II-C. TECHNOLOGY MANAGEMENT PROGRAMME

1. PREAMBLE

The Technology Management Programme continued its operations during the year 2007-08 and completed a number of activities that were targeted for the year.

2. OBJECTIVES

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

- Enhancing knowledge base in respect of technologies specific to the nation, including rural based technologies and region/sector specific technologies by undertaking analytical studies, technology status and development studies;

- Providing information to industry, Government departments and researchers through targeted research studies and policy research;

- Promoting industry-institute interaction by setting up resource centers on technology management in appropriate locations;

- Curriculum development exercises;

- Enhancing academic interest and contribution through active collaborations and memorandums of understanding with academic institutes;

- Providing assistance in efficient transfer of technology, through information in respect of foreign collaborations approved and analysis of such approvals as well as focused studies;

- Initiating state level agencies and research organizations to take up activities in the realm of Technology Management;

- Information dissemination on Technology Management related aspects through newsletters, manuals, and other forms

- Promoting an understanding of Technology Management in the Indian scenario through case studies of manufacturing and research organizations in the country, etc.

- Conducting awareness programmes, focused training courses, seminars and management development programmes, and providing guidance to trainers.

4. WORK COMPLETED/UNDER-TAKEN DURING THE YEAR

During the year, in addition to the on-going work, some more need based programmes and activities have been taken up.

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 which have been completed/ undertaken under this category include the following:

Studies on 'Potential of Minor Forest Produce (MFP) based industries in select regions'

Status studies of minor forest produce (MFP) and industries based on non wood forest produce of select regions have been undertaken. The study pertaining to the State of Gujarat has been taken up by Gujarat Industrial and Technical Organization Ltd. (GITCO); that of Tamil Nadu by Industrial and Technical Consultancy Organization of Tamil Nadu Ltd. (ITCOT); that of West Bengal by West Bengal Consultancy Organization Ltd., (WEBCON) Kolkata; and that of Andhra Pradesh by APITCO, Hyderabad. The reports are the outcome of surveys carried out in the respective States to assess the availability of MFP and also to assess the industries which are dependent on MFPs as raw materials for their industries. The studies analyze the status of technologies available in the region of concern and suggest measures towards generation of value added products based on MFP as raw material. Select project profiles relevant to the specific regions have also been brought out. The findings of the studies on Potential of MFP in Gujarat, and Tamil Nadu have been widely disseminated through the organization of workshops in Ahmedabad and Coimbatore respectively.

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 objective of the study taken up by West Bengal Consultancy Organization Ltd. (WEBCON), Kolkata was assessment of technology status and scope for improvement in the handloom, power loom and ready made garments sector in West Bengal. The report has brought out an overview of the handloom, powerloom and readymade garment industries in West Bengal, technologies in use and 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.

The findings of the study have been widely disseminated through a workshop organized in Kolkata during the year.

Study on development of beel fisheries and various species of bamboo in NE states

The study has been entrusted to the North Eastern and Technical Consultancy Organization Limited (NEITCO), Guwahati. The draft report brought out by NEITCO was discussed in an Evaluation Committee Meeting comprising of concerned Government Departments, industry and academic representatives, research agencies and experts. The report is based on an analysis of data collected on quantitative availability and characteristics of various species of bamboo as well as beel fisheries in the whole of northeastern region. Conclusions have been drawn and recommendations indicated to better the prospects of the involved agencies and individuals, both in the short term as well as in the long term.

Study on Status of Technology in Castor Oil & its Derivatives in India

The study has been entrusted to Gujarat Industrial & Technical Consultancy Organization Ltd. (GITCO), Ahmedabad. The objective of the study is to assess technology status and scope for improvement in the production of Castor Oil & its Derivatives in India. The report will broadly bring out an overview of the Castor Oil & its Derivatives in India, technologies in use, technologies for improvement of these sectors, research and development, a SWOT analysis of the technologies and the practices

in use, bring out the availability of newer technologies, issues involved in marketing, raw material, infrastructure, etc. for improving the productivity in these sectors. The project is in progress.

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, the status and prospects of industry-institute collaborations in the field of nano technology. The draft report brought out by CII was discussed in an Evaluation Committee Meeting attended by concerned industry representatives and experts. The report was revised on the basis of the recommendations made at the Meeting. The final report has been brought out and the project has been completed.

Study on 'Management of Technology in the Automotive sector'

The study was assigned to Management Development Institute (MDI), Gurgaon. The main objective was to study aspects related to management of technology in the automotive sector that have potential to grow and develop further in the country, and suggest measures for furthering innovations in this vibrant sector. The report has based its analysis on

general developments in the Indian automotive industry sector and on cases of technology development and innovations carried out by Sona Koya Steering Systems, Hero Honda. The report includes a case study of technology forecasting and assessment relating to use of magnesium in automobile vehicles. The study has been completed and the final report has been received.

