WORKING TOGETHER WORKS
Cluster Case Studies

Foundation for MSME Clusters

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Contents

Why Cluster Case Studies Can Be Helpful

India has more than 6,500 industrial, handloom, handicraft and micro-enterprise clusters. These clusters represent the socio-economic heritage of the country where some of the towns or contiguous group of villages known for a specific product or a range of complementary products have been in existence for decades and centuries.

More than 50 countries, economically developed and developing, have their cluster initiatives under way. Within India, with probably the richest diversity of clusters, it is estimated that there are more than 20 independently funded initiatives across more than 1,000 clusters in 2005.

This compilation of 19 case studies of cluster initiatives provides an insight into diverse cluster development approaches that can be undertaken with as much variety of objectives and outcomes. The choice of initiatives is neither based on the criterion of 'better approaches' nor 'better clusters'. The idea is to capture the diversity of clusters, approaches, implementation agencies and objectives to help the reader draw one's own lessons and conclusions.

The case studies include a wide range of products among micro enterprises such as handlooms items, brass & bell metal, traditional footwear, crochet & lace work, coir products, hand tools. On the other hand, the products of industrial clusters include processed foods, rice milling, ready-made garments, machine tools, rubber, engineering products, etc.

These case studies also come from different States including Andhra Pradesh, Kerala, Tamil Nadu, Maharashtra, Gujarat, Rajasthan, Madhya Pradesh, Punjab, Orissa and West Bengal.

The nature of institutions that are involved in programme implementation are also varied. They include State Government Departments, Central/ State Government agencies (e.g. RUDA, SISI, Textiles Committee), techno-commercial institutions (e.g. APITCO, EDI, MITCON, NISIET), developmental institutions (e.g. NABARD, SIDBI) through NGOs, Bank (e.g. SBI), international agency (UNIDO), etc.

Majority of these interventions have been for a period of 3 to 5 years. While most of these interventions have either been officially concluded or are about to be concluded, some are still on-going. Interestingly, in some of the concluded initiatives, where the implementing institutions are very much part of the clusters, they continue to provide support to the cluster initiatives.

A number of constraining issues that limited the cluster growth were identified by different institutions. These include poor capacity of human resources, lack of marketing abilities, lack of appropriate

financing mechanism, infrastructure bottlenecks, information gaps and technological drawbacks, etc. But the existing institutional framework of the clusters was unable to address most of these problems and the MSMEs were working in isolation.

The experience of successful MSME clusters shows the significance of promoting joint action both in developed and developing economies. MSMEs benefit passively from their physical agglomeration but it is the active consciously promoted local joint action that makes a difference between a less competitive and a more competitive cluster[1]. These cluster development programmes were aimed at triggering such a virtuous cycle in the clusters. These attempts have been able to make a difference in the functioning of the clusters through enhanced turnover, new market linkages, quality up-gradation, efficient sourcing, technical changes and improved practices, creation of infrastructure, etc.

These interventions were organised by either placing a dedicated person to oversee the growth or by placing a team of persons who visit the cluster from time to time. However in all cases the cluster stakeholders were made an active part of all decision making process. Exposure visits played an important role in ice breaking, creation of trust and setting goals for achievement. Creation of networks brought down cost of new ventures and usage of appropriate business development service (BDS) providers led to achievement of quick results, in turn creating further confidence among the network members. The representatives of implementing agencies also created a number of linkages for the stakeholders within and outside the cluster and channelised development resources into the cluster. A number of infrastructure development activities were also carried out. In most cases there is also a clear tendency of the evolution of a local governance framework, which can mature to become a steering system for future development of the cluster.

True to the spirit of cluster development a number of agencies and personalities provided relentless guidance, support and encouragement to these programmes in various locations. It will be very difficult to mention all those names and contributions. On behalf of the clusters we would like to thank them for all their initiatives. Last but not the least we would like to thank the contributors to this compilation. Needless to say these case studies do not necessarily reflect the views of the organisation to which they belong. This document has not been formally edited.

(Footnote)

[1] Schmitz, Hubert. 1999. Collective Efficiency and Increasing Returns. Cambridge Journal of Economics. 1999, 23, 465-483

Glossary of Terms Used

ACCDS: Alappuzha Coir Cluster Development society
APEDA: Agriculture and Processed Food Export Development Authority
AEZ: Agri-Export Zone
ARMA: Akkalkot Road MIDC association
AICLEA: All India Crochet Lace Exporters Association
APPCB: Andhra Pradesh State Pollution Control Board
APPEAL: Apparel Exporters Association of Ludhiana
BMTMN: Bangalore Machine Tool Manufacturer's Association
B2b: business to business
BHTC: Bangalore Heat Treaters Cluster
BHEL: Bharat Heavy Electricals Limited
BISWA: Bharat Integrated Social Welfare Agency
BIDASS: BHEL Industrial Development and Service Society
BHELSSIA: BHEL Small Scale Industries Association BHELSSIA
BDO: Block Development Officer BDO
BTRA – PSC: Bombay Textile Research Association-Powerloom Service Centre
BMTPC: Building Material Technology Promotion Council Bunkar Vikas Sansthan (BVS)
BDS: Business Development Service
CCRI: Central Coir Research Institute
CFTRI: Central Food Technology Research Institute
CMT: Central Manufacturing Technology Institute
CPCB: Central Pollution Control Board
CDA: Cluster Development Agent
CDC: Cluster Development Committee
CDCC: Cluster Development Co-ordination Committee
CDP: Cluster development programme
CUSAT: Cochin University of Science and Technology (CUSAT)
CODISSIA: Coimbatore District Small Scale Industries Association
COWMA: Coimbatore Wet Grinders and Accessories Manufacturers Association
CETP: Common Effluent Treatment Plant
CFCs: Common Facility Centres
CFSC: Common Facility Service Centre
CII: Confederation of Indian Industry
CLCSS: Credit Link Capital Subsidy Scheme
DDHPY: Deen Dayal Hathkargha Protsahan Yojana
DIPP: Department for Industrial Policy and Promotion
DCHL: Development Commissioner – Handlooms
DCSSI: Development Commissioner Small Scale Industries
DIC: District Industries Centre
DM: District Magistrate
DRDA: District Rural Development Authority
DBC: Divided Blast Cupolas
ETPs: Effluent treatment plants Engineering Export Promotion Council
EDI: Entrepreneurship Development Institute of India
EU: European Union
FEKTAA: Federation of Knitwear, Textiles and Allied Industries Association
FERA: Foreign Exchange Regulation Act
FRIA: Federation of Rubber Industry Associations
GM: General Manager
GoAP: Government of Andhra Pradesh
GoG: Government of Gujarat
GIDC: Gujarat Industrial Development Corporation
HEPC: Handloom Export Promotion Council
HES: Handloom Export Scheme
HACCP: Hazard Analysis and Critical Control Point
HMT: Hindustan Machine Tools
HFA: Howrah Foundry Association
IFA: Indian Foundry Association
IIF: Indian Institute of Foundrymen
IISc: Indian Institute of Science
IMTC: Indian Machine Tool Consortium
IMTEX: Indian Machine Tool Exhibition
IMTMA: Indian Machine Tool Manufacturer's Association
IOC: Indian Oil Corporation
IIUS: Industrial Infrastructure Upgradation Scheme
IL&FS: Infrastructure Leasing and Financial Services Ltd
IHTT: Institute of Handloom and Textile Technology
JFOA: Jamnagar Factory Owners' Association
KRMC: Kalady Rice Millers Consortium
K-BIP: Kerala Bureau of Industrial Promotion
KIED: Kerala Institute of Entrepreneurship Development
KSCMA: Kerala State Cherukida Manufacturers Association
KSIDC: Kerala State Industrial Development Corporation
KSSSCMF: Kerala State Small Scale Coir Manufacturers Federation-
LDM: Lead District Manager
MTMs: Machine tool manufacturers
MTAMC: Machine Tools Accessories Manufacturer Consortium
MITCON: Maharashtra Industrial and Technical Consultancy Organisation
MIDC: Maharashtra Industrial Development Corporation

MSAMB: Maharashtra State Agriculture Marketing Board
MDPs: Management Development Programmes
MML: Margin Money Loan
MEP: Minimum Export Price
MPP: Minimum Purchase Price
MFPI: Ministry of Food Processing Industry
MoSSI: Ministry of Small Scale Industries
MPHSVN: MP Hast Shipa Vikas Nigam
MCGF: Mutual Credit Guarantee Fund
MCGFS: Mutual Credit Guarantee Fund Scheme
NABARD: National Bank for Agriculture and Rural Development
NHDC: National Handloom Development Corporation
NHB: National Horticulture Board
NID: National Institute of Designs
NIFT: National Institute of Fashion Technology
NIT: National Institute of Technology
NISIET: National Institute of Small Industries Extension Training
NML: National Metallurgical Laboratory
NMDC: National Minorities Development Corporation
NSTEDB: National Science and Technology Development Board
NSIC: National Small Industries Corporation
NRFPMC: Natural Rubber and Fibre Product Manufacturers Consortium
NMCP: Netherlands Management Co-operation Programme
NTTF: Nettur Technical Training Foundation
NDAs: Network Development Agents
NLDP: National Leather Development Programme
(OEMs: Original Equipment Manufacturers
PCRA: Petroleum Conservation Research Association
PEN: Planters Energy Network
PCS: Pollution Control System
PD: Project Director
PD: Provident fund
PSUs: (public sector undertakings)
PPSPs: Public and Private Service Providers
PDS: Public Distribution System
PPP: Public Private Partnership
QMS: Quality Management Systems
REA: Rajkot Engineering Association
RTS: Ready to Serve
RDO: Revenue Divisional Officer
REDP: Rural Entrepreneurship Development Programme
SHGs: Self Help Groups
SES: Senior Experten Services
SMEs: Small and medium enterprises
SICDP: Small Industries Cluster Development Programme
SPM: Suspended Particulated Matter
SIDBI: Small Industries Development Bank of India
SISI: Small Industries Service Institute
SICDP: Small Industry Cluster Development Programme
STMA: Solapur Textile Manufacturers Association
SZYDS: Solapur Zilla Yantramag Dharak Sangh
SPV: Special Purpose Vehicle
SBI: State Bank of India
SIDCO: State Industrial Development Corporation
SCX: Sub-contracting exchange
SPM: Suspended Particulate Matter
TFP: Talegaon Floriculture Park
TERI: Tata Energy Research Institute
TDTC: Technology Demonstration-cum-Training Centre
TICC: Technology Investment Capital Corporation
TCIDS: Textile Centre Infrastructure Development Scheme
TDF: Textile Development Foundation
TIEMA: Thuvakudi Industrial Estate Manufacturers Association
TPD: Tonnes per day
TQM: Total Quality Management

Chapter 01
Alleppey - Coir

The coir cluster at Alleppey provides jobs to over 80,000 artisans and has a turnover of Rs 1,500 crores (USD 340 million). The network based approach as demonstrated by the Coir Board and EDI in the cluster was innovatively utilised by the State Bank of India for providing finance for input availability and marketing. This led to collateral free financing of over 223 networks of 4470 tiny and small units to the tune of Rs 4.6 crores (USD 1 million). The smaller networks were also jointly formalised into larger networks for better marketing linkages.

Evolution of the Cluster

In the mid-nineteenth century, Europeans familiar with the woven products of jute in Bengal travelled to Alleppey with local technicians and began manufacturing coir ropes. This planted the seed for the coir cluster. Thereafter several Europeans came into Alleppey and started producing coir ropes in large quantities. Smaller Indian firms took birth as sub-contractors to the larger firms.

From 1857 till the 1930s the products manufactured largely included ropes. Post-Independence, many Europeans handed over operations to their Indian counterparts. The latter in turn encouraged sub-contraction in the light of the strong unionisation of labour in the region. As a result large-scale factories declined and small units mushroomed in their place. The Coir Industry Act 1953 was enacted and the Government assumed a significant role in operations in the sector. The State Government of Kerala also launched many developmental schemes. A Minimum Export Price (MEP) as well as a Minimum Purchase Price (MPP) was enforced in the 1960s and in 1976 respectively, to ensure that workers and sub-contractors were receiving adequate earnings. By the early 2000s, both MEP and MPP were removed and market forces started determining prices.

Mechanisation developed slowly, presumably, as a result of the 'strong labour pressure in the State'. Hence, unlike enterprises in other southern states, today Alleppey does not have large modern factories. However, technical advancements since the 1960s facilitated elimination of drudgery in certain processes and led to the modernisation of looms.

Since the 1980s semi-automatic looms were introduced and simultaneously product diversification took place. Today, the cluster manufactures and exports a wide range of products such as mats, mattings etcetera. Some of the new

applications of coir include `geo-textiles' to make dykes and prevent soil erosion, coir blends with other natural fibres and material for use as Venetian blinds, false ceilings and partitions etc.

The Cluster and its Major Stakeholders

The principal stakeholders include the spinners (normally women operators), weavers and exporters. The cluster has about 45,000 spinners and about 35,000 weavers (and also thousands of workers who are involved in related enterprises involved in spooling, dyeing etc.) The spinners use about 15,000 ratts (spinning machines). As on 2002 the total turnover of the cluster was about Rs.1200 crores (USD 273 million) with an export turnover of about Rs 370 crores (USD 84 million).

