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Power Information and Communication Network (POWERICONET): A Proposal

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Introduction

"Tamasomam Jyotirgamayah" (O Mother! Lead us from darkness to light) - has always been the essence of Indian spiritual being. Ethereally speaking, it has also been the wish of the modern man to escape from darkness to light- both metaphysically and metaphorically. The means that man has invented to meet this end is nothing else than the electricity. Today, it would be as much naïve to imagine the modern man without electricity as nihilistic to imagine the fish out of water (Razdan, 2003). Electricity is not a matter of life and death. It is a lot more important than that. Light is life. No nation can become a developed country without proper and efficient system of electricity. Universal power supply is the primary responsibility of a welfare state. Hence, it is one of the critical infrastructure on which sustainable economic growth of any country depends.

Hydroelectric Power

The term "Hydro" is derived from the Greek word for wate. The force of gravity causes water to flow downwards. The downward motion of water contains kinetic energy which is converted into mechanical energy and consequently into electrical energy in hydroelectric power station. Electric power generated with the help of falling water – propelled Turbines, is called Hydroelectric Power (Prasad, 2000). In general, falling water is channeled through a turbine, which converts the water's energy into the mechanical power.

Hydropower is one such resource, which is renewable, non-polluting, environmentally friendly and cheapest source of energy. The hydro power plants contribute significantly to the development of the area surrounded within and outside the project area since a network of roads and bridges are laid for the project, which connects the local area to the outside world and opens large number of avenues for the development of the area (Verma, 1996). India's first hydro station was commissioned in 1897 at Darjeeling. Since then many mega projects have come up and many more are in the pipeline. Although hydropower is considered a renewable and economical source of energy, yet its share has decreased in post independent India.

Due to the imminent oil price rise and depleting resources of natural fuel, the priorities of power sector are focused on the development of hydropower for capacity addition in forthcoming years. At present, the Ministry of Power (MOP) is the nodal agency and is concerned with the perspective planning and policy formulation in the power sector. The CEA (Central Electricity Authority), constituted under the Electricity (Supply) Act, 1948 assists the Ministry of Power (MoP) in all its technical and economic matters and is responsible for developing a sound, adequate, uniform policy for the control and utilization of the national power resources. All the power sector industries, i.e., Thermal, Hydro, Nuclear, Renewable, Wind and such other organizations/ research institutions are available under one roof of Ministry of Power.

Key Players in the Hydroelectric Power Sector

The following corporations are engaged in generation and transmission of hydropower in India (Mathur, 2003).

- National Hydroelectric Power Corporation Limited (NHPC).
- North Eastern Electric Power Corporation Limited (NEEPCO).
- Tehri Hydro Development Corporation (THDC).
- Satluj Jal Vidyut Nigam Limited (SJVN).
- Bhakra Beas Management Board (BBMB).
- Damodar Valley Corporation (DVC).
- National Thermal Power Corporation Limited (NTPC).

Role of Hydroelectric Power Libraries

In order to satisfy information needs of the users of such organizations, libraries have been setup. However, the genesis of power sector libraries is very difficult to trace because there is no evidence to focus light on it. Moreover, there is no resource for identifying the status and importance of power sector libraries in India. Although the libraries in India are undergoing significant change in their functions, yet the libraries attached to the institutions in the power sector are still lagging far behind. The present study provides the organizational structure of the power sector libraries, availability of sources and services as well finds out the existence of resource sharing and networking amongst such libraries in India.

Comparative Study of the Hydropower Sector Libraries

Keeping in view the objectives of the study, the data was collected using a questionnaire (Appendix-I) which was got filled from the chief librarians (called managers/library officer/library incharge, etc.) of seven hydropower sector libraries mentioned above. The data has been analyzed below with the help of the tables.

