

II - C. TECHNOLOGY MANAGEMENT PROGRAMME

1. PREAMBLE

The Technology Management Programme continued its operations during the year 2006-07 and completed a number of activities that were targeted for the year.

2. OBJECTIVES

The major objective of the Technology Management Programme is to provide technical inputs and support mechanisms for efficient transfer and management of technology. Technology management aspects have gained special significance in the current era of intense technological competition. The programme is, therefore, aimed at enhancing technology management capability in industry, R&D and consultancy organizations, academic institutes and other establishments.

3. ACTIVITIES

The programme is aimed at enhancing the skills in the efficient management and transfer of technology. The major activities undertaken are aimed towards:

- Enhancing the knowledge base in respect of technologies specific to the nation, particularly rural based and region/sector specific technologies by undertaking analytical, technology status and development studies;
- Undertake research studies and policy research for providing technology information services to Government Departments, researchers, etc;
- Promoting industry-institute interaction by setting up resource centres on technology management in appropriate locations;
- Enhancing academic interest and contribution through active collaboration with academic institutions;

- Maintaining the database of approved foreign collaborations, undertaking studies and extending assistance in transfer of technology;
- Instituting state level research organizations and other agencies to take up activities in the realm of Technology Management;
- Information dissemination on Technology Management related aspects through newsletters, manuals, and other forms
- Undertaking case studies for ensuring a better understanding of Technology Management in the Indian
- Conducting awareness programmes, training courses, seminars and management development programmes, and undertaking curriculum development for various training programmes.

4. WORK COMPLETED/ UNDER-TAKEN DURING THE YEAR

4.1 Analytical, Technology Status and Development Studies

Sector-specific and region-specific studies of technologies, including rural based technologies are important in identifying technology gap, ensuring technology transfer and enhancing efficiency of industries. Some of the studies initiated in this regard are listed below:

Studies on 'Potential of Minor Forest Produce (MFP) Based Industries in Select Regions'

Studies on minor forest produce (MFP)

industries have been taken up in Gujarat through Gujarat Industrial and Technical Organization Ltd. (GITCO); in Tamil Nadu through Industrial and Technical Consultancy Organization of Tamil Nadu Ltd. (ITCOT), in West Bengal through West Bengal Consultancy Organization Ltd., (WEBCON) Kolkata; in Andhra Pradesh through APITCO, Hyderabad. The broad objective of these studies is to assess the status of MFP based industries in these states including the technology in use and to suggest measures towards generation of value added products based on MFP as raw material. The studies on Potential of MFP in Andhra Pradesh, Gujarat, Tamil Nadu and West Bengal have been completed and the reports have been brought out.

Study on Status of Technology in Selected Cottage and Tiny Industries of Madhya Pradesh and Chhattisgarh

The study was entrusted to MP Consultancy Organization Limited (MPCON), Bhopal. The objective of the study is to select cottage and tiny units in some districts of the States to assess: the status of technology; the need for technology upgradation; potential for productivity enhancement and value addition including export potential. The study has been completed and the final report has been received.

A Study on the Status and Potential of Karaya Gum

The study was entrusted to UP Industrial Consultants Limited (UPICO), Kanpur. The primary objective of the study is to identify actual availability of karaya gum viz-a-viz its plants from the forest areas or otherwise and its possible utilisation by the industry. The study has been completed and the final report has been received.

Study on the Technology Status on Isabgol based Industries

This study was taken up by Consultancy Development Centre (CDC), New Delhi. The main objective of the study is to study the status of the industries based on isabgol by carrying out a market survey about its availability, its consumption level and future potential. The study has been completed and the final report has been brought out. The report highlights important medicinal applications of isabgol, status of isabgol industry in India, international scenario of the isabgol industry, research and development in the isabgol industry in-house R&D, selected clinical results, specifications, technology absorption, thrust areas and potential for new industry. Findings of the study were disseminated through a workshop organized in New Delhi through CDC.