Over 700 cooperative societies have been formed in the region. The societies collect orders from exporters and distribute these amongst members. As these societies are 'firm' on securing appropriate realisation to labour for members their labour and production charges are sometimes not that attractive from the point of view of exporters who may outsource manufacture to other units in the informal sector. The performance of societies by and large is, therefore, not very encouraging.

There are several associations representing the interests of small-scale manufacturers in the cluster. These include the Kerala State Small Scale Coir Manufacturers Federation (involving a large number of small weavers and cooperative societies) and the Kerala State Cherukida Manufacturers Association, amongst others. Besides, there are four exporters' associations, with a total membership base of about 100 exporters. The associations of both manufacturers and exporters have a critical mandate in terms of negotiation and resolving disputes with input suppliers and workers. Technological developments are either developed or standardised by the Central Coir Research Institute (CCRI). The Coir Board, through various related bodies such as the CCRI, facilitates technology upgradation, standardisation and dissemination. It also acts as a kind of Export Promotion Council.

The Directorate of Coir Development is involved in several developmental activities such as facilitating up-gradation of skills and 'raats' (spinning machines) establishment of defibreing (extraction of fibre from husk) units, etc. The Coir Workers Welfare Board works on related areas and provides valuable services to workers in the cluster in terms of facilitating insurance and other services. The cluster has several commercial financial institutions, such as the SBI, in its midst.

Major Problems

The major problems identified included:

- A large number of units based in households-or in the highly sub-contracted cluster, suffered from an acute dearth of formal institutional finance.
- Technological issues in terms of adequate defibreing units, effluent treatment plants for dyeing units as well as 'motorisation' of traditional raats as a means to enhance productivity, were not fully developed.
- Market development and marketing: Inadequacies in the context of accessing a large number of buyers by small exporters who constitute the majority of enterprises in this segment was also evident. Relative dearth of market-led diversification initiatives were also identified. The uniqueness of Alleppey products have not yet been adequately exploited in terms of brand building initiatives, which means that the products are unprotected from possible fakes manufactured in other regions.

Vision for the Cluster

The cluster vision that progressively evolved was 'The coir cluster of Alleppey will become a globally preferred sub-contraction pocket for various coir fibre-related value added products by the year 2005'.

Implementation Strategy

The Coir Board and the EDII had pursued an initiative over a period of a few months of evolving networks (for purchase, export and common facilities) along the supply chain. In the same spirit, as finance was one of the major issues of the cluster, and SBI being a financing institution per se, the implementation process started by financing such small enterprise (weavers') networks without collateral. Thereafter the 'household' units (spinners) were organized into Consortia and SHGs for group financing. Having delivered on this front, these networks were provided training, and empowered into marketing and better input sourcing linkages. For marketing, the consortia

of weavers were networked with exporters as to offer volumes and thereby avoid the non-productive middlemen. The empowered (household units') consortia (who may also be referred to as SHGs) as also weavers were thereafter federated into associations.

Major Interventions

Financing of tiny units

It all started off with the Coir Board and the EDI evolving several networks of manufacturers and exporters over a project. The SBI took the initiative of contributing towards financing these small networks of mats as also matting manufacturers on a Mutual Credit Guarantee Fund Scheme (MCGFS[1]) as also a 'cash deposit based advance' mode. Such groups served as amongst the first institutionally financed input purchase networks in the cluster. Thereafter hundreds of consortia evolved across different segments along the supply chain. In total about 223 consortia comprising around 4,700 tiny and small 'enterprises' (spinners and weavers), were provided finance linkages and were also catalysed to pursue various common business plans.

The print media served to help disseminate information, as did rounds of meetings with small enterprises. This led to a virtual exploitation of consortiums in the cluster that thereafter pursued numerous joint activities. So far the State Bank of India has provided credit linkages to 223 consortia (directly) amounting to about Rs 4.60 crore (USD 1 million) by way of this unique financial intervention in the region. Different segments along the supply chain have benefited from this. The mattings group includes about 11 groups that have had assistance by way of cash credit or term loan from SBI amounting to about Rs 10 lakh (USD 22700) each. Mats group members have on an average received support in the range of Rs. 2 to Rs 4 lakh (USD 4545 to USD 9090) per group and the spinning segment has received amounts less than this.

Finance for Securing Raw Material

The cluster experiences severe crises on the 'fibre' front, which is a seasonal and periodic phenomenon. Various measures have been explored, such as the import of fibre from Sri Lanka. As a unique option, SBI served as the lending agency to finance `Kudumbashree'[1] groups to pursue the collection of husk from different locations in Kerala. On a trial basis about 118 groups have been supported. The zila panchayat and Kudumbashree are key stakeholders. Appropriate recovery of husk is expected to alleviate recurring shortages. These networks have been financed @ about Rs 50,000 (USD 1,100) per group to recover husk from different locations. A total of Rs. 59 lakh (USD 134,000) has been contributed by the SBI towards this initiative.

Infrastructure and technology upgradation

Most defibreing units were based in Tamil Nadu. Poor infrastructure in the region in the context of defibreing mills had been contributing to higher cost of production, which in turn made it difficult for the units to ward off competition.

Under the Integrated Infrastructure Upgradation Scheme (IIUS) several defibreing mills are being established. This will give greater bargaining power to the product manufacturers and also exporting SMEs in the cluster vis-à-vis suppliers of inputs outside. Common facilities evolved included shearing and finishing, glueing and defibreing units. A small training institute to facilitate the upgradation of raats has been established by the Women Spinners' Association.

A training facility for spinners

Most training facilities are offered by Government agencies as a unique initiative. The spinners' association established a training facility, which was also expected to offer a revenue model for the association. The training programme offered is normally for six days and 16 women are trained per batch in about 8 raats. About Rs 50 (USD 1.1) per day is offered per trainee by the Board. The cost of the trainer is also borne by the Board. Those trained to operate motorised raats are offered the traditional motorised raats at a subsidised rate of about Rs 750 (USD 17) each. About 30 batches have been trained so far.

As part of technology upgradation initiatives amotorised spinning raat has been conceived with the help of an international BDS provider - SES, which is yet to be commercialised. Simple equipment for better sorting of coir fibre before spinning has been designed. In the case of women spinners networked as consortia, incomes in terms of per diem earnings increased by about 25 per cent by virtue of utilising upgraded raats and also due to the procurement of inputs from their own working capital. The Board of Director's meeting under the IIUS held on September 2005 has offered support to set up 121 coir spinning units with motorised traditional raats.

Market development and marketing

The networks that were created for common sourcing were also encouraged to participate in national and international trade fairs. Networks also attended the B2B meets organised by the Kerala Bureau of Industrial Promotion (K-BIP) at Kochi, which led to new market linkages for SMEs. The services of international BDS providers SES, Germany, are also being used to facilitate relevant options.

Upon pursuing 'advocacy' over a period of time, the Coir Board has decided to take up the preparation of a case for registration of Alleppey coir under the Geographical Indications Act of the Government of India.

Several workshops were conducted involving the trade desks of Korea, Britain and Netherlands, fair trade organisations and private service providers such as the Dun and Bradstreet. These had targeted information gaps for exporters.

The Coir Board has tied up with institutions such as the Building Material Technology Promotion Council (BMTPC) for low cost housing technologies using coir-related inputs. The Board has also been exploring the use of natural dyes to increase the eco-friendliness of coir home furnishings in association with IIT, as part of its constant search for value-added production.

Consolidated Results

- About 223 consortia comprising around 4700 tiny and small 'enterprises' (spinners and weavers) were evolved and catalysed to pursue various common business plans such as common cash purchase of inputs thereby facilitating operations even during periods of raw material shortage, secure inputs in bulk and cash and thereby realise discounts on procurement, some used a part for sourcing inputs and a part for securing motorised traditional raats, etc.

- For tiny women spinners, networked as consortia, incomes in terms of per diem earnings increased by about 25 percent by virtue of utilising upgraded raats as also procurement of inputs with own working capital (than remain as jobbers).

- State Bank of India provided credit linkages to 323 consortia amounting to about Rs. 4.60 crores (USD 1 million) by way of a unique financial intervention in the region.

- 118 women consortia have been financed for husk collection in collaboration with district panchayat for Rs. 59 lakhs (USD 134,000) by SBI.

- Several interventions were pursued in close collaboration with the Coir Board, the Department for Coir and Industries Departments (Government of Kerala). Other institutions like SES, CII, NMCP, KVIC have been networked with.

Sustainability of Interventions

The consortia has evolved into three associations, specific to each of the three major production segments in the cluster, so as to pursue advocacy and also progressively work on association strengthening activities. The Alappuzha Coir Cluster Development society (ACCDS) serves as the apex implementing SPV with a Coir Board official playing the role of Executive Director. A Cluster Development Coordination Committee (CDCC) has been created for the smooth and efficient functioning of the cluster. Its members include associations that have been evolved over interventions, the Coir Board, KSIDC, Coir Department, SISI, SBI, SIDBI, etc. The CDCC is, however, at a relative stage of infancy. Above all, the State Government (Coir Department and Coir Welfare Board) is seriously pursuing the methodology and has already trained over 20 officers as promoters of this cluster development programme.

Future Direction

In addition to strengthening the various associations that have evolved, various initiatives are being progressively considered by cluster actors:

Registration of Alleppey coir products under the Geographical Indications (GI) Act: GI could be secured on the basis of skill on the spinning front and weaving. Thereafter, common brand building initiatives may be explored in terms of promotion of the Alleppey coir brand.

Effective implementation of the project under the IIUS: Effective implementation of the large project under the IIUS scheme is accorded top priority as part of future interventions.

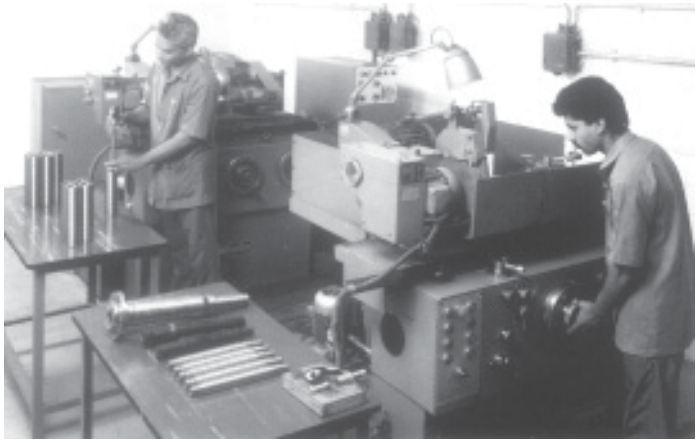
In addition various options to enhance competitiveness are being explored by stakeholders in terms of bio-gas options to optimise power costs in defibreing units amongst others.

The coir cluster of Alleppy is situated in the state of Kerala. This initiative for development of the cluster commenced in the year 2002-03 by the Sate Bank of India. The Project is still under implementation. This article has been written by Mr V Padmanand, SME Consultant, Chennai.

Footnotes

1. A somewhat similar product was tried out successfully for a few groups in the hand block printed textiles cluster of Jaipur under a UNIDO cluster development programme. In Alleppy too the scheme took off with the support of the same institutions viz. SIDBI, SBI and thereafter the KVIB.

2. A movement of women SHGs



Chapter 02
Bangalore - Machine Tools

UNIDO Cluster Development Programme started interventions in the cluster at a time when the industry was facing stiff competition from cheaper, better made imported machine tools. Effects of liberalisation of the economy had started to set in. UNIDO tackled these problems by creating awareness and networks of small machine tool manufacturers and vendor units, providing training and institutional linkages and increasing the usage of BDS providers. A full time cluster development agent stationed in the cluster for this purpose handled these issues. The result was that the firms involved made savings through energy audits, started implementing world class shop floor practices, lowered production cycle time and got engaged in common procurement of material and other inputs. Moreover with joint efforts firms generated additional business and upgraded their manufacturing facilities. New international markets were explored and gaps in skills were addressed through new training programmes.

Evolution of the Cluster

Manufacture of machine tools in India developed in three geographical clusters—in and around Bombay/ Pune, in Bangalore and in the Punjab. While local factors played an important role in their growth, the growth of the entire industry was influenced to a large extent by government policy changes.

The presence of ordnance factories and repair workshops provided the initial stimulus for the machine tool industry in Bangalore, during and immediately after World War II, as Bangalore was then the Southern Headquarters of the Armed Forces. Growth became widespread after the establishment of public sector enterprises, Hindustan Machine Tools (HMT) founded in 1953, being the most dominant. HMT created a demand for a large number of ancillary and support firms through inflow of capital and supply of technocrats, who created their spin-off enterprises. The ban on import of machine tools (1951-66) that could be produced indigenously encouraged national manufacturers to venture into newer areas while foreign manufacturers had an incentive to set up local subsidiaries or licensees.

In 1973, the Foreign Exchange Regulation Act (FERA) made it compulsory for foreign companies to reduce their holdings to less than 40 percent. A

number of foreign manufacturers exited from the Indian scenario. This, along with high tariffs on more advanced machine tools, probably blocked the progress of the Indian industry along the path of the international industry (e.g. numerically controlled machine tools). In the absence of competition, the cluster continued to grow, but through integrated firms with a minimum of subcontracting.