Table 1: Library Staff

Organization	Library Staff			
	Professionals	Semi-Professionals	Non-Professionals	Total
NHPC	15	Nil	6	21
NEEPCO	Nil	Nil	3	3
BBMB	Nil	Nil	2	2
SJVN	1	Nil	Nil	1
DVC	2	Nil	3	5
NTPC	6	Nil	4	10
THDC	Nil	Nil	3	3

Table. 1 provides a comparative overview of the total number of library staff in the libraries under study. It is clear from the table that NHPC possesses the maximum number of library professionals (i.e., 15), followed by NTPC, (i.e., 6) and DVC (i.e., 2). However, there is no professional librarian employed in the libraries of NEEPCO, BBMB and THDC to provide the library services to their users.

Table 2: Budget

Organization	Library Budget		
	Periodical,(CDRom/Online/ Printed)	Books/ Furniture	Total
NHPC	15 lakhs	5 lakhs	20 lakhs
NEEPCO	Not Specific	Not Specific	1.5 lakhs
BBMB	Not Specific	Not Specific	Not specific
SJVN	3 lakhs	2 lakhs	5 lakhs
DVC	Not Specific	Not Specific	Not specific
NTPC	40 lakhs	20 lakhs	60 lakhs
THDC	2 lakhs	1 lakhs	3 lakhs

Table 2 indicates the budgetary distribution in hydroelectric power sector libraries in India. It is clear, that NTPC has maximum budgetary provision for its library followed by NHPC. The NPTC, SJVN and NHPC library spend about 70% of their total budget on subscription of Periodicals (CD ROM/Online/ Printed). DVC and BBMB do not have any specific budgetary allocation for their libraries. The library of NEEPCO, however, has not segregated their library budget in specific ratio for various categories.

Table 3: Library Collections

Library Collections	NHPC	NEEPCO	BBMB	SJVN	DVC	NTPC	THDC
Books	20000	1750	1000	2500	15000	11000	7000
Periodicals	134	5	7	35	18	160	Nil
Conference Proceedings	200	Nil	Nil	450	Nil	Nil	Nil
Technical reports	700	Nil	Nil	500	Nil	3000	Nil
Theses	1	Nil	Nil	5	15	Nil	Nil
Government Publications	400	Nil	Nil	150	Nil	Nil	Nil
Standards/Specifications	5000	500	4	400	15000	37000	2000
Patents	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Micro documents	150	Nil	Nil	12	Nil	162	Nil
Audio-Video material	9	Nil	Nil	50	Nil	Nil	25
Maps	100	Nil	Nil	70	50	Nil	5
Atlases	5	Nil	Nil	1	10	Nil	5
translations	Nil	Nil	Nil	15	Nil	Nil	Nil

Table 3 reveals the collections in various libraries of hydroelectric power organizations in India. It shows that the NHPC library leads in the books collection followed by the libraries of DVC and NTPC. Both NTPC and NHPC libraries have a good collection of periodicals. NTPC and DVC have a rich collection of standards/ specifications followed by NHPC library. Only one library, i.e., the library of SJVN has documents in the form of scientific and technical translations. However, no library has acquired any patent in its collection. Poor collection of NEEPCO and BBMB libraries can be attributed to the fact that these are not managed by the library professionals.

Table 4: Library Services

Library Services	NHPC	NEEPCO	BBMB	SJVN	DVC	NTPC	THDC
Reference Services	Yes	Yes	No	Yes	Yes	Yes	Yes
Current Awareness Services	Yes	Yes	No	Yes	Yes	Yes	Yes
SDI Services	Yes	No	No	Yes	No	Yes	No
Indexing Services	Yes	No	No	Yes	No	No	No
Bibliographical Services	Yes	No	No	No	Yes	Yes	No
Abstracting Services	No	No	No	No	No	No	No
Translation Services	No	No	No	No	No	Yes	No

Reprographic Services	Yes	Yes	No	Yes	Yes	Yes	No
ILL	Yes	No	No	Yes	Yes	Yes	No
Document Delivery Services	Yes	No	No	Yes	Yes	Yes	No
CD-ROM databases/Online Searching	Yes	No	No	No	No	Yes	No
Internet Browsing	Yes	No	No	Yes	Yes	Yes	No
Library Networking	No	No	No	No	No	No	No