Study on 'Social Capital and Technology'

The study has been undertaken in association with T A Pai Management Institute (TAPMI), Manipal. The study report is an outcome of research and analysis on 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 report concludes that Information and Communication Technology related developments have decisive impact on social capital. The research has indicated that social capital does promote better utilization of other forms of capital such as finance and human capital. The survey findings in respect of inter organizational linkages have led to an understanding of how ICT technologies can be dealt with to enhance social capital, which is seen to be an important organizational asset. The project has been completed.

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 of fish harvesting being deployed along the coastal districts of Karnataka and to suggest innovative and cost effective technologies for the same. An analysis of the present status of post harvest technologies in the region is also included. The draft report brought out by NITK-STEP was discussed in an Evaluation Committee

meeting comprising of representatives of concerned Government Departments, industry, academic and research organizations. Workshops have been organized to disseminate the findings. The report is under finalization.

4.3 Targeted Research Studies on Specific Issues in Technology Transfer 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 '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 from carrying 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 as well as technologies, in this regard. The draft report brought out by IIM Indore was evaluated by an Evaluation Committee comprising of representatives of concerned agencies and experts. The report has been finalized based on the recommendations of the Committee.

Study on 'Managing strategic transformation of high-tech firms in India'

The study has been entrusted to IIM Calcutta. The broad objective of the study is to research into the process of strategic transformation by companies that wish to move up the value chain, in the case of two specific industries, namely the pharmaceutical and information technology. The draft report was discussed in an Evaluation Committee. The findings indicate that a number of IT companies and Pharmaceutical firms have made strategic moves to be at the forefront of global leadership by making use of emerging opportunities. The report is under finalization.

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 submitted was discussed in an Evaluation Committee Meeting. The report brings out important factors involved in determining capabilities and productivity in clusters; and includes an analysis of the structure of the cluster – size distribution, characteristics of entrepreneurs, product composition and location in the cluster life cycle. The report has been finalized and the project has been completed.

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 a strategy to enhance competitiveness of emerging industries; understand the dynamics of competitiveness in emerging industries of different countries; 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 final report of the study has been received and its findings have been disseminated in a workshop organized in collaboration with IIT, Delhi and IIT, Bombay in Mumbai.

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

The project has been taken up by Institute for Integrated Learning in Management (IILM), New Delhi. Objective of the study the current status of knowledge management practices in the Auto Component SME Clusters covering the aspects of technology, process and people of knowledge management and to identify strength and weaknesses in knowledge management practices in this sector. An Evaluation Committee comprising of concerned experts and representative industry, academic and Government organizations reviewed the draft report. The report is under finalization.

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.

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 Department has been collaborating with academic institutes, especially those concerned with technical and management education. Different activities, inclusive of 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, IIT Madras has progressed. 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 and others have 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 were continued apart from continuing the existing collaborations with research institutions. 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, MITCON, Pune, GITCO Ahmedabad, ITCOT Chennai, WEBCON Kolkata and CDC New Delhi.

4.7 Centres for Technology Management (CTM)

Centres for Technology and Innovation Management have been set up in different locations of the country where there is access to information on aspects concerned with the subject that are of specific interest to the region of concern, expertise to advise and provide guidance on issues concerned with technology management, and generate long-term as well as short-term solutions. 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.

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

Phase III of the project is currently underway. The activities completed in Phase I & II include: development of a local data base of select industry SME units, three work studies and two case studies and organization of 6 workshops/seminars, publication of a booklet on Patent Procedures, twelve issues of CTM newsletter and Study on 'Technology Upgradation in Pump Industry'.

Survey on Common Modern Tool Room, preparation of audio visuals on technology management related aspects and augmentation of the content of the TM portal are in progress. Some of the programmes and publications are in the vernacular medium, so that the local SME industry participants at various levels can also benefit from the activities of the Centre.

Centre for Technology Management at MPCOST, Bhopal

After successful completion of Phase-I activities under the Technology Management Centre, Phase-II activities were started. The activities proposed include need-based sectoral technology status studies, case studies, theme-oriented workshops on emerging issues concerning Technology Management, short-duration training programme on TM, bringing out quarterly newsletter, development of a portal on TM, scouting/trouble-shooting services to the industries on TM aspects, etc. Priority activities with respect to the need and relevance of the industry for the State of Madhya Pradesh are being taken up in consultation with the State functionaries and organizations.