The collapse of the Soviet Union as an export market in 1990 dried up a significant flow of exports. The process of liberalisation forced machine tool firms to restructure to become more competitive. It is at this time that the first few firms started to outsource. While the industry was trying to cope with liberalisation, recession swept this industry from 1994-96 as Taiwanese machine tools were making significant inroads in the Indian market and the automotive industry experienced its first downturn between 1997-99. Bangalore was no exception to this national trend.

The Cluster and its Major Stakeholders

Machine tool manufacturers (MTMs) are at the core of the cluster. These include medium and small manufacturers. At the start of the intervention, the cluster had 125 units of which forty-five were MTMs. Six were medium-sized units and the rest were small. Seventy to eighty vendor units, consisting of ten heat treaters, eight abrasive units, four foundries, ten precision machining units and ten fabrication units provided backward linkages to the MTMs. During end- 1999, the cluster had a turnover of Rs. Rs. 250 crores (USD 56million), approximately 40 per cent of India's total production. The domestic market consumed 90 per cent of this output, while only 10 per cent was exported. The cluster mainly produced metal cutting machines and its share in metal forming machines was very low.

Dealers, Original Equipment Manufacturers (OEMs), auto component manufacturers and other equipment manufacturers provided the forward linkages on the domestic front. A few units exported directly to OEMs. Technical support institutions such as the Nettur Technical Training Foundation (NTTF), the Indian Institute of Science (IISc) and the Central Manufacturing Technology Institute (CMTI) were present but did not interact much with the industry.

The Indian Machine Tool Manufacturer's Association (IMTMA) was involved in organising the Indian Machine Tool Exhibition (IMTEX) every three years, carrying out census of the cluster and organising events for disseminating knowledge. Linkages of firms with support institutions was also very weak.

Major Problems

- *Poor Market Presence*: Traditionally, small MTMs sold their products by word of mouth with a market reach limited to Southern India. They were only production oriented and not market or customer oriented. Due to the recession and liberalisation of the economy, sales of small MTMs were declining rapidly and survival was the key issue. Further, the small-scale industry (SSI) was focused entirely on the domestic market.

- *Skill and Information Gaps in Critical Areas*: Skill upgradation in the area of machine-assembling was absent. No training courses were available on heat treatment. In small units, second line management was missing and entrepreneurs were more focused on routine rather than on strategic issues. An information gap was significant in the field of exports with a mindset that 'we cannot export'.

- *Low Level of Competitiveness*: With the availability of cheaper imports, units of all sizes were finding it difficult to compete in the local market, which in turn absorbed 90 per cent of their production. Production and inputs costs were high, though a significant scope existed for reductions through improved raw material sourcing or product standardisation, quality enhancement, energy audit and introduction of world class manufacturing practices. These improvements were perceived as too costly for small firms to implement and there were only a few very expensive consultants in the cluster that could address these issues.

- *Inadequate Backward Linkage*: The falling market share put pressure on production costs and small MTMs started to lower quality. This resulted in complete isolation of small MTMs from the larger ones, which were investing in product quality. In the process, large firms created highly integrated production systems and developed a wide range of vendors, suppliers and sub-contractors. Every firm had its vendors. Orders for a particular component was spread over a large number of

vendors, none of whom had any incentive in specialising. Each large MTM developed a group of its own and stood isolated from others. In the absence of dedicated production, the industry was diluted over a large number of vendors.

- *Weak Institutional Framework*: IMTMA was the backbone association of MTMs in the cluster. It mainly represented the large and medium units and was mainly concerned with macro and policy issues. Issues related directly to firm level production or forward/backward linkages were not of prime importance to any organisation in the cluster. The small firms did not have any platform to discuss their business related concerns. Some other institutions were present but because of their intermediary-driven programmes there was a knowledge gap and a lack of mutual understanding vis-à-vis the smaller MTMs. As a result, there was an absence of initiatives and lack of benefits to the firms. Overall, the capacity of the cluster to identify issues of mutual business interest and implement strategies through intermediaries was low.

Vision for the Cluster

The long-term vision for the cluster was 'The Bangalore Machine Tools Cluster will become domestically and globally competitive by adopting best practices in marketing, production and institutional strengthening'.

Implementation Strategy

The cluster's problems were addressed through a systematic approach by:

- creating awareness and building consensus on 'group approach';
- creating formal networks of small MTMs and vendor units;
- providing market linkages to the new networks;
- replicating such efforts through demonstration of business gains;
- organising institutional linkages;
- increasing usage of BDS providers to support this growth; and
- building capacity of newly formed and existing networks to continue these activities in the future.

Activities in 2000 focused on awareness creation and consensus building among cluster actors to attain the vision through a 'group approach'. Pilot networks and pilot business linked activities were initiated in 2001. Replication of best practices and testing of new marketing channels and sharing of risks through a network approach was introduced during 2002. Networks were linked to each other and execution of orders improved though training and empowerment. The networks were also linked with various technical and financial institutions for future support. Support activities for the period January to August 2003 focused on enhancing the capacity of the networks, to execute business development activities through training of Network Development Agents (NDAs) and the creation of umbrella networks.

Major Interventions

Market Promotion

The diagnostic study and the ensuing two validation workshops (one with MTMs and the other with their vendors) revealed that marketing was the principal area of concern for the cluster. Informal visits and discussions that followed revealed that proactive marketing was perceived as a high-cost proposition. In small group meetings, however, some firms agreed that common marketing could be a viable solution.

Accordingly, a strategy was drawn up to increase the market reach of small firms through joint marketing. As a by-product, enhanced levels of mutual understanding were expected to open up new growth avenues.

Marketing-related problems were identified and a pilot network of members with an ideal mix of products was created. Trust-building among firms (from simple joint marketing ventures to more complex ones); dissemination of information on successful marketing cooperation and replication of similar models throughout the cluster followed.

Initially one network of eight firms with complimentary machine tool products was formed. The group was registered as the Bangalore Machine Tool Manufacturer's Association (BMTMN). The firms agreed to hire the common services of a consultancy firm for quality upgradation (ISO-9001:2000).

Although quality upgradation was not an area of major concern, the firms agreed to the joint action as the level of 'critical information' sharing was low and returns from individual investments were high and

relatively certain. Initially, entrepreneurs would meet only within their premises. As inhibitions faded, the entrepreneurs made group visits to each other's shop floors.
BMTMN members decided to produce a common brochure to help identify potential customers in their endeavour of proactive marketing. Thereafter, they participated jointly in fairs. The success derived from these new marketing channels gave them confidence to jointly explore, the Chinese and Brazilian markets as export destinations. This gradual confidence-building led to sharing orders with other BMTMN members.

The message of success soon spread through the cluster and another group of small MTMs with complimentary products formed the Indian Machine Tool Consortium (IMTC), produced a common marketing brochure and started participating in fairs. They also appointed a marketing agent in Bangalore.

BMTMN and IMTC invited large firms to visit their factories, evaluate their production capacity and place orders. Orders started to be registered and very soon, six new networks came into existence, which started exploring new marketing channels including a joint web site and advertisements and common dealers.

Initially, UNIDO contributed 50 per cent of the costs of these initiatives. Gradually, this was reduced and soon the groups started to manage all expenses related to marketing by themselves.
As a result of the marketing promotion initiatives, forty-five firms organised in five networks have generated additional sales worth Rs 4.34 crores (USD 1 million). Three new markets and two new export destinations have been created or strengthened. Firms in network have invested in eight new common brochures and four new marketing set-ups, two common marketing offices across the country and two common web sites.

Hence it may be concluded that joint marketing is a viable activity for cluster development. However it takes time for firms to believe in each other. Product mix is crucial and once positive outcomes are demonstrated, initiatives spread fast in the cluster. Indeed, while some support may be needed to motivate firms on joint activities, as soon as the results start showing, joint exploration becomes fully sustainable.

MTAMC Common Office

The Machine Tools Accessories Manufacturer Consortium (MTAMC) was formed in October 2002 by five members. Mr. Shivasubramanian, CEO of Lex Technoaid, recalled: 'For quite some time, I had watched consortia in different exhibitions. I could immediately appreciate the savings made by firms due to joint participation and the high visibility they were benefiting from due to bigger scale of participation. I realised that it was about time to form a consortium of accessory manufacturers.' Mr. Mathew, another member of the consortium, explained that being a supplier to the same client led firms to work together successfully since, 'Being suppliers to WIDIA (a German machine tools multinational), we all had the same size and set of principles.'

The consortium advertised in Chennai newspapers to find a marketing engineer to represent them. More than 50 consultants applied. 'I was pleasantly surprised…on earlier occasions, when my firm wanted to hire someone in Chennai, I could hardly locate more than 2-3 people,' commented Mr. Shivasubramaniam.

With the appointment of a resident marketing engineer in Chennai, the consortium devised a monitoring mechanism. Once a month, a member of the consortium would visit Chennai and the engineer would be called to Bangalore for review. Very soon the engineer started generating business for the firms.

Members of the group started attracting the attention of big customers. Hyundai placed an order for spindles and soon other orders started pouring in from Brakes India, and the Rane Group. Mr. Shivasubramaniam later recalled, 'The first 10 months were spent on making contact with big firms. Now we get at least one enquiry a week. Within the next 6-8 months, we hope to do good business with Chennai auto component manufacturers. Without this common marketing office there was no way we could make an entry into the Chennai market.'

Enhancing Competitiveness through BDS intervention

The usage of specialised BDS was very low in the cluster due to the heavy fees of the providers, while the latter cited lack of willingness to pay. Considering that the machine tool industry is highly technology intensive, quality is imperative. Further, being in direct competition with international players, cost management, product standardisation and better engineering practices are essential pre-requisites to growth. Two things were required to make quality culture an integral part of the industry. Firstly the barrier to usage of BDS needed to be broken. Secondly, a value proposition had to be created in all BDS based interventions. Joint action (sharing of fees) was seen as a tool to break the 'heavy fee' barrier. Introduction and trials by a large number of BDS was the second step to create the culture. The final objective or the value proposition of this initiative was to reduce operation costs of enhanced productivity.

Priority areas were identified and a consensus was created on one or more issues in a network. The appropriate BDS providers were identified and the activities were implemented by them in a few firms in each network. The benefits were documented, information disseminated and replicated.

The first intervention started, on a pilot bases, with an ISO-9000 consultant. This helped to build trust amongst the participating firms and started a culture of improvement so that BDS were introduced in the areas of 5S (Japanese quality standards), value engineering, cost accounting and cost controlling. Energy audit consultants were deployed mainly in the heat treatment units and foundries.

In order to build in a strong element of sustainability, the Institute of Quality from the Confederation of Indian Industry (CII) was approached to train two BDS providers in the implementation of world class manufacturing practices for small units. The two BDS providers were identified by the small firms themselves and trained. They were then asked to assess the applicability of these techniques to MTMs and it was found that there was an enormous potential. Similarly, new BDS were introduced for export marketing, export management training, and technology transfer from Europe (CE marking).

The Case of Neeri Engineering

Mr. Sunil Baglani, CEO of Neeri Engineering, was one of the first to join the UNIDO project. After the seminar conducted by a BDS provider, he offered his units as a model for implementation. Critical staff was trained on 5S principles. Mr. Baglani approved a good number of the proposals put forward by the employees as a result of the training, including painting walls, cleaning the floors, and making additional room for tools.

Several teams were created and they would meet once a week to decide on the next course of action in collaboration with the consultant. Finally, the management showed its full commitment to the improvement exercise. The unit reported savings of 10 per cent in just three months, two new machines were installed and scrap material and machines worth Rs. 50,000 (US$1,100) were identified, and sold. Simultaneously, the scheme suggested by the BDS, was put into place.

After 3 months, the consortium ABMTC invited cluster firms to visit Neeri Engineering. In a presentation, Mr. Shiva Kumar, production manager at Neeri Engineering, stated that, 'The best thing that has happened is that the morale of our workers has drastically improved…one major problem solved is the discipline of employees. I myself used to come late. Now all employees come 5 minutes before time and start their day by taking an oath.' Later, Mr. Baglani stated that 'Although I have spent Rs. 2 lakhs (US$4,500) in implementing 5S, I have saved more than Rs. 13 lakhs (US$30,000) on the suggestion scheme itself. 5S helped to bring about the involvement of my employees, who now feel part of the company. This, I think, is the biggest achievement of the project, and this is just the beginning, we are now benchmarking ourselves with companies like Toyota and TVS to make further improvements.'

As a result of the interventions, 28 new BDS providers offering 12 BDS were introduced in the cluster. A hundred firms benefited from the various services. Forty made a saving of Rs. 77 lakhs (US$175,000) through energy audits, implementation of world-class shop floor practices, reduced production time and common procurement. Out of these, at least Rs. 60 laksh (US$136,000) is an annual recurring savings for the cluster firms.