Table 4 depicts the library and information services being provided by the libraries under study. All the libraries provide reference and current awareness services with the exception of the library of BBMB. Four libraries, i.e., the libraries at NHPC, SJVN, DVC and NTPC provide document delivery services and the Internet browsing facility to their users. The libraries at NHPC, SJVN and NTPC provide SDI services. Inter library loan facility is being provided by the libraries of NHPC, SJVN, DVC and NTPC. The libraries of NHPC, DVC and NTPC also provide bibliographical services. Most of the libraries provide reprographic services with the exception of BBMB and THDC. Only one library, i.e., the library of NTPC provides translation services to its users. NTPC and NHPC library also provide CD-ROM databases as well as online searching facility to their users. No library, however, provides abstracting services. It is clear from the table that BBMB has not paid much attention towards its library and in the absence of the professional staff, no such services are being provided. The table also indicates that the libraries of NTPC, SJVN and DVC bring out information bulletin for their users. This may be because of the presence of professionals in these libraries. The table clearly indicates that no library network exists at present in such libraries.

Table 5: Library Software Used

Organization	LIBSYS	CDS/ISIS	WINISIS	TECHLIB	SOUL
NHPC	Yes	No	No	No	No
NEEPCO	No	No	No	No	No
BBMB	No	No	No	No	No
SJVN	No	No	Yes	No	No
DVC	No	No	No	No	No
NTPC	Yes	No	No	No	No
THDC	No	No	No	No	No

Table 5 reveals the software used for library automation purposes in different libraries under study. Libraries of NTPC and NHPC use LIBSYS software for library automation and library of SJVN uses WINISIS software for information storage and retrieval. However, the libraries of NEEPCO, BBMB, THDC and DVC have not automated their libraries yet.

Table 6: Automation of Housekeeping Operations

Organization	Circulation	Acquisition	Cataloguing	Serial Control	OPAC	Report Generating
NHPC	Yes	Yes	Yes	No	Yes	No
NEEPCO	No	No	No	No	No	No
BBMB	No	No	No	No	No	No
SJVN	No	Yes	Yes	No	Yes	No
DVC	No	No	No	No	No	No
NTPC	Yes	Yes	Yes	No	Yes	No

THDC	No	No	No	No	No	No

Table 6 reveals the status of the house keeping operations in the hydropower sector libraries in India. It also reveals that the libraries of NHPC and NTPC have automated their acquisition, circulation as well as cataloguing work, whereas the library of SJVN has automated only the acquisition and cataloguing work. Not even a single library in hydropower sector under study has automated Serials Control and Report generation modules as yet.

Table 7 below reveals the librarians perceptions of resource sharing and networking in libraries. The librarians of SJVN, DVC and NTPC strongly agree with the fact that it is more beneficial to serve patrons from locally owned materials than through resource sharing, whereas the librarians of NHPC disagree with it. Since the libraries of NEEPCO, BBMB and THDC are being looked after by the non-professionals, their perception is neutral. The librarians of SJVN, DVC and NTPC agree with library resource sharing as beneficial only to special groups of libraries, while the librarian of NHPC disagrees with it. However, the librarians of NHPC, SJVN and NTPC feel that participation in a network will not cause the libraries to lose their identities, while the librarian of DVC agrees with it. The librarians of SJVN and DVC disagree with the fact that the libraries should place increasing emphasis on materials held in other libraries, while NTPC and NHPC agree with it. The librarians of the DVC, SJVN, NTPC and NHPC agree with the fact that notwithstanding the initial investment, library network willhelp the libraries to reduce expenditure and networks help in saving time of the professionals and increased provision of library services to the clientele. The librarians at the SJVN, DVC and NTPC disagree with the fact that no library can be self-sufficient, but the librarian of NHPC library strongly agrees with it.

Table 7: Librarians' perception of resource sharing and networking

Scale used: (5) Strongly Agree (4) Agree (3) Neutral (2) Disagree (1) Strongly Disagree.