Study on Status of Technology and Scope of Technology Improvement in Handloom, Powerloom, Readymade Garments Sector in West Bengal by West Bengal Consultancy Organization Ltd. (WEBCON), Kolkata

The study was taken up by West Bengal Consultancy Organization Ltd. (WEBCON), Kolkata. The objective of the study is assessment of technology status and scope for improvement in the handloom, power loom and ready-made garments sector in West Bengal. The study has been completed and final report has been prepared. The report has brought out an overview of the handloom, powerloom and readymade garment industries in West Bengal, technologies in use, technologies for improvement of these sectors. It includes a SWOT analysis of the technologies and the practices in use, brings out the availability of newer technologies, issues involved in marketing, raw material, infrastructure, etc. for improving the productivity in these sectors.

Study on Development of Fisheries and Various Species of Bamboo in NE states

The study has been entrusted to the North Eastern and Technical Consultancy Organisation Limited (NEITCO), Guwahati. The study would collect data on quantitative availability and characteristics of various species of bamboo as well as fish in the whole of North-Eastern region and try to analyse these data to arrive at conclusions for the best possible use of these materials by the industry and others in the region. The project is underway.

4.2 Studies on Technology and Innovation Management Issues

Technological dynamism has become the order of the day and new approaches; tools and techniques are being developed in technology and innovation management areas. Studies in such emerging areas for harnessing knowledge creation, technology transfer and technology up-gradation, have been taken up. These are listed below:

Study on the Status and Prospects of Industry-Institute Collaborations in Emerging Technologies by Confederation of Indian Industry (CII), Gurgaon

The study has been entrusted to Confederation of Indian Industries (CII), Gurgaon. The basic objective of the study is to bring out the status and prospects of industry-institute collaborations in the field of nano technology. CII prepared a draft report and was discussed in an Evaluation Committee Meeting at DSIR. The finalization of the report is under progress.

Study on 'Management of Technology in the Automotive Sector'

The study has been assigned to Management Development Institute (MDI), Gurgaon. The

main objective is to study aspects related to management of technology in the automotive sector that is having immense potential to grow and develop further in the country, create a dedicated research team to this end and suggest measures for furthering innovations in this vibrant sector. The draft report has been brought out by MDI, which was discussed in an Evaluation Committee Meeting. The report is under finalization.

Study on 'Social Capital and Technology'

The study has been undertaken in association with T A Pai Management Institute (TAPMI), Manipal. The study discusses in detail the manner in which technology has shaped and continues to shape social capital among professional groups. Both a qualitative as well as a statistical analysis has been undertaken, as part of the project. The draft report was evaluated by the Evaluation Committee and the report has been finalized.

Technology Audit of Fish Processing Industry in the Coastal Districts of Karnataka

The project has been taken up by NITK Science & Technology Entrepreneurs' Park, Karnataka. The objective is to assess the existing practices for fish harvesting and evolve innovative and cost effective technologies for the same and to assess the present status of post harvest technologies. The project is underway.

Study on Common Modern Tool Room Facility

This research study was carried out by the Centre for Technology Management at PSG Institute of Management, Coimbatore with a view to identify the requirements of tool room facilities of SMEs in and around Coimbatore. The study has been completed.

4.3 Research Studies on Specific Issues in Technology Transfer, Technology and Innovation Management

There is need for serious research on management of technology in different sectors to develop an objective understanding of complex situations demanding a focused direction. Such research efforts not only result in comprehensive information of a specific nature but also enable objective decision-making. The studies undertaken during the year in this regard are listed below:

Study on 'Women Representation in Corporate R&D'

The study was assigned to IIM Calcutta. The basic objective of the study was to examine the determinants of women leadership in R&D Departments of various corporate organizations. Phase-III of the project taken up to evaluate explicit gender policies in organizations and identify specific issues with reference to high growth companies as against conservative industries has been completed.