Table 2 : BDS introduced in Bangalore Machine tool cluster

	Name of BDS	No. of BDS providers	No. of networks benefited	No. of firms benefited
1	*Energy auditing*	*2*		*2*
2	*Cost auditing*	*1*		*2*
3	*ISO-9000 implementation*	*2*	*3*	*12*
4	*CE mark implementation*	*1*	*1*	*5*
5	*FEM consultancy*	*1*	*1*	*10*
6	*World class manufacturing practices*	*1*	*2*	*4*
7	*Technology transfer*	*1*	*1*	*4*
8	*Exhibition hall decoration*	*2*	*4*	*35*
9	*Procurement consultancy*	*1*		*5 relatively large units*
10	*Vendor rating consultancy*	*1*		*5 relatively large units & 69 vendors*
11	*Market related consultancy (Common brochure designers, Marketing, Common dealers,*	*11*	*8*	*57*
	International Trade)			
12	*Training related consultancy*	*4*	*6*	*55*
	Total	*28*	*8*	*100*

Table 3: Savings Made Through the CDP

Activity	Total savings (Rs. million)
Common Iso-9000 Consultant	0.4
Energy Audits	0.2
Implementation of World class manufacturing practices	0.4
Common Procurement	6.0
Reduced Production Cycle Time	0.08
Information sharing in procurement costs	0.01
Joint Negotiation for Exhibitions / Training / CE Marking	0.5
Sharing of Best practices	0.07
Total	**7.7**

To conclude, if the right mode of intervention is developed and results are properly disseminated, BDS can play a significant role in cluster development, especially in terms of reach and sustainability. It is however an essential precondition that the BDS providers acquire sufficient knowledge about some of the principles of cluster development (e.g. the group approach to purchase of BDS) and about the precise needs of the small enterprises, so that they can later take these type of initiatives on their own.

Vendor development

The principal buyers were large machine tool units who sold these machines under their brand name. They were not interested in vendor development as they only used those units that were able to meet their terms of quality and delivery. They were not interested in widening their supply base as they were not sure of the quality new suppliers could provide. Standardisation of products supplied by vendors was also an issue.

Hence the objective of this intervention was to create a system where all vendors were rated on pre-determined criteria. These criteria and the list of possible vendors would be known to all large MTMs, who could then buy from a larger base with greater confidence. Firms of similar nature and size would then network under the aegis of their buyer to standardise their products as per specifications and learn from best practices of each other. This would in turn mean that the large buyer would have improved vendors at his disposal.

Initially, large companies were insensitive about the need for a collaborative partnership with their vendors. Through intense dialogue at various levels, this awareness was created. In subsequent meetings of the emerging core group (formed by representatives of 5 large companies) a project on vendor rating, vendor sharing and vendor development was fleshed out. The companies agreed to share good vendors as the latter were not using full capacity, which led to higher costs. It was thus agreed to rate vendors based on a common set of criteria and to rely on joint action for their upgradation, whenever needed. All companies got together to devise the common rating structure. A vendor-rating agency was hired and it visited the shop floors of the vendors. Finally rating certificates were awarded. Once the vendors realised the gaps in their production processes, they were helped to tackle them with support from financial institutions.

Similarly, foundries and heat treaters were brought together to address their common problems through joint action. Later, a heat treaters network was registered as the Bangalore Heat Treaters Cluster (BHTC). Regular vendor-vendee meetings followed and introduced a culture of solving issues bilaterallyr. Design vendors were gathered so that they could improve their services to large MTMs and increase their value addition. This group called the 'Designer's Consortium' later printed a common marketing brochure.

As a result, 69 vendors were rated. Out of these, 21 upgraded their facilities with an investment of Rs. 5 crores (US$1,136,000). BHTC started taking proactive joint action to solve problems experienced by heat treaters.

Foundries formed an informal network to discuss common critical issues. Design vendors joined hands not only to improve their delivery schedules but also to get additional business from other sectors. Thanks to various exposure visits and energy audits, foundries improved on many shop floor practices.

Designer's Consortium

At a chief executive officers' club meeting, members discussed the fact that their design consultant often failed to deliver on time for lack of capacity. Moreover, while at times they would be overstretched to respond to the request of a large MTM, most often they were idle. As a result, MTMs failed to meet their customers' deadlines.

Mr. Shashi Dhar was nominated by the group as the leader to address this issue. He invited the head designers from five large companies to discuss their problems in operating practices. This event, besides enhancing mutual learning, provided clearer details on the capacity of each design consultant.

A group of six design consultant was invited to discuss the problems. They decided to meet every week. As trust between them started to grow, they shared ideas, visited each other and decided to present themselves as a common front to MTMs. In this way, MTMs would not only deal with one entity, but the workload could be shared among the members and delivery times could be respected. In the first presentation to the large MTMs, Mr Badri, President, Designers Consortium, said, 'We wish to thank MTMs for bringing us together. We are printing our common brochure and intend to market ourselves beyond Bangalore.' Mr. Shashi Dhar later added, 'I was hopeful. But I didn't really expect that this group would go so far.'

Skill Development

A core group of industry people agreed on the fact that assembly fitters were in dire need of upgradation. On deeper discussions new areas like export documentation also came to the fore. This lack of skilled manpower was restricting growth. The need for redressing human resource weaknesses and upscaling through demonstration was seen as the only sustainable way to remove this problem of skill from the core.

Hence, a comprehensive needs assessment was undertaken by UNIDO through visits to firms, talks with industry leaders and group meetings. A small team, with people from the industry and technical and training institutions, spelt out how these needs could be met in a sustainable manner. Networking with support institutions, industry and BDS providers was the next step.

A team of experts (drawn from three large companies along with a senior functionary from a training institute) was thus established to draw up a syllabus. This was thoroughly discussed in the core group meetings. A local training institute was then contacted to run the programme. Faculty was also drawn from the large units, which also offered visits to their shop floors to demonstrate best practices to all trainees. Three such successful training programmes were conducted for upgrading the skills of assembly fitters.

Simultaneously the small units were sensitised about the need to develop a second line management in their companies. The issue was deliberated in various network meetings. It was found out, that the Small Industries Service Institute (SISI) was running a relevant training programme. Some entrepreneurs and a few of their employees attended one of the sessions to assess the utility of the programme and reported that the programme needed to be adapted to their needs. As a consequence, the programme was shortened to eight-and-a-half days and customised as required.

Additionally, during the small group meetings concerns were expressed that none of small units could handle export issues (such as documentation, quoting in international markets, using the web to locate customers, successful exporting practices or procedures).

One of the consortia took the initiative to draw out a detailed syllabus for export management training in consultation with BDS of other consortia, and ran the programme successfully for 5 half days. Twenty-two entrepreneurs were thus trained.

Similarly the Bangalore Heat Treaters Cluster (BHTC) realised that their customers understood very little about their activities, leading to problems such as wrong selection of material or design by costumers. BHTC devised a two-day programme for their end customers that became very popular. More than twenty-five firms sent their design and material managers for this training programme. BHTC planned to conduct such programmes every quarter.

Forty-five workers were trained as assembly fitters and best practices in the industry were shared. Twenty-two entrepreneurs in export management and training and fifteen second line mangers were also trained. This led to improvement of morale of employees and enhancement of their skills in communication, decision-making and leadership, while the entrepreneurs ventured out to new international markets.

Consolidated Results

The results of intervention may be summarised as follows:

Firm level

1. Forty firms made a saving of Rs. 77 lakhs (USD175,000) through energy audits, implementation of world class shop floor practices, lower production cycle time and common procurement of material and other inputs. Of this at least Rs. 6 million (USD136,000) are annual recurring savings.
2. Firms generated additional business worth Rs. 5 crores (USD 1.1 million) and inquiries for an additional Rs. 400 crores (USD 90.1 million).
3. Twenty-one vendor firms upgraded their manufacturing facilities with an investment of Rs. 5 crores (USD 1.1 million).

Cluster level

1. A new international market, China has been explored.
2. Four new training programmes were introduced leading to the training of around 200 people from 50 firms.
3. Twenty-eight new BDS providers offering twelve BDS were introduced.
4. Several techniques to raise competitiveness such as energy saving, world class shop floor practices etc. have been introduced.

Sustainability of Interventions

The activities are becoming more result-oriented, with rising contributions and responsibilities shouldered by the industry. The cluster has developed its own vision and action plan. The industry has networked within itself to be able to respond to emerging changes in a more homogenous manner. Strong and direct linkages have been formed with many of the support institutions. Further, new networks are functioning on a sustainable basis. IMTMA, the chief association of MTMs, has set up a cluster development cell. It has hired an executive, trained by UNIDO, for more than a year. The association decided to launch its own cluster programme in other clusters. Eight new technical/ financial institutions have been linked to about a hundred firms in the cluster.

Future Direction

The cluster travelled a long way from being a fragmented to a dynamic one. It has come to use newer marketing tools and it has shifted focus from production to marketing. This is especially perceptible in the attitudinal change of small companies, which see liberalisation as an opportunity and no longer as a threat.

The prevailing collaborative mood facilitates a reduction in input costs and the small industry is gearing towards exports. It is expected that the cluster as a whole will soon become export oriented. The industry is planning to create a machine tool park where input supplies can be better planned. This will also become a major attraction for international buyers. IMTMA has adopted the cluster development programme and its cluster development executive is carrying out the work further.

At present, ABMTC still appears in need of further strengthening and better integration into IMTMA in the coming months. It however appears that the IMTMA cluster cell will be in a position to handle this challenge.

UNIDO Cluster Development Programme (CDP) worked in the machine tool cluster of Bangalore during the period 1999 to 2002. This article was authored in June 2002 by Mr Jitendra Kalra, the then National Expert of UNIDO-CDP.

Chapter 03
Chanderi - Handloom

The cluster development programme at Chanderi has led to the formation of a weavers' organisation (BVS). BVS is doing business with a number of up-market clientele. The weavers of BVS are not only getting higher wages, they are also enjoying profit. Credit has also been arranged for the weavers through formal channels. Simultaneously various technical and related infrastructure issues including improved dyeing, wider width looms, a yarn depot and a dye house have also been introduced. Chanderi saris got registered under Geographical Indication Act through a newly created organisation of weavers, master weavers and traders – Chanderi Development Foundation. Activities for the empowerment of women weavers were also introduced through specialised agencies. These social empowerment initiatives are being mainstreamed through the best-suited local institutions. The programme is being implemented by UNIDO CDP, also with the support of Department of Rural Industries, Government of Madhya Pradesh.

Evolution of the Cluster

Weaving in Chanderi is reported ever since the Mughal regime of Jehangir. Fine muslin weaves of *Pagri*[1], *dupattas* etc. with hand spun yarns (by women) and embellishments with pure zari continued till mill made yarns was introduced in the last decade of the nineteenth century. In 1910 AD, the Scindhia dynasty of Gwalior patronised Chanderi textiles and set up a training centre for the weavers.

Silk was introduced in the nineteen forties. Later, the adoption of the training centre by the state government led to introduction of 'fly shuttle' looms, 'jacquard' and 'dobby'[2]. These helped in improved value addition. By 1975, 'silk by silk' and 'silk by cotton' yarn combinations were most commonly produced. Creation of Madhya Pradesh (MP) State Textile Corporation in 1976 and MP State Handloom Weavers Cooperative Federation in 1982 helped in providing support to the weavers either individually or in the form of cooperatives. As a result, since 1980, the number of handlooms had been continuously on the increase.

However, these marketing institutions, which were sourcing up to 40 per cent of the total production till 1994, could not sustain their support due to financial problems. Thus by the year 2000, the total purchase came down to just about 10 per cent of total production of the cluster. At the time of initiation of intervention, the weavers mostly used to do production. The master weavers and traders mostly supplied raw material to the weavers and marketed

the finished products. However some weavers managed their own raw material, but here also the traders and master weavers did the marketing. There are 10 cooperative societies also in the cluster.

The Cluster and its Major Stakeholders

Chanderi is a relatively small town of 30,000 inhabitants. In the year 2002, the cluster had about 3659 working looms providing direct and indirect employment to about 18,000 persons and an estimated annual turnover of Rs 150 millions (USD 3.5 million). Around 1100 looms are in the cooperative sector. There are about 45 master weavers and 12 traders.

At the beginning of the intervention, apart from a local Resource Centre and an office of MP Hast Shipa Vikas Nigam (MPHSVN – a Government of MP ~~office~~ institution), all other support institutions were located outside Chanderi. However, the State Government had set up a high-powered Task Force headed by the Chief Minister for the development of Chanderi. A consortium of traders and master weavers - Chanderi Silk Club, had also been just formed to provide linkages with international markets. Apart from Silk Club and other registered weaver cooperative societies, there were no private sector institutions in Chanderi.

Major Problems

The diagnostic study found that of the total weaving community, around 20 per cent were independent weavers, i.e. having their own working capital, but dependent on master weavers for marketing. Around 50 per cent were contractual weavers who were provided both working capital by the traders/master weavers and the end products were taken by them for marketing. The remaining 30 per cent were daily wage earners. With no control on the production process and falling capacity utilisation, the earning capacity of weavers was getting squeezed, as the master weavers and traders were naturally partially passing them the outcomes of falling profitability. The latter themselves were also not enjoying the comfort in the market due to poor dyeing quality, lack of design innovation, lack of (at times usage of) trade related infrastructure facilities and competition from the power loom fakes. Problems also accentuated due to low level of education, no history of savings, limited access to micro finance, etc. for the weavers too.