Rates of Perception	NHPC	NEEPCO	BBMB	SJVN	DVC	NTPC	THDC
It is more beneficial to serve patrons from locally owned materials.	1	3	3	5	5	4	3
Library resource sharing is more beneficial to special libraries.	2	3	3	4	4	4	3
Participation in a network will cause the libraries lose their identities	1	3	3	2	4	2	3
Libraries should place increasing emphasis on materials held in other libraries.	4	3	3	2	2	4	3
Libraries can be self-sufficient and operate as independent entities.	1	3	3	2	2	4	3
No libraries can be self sufficient	5	3	3	1	1	2	3
Library Network helps libraries to reduce expenditure.	5	3	3	4	4	4	3
Network helps to save time and increase provision of more services.	5	3	3	4	4	4	3

Table 8: Constraints for library networking

Factors	NHPC	NEEPCO	BBMB	SJVN	DVC	NTPC	THDC
Financial constraints	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limited staff	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Technological problems	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lack of training	No	Yes	Yes	Yes	Yes	Yes	Yes
Ambiguous governance structure of the network	No	Yes	No	Yes	Yes	No	No
Attitudes of professionals	Yes	Yes	Yes	Yes	Yes	No	Yes
Fear of loss or damage of materials	Yes	Yes	Yes	No	Yes	No	Yes

Table 8 reveals the problems observed by the librarians for networking of power sector libraries. All the librarians of hydropower sector libraries under study agreed with the problems of financial constraints as well as the availability of limited staff for participation in the networking process. Librarians of

DVC, SJVN, and NEEPCO agreed with the ambiguous governance structure of the network, whereas the librarians of NHPC, BBMB, THDC and NTPC did not agree with it. The librarians of all the libraries except of NTPC felt the negative attitude of professionals towards networking and resource sharing as another factor for participation in library networking. However, all the librarians working in the hydropower sector were in agreement with the technological problems related to networking of their libraries. All the librarians of the hydropower sector agreed with the lack of training on the use of network at the top management, which affects their participation in library networking process, whereas the librarian of NHPC did not agree with it. The librarians of NHPC, BBMB, THDC, NEEPCO and DVC fear the loss or damage of materials if lent out to other libraries, whereas the librarians of SJVN and NTPC do not think so.

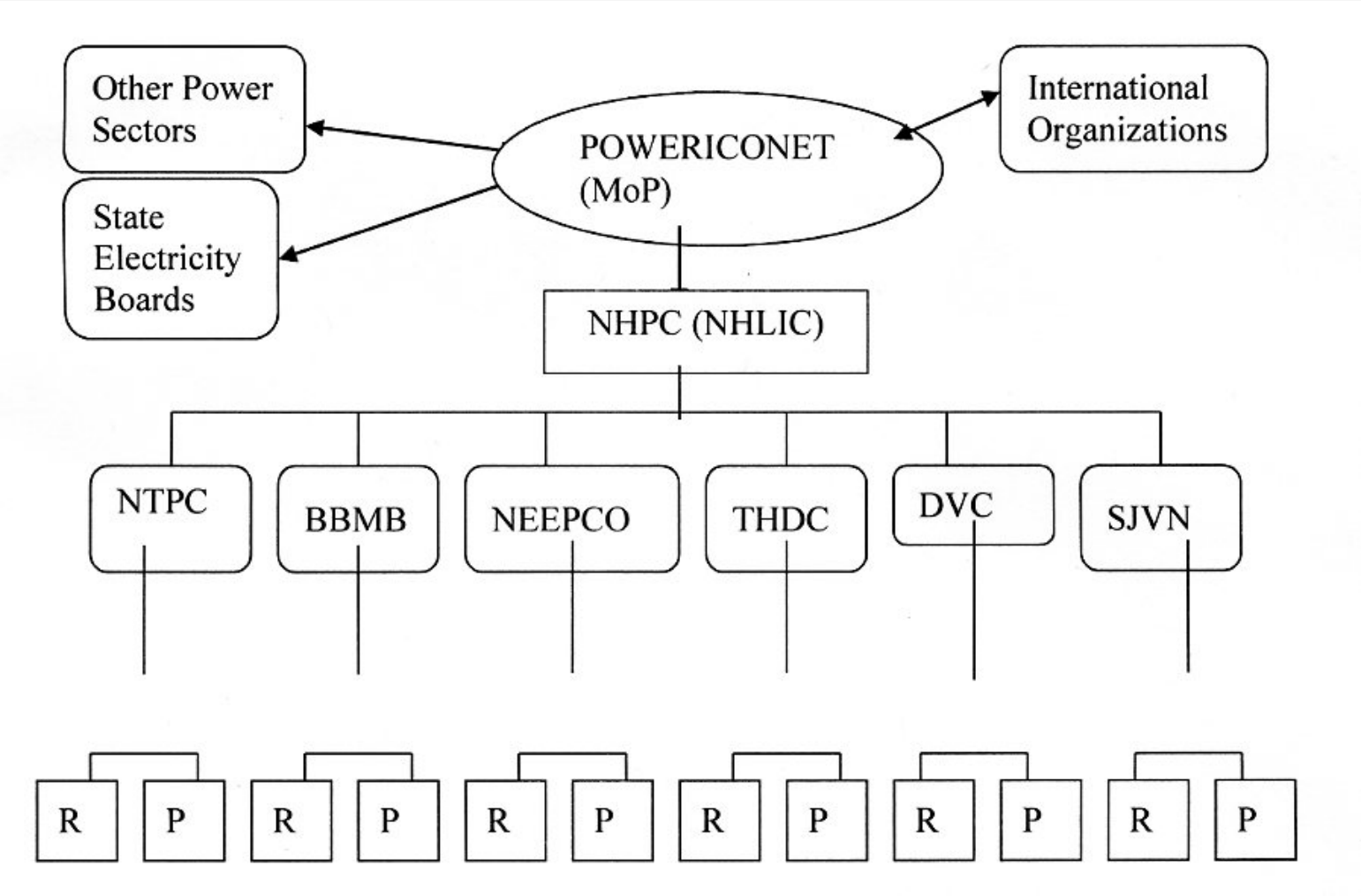
6. Networking of Hydroelectric Power Sector Libraries:

