies, societies
- h) projects
- i) chemicals

Subjects covered:

Entomology , biotechnology,  
Pest control (biological and chemical)  
health hazards  
environment (water and air pollution)  
Insecticides (production, distribution and marketing)  
agricultural production (pesticide use, yield, protection, storage)  
legal aspects (regulations, laws)  
indigenous knowledge

Standardization: Following standards are required. The Management committees should formulate these standards.

- a) subject fields
- b) selection of information.
- c) thesaurus
- d) Data format and input sheet
- e) Software (cds/isis is suggested)
- f) Method of transfer of data
- g) Output formats
- h) Method of dissemination and access to database
- i) Method of document delivery

Collection of information:

A participating library is expected to forward the following information:

Books, articles, papers, thesis, reports in the library  
Research personnel and experts  
Research projects  
Pesticides  
Organizations dealing with pests and pesticides (manufacturing, storage, distribution, marketing)  
Pests  
Photos and AV

Outputs

The outputs should be decided by the regional committee. Following are suggested:

Regional database (CD ROM)  
Regional database (internet)  
Web page with database search facilities and online requesting of documents/information by e-mail

New additions (printed bulletin)  
Directory of Organizations  
Directory of Experts  
Directory of Projects  
Inventory of insect pests, pest damages  
Photo gallery of insect pests (internet)

#### **7. Training**

Training will be organized at the national level. NC is responsible for training the library personnel in data collection, analysis and data transfer. Training material prepared by one NC will be useful for other national center. Trainers could be shared.

RC should prepare guidelines and instructional material. These should be made available to NCs.

#### **8. Budget**

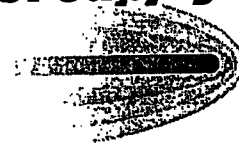
The pilot project requires funds to cover regional and national expenditure. NC should work out a strategy to raise funds for creation of the national database, national repository, national training, national committee, etc. A suitable donor should be approached to solicit funds for regional expenses.

***COPYRIGHT IMPLICATIONS OF DOCUMENT  
SUPPLY***



**D. M. KARUNARATNA**

## ***\* Mode of Supply***



- Document
- Electronic
- Others

## ***\* Copyright***



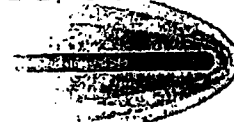
- Basic Norms
- SAARC National Laws
- International Obligations

## ***Protected works***



- Original literary & artistic work
- Derivative works
- Expressions & Ideas
- Mode or Form of Expression

## ***\* Rights Protected***



- Economic- reproduction, communication & translation etc
- Moral – authorship /distortion etc
- Duration
- Limitations

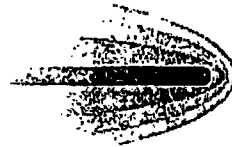
## ***\* Ownership***

- Authors & heirs
- Employees & Commissioned works
- Assignment
- Licensing

## ***\* Enforcement***

- Infringement
- Civil litigation
- Criminal sanctions
- Customs
- Collective & individual management

## ***New Dimensions***



- Reprography
- Home-taping
- Computer programs
- Databases
- Digital Transmission etc