Vision for the Cluster

The objective of this intervention was to assess the impact on poverty nodes[3], i.e. the weavers, through a cluster development approach. Accordingly the vision for the cluster was set as "Chanderi will mainly offer its unique high value added fabric among exporters and niche retail stores to suit the high end domestic and international market by the year 2005. In the process, at least 250 poor weavers' families will enhance their turnover by at least 20 percent."

Implementation Strategy

Objective of this project is to empower the weaver not only through income generation but also empower them to take their own decision. This was handled through the following strategy:

. Creation of weavers' organisation: Not all weavers are interested or are financially capable of shelving the existing weaver-master weaver/ trader production relation and create a new production relation as an entrepreneur, wherein the weavers manage their own raw material sourcing and marketing and also take all decision. It was felt that a movement may be taken in this direction and the interested weavers will be supported for the same.

. Promotion of other interest groups: The weavers, who will not be a part of the above strategy, will continue to be a part of the existing weaver-master weaver/trader production relation. Hence it was felt that promotion of the groups of traders and master weavers will have a percolation effect on the weavers attached to them too. Simultaneously interest groups to promote overall cluster development issues will also be promoted.

. Empowerment: While the above will directly affect income related issues, non-income related empowerment issues also needed to be addressed – firstly through a supply driven approach and later institutionalize it to with appropriate cluster based institutions.

Major interventions

Marketing

To start with weavers were networked in the form of SHGs. As classical SHGs they started savings and inter loaning. At this point, the SHGs were given inputs with respect to dyeing. They were then exposed to traditional fairs organised by various development agencies. These acted as eye openers. The weavers witnessed the 'magic of margins' and also understood the dynamics of product marketing through this new linkage. But for this they needed their own produce and that too in sufficient quantity. A single SHG is not a viable unit for this purpose. At this stage a well-educated BDS provider was hired to train the weavers in various market opportunities and organisational structure for evolving their own organisation. Exposure visits were organised to functioning weavers' organisations too. The weavers learnt that they have to work in numbers. Simultaneously the SHGs started participating in various regular marketing events. But soon they realised that such events cannot be the only mechanism for sale if they want to make it on their own.

Around 40 SHGs were created by this time. The BDS provider was constantly discussing the idea of coming together with the SHGs. At this stage some of the interested SHGs participated in a joint marketing event with a renowned organisation – Women Weaves in Mumbai. A renowned designer freshly created all the products through new design inputs. High profile buyers were mobilised by Women Weaves. The 3-day event was wrapped up in few hours as all the products got sold as soon as the event started. This gave the weavers the clue that to succeed they not only need to go for direct marketing but get attached to high value chains and have professional design inputs too. This event also gave the weavers their first lesson on various entrepreneurial issues, e.g. quality maintenance, timely delivery, product costing. The weavers realised a much higher wage earning and also shared profit! They also bagged orders.

Thus began the journey of 7 SHGs consisting of around 70 weavers who agreed to plunge into their own world of productionisation. They pooled their resources and federated into a new organisation called Bunkar Vikas Sansthan (BVS). BVS decided to mange their own production and market it directly. They started with the repeat orders of the Women Weaves event and soon business was struck with a high-end handloom and handicraft marketing organisation called Fab India.

The experience of working with Fab India consolidated their learning and naturally promoted them to create a system to manage the business. The need for professional functioning also led to setting up of rules and regulations for common raw material procurement, production, transparent quality management systems, costing, pricing and timely delivery of orders. This is now becoming a self-governing mechanism for any order that the weavers of BVS receive.

Over time as BVS matured, the number of SHGs as BVS members is now 13. BVS now plans to induct 8 more SHGs as members. BVS also started doing business with various other high-end marketing outlets too.

How Weavers Manage BVS

BVS has an executive committee of 19 members, including 5 women, to take all major decisions regarding business. There are two sub committees also. One is responsible for all marketing related tasks. The other one is for production, including allocation of jobs, fixation of wages, payment to the weavers for their work, etc. It is relatively better matured up. Then there are 'Vyavasthapaks', one from each SHG to take work, keep account of supplies and payments to the group members. A Vyavasthapaks is paid 3% of the total payment by BVS for her/his effort. The dyeing house and yarn bank are under the control of BVS, which has an office, with accounts section, room for stocks and for the meetings. There is a general body consisting of all BVS members. It is the apex body, responsible for budget approval, ratification of all decisions and actions. The CEO of BVS supports them in these initiatives.

Design & Product Diversification

A number of design and product diversification workshops with the support of Govt. of MP and the designers' team from NIFT, design projects with the designers of NID and other reputed institutions, design ranges as per the market needs and the orders received, all have been helpful in enriching the design range of the cluster and the creation of new yarn combinations, especially use of tussar yarn and the cotton – cotton combinations have provided a completely new image to Chanderi and opened its possibilities for wide range of product ranges besides saris. Thus, saris, suits, dupattas, dress material, furnishings, home accessories etc. have been created for more marketing avenues. A CD of Chanderi designs has also been created by a BDS provider

Technological Issues

Low productivity and drudgery in pre loom processes and the poor quality of dyeing were the key technological issues in the cluster. To address this firstly dyeing workshops were organised with the support of experts from NIFT. This created the initial interest. Thereafter a BDS provider started interacting regularly and giving the weavers inputs on appropriate dyeing technique. However a big learning impetus came when the dyeing of yarns for the Women Weaves event went to Maheshwar for dyeing, as the local dyeing was not acceptable. Thereafter the quality regulation technique of Fab India production pushed the weavers into bulk buying and getting yarns dyed from Coimbatore! At this stage the weavers of BVS decided to have their own yarn depot and dyeing arrangement. Now, with the support of National Handloom Development Corporation (NHDC), BVS has opened its own yarn depot. Training was provided to some of the interested weavers and they were inducted into the new dyeing arrangement created by BVS. With the support of Government of MP, 10 high width *tara looms* have been installed too. New weaving techniques were also introduced by involving the Silk Club.

Credit Support

Regular savings by the SHGs and the efficient business systems of BVS were created to improve the mutual confidence between the banks and the weaver community. It was identified that cheap credit can be mobilised through credit lines of National Minorities Development Corporation (NMDC). But NMDC fund can only be sourced through a reputed organisation. Here again the Government of MP provided support through its corporation – Hast Shilpa Vikas Nigam (HSVN) and a loan of Rs. 8.55 lakhs was given to the SHG members of BVS. Loan of Rs. 80,000 each was also mobilised for two SHGs. Besides, NIRVANA (an NGO) has given an interest free loan of Rs. 1 lakh to one BVS weaver. ONGC (Oil and Natural Gas Commission) has also provided working capital of Rs 5 lakhs to BVS.

Other social issues

Social issues, related to empowerment, health and education are also being addressed. Involvement of women is ensured in all activities. There is reasonable amount of representation of women in executive committees of all the important bodies. They are encouraged to participate in exposure visits. Women weavers were provided specialised leadership training through a leading women empowerment organisation – SEWA. One of the weavers has

Empowerment of Women

Ms. Afroz Jahan joined her SHG, Indra Samooh in 2003, just as another member. Her group was one of the first ones to join the bunch of SHGs, which formed BVS. She got the opportunity she was looking for and deserved to get. Now, she has proved herself a person with great leadership qualities. Not only she is one of the senior executive committee members of BVS, but also has been elected as Vice-Chairperson of the national body of Homenet South Asia, a sister concern of SEWA, Ahmedabad. Homenet sponsored her to participate in exhibitions in Pakistan and Nepal. Now, about 150 weaver women of Chanderi have formed a forum, called Hamari Duniya, of which she has been made Chairperson. Not only herself , but a number of other women also have come forward to take lead in the responsibilities offered to them by the group. Of course, she has motivated many of them to do so.

visited Pakistan to participate in an exhibition. About 80 women are enrolled in literacy classes and they are taking interest in learning. In the process of women empowerment, about 150 women have constituted a forum, they have named it 'Hamari Duniya' (our world), under the aegis of BVS. This would serve as the platform for women's common issues.

Strengthening of local governance framework

While 60 networks were created in the cluster, a lot of effort was made to federate the 13 selected SHGs to form BVS and then strengthen this new weavers' institution to demonstrate the benefits of joint action and effective system for common business and other activities. BVS helped in showcasing the essence of value-based systems in the long run to provide not only sustainable business but also help in improvement of the overall social fabric of the cluster. The Chanderi Silk Club of the master weavers and the traders, which had been created earlier, was not only revitalised and strengthened but at the same time given a larger cluster level mandate of showcasing the best of Chanderi at international fairs and exhibitions. These separate organisations of diverse interest groups, weavers and master weavers were then brought under a common platform to create the Chanderi Foundation, which could obtain the GI registration for the entire cluster.

Sustainability of Intervention

BVS, which is now a federation of 13 SHGs is now on the verge of increasing its membership and has also been able to obtain confirmed marketing links with Fab India and other niche buyers. Thus it is poised to provide regular work to the weavers and sustain the well laid down systems of common business. However there is further need for its capacity building. The cluster has received the GI certification and thus the problems of fakes might also be attempted to be handled now by the cluster stakeholders. The cluster friendly policies formed by the state government would also be a support for the cluster. The opening of the local office of Fab-India in the cluster is a sign of the fact that long-term institutional links for the cluster have begun to make in-roads and are here to stay.

Future Direction

Efforts in the initial years were on networks creation and basic capacity building. This was followed by strengthening of the networks in production and marketing capacities. Measures for empowerment of women weavers were also simultaneously addressed. Much of these have been attained. However lot still needs to be done for the sustainability of efforts, especially with respect to high-level capacity building in enterprise management of BVS. Besides the BVS, Silk Club and the Chanderi Development Foundation also need support to preserve and promote the advantages gained during the past few years. Efforts also need to be made for providing micro finance to the poorest and consolidation of the achievements on the gender front. These will be done through need specific training followed by on-the-event handholding. Accordingly the future objectives of the cluster could be the following:

1. Consolidation of BVS through capacity building
2. Empowerment of women
3. Strengthening of BVS and Silk Club in design and product development
4. Product Promotion through Chanderi Development Foundation
5. Credit and micro finance facilitation

Chanderi is a town situated in Dstrict Ashoknagar of Madhya Prdesh. Intervention in this cluster under the current project (US/GLO/02/059) started in April 2003. The Project is ongoing. This case study has been compiled by Mr Ashwini Saxena, National Expert, UNIDO CDP (Orissa). It draws heavily form a diagnostic study of Chanderi cluster prepared by UNIDO and an Impact Assessment study prepared by Indian Grameen Services (BASIX) for UNIDO CDP.

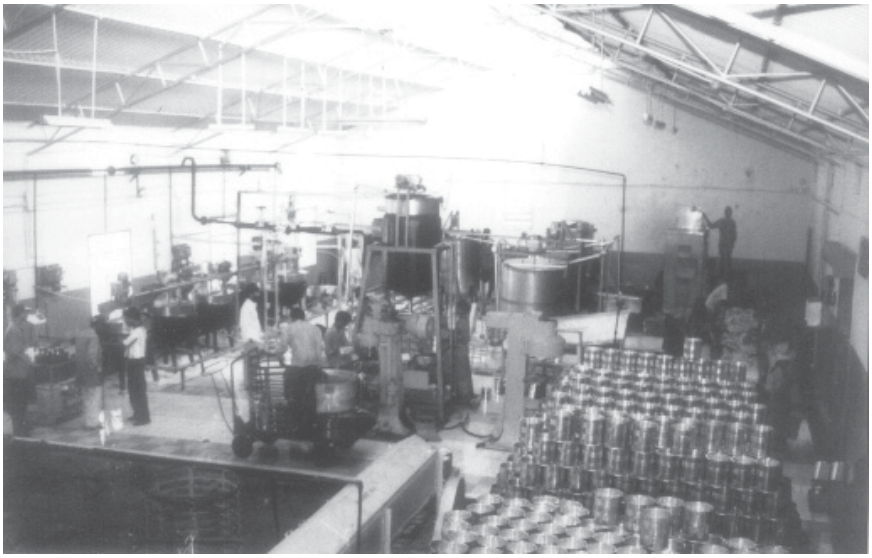
Footnotes

[1] Pagri is a piece of cloth worn over the head by men for protection.

[2] While fly shuttle looms provide better productivity over the old throw shuttle looms, the loom attachments dobby and jacquard facilitate motif creation on the fabric during weaving.

[3] Here poverty refers to participatory poverty as defined by the stakeholders. This has no link with poverty line or other definitions of poverty. The poverty nodes were identified through a participatory poverty approach by the stakeholders themselves.