Development of a Model for Evaluation of Innovations in SMEs

The project has been taken up in association with IISc., Bangalore. The objective was to develop a model of innovation in select entrepreneurial technology based small and medium enterprises drawn up from amongst select sectors. The project has been completed and the finalized report has been brought out.

R&D Project Monitoring and Control System for Indian Organizations

This research study conducted by the Centre for Technology Management at IIT Bombay has been completed. The objective of the study was to review existing tools for R&D Project Monitoring and Control Systems and to develop a framework to monitor and control the progress of the R&D projects. The

report has brought out the features of systems implemented by Indian organizations to control and monitor R&D projects.

Case Study on Technology Management: Roots of Competitiveness

The Centre conducted this case study for Technology Management at PSG Institute of Management, Coimbatore with the objective of studying various factors contributing to the competitiveness. It has been completed. The study has brought out how both innovation and technology are critical in determining the position of a firm towards excellence in the performance.

Study on 'An Empirical Analysis of the Status of Collaborative R&D in India'

The study has been entrusted to IIM Indore. The main objective of the study is to understand the perception of Indian industries related to collaborative R&D, identify the factors that impede Indian industry to carry out collaborative R&D, estimate the impact intensity of these factors on the probability of adopting collaborative R&D and bring out the difference across industries or technologies. An Evaluation Committee evaluated the draft report and the report is under finalization.

Study on 'Managing Strategic Transformation of High-tech Firms in India'

The study has been entrusted to IIM Calcutta. The study would research into the process of strategic transformation by companies that wish to move up the value chain, in the case of two specific industries viz. pharmaceutical and information technology. The draft report has been received.

Study on 'Building Technological Capabilities Through Strategic Development of Industrial Clusters'

The study has been entrusted to IIM Ahmedabad. The project aims to broadly

study the mechanisms that firms use to learn from each other in order to enhance their technological capabilities and consequently their competitiveness and identify what allows clusters to achieve this objective. The draft report has been received

Research Study on Competitiveness Evaluation for Emerging Technologies

This study has been taken up by Department of Management Studies, IIT Delhi. The basic objective of the study is to identify key elements of strategy of competitive countries in emerging industries to enhance competitiveness of their emerging industries; understand the dynamics of competitiveness in emerging industries to identify key success factors; and evolve criteria of evaluating competitiveness of the industries and assess the availability, cost and quality of data for the purpose. The draft report of the study has been received.

Study of Knowledge Management in Auto Component SME Clusters in the NCR Region

The research study has been taken up by the Institute for Integrated Learning in Management (IILM), New Delhi. The objective of the study is to study the current status of knowledge management practices in the Auto Component SME Clusters covering technologies, process and people aspects of knowledge management and to identify strength and weaknesses in knowledge management practices in this sector. The draft report of the study has been received.

4.4 Case Studies Covering Technology Management Aspects

The objective is to generate learning from best practices and to study and analyze the manner in which technology is managed in Indian enterprises. Apart from being useful for pedagogic use, these case studies also

provide useful information to consultants and executives from industry.

A Case Study on Operational Strategies of Pump Industries

This case study was conducted by PSG Institute of Management, Coimbatore under the Centre for Technology Management. The objective of the study was to study the operations, strategies in successfully operating pump industries and to compare the strategies between the companies doing extremely good. It has provided a framework to fix solutions for the unsuccessful pump industries to compete and survive in the competitive environment.

A Case Study on the Industrial Units of Govindpura Industrial Cluster in Bhopal.

This case study was conducted by Madhya Pradesh Council for Science & Technology (MPCOST), Bhopal under the Centre for Technology Management supported. This case study has brought out various issues related to technology management aspects and is based on inputs provided by 42 small scale engineering enterprises located in the Govindpura Industrial Area of Bhopal covering mainly heavy and light engineering, electrical equipment and insulation, transformer and allied products and machine shops.