Hydropower sector library is an institution that intends to support the administrative agencies of the power sector including government, public sector, autonomous bodies and private sector through its services. As is clear from the above analysis, the libraries attached to NHPC, NTPC, SJVN and DVC are better off and provide more services to their users. This may be because of the presence of professionals in these libraries. The libraries of BBMB, NEEPCO and THDC have not paid much attention towards their libraries in the absence of any professional staff. Moreover, there is a lack of cooperation and coordination amongst such libraries in India. As a result, it has become a difficult task on the part of researchers, engineers, information intermediaries and policy makers to meet their day-to-day information needs. Keeping in view these facts, a network model for such libraries has been suggested below by the name of POWERICONET.

7. POWERICONET: A Proposal

It is proposed that Power Information and Communication Network (POWERICONET) be established for the hydropower sector libraries in India so that the hydropower personnel can have timely access to their information requirements.

Figure 1: Proposed POWERICONET



R=Regional Library

P=Project Library

NHLIC = National Hydropower Library & Information Center

MoP= Ministry of Power

Objectives

The objectives of the proposed POWERICONET would be as follows:

i. To identify the existing infrastructure of the power sector industry in India.

ii. To identify the areas of specialization of the working Engineers and Technologists.

iii. To determine their information needs.

iv. To identify the modes of assessing the information as preferred by them while seeking the required information.

Functions

The functions of the proposed POWERICONET would be as follows:

i. To act as an active network of computer based information database of all power sector information having links with other national and international networks;

ii. Links with power sector's allied organizations to collect and generate structured information for the users, such as policy makers, administrators and engineers;

iii. To serve as a repository and ultimately to organize a databank for all power sector information;

iv. To access resources in allied areas like Thermal Power, Nuclear Power, etc.;

v. To evolve various standards and uniform guidelines in techniques, methods, procedures, and services for adoption by the participating hydropower sector libraries so as to facilitate pooling, sharing and exchanging resources and services;

vi. Reduce unnecessary duplication of the resources;

vii. To promote sharing of resources and improve mutual co-operation amongst the hydropower sector libraries;

viii. Provide alerting services as well as compile a union catalogue of the documents available in the libraries of hydropower institutions and Organizations.