Consolidated Results	
Strategic Goal	**How Cluster Benefited**
Income	· BVS and SHGs sold their goods worth Rs. 8.3 million. Of this Rs 6.7 million was to Fab-India. BVS could give 10 to 15 percentage extra wages plus 7 to 15 percentage profit to their SHG members who are weavers. . The Chanderi Development Foundation has been created to manage macro issues at cluster level. The 11 members of this body (7 weavers, 2 traders and 2 heads of cooperatives) have got Geographical Indication (GI) registration to protect Chanderi.
Quality	· Special group of 5 Dyers has been formed and they are doing dyeing for BVS. · A dye house and a colour depot of BVS have been set up · New higher width looms have been introduced
Credit	· National Minority Development Finance Corporation provided working capital assistance to BVS through MPHSVN for an amount of Rs. 850,000 · SBI Indore has released Rs 160,000 to two SHG's for business promotion. . Workshop on micro-finance with the Govt. Of MP brought out needs for focused attention through existing cluster based banks/FI
Health	· Awareness on Health and Hygiene and small tips "How to prevent disease" workshop on community health has been shared through different initiatives. · More than 100 weavers have benefited from health check up camps and 226 have received spectacles at nominal rates.
Knowledge	· Special curriculum & literacy classes by NIRANTER, an NGO for 5 SHGs · Special leadership training to 28 women weavers by SEWA.
Other social issues	· BVS has engaged 4 social animators for addressing various gender related issues · BVS has formed a special forum – "*Hamari Duniya*' (our world), consisting of women members to take forward the gender issues.



Chapter 04
Chittoor - Food Processing

The Chittoor Fruit Processing Cluster (CFPC), is the largest cluster of its kind in India. Lack of mutual trust, intense inter-firm competition and a roller-coaster performance marked the growth of the cluster before the interventions in 1998. Other problems afflicting it were unscientific raw material handling practices, primitive processing technologies, unremunerative product-mix, poor product quality and high environmental pollution. The interventions by APITCO, as the Cluster Development Agent (CDA), with the active participation of the firms and their commitment to "swim or sink together" attitude; along with proactive support from National Horticulture Board (NHB), Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Food Processing Industry (MFPI), Government of India and Government of Andhra Pradesh (GoAP). increased exports, domestic sales and employment; led to introduction of HACCP protocols; and setting up of aseptic packaging facilities and effluent treatment plants. An Agri-Export Zone (AEZ) covering the entire district and a Food Park at Kuppam have been established.

Evolution of the Cluster

Evolution of the cluster can be traced to the initiative of two fruit traders of the district, Mr Haneef and Mr Sattar, who had to set up a micro enterprise to extract mango pulp, around 1965. The venture shut down after operating for some years. The first organised effort for fruit processing in the district was however attributed to a visionary entrepreneur, Mr. A. Subrahmanya Reddy a native of the district. Mr. Reddy is credited with establishing and successfully operating the first mechanised fruit processing enterprise in Chittoor district in 1970. Until 1980, his was the only firm – M/s India Canning Industries – in the district.

Seeing Mr. Reddy's success, 23 more firms were set up by other entrepreneurs between 1981 and 1990. Poor performance of weak firms led to high incidence of default on term and working capital loans. It also saw the entry of merchant exporters and marketing firms for contract manufacturing. The 1990s saw the entry of more firms, some of which had better processing technologies. This intensified

competition and led to efforts by a few firms to modernise operations in order to survive competition. Under-cutting of prices by firms was also not uncommon. The cluster underwent a cluster development programme initiative with joint action since 1998.

The Cluster and its Major Stakeholders

In 1998, the cluster had 33 SMEs with installed capacity of 1,681 tonnes per day, turnover of Rs. 68 crores (USD 15.5 million) and employed around 9,000 people. Seventy-five per cent of the turnover was exported. The majority of the small and medium enterprises had similar process technologies, product-mix, production capacities, canning facilities, level of investments and even clients. The other stakeholder were farmers, raw material traders, merchant exporters, transport firms, equipment suppliers, maintenance firms, commercial banks and financial institutions.

Major Problems

The diagnostic study identified that the cluster needed to address the following:

1. Various technical issues including unscientific raw material handling practices at the farmer, trader and processor levels, unhygienic operations, high level of in-process wastage and lack of focus on product quality as reflected in minimal process checks and hazard control points
2. Excessive dependence on merchant exporters and on contract manufacturing. Besides there was an unremunerative product-mix as a majority of the enterprises produce only single strength mango pulp.
3. Increasing levels of environmental pollution as liquid effluents are discharged into open drains without treatment and solid wastes dumped in open places.

Vision for the Cluster

No formal vision statement was drafted. However, as the key issues were identified and a number of brainstorming sessions were organised, the vision of the cluster emerged as product quality improvement, strengthening product value chain and enhancing direct exports by enterprises.

Implementation Strategy

Since interactions between enterprises were negligible and they viewed themselves as competitors, APITCO led the process of interaction. Brainstorming sessions were organised on the development of the cluster. This was followed by sessions where cluster enterprises interfaced with technology providers and experts in marketing, quality assurance and processing. This helped to persuade the enterprises to modernise their operations and collaborate with each other on large projects for mutual advantage.

The changes were demonstrated in a few units that agreed to initiate them. On seeing the successful results of the changes, those units that had held back were convinced to follow suit. The 'change-leaders' and 'followers' were meticulously guided by APITCO to carry out the changes . What is of prime significance in this effort is the strategic role that APITCO played to foster institutional linkages and leverage schemes of assistance formulated by known supporting institutions. APITCO also arranged for partial funding of common facilities projects, led by joint forum and firm-level modernisation plans.

Major Interventions

The major interventions focussed on the key issues involved in the development of the cluster are summarised below:

Improved Raw Material Handling: The extent of wastage of raw fruit due to unscientific handling at farmer, trader and processor levels was as high as 8 per cent. With a view to minimising this, three interventions were made:

- usage of perforated plastic crates, of 25 kg capacity, for carrying raw fruit;
- construction of well-ventilated and scientifically designed *pucca* intermediate storage sheds for fruit ripening;
- usage of tractor-mounted mobile elevators for harvesting fruit from mango trees.

The first two interventions were well received and are widely used. A suitable technology has been identified for the third case. The equipment was fabricated locally and demonstrated. Commercial propagation is slated for the next season (2006).

These interventions contributed positively in containing raw material wastage to around 5 per cent. There is potential for further reduction if all farmers and traders practice these interventions and the conditions of the roads are improved.

The implementation of the interventions was facilitated by part financial assistance from NHB for propagating the use of plastic crates and APEDA extended financial support to test and pilot the fruit-harvesting technology intervention.

Process Improvements: Process improvements by small enterprises in the cluster were vital to ensure hygiene and improve product quality. Three major interventions were initiated towards this end:

- mechanical washing of fruit and conveying of the slices to the pulper;
- usage of a pasteuriser vis-à-vis open steam-jacketed kettles;
- improving the can-sterilization system and usage of rotary continuous can filling machine.

Considerable effort was needed by CDA to sensitise and convince the enterprises regarding the imperatives of these intervention. As it implied additional investments, only two enterprises opted for the process improvements initially. However, seeing the advantages of the interventions, eight more enterprises opted for them during the next two years.

Most significantly, five enterprises have opted to set up aseptic packaging facilities, in line with the growing preference of importers. Considering the high capital investment warranted, a common aseptic packaging facility is being planned at Chittoor to cater to the needs of the smaller processing enterprises.

Common Facility for Aseptic Packaging

Aseptically packaged food products are shelf-stable and do not need any special environment for storage, especially at the retail level. Further, it enhances food safety. For these reasons, importers of processed foods particularly in OECD markets insist on aseptic packaging.

A common facility for aseptic packing of fruit pulps, with an installed capacity of 80 tonnes per day, is being set up in the Chittoor Fruit Processing Cluster. Establishment of the facility involves an outlay of Rs. 600 lakhs (US$1,364,000), 75% of which is provided by APEDA as grant and 25% by Andhra Pradesh State Trading Corporation (APSTC).

Quality Assurance: As the end products from the cluster are intended for human consumption and are exported, it is necessary that they conform to HACCP protocols. Two seminars were organised by CDA to sensitise processors on various aspects of quality assurance. Majority of the participants were convinced of the need and opted to conform to HACCP requirements. This however called for an average additional investment of Rs. 3.5 lakhs (US$8,000) per processing enterprises. Part of the financial support for HACCP certification was extended by APEDA, and the balance was borne by the respective enterprises. The impact of the intervention is that 70% of the cluster enterprises are HACCP certified.

A common testing laboratory was also established to enable that cluster enterprises have their products tested and certified for quality and export worthiness. Of the total outlay of Rs. 25 lakhs (US$57,000), 80% was provided as grant by MFPI and the balance was contributed by the Chittoor Fruit Processors' Federation (CFPF).

Common Testing Laboratory

The common testing laboratory will benefit all the enterprises, particularly the small enterprises, to have their end products tested and certified for quality. The facility was conceived as a sequel to the strong desire expressed by a large number of enterprises that only products tested and certified for quality and safety should be marketed.

The laboratory has provision for testing pesticide residues, presence of heavy metals and other contaminants. Pending creation of permanent infrastructure, a leading processing enterprise in the cluster offered its premises to house the laboratory and commence operations.

Broad-based Product-mix and Market Development: The cluster enterprises predominantly produce single-strength mango pulp of 15^0-16^0 brix. This being the first-stage end product in processing, there is little value addition. As the processors are engaged in contract manufacturing for merchant exporters, they did not evince much interest in value addition.

As a result of a series of interactions with marketing experts, the processors were convinced about the advantages of direct export efforts and producing down-stream value added products such as RTS fruit beverages, jams, jellies etc., primarily to meet the growing domestic demand. This intervention made a notable impact. At least three enterprises started direct exports. Further, CFPF has piloted the marketing of a common brand 'Seven Hills' of mango RTS drink through dispensers, in the local markets of Tirupati and Tirumalai towns, utilising the existing retailer chain. The response was good and it is planned to enhance the marketing effort through Rajiv Yuvashakti project of the Government of Andhra Pradesh to promote self-employment among the youth.

Waste Management: Management of in-process waste, both liquid and solid, in the cluster in an environment friendly manner was a major challenge. As a sequel to pressures from the Andhra Pradesh State Pollution Control Board (APPCB) and the imperatives of the WTO regime, the enterprises have decided to set up Effluent Treatment Plants (ETP). As a result liquid effluents (mainly wash and process water containing BOD 1,500 mg/litre, COD 2,400 mg/litre and pH 5.0 - 6.0) are treated to safe levels of BOD <50 mg/litre, COD <200 mg/litre and pH 5.5-9.0) before being discharged. The cost of establishing an ETP as per the design specifications of APPCB was Rs. 12.50 lakhs (US$28,000). While APEDA extended 50% financial assistance, the enterprises mobilised the rest as their share.

Consolidated Results

The interventions pursued in the cluster have triggered a positive impact, which in turn has led to some significant spin-offs. The major results emerging from the interventions, both at firm and cluster levels are summarised as below:

Firm-level

- Eighteen new enterprises have entered the cluster adding nearly 1,500 tonnes of processing capacity per day. The turnover of the cluster has increased by Rs. 238 crores (US$54,000,000) with creation of nearly 7,000 new jobs, mostly seasonal.
- Fifty processing enterprises use plastic crates for handling raw fruit, while 35 have set up *pucca* intermediate storage sheds. These measures have contributed to scaling down raw material handling wastages to around 5 per cent.
- Thirty enterprises have implemented process modernisation measures that facilitated product quality improvement, waste minimisation and efficient energy management in varied measure.
- Thirty-eight enterprises have established effluent treatment plants to treat liquid effluents to safe levels and use the treated water for irrigation of orchards.
- Seven enterprises have set up an aseptic packaging facility to cater to export market requirement and thus enhance their market prospects.
- Thirty-six enterprises are HACCP certified.

Cluster-level

- Critical common infrastructure has been strengthened through setting up of a common testing laboratory and an aseptic packaging facility.
- Chittoor Fruit Processors Federation has become more active with increased trust and collaboration among members. About 25 new members have jointed the federation.
- An Agri-Export Zone covering the entire district has been established.
- A Food Park at Kuppam has been set up.
- Fruit processing has been declared as a seasonal industry.
- Minimum demand charges by A P Transco have been reduced.
- An exemption of marketing cess on purchases of raw fruit used in the production of finished products meant for exports has been granted.

Sustainability of Interventions

As the cluster development process gained acceleration, voluntary participation by enterprises and their conviction to improve their performance has become stronger. This is evident from the lead role assumed by them over the years in sharing problems and making plans for cluster development. Today, the CDA and other institutions play only enabling roles.

Over the last five years, a fairly strong local institutional network involving cluster enterprises, commercial banks, district level government institutions, marketing firms and other support providers has emerged and operates smoothly. External institutions are approached only occasionally to avail assistance under specific schemes.

Future Direction

To further strengthen the growth of the cluster, the following interventions are suggested:

Protecting and Promoting Product Uniqueness: Totapuri mango pulp from Chittoor enjoys a reputation and consumer preference in export markets. The cluster enterprises therefore feel the need to protect Chittoor Totapuri Mango Pulp under the Geographical Indications (GI) Act. APITCO and CPFP are working out a plan for GI initiation.

Organising Trade and Exposure Visits: By exposing cluster forms to trade channels and consumers in major importing countries, direct exports could be enhanced. Similarly, visits to leading fruit processing clusters abroad will help reinforce their belief in cluster dynamics and enable them to commit to cluster development. APITCO has approached Ministry of Small Scale Industries (MoSSI), Government of India and APEDA to support an exposure visit of cluster enterprises dealing with Western Europe markets.