A Study on Technological Aspects of Medicinal Plants in Madhya Pradesh

This case study was conducted by Madhya Pradesh Council for Science & Technology (MPCOST), Bhopal under the Centre for Technology Management. The study has brought out the availability of Medicinal Plants in the State of Madhya Pradesh, cultivation and harvesting of medicinal plants, market opportunities, existing processing technologies, and technologies for value addition, etc.

Case Studies on Industrial Clusters by IIT, Kanpur

Case Studies on select industrial clusters in the State of Uttar Pradesh has been taken up in association with IIT, Kanpur. The objective is to understand and document the issues that underline the sustained competitive advantages of three clusters – the leather processing cluster of Kanpur, the silk producing cluster of Varanasi and the brass work cluster of Moradabad. The draft report has been discussed in an Evaluation Committee meeting and the report is under finalization.

4.5 Collaborative Work with Academic and Research Institutes

In order to give the necessary thrust to formal education and develop a base of teaching tools on technology management aspects, the DSIR has been collaborating with academic institutes, especially those concerned with technical and management education. Management development programmes and projects on technology and innovation management in association with IIM Ahmedabad, IIM Kolkata and IIM Indore are under progress. Work taken up at IIT Bombay, IIT Kanpur, IIT Delhi, and IIT Madras as well as projects undertaken in partnership with other institutes, including ASCI Hyderabad, IISc Bangalore, PSGIM Coimbatore, NITK, Management Development Institute Gurgaon, T.A. Pai Management Institute Manipal, etc are also under progress.

4.6 Industry-Institute Networking with State Level, Research and Other Agencies on Technology Management

Interactions with several State level bodies across the country has been continued and collaborative activities have been taken up in partnership with Madhya Pradesh Council of

Science & Technology, Karnataka Council for Technological Upgradation, different State level Technical Consultancy Agencies including MPCON Bhopal, APITCO Hyderabad, NEITCO Guwahati, UPICO Kanpur, GITCO Ahmedabad, ITCOT Chennai, WEBCON Kolkata and CDC New Delhi.

4.7 Centres for Technology Management (CTM)

DSIR has initiated the setting up of Centres for Technology and Innovation Management in different locations of the country having access to information on aspects concerned with the subject that are of specific interest to the region and having expertise to advise and provide guidance on issues related to technology management. The activities taken up have been wide ranging: training, research, cluster development studies, case studies, scouting innovation, manpower development, interfacing between academia and industries, data generation, sharing of knowledge and providing solutions to industries, preparation of technology related policy studies, developing training tools and modules. The centres established are the following:

Centre for Technology Management (CTM) at PSG Institute of Management, Coimbatore

The activities undertaken included training programmes on different aspects of Technology and Innovation Management apart from a survey on technology issues in pump and foundry industry for assessing the status of the Coimbatore industry. Phases-I and II have been completed. The 3rd Phase has commenced during the year. Activities proposed include: identification of promising SMEs for focused attention, development of a local data base, conduct of technology upgradation and development programme for 6 units, organization of workshops/seminars,

conduct of work studies and case studies, a national level yearly journal on TM, preparation of audio visuals, CTM Newsletter and creation of a website, in addition to creation of a resource cell in the CTM. During the year, activities carried out include a 2-day workshop on Lean Manufacturing, an interactive programme on “How to license your technology?” one-day seminar on ISO/TS-16949 Automotive Standards and an Innovators’ Expo, a booklet on Patent Procedures, 12 issues of CTM newsletter, programme on Creating Leadership, a Study on Technology Upgradation in Pump Industry, a China Orientation Certification programme, introduction of an elective course on Technology Management for II year PG students, a Survey on Common Modern Tool Room.