Centre for Technology Management at IIT, Bombay

Work has been undertaken as set of collaborative activities under an MOU with the School of Management at IIT Bombay. Phases I and II had been completed earlier.. Phase III has now been initiated with Management Development Programme on R&D Management for industry executives and one newsletter issue. A Programme Advisory cum Monitoring Committee has been set up and has met to finalize the work content of the phase. Case studies of select organizations, augmentation of portal content, training of trainers programmes for academic and industry participants, management development programmes for industry executives and other activities are under implementation.

Centre at Karnataka Council for Technological Upgradation (KCTU)

Collaborative activities 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 successful completion of phase I. An audio visual programme on Technology management, covering initiatives under the MOU with KCTU, has also been prepared. Phase-II has now commenced. Activities taken up include: studies on technology upgradation in select industry clusters of the State, training and human resource development, TM awareness programmes in targeted regions of the State, cases studies, preparation of audio visuals, and publications on TM.

Centre at Administrative Staff College of India, Hyderabad

Collaboration with Administrative Staff College for building institutional capability in Technology Management has been continued. Four phases covering a range of activities that have evolved over a period of time; including case studies of manufacturing and research organisations, technology policy studies, and training programmes on various TM issues; have been completed. Phase V has now been initiated comprising several activities that include a comprehensive Technology Management Case Study on a specific industry, Case Studies from Manufacturing Industry and research Organizations, Training Programmes on Technology Management aspects of two weeks duration each, Research Publications and augmentation of the Web enabled portal.

Centre for Technology & Innovation Management at IED Patna, Bihar

With the objective of developing technology management capabilities in the State of Bihar and to serve as a resource center, this Technology Management Centre is being set up at Institute of Entrepreneurship Development at Patna in Bihar. The project has been commissioned after completion of due formalities.

Centre for Technology & Innovation Management at IHBT, Palampur in Himachal Pradesh

With the objective of developing technology management capabilities in the State of Himachal Pradesh and adjoining areas to serve as a resource center, this Technology Management Centre is being set up at IHBT, Palampur in Himachal Pradesh. The project has been commissioned after completion of due formalities.

Support to the existing Centre of Innovation & Technology Management at IMI, New Delhi

With a view to develop technology management capabilities and create a greater awareness about Technology and Innovation Management, targeted training programme for trainers and awareness programme are being supported at IMI, New Delhi to be carried out by the existing Centre for Innovation & Technology Management at the institute. The project has been commissioned.

4.8 Curriculum Development

An initiative towards curriculum development in Technology management has been taken up and preparation of five course modules has prioritized. Each module consists of twenty topics and specific topic writers have been identified and task of writing had been assigned. Four course modules have been completed and the fifth one is under preparation.

4.9 Information Dissemination

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

information dissemination on technology management aspects 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

Newsletters on specific technology management aspects in association with IIT Bombay, PSGIM Coimbatore, KCTU Bangalore and MAPCOST Bhopal, is being brought out regularly.

Electronic Newsletter

An electronic newsletter developed in collaboration with IIT Madras has been launched and eight issues have been published. 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 on various aspects of technology management.

Portals for information dissemination

Portals and other interactive media have been developed in association with ASCI Hyderabad, IIT Bombay, PSGIM Coimbatore and other organizations and these are being continuously augmented to provide contemporary information on a periodic basis.

4.10 Training/ Interaction Meets/ Management Development Programmes

During the year, the following programmes were organized ;

- National Workshop on Leveraging Innovation for SME Competitiveness at Pune in collaboration with CDC, New Delhi and MITCON, Pune.

- National Workshop on Competitiveness in Emerging Industries at Mumbai in collaboration with IIT, Delhi and IIT, Bombay.

- National Workshop on Technology Status and Potential for Improvement in Handloom Powerloom and Readymade Garment Sectors in West Bengal at Kolkata in collaboration with WEBCON, Kolkata.

- National Workshop on Status and Potential for Minor Forest Produce based Industries in Gujarat at Ahmedabad in collaboration with GITCO, Ahmedabad.

- A National Workshop on Status and Potential for Minor Forest Produce based Industries in Tamil Nadu at Coimbatore in collaboration with ITCOT, Chennai.

- Interaction Meet under TM for Best Paper Contest in collaboration with Anna Malai University, Anna Malai Nagar.

- Seminar on Technology Management Programme for unorganized SSI sector through Agargami Handicapped Samity, West Bengal.

- A 6-month Training Programme in Technology Management in Food Technology, Herbal and Medicinal Plant Processing Technology and Information Technology for 30 candidates each in collaboration with Institute of Entrepreneurship Development, Patna.

- Management Development Programme on 'R&D Management' in collaboration with IIT Bombay for the benefit of industry participants.

- Training Programme for senior scientists on 'Technology Commercialization' in association with ASCI Hyderabad.