Creation of Market Intelligence Data Base: There is low awareness in the enterprises about overseas markets. It is therefore necessary to create a comprehensive market intelligence base in CFPF for use by the enterprises. APITCO is motivating CPFP to host a common website and install systems for export-market data collection and information sharing with members.

Common Facility for Solid Waste Management: Safe disposal of solid waste generated in the cluster, which amounts to around 40,000 tonnes per season continues to be a major challenge. Setting up of a common facility to use the waste for the production of cattle feed, bio-fertiliser and fuel briquettes can be encouraged. APITCO has tried to motivate suitable private entrepreneurs for setting up the common facility.

The Chittoor Food Processing Cluster is situated within a radius of 40 kms. around Chittoor town, in Andhra Pradesh. The initiative for the development of the fruit-processing cluster of Chittoor was started in the year 1998 by APITCOand major interventions are accomplished. This article has been authored by Mr S Srinivasa Rao, Managing Director, APITCO and Mr I D Prasad, Chief Consultant, (Corporate Development), APITCO

Chapter 05
Coimbatore - Wet Grinder

The interventions at the wet grinder cluster of Coimbatore reflect an 'institution-association', i.e. Small Industry Service Institute (SISI) of the Ministry of SSI, Government of India and Coimbatore Wet Grinders and Accessories Manufacturers Association- (COWMA) - 'SISI-COWMA' partnership initiative that can serve as a demonstration model for other clusters. The problems faced by the cluster prior to interventions were price and quality of critical inputs, credit and market linkages, limited product development and design. COWMA was an active association but lacked operational infrastructure and experience in the developmental role for an association. The project through the cluster development agent (CDA) of SISI and technical guidance of NISIET and one specialised BDS provider, gave the desired inputs for the same to various stakeholders. It also fully involved COWMA in all Project operations. As a result, COWMA is now taking active role in promotion of marketing, making available credit facilities and providing infrastructure support to its members. The successful consortia and 'SPV-'led interventions of COWMA has encouraged, the Small Industries Department of the state government to evolved a new support package for infrastructure development in SSI clusters.

Evolution of the Cluster

The Wet Grinder Cluster of Coimbatore produces electro-mechanical grinders that make batter to prepare idlis and dosas - traditional South Indian dishes. Traditionally, the batter was prepared by the grinding action of a large stone, holding the ingredients in its bowl, in which another stone of smaller size was rotated. The quarries of Coimbatore supplied these stones.

Over the years the cluster has grown with changing product designs and features, led by entrepreneurs from within the cluster. The first mechanical wet grinder was innovated in 1955. In this machine, a belt and pulley mechanism rotates the larger stone while the smaller one is held inside the bowl, using an arm-set mechanism. This is today referred to as the 'conventional' grinder. Over the next two decades, hundreds of enterprises started manufacturing this product. In 1980 a leading manufacturer introduced a 'tilting' grinder, in which the shape of the stone was modified and a drum (as against the 'bowl') was made to facilitate the tilting operations. At present, over 10 per cent of cluster turnover is accounted for by this 'tilting' grinder, which is more convenient for consumers.

In 1995, a leading medium scale engineering enterprise brought out a table-top version priced three times that of the two standard varieties. This product is easier to transport and saves space (very critical to urban households). At present the table-top version accounts for about 70 per cent of the market share of the product. In recent years, large commercial wet grinders have been introduced in hotels and enterprises making ready-to-use batter, etc. Small volumes of the product are used for grinding chemicals and drugs in the pharmaceutical and chemical industry also.

The Cluster and its Major Stakeholders

The Cluster at Coimbatore produces over 75 per cent of wet grinders made in the country. About 80 per cent of the product is sold in the four southern states of Tamil Nadu, Andhra Pradesh, Karnataka and Kerala. Target customers also include South Indians across the country and abroad, through dealers, agents and exporters. There are 700 units in the cluster. These include one medium scale unit, about 50 comparatively larger SSI composite manufacturing units and about 150 SSI units. There are over 500 components manufacturers and suppliers, making motors, drums, castings, stones and arm-sets. The estimated turnover of the cluster is Rs. 225 crores (USD 51 million). The relatively larger firms avail the services of private designers to introduce small product innovations. There are several local traders who supply inputs sourced from various regions across India. The cluster provides direct employment to about 20,000 people and indirectly employs over 50,000 people.

The industry association - Coimbatore Wet Grinders and Accessories Manufacturers Association (COWMA) was established in 1995 and has 600 members. COWMA is also affiliated to the Coimbatore District Small Scale Industries Association (CODISSIA) and the apex Confederation of Indian Industry (CII). The former is rated amongst the leading regional associations in the country covering enterprises in a variety of product categories. Services offered by CODESSIA in terms of workshop and training programmes are availed by COWMA members.

Most enterprises avail of support from conveniently located banks. Various support institutions like SIDBI, NSIC and the renowned PSG College of Technology are located in Coimbatore. The city is the headquarters of the District Industries Centre (DIC). The concerned Engineering Export Promotion Council (EEPC) is located in Chennai. As an industrial city, Coimbatore is blessed with specialised private BDS providers offering a variety of services.

Major Problems

Price and Quality of Critical Inputs: Copper wire drawings, stampings and stainless steel (SS) sheets are the critical inputs of the industry. They are sourced from all over India through multiple channels of traders. This implied a cost burden as also questions on the quality of the inputs. Moreover, standardisation of inputs and hence the end product was difficult to achieve under these circumstances. There was also a lack of various facilities for quality output.

Credit Linkages: The tiny enterprise segments amongst the 500 components manufacturers suffered from lack of adequate financial resources and collateral to secure institutional credit. They possessed specialised skills but operated in a sub-

COWMA - A Strong Association

COWMA is the single industry association that represents the interests of enterprises across (and within the same segments of) the supply chain. Floor prices at which products are supplied by component manufacturers to wet grinder manufacturers/ assemblers and those supplied by wet grinder manufacturers/assemblers to dealers are decided by COWMA. Detrimental price competition is therefore staved off to an extent. The association arbitrates disputes amongst individual members on an informal basis. It arranges for local sales tax related BDS providers to members at competitive rates. It also does advocacy on behalf of all enterprise segments in this cluster. The association had operational limitations with respect to lack of exclusive office space and professional managers.

optimal situation of procuring inputs on credit basis, thereby further depleting earnings.

Market Linkages: The firms had weak direct export market linkages. They also confronted relatively saturated domestic markets. The product is a durable consumer good and repeat purchases by consumers was low. Fundamental marketing concepts indicate that regular launches of new models (with upgraded features and value-added functions) and relevant promotion is critical. It is only then that repeat-purchases of a durable consumer item are possible within a time period less than the life of the product. This is a basic marketing strategy. The option of developing new market segments of non-South Indians had not been seriously pursued. Initiatives towards exploring different product applications is also relatively lacklustre.

Product Development and Design Related Issues: The cluster's products were characterised by relatively poor development in terms of design and product development. These included issues like aesthetic looks, energy or input cost efficiency, reducing the speed of the motor, which would economise on costs of belt and pulley related inputs.

Vision for the Cluster

The vision for the cluster that was progressively evolved by the implementing agency was: 'The Wet Grinder Cluster at Coimbatore would have entered into a sustained growth trajectory by means of realising sustainable cost and differentiation advantages as also exploring and creating new markets and supplying quality products by the year 2007'.

Implementation Strategy

SMEs in the cluster have a strong representation in the form of COWMA, but it lacked operational infrastructure. It was felt that the activities of the association could be best institutionalised by providing the operational infrastructure. The next stage was to organise pilot activities to increase interactions amongst enterprises to explore Common Business Plans. This was followed up by more serious business activities by smaller networks of firms sponsored by COWMA, which led to further benefits to the firms.

Thus the strategy for implementation was to act as a support provider and let the cluster stakeholders lead from the front. This would ensure high sustainability of efforts. The implementing agency also took the support of the National Institute of Small Industry Extension Training (NISIET) to advise on strategic issues and monitor the growth of this programme. NISIET was given the funds by the agency for flexible and quick decision-making and disbursement of support for the activities of the cluster. NISIET also engaged the services of a specialised BDS provider with expertise in pursuing various interventions in the cluster. The BDS provider worked closely with the CDA, COWMA as also NISIET to pursue various capacity building (evolution of networks) as well as strategic initiatives (evolution of CFCs as well as branding options). Over time COWMA took the lead in working closely with the SISI in implementing different activities, thereby taking cluster development on a real fast-track mode.

Implementation of various initiatives was also tagged with strong media linkages to publicise information on benefits derived from various interventions. This was expected to generate interest among a larger number of enterprises to pursue similar interventions.

Major Interventions

Common input purchase and processing: Of the 65 motor manufacturers in the cluster about 10 of the larger ones were brought together as a demonstration group to initially organise a (input) suppliers meet. Inputs in terms of copper wire drawings and stampings, for example, constitute a major cost of production. This was sourced from other regions through local traders. After collecting input on potential suppliers from the Engineering Export Promotion Council (EEPC), Chennai, a one-day meet was organised. Upon interaction with traders and manufacturers from across India, the motor manufacturers narrowed down their focus to one product-copper wires. Copper wire drawings account for about 35-40 per cent of cost of production of the motor manufacturers. The network of these 10 small motor manufacturers then successfully (and directly) sourced inputs by way of copper tubes from traders in Delhi to the tune of Rs. 4.6 lakhs (USD 10,000). The copper tubes were drawn into wire at a factory in Bangalore. The results were encouraging. The network could offer better quality products (as they selected the inputs themselves) to wet grinder manufacturers at the same price that others in the cluster do. The network is now approaching financial

institutions seeking support for a limit of Rs. 40 lakhs (USD 91,000) so as to facilitate necessary bulk purchases. They have also identified different locations that are cheaper for sourcing inputs.

Common facilities centre: There was a need for progressively developing common standards for products. There was also the need to facilitate testing services, as these are not adequately available in Coimbatore. The other gaps included copper wire drawing and insulation facilities, varnishing facilities, stampings production facility, SS buffing facility with tig welding, plastic compounding, crushing and granulating facilities. Performance of end products also varied from one manufacturer to another and between one batch or lot and the other. Even the components that were used were not interchangeable. To address these issues COWMA became proactive with the support of the implementing agency to implement a common facility centre.

An SPV for project implementation in the form of a society 'COWMA Cluster Services' was created. Twelve key members of COWMA served as the initial members of the society. The contributors to the project (as proposed) were: cluster SPV (54.41 per cent), DCSSI (about 34 per cent) and the State Government of Tamil Nadu (about 11.25 per cent) of total project cost including (implicit) working capital of Rs. 288.20 lakhs (USD 655,000). While DCSSI has sanctioned assistance of 90 per cent of core machinery and equipment, the State Government's contribution is under finalisation.

Credit Linkages: Inadequate cash for efficient operations was identified as one of the most critical problems of tiny-scale component suppliers. This circumstance was largely due to the 'unorganised' and 'informal' nature of operations amongst enterprises in this segment. Ten (of the 40) arm-set manufacturers built a partnership consortium. The objective was to avoid the implicit cost of credit purchase from local traders. They pooled in Rs. 1.25 lakhs (USD 2,800) to secure support from SIDBI (interest-free loan contribution to corpus of Rs. 1.25 lakhs) and secured a WCTL facility of Rs. 5 lakhs (USD 11,000) from the Vijaya Bank. The implementation of this intervention encompassed a total timeframe of about three months. The Vijaya Bank (the lending agency in this scheme) was an institution newly introduced into the Mutual Credit Guarantee Fund (MCGF) operations in the country. The initiative facilitated considerable increase in earnings of member enterprises of the network.

Within a period of eight months of availing SIDBI support in December 2004, the enterprises have successfully targeted the critical problem of credit purchase of inputs from local traders. They are currently sourcing inputs such as MS rods and pipe angles directly (in cash) from the Coimbatore-based retail outlets of Chennai traders. Each member enterprise is securing a net saving of over Rs. 6,000 per month by this initiative.

The facility of Rs. 5 lakhs is to be repaid over 60 monthly instalments. Including interest at 12 per cent per annum, the network contributes about Rs. 11,290 per month to service this obligation. SIDBI's interest-free loan (contribution to corpus) is serviced at Rs. 3000 per month. In all, the network members have been depositing Rs. 15,000 per month in the bank to cover obligations. Of this Rs. 700 per month goes to COWMA as a token service fee for playing a monitoring role as the implementing agency.

In view of the success of the first demonstration network, SIDBI has sanctioned support for another group of small components manufacturers. The fund requirement for this group is Rs.10 lakhs (USD 23,000).

Marketing initiatives: Various initiatives such as establishment of a common website of COWMA (www.wetgrindercoimbatore.com) and printing of a cookery booklet to encourage new consumers to try the product were pursued. In addition, two initiatives were also made:

* Organising specialised fairs in geographically new markets.
* Creating a marketing network. This is still at a relative stage of infancy.