Centre for Technology Management at Madhya Pradesh Council of Science & Technology (MPCOST), Bhopal

A number of activities related to technology management have been initiated under Phase I. The activities include specific region need based study reports, bringing out of a periodic publication, the organization of training programmes and workshops on specific Technology Management related issues and awareness generation programmes. A case study of the industrial units of Govindpura Industrial Cluster in Bhopal, and a study on Technological Aspects of Medicinal Plants in Madhya Pradesh were completed and reports finalized. The proposed phase-I activities were completed and a workplan for phase-II activities was approved by TAC and action was being taken to get necessary approval for implementation for support.

Centre for Technology Management at IIT Bombay

Work has been undertaken as set of collaborative activities under an MOU. Phase-

I had been completed earlier and Phase-II has completed now. Under these phases, activities taken up include: Management Development Programmes, Case Studies on TM aspects as well as research studies on contemporary TM issues, teaching courses, Newsletters on TM issues and development of a portal. Initiation of phase III is on the anvil. The phase-II activities of the Centre were taken up for implementation.

Centre at Karnataka Council for Technological Upgradation (KCTU)

Collaborative activities undertaken in association with the Karnataka Council for Technological Upgradation, Bangalore, a joint venture organization between the Central and Karnataka State Government, were continued. Cluster level case studies, focused training programmes, information dissemination of technology management aspects specific to the region and bringing out of newsletters are among the activities taken up during phase I. During the year, an audio visual programme on Technology management, covering initiatives under the MOU with KCTU, has been prepared. Phase I has been completed and continuation of Phase-II activities was approved by TAC and action was being taken to implement the same.

Centre at Administrative Staff College of India, Hyderabad

With the objective of building institutional capability in Technology Management, DSIR has partnered with ASCI. Three phases has been completed earlier and Phase-IV activities are now being completed.

4.8 Information Dissemination

To enhance understanding and appreciation of the importance of aspects concerned with management of technology, mechanisms for information dissemination on technology

management have been initiated. These include: Newsletters, Manuals, Paper contests on specific technology related issues, Compilations of articles, Audio-visual aids, Portals and others. Information that is region specific, or relating to globally world wide emerging aspects, or nationally important issues, or sector specific information and even general educative articles are all included to impart the requisite information and value, depending upon the actual medium or product, and its specific use.

Newsletters

DSIR has been bringing out newsletters on specific technology management aspects in association with IIT Bombay, PSGIM Coimbatore, KCTU Bangalore and MAPCOST Bhopal. An electronic newsletter developed in collaboration with IIT Madras has been launched. Seven issues have been published and the eighth is underway. The objective of the Newsletter is to enhance technological creativity and interest in technology development among various target groups. The newsletter features information on various technologies, case studies, and technology morphologies; and provide basic foundation in various aspects of technology management.

Portals For Information Dissemination

Portals and other interactive media were developed in association with ASCI Hyderabad, IIT Bombay, PSGIM, Coimbatore and other organizations.

4.9 Training/Interaction meets/Seminars/Management Development Programmes

During the year, the following twenty programmes have been organized.

- 10 workshops on Technology Management Issues – Prospects and Profits were organized in different places in the country in collaboration with CDC, New Delhi.
- A workshop on Technology Status in Isabgol based Industries in India was organized at New Delhi through CDC, New Delhi.
- Two workshops – one each on IT and HR Opportunities and Challenges were organized at Velammal College of Engineering, Chennai.
- A National Workshop on Technology Management and Human Engineering was organized in association with ICAI Business School at Pune.
- International Globelics Conference was organized in association with Centre for Development Studies at Trivandrum.
- Two international training programmes on Issues on Technology Management for SMEs in the developing countries – Challenges and Opportunities were organized in Pakistan and Vietnam in collaboration with CDC, New Delhi.
- A roundtable on issues before the National Knowledge Commission was organized in Hyderabad in association with ASCI.
- A Workshop on Lean Manufacturing and an interactive programme on How to license your technologies as well as Innovators' Expo were organized by Centre for Technology Management at PSG Institute of Management, Coimbatore.