Organizational Structure

It is proposed that the POWERICONET should be a National mission. This network should be developed through a mutual cooperation amongst the Ministry of Power and all the major hydroelectric power sectors institutions in India. National Informatics Center can be requested to maintain the POWERICONET. It should be an integrated library and information system comprising different operational units covering the entire hydroelectric power sector industry in India as shown in the proposed POWERICONET (Fig. 1). National Hydroelectric Power Corporation (NHPC) can be considering as the "National Hydropower Library Information Center (NHLIC)" as it has better infrastructure in comparison to other organizations.

Implementation

Implementation of the proposed POWERICONET should be carried out in three phases.

The phase wise implementation tasks to be undertaken would be as follows:

Phase-I

i. Automation of the libraries and information centers at PICs and RICs.

ii. Setting up of communication infrastructure.

iii. Creation of machine-readable catalogue.

iv. Providing training to the existing staff at PICs and RICs.

Phase-II

i. Setting up of the network.

ii. Linking of the participating libraries and information centers.

iii. Introduction of various user services through network, e.g., Union catalogue, document delivery services, information bulletin boards, etc.

Phase-III

i. Bringing all the power sectors organizations, associations and research organizations under the proposed POWERICONET through Wide Area Network.

ii. Collaboration with other local, regional, national and international networks.

Issues before the Proposed POWERICONET:

While having a fresh look at the various issues involved in networking and resource sharing amongst the libraries of hydropower sector organizations under the proposed network, following issues may be resolved before POWERICONET is launched.

a. Infrastructure: All the libraries of the participating organizations must have minimum infrastructure including computer, laser printer, Internet connectivity, e-mail facility, etc.

b. Professional manpower: As the library is an important unit of its parent institution for collection, collation and dissemination of information resources, the concerned authorities must appoint professional librarians to manage their respective libraries.

c. Development of Websites of the participating libraries: Institutional/ Organizational web site with sufficient links to their library for each participating hydropower sector library will facilitate online access to the available information to the network partners.

d. Development of information resource base: State-of-the-art network communication for transferring documents in virtual, digital and analogue formats may gradually be developed.

e. Network services: Union Catalogues, ILL, Information Bulletin Boards and Document delivery services, etc. may be provided on demand through e-mail, electronic file transfers, hard copy, etc.

f. Network Finance: Financial requirements for hardware and software augmentation and database development at the respective organizations may be met from within the resources of the organization or as one time grant from the Ministry of Power or the World Bank for the effective working of the proposed network.

g. Use of POWERICONET: An exclusive web site for POWERICONET with sufficient hyperlinks may be developed for web publishing and for more visibility and accessibility. User-orientation programmes may be organized regularly to orientate them for effective utilization of the POWERICONET information services.

Conclusion

A well-designed network of organizations assumes importance in the context of the development of a country. Establishment of organic linkage of organizations is essential through networking for proper transfer of information. In this connection, the efforts under the proposed POWERICONET through a variety of projects like building up of library database, web page development, web enabling of information are all to be pursued vigorously. The proposed network in the hydropower sector, i.e., POWERICONET, will overcome the geographical barriers and will help in furthering knowledge in the area of power/energy as well as helping the MOP to achieve its target.

The proposed network in the hydropower sector will overcome the geographical barriers. Initially, there may be a problem of funds to purchase computers and other related equipment. However, the problem can be solved with the help of multilateral organizations, like the World Bank, or government funding. Later on, to sustain such a system, participating organizations will be dependent on their respective organizations for funds or will have to generate resources. It is very important that the attitude of the employee of the participating organization should be cooperative. In addition to learning about the technical aspect of information technology and its uses in the resource sharing, there is a need to make an effort for the attitudinal change among the human resources in the libraries. One of the positive features of the proposed network is that it can be developed in stages. As more and more organizations and institutes are willing to be part of the network, they can be involved in it. This network will help in furthering knowledge in the area of power/energy. Hence, there is an urgent need to have networking of hydropower libraries in India so as to achieve the vision of Ministry of Power i.e. Electricity to all by 2012 (www.powermin.nic.in).

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