The local availability of appropriate stone (a critical raw material), a skilled labour and component manufacturing force, and the presence of well developed enterprises in the areas of motor manufacturing, foundry, electroplating, and machining in the industrial city of Coimbatore offers factor advantages. This makes the region a competitive place for manufacture of wet grinders. Some factor conditions indicated scope for registration of the products under the GI Act. This initiative was pursued by COWMA intermittently over a period of three

Organisation of an Exclusive Fair by the Association

As part of the initiative to develop new market segments and consumers, a food mela was organised at Indore in 2005. The CDA took the lead in co-ordinating the event with the counterpart SISI at Indore. COWMA office bearers mobilised industry to participate. About 30 per cent of the Rs. 1.4 lakhs (USD 3,000) cost outlay on the event was met by COWMA. The balance was offered by the SISI from DCSSI funds allocated for implementation of cluster development activities. This was a pioneering attempt at market development

SISI Indore, availed the services of an event manager who arranged the venue (a hotel) and furniture on lease basis. Local advertisement (on cable channels) and press meets were conducted. Printed banners were displayed across Indore. Over 2,000 people including potential distributors and dealers, visited the three-day mela. These people were contacted on the basis of information received from dealer and distributor associations. During the mela, visitors were also shown the different types of dishes that can be prepared using the grinder. Six enterprises have secured orders worth about Rs. 25 lakhs (USD 57,000). Much larger orders are expected to be booked in the near future.

COWMA Market Consortia: A Potential Cluster SPV for Generic Brand Promotion

A network involving four Wet Grinder manufacturers/ assemblers decided to target export markets (the NRI population). The Middle-East as well as South East Asian regions are being targeted. Information on importers/ dealers and agents related to home appliances were compiled from various directories. Contact points of NRI associations, world-wide were sourced from nodal agencies in the southern states. Indo-American and other similar chambers of commerce were networked with for information. An NDA has been appointed (partly supported by SIDO funds) to work on promoting participation in an international fair for which support from NSIC is available. A customer database has been compiled for contact over the internet. NSIC membership with regard to infomediary services has also been availed of and a common catalogue developed. The network explored other options such as direct marketing through SHGs by means of networking with NGOs and Women's Development organisations. However, it decided to keep this option on hold and focus instead on exports, to avoid mutual conflict (amongst members) and disturbing their own brands in existing established markets by merely changing the channel mix. The network progressively evolved into an SPV of COWMA so as to pursue generic product promotion initiatives upon formal registration.

The members of this network have taken the lead to secure standardised input-output norms for cluster SMEs to facilitate global sourcing of some inputs competitively and to establish drawback rates as they move towards direct exports. Three units including one composite wet grinder manufacturing unit and two components manufacturers have already received ISO certification.

months. Close interactions with actors from the nearby Salem Power Loom Fabrics Cluster facilitated the process. Salem fabrics was at that time, well into the process of being registered under the GI Act. A GI could progressively serve as a catalyst towards common brand promotion activities.

Product Development and Design: With regard to this major problem, various interventions are in progress. Support from the international BDS facilitating service provider (SES Germany) as also the NID are being progressively availed of. A scheme for establishing a cluster business (including market) information centre has been evolved. The same is expected to be connected with a proposed sub-contracting exchange (SCX) project. Results are yet to fructify as interventions in this key area have only recently commenced.

Consolidated Result

The arm set manufacturing units are benefiting from a gross increase in earnings by about Rs.7500 per month. This implies a 30 percent (net) increase in earnings. Each Motor Manufacturer in the demonstration network is expected to substantially improve turnovers due to enhanced quality. Three units including one composite Wet Grinder manufacturing unit and 2 components manufacturers have already received ISO certification. SISI Coimbatore played the role of BDS provider in this context. Six enterprises have secured orders worth about Rs.25 lakh upon directly conducting an exclusive fair in non - conventional markets. Much larger orders are expected to be booked in the near future.

The common website established at the association has generated over 25 National and international enquires from new market channels. Some members have already converted these into business.

The CFC that is being implemented by the SPV of the association is expected to result in a reduction of manufacturing costs by about 15 percent for all member units.

SIDBI as also commercial banks have been sustainably linked to interventions in terms of supporting by way of appropriate financing instruments for tiny enterprises in the cluster. Two groups have been sanctioned support by the SIDBI already. The association led MCGF model, is perhaps amongst the first of its kind in India. Several others are also approaching them for support. Services of institutions such as the NSIC have been also interlinked with action plans of networks.

The CFC as also other demonstration 'hard' networks and other interventions were pursued under the aegis of the cluster based association - COWMA. Registration under the GI act as also initiatives of COWMA market consortia are expected to contribute towards brand promotion and market development initiatives of cluster enterprises. COWMA has therefore evolved into a 'business development model for firms by an association'.

The successful consortia and SPV-led interventions of the COWMA has encouraged the Small Industries Department of the state government to evolve a new support package for infrastructure development in SSI clusters. The Government of Tamil Nadu has since decided to promote similar projects in the state supported under SICDP of the DCSSI on the following pattern: The Government of India and Government of Tamil Nadu will together contribute up to 40 per cent of the project cost. The Government of Tamil Nadu's share will be a maximum of 20 per cent with SPV members' share being up to 60 percent of the project cost. This scheme is to be implemented under the Part II Schemes of the Small Industries Department of the Government of Tamil Nadu.

Sustainability of Interventions

The institutional framework in terms of appropriate delivery of services is being evolved so that it is sustainable. The association-led MCGFS model, perhaps the first of its kind in India provides options for more tiny enterprises to be financed on this pattern. An indicator of this is the subsequent sanction of further MCGF projects by SIDBI to networks upon successful implementation of the first. CGTSI's offer to network with COWMA along similar lines is also an indicator of greater interest by FIs on financing tiny and smaller enterprises in the cluster by means of appropriate instruments.

Appropriate orientation of support R & D and academic institutions such as the PSG College of Technology is being leveraged to provide skill upgradation training to enterprises. This is in terms of industrial design, prototype development,

ergonomics, etc. A proposal for a two-month, part-time training option has been submitted by COWMA and PSG College of Technology to the DST. Sanction is awaited. This intervention is expected to lead to long standing successful relationships between cluster SMEs and such institutions. The NID, Ahmedabad, is also being involved to pursue design related interventions. They are expected to work closely with COWMA to ensure sustainability.

The fact that almost all interventions are being pursued under the banner of COWMA with its contribution in terms of monetary and manpower resources is another indicator of sustainability.

Future Direction

Other than the institutionalisation, interventions indicated in the previous section, the future scope for development of the cluster may be visualised on several fronts:

• Continued study to explore reduction in the speed of the motor so as to cut down the cost of production of wet grinders.

• Brand promotion upon securing registration under the GI act. The successful implementation of the CFC is critical to facilitate the same in terms of enhancing competitiveness of small units as also quality and standardisation of products.

• Emphasis on catalysing initiatives of marketing networks.

• Cluster-wide replication of the demonstrated network models amongst tiny component manufacturers so as to avoid the cost of credit purchase and amongst small component manufacturers to ensure procurement in right quantities and volumes is expected to progress in a respectable pace.

Coimbatore is situated in the State of Tamil Nadu. The initiative for development in this cluster was started in the April 2004 by the Small Industries Service Institute (SISI), Ministry of SSI, Government of India. The work is ongoing. This article has been authored by Mr V Padmanand, SME Consultant, Chennai.

Chapter 06
Howrah - Foundry

At the foundry cluster of Howrah (West Bengal), a developmental financial institution - Small Industries Development Bank of India (SIDBI), took the lead in supporting the foundry SMEs, at a time when the units were under severe regulatory pressure to deliver on the environmental front. This was done with the support of a local technical agency and industry associations. These interventions resulted in fulfilling the environmental requirements as well as carrying out technical up-gradation and savings. The trust that was built up between the units and the support agencies during that period of interaction, is now leading towards creating similar large-scale initiatives for the benefit of the cluster.

Evolution of the Cluster

The foundry industry in India started in 1940 in Howrah and then spread to other States. The growth of foundry-related enterprises in the Howrah belt in the 1940s and 1950s was a result of the concentration of user industries — jute, textile and engineering industries — in the region and local availability of raw materials like pig iron and coal.

Most of the units were established several decades ago and are managed as family businesses. They have generally displayed little initiative towards modernisation after commissioning. Further, the cluster had evolved during a period when environmental issues were not relevant.

The cluster faced a major challenge when environmental laws with emission standards for foundries were introduced in 1990. In 1995, a leading environmental lawyer filed a Public Interest Litigation in the Supreme Court of India. Thereafter, orders were issued to install pollution control equipment in the furnaces. The deadline for compliance with these orders was extended to 1996.

SIDBI's intervention was initiated during this period. Subsequently, the West Bengal Pollution Control Board (WBPCB) and local industry associations have pursued various related interventions.

The Cluster and its Major Stakeholders

Howrah is the oldest foundry cluster in the country and perhaps the largest with over 500 units. The cluster accounts for over six per cent of the foundries in the country. However, over the years Howrah's share in terms of total castings produced in the country has fallen. In recent years there have been intense competitive pressures in terms of market demand for quality castings at competitive prices. Further, a large volume of the output from the cluster is of poor

value. It produces low-end products like pumps and tube well bodies, jute mill spares, etc. This is the direct result of lack of up-gradation of the machinery over the years. Thus the Howrah foundries have not been able to compete with the foundries in other parts of the country.

There are two industry associations in the cluster and in adjacent Kolkata. These are the Indian Foundry Association (IFA) and the Howrah Foundry Association (HFA). The IFA has a larger membership base than the HFA. The latter has about 160 Howrah-based members on its rolls and comprises of relatively smaller foundries. Many HFA members are also members of the IFA.

There are several specialised public as well as private service providers in the cluster. The Indian Institute of Foundrymen (IIF) is headquartered at Kolkata and conducts technical courses for the benefit of the industry and its members. It also brings out a journal. The National Metallurgical Laboratory (NML) is a government research laboratory headquartered at Jamshedpur. It has a local presence in the cluster, which works closely with the IFA and is actively involved in evolving pollution control systems for the foundries. The West Bengal Pollution Control Board (WBPCB) is the regulatory agency responsible for monitoring the compliance of emission standards drawn up by the Central Pollution Control Board (CPCB).

The cluster being in close proximity to Kolkata has no dearth of support from both financial and marketing service providers. SIDBI has a major presence in the region and has been focussing on modernisation and up-gradation of small enterprises. Infrastructure Leasing and Financial Services Ltd (ILFS), the infrastructure related service provider, has sizeable operations in the cluster and is working on the establishment of a physical infrastructure for the small and medium enterprises (SMEs) of the cluster. The Tata Energy Research Institute (TERI) has also been working in the cluster.

Major Problems

An ever-increasing population and natural industrialisation and town planning has put severe pressures here. The region was affected by serious air pollution problems. The Central Pollution Control Board (CPCB) found that the annual mean concentration of Suspended Particulated Matter (SPM) in the residential areas were beyond the stipulated norms. Other problems were shortage of power, industry related infrastructure, etc.

In the recent past SIDBI has identified several problem areas including the need for technology up-gradation, provision of waste disposal facilities, high manpower costs, shortage of trained personnel to work in factories, environmental concerns, etc.

Vision for the Cluster

No formal vision was evolved for the programme. However, The Technology Up-gradation and Modernisation Programme of SIDBI in the cluster is aimed at improving the technical capabilities and competitiveness of SSI units by introducing commercially proven technologies. The primary upgradation measures envisaged were conversion to Divided Blast Cupola (DBC) with appropriate downstream pollution control equipment. This is expected to result in significant improvement in quality and productivity and to bring about cost reductions, saving of energy and raw materials and reduction in the level of pollution. The intervention of SIDBI in Howrah may be visualised in this context.

Major Interventions and Consolidated Results

During the mid 1990s, pressure from the WBPCB compelled the foundry units to follow the stipulation to reduce emission so as to meet the norms regarding ambient quality standards. The development-focussed intervention by SIDBI, which started around that time, should be considered in the context of the high-pressure situation amongst foundry units.

At a workshop organised by SIDBI, HFA members approached the institution to explore options to resolve their crisis. SIDBI decided to work with about twenty units to demonstrate options. A local institution and service provider Consultants Network (C-NET) was identified to facilitate intervention. C-NET registered 32 foundries and undertook implementation of a package which included design of a DBC and supervision of the conversion process. Cost of designing an appropriate cupola was subsidised by SIDBI and the redesigned cupola was subsequently introduced.

For a period of about four months experts worked through C-NET with the selected enterprises in the cluster. The inner diameter of the furnace was reduced and the inner refractory lining was increased. This reduced the consumption of coal and also enhanced the safety of the furnace.

SIDBI provided a subsidy of about Rs. 1,05,000 (US$ 2,400) per enterprise. Enterprises invested about twice this amount in upgrading their technology and designing and converting their conventional cupolas to DBC.

At the firm level, intervention by SIDBI led to reduction in suspended particulate matter (SPM) by over 75 per cent. It also led to reduction in coal consumption by about 20 per cent. This resulted in a reduction of about 6 per cent in total costs. In real terms there was a fuel saving of about Rs 20,000 (US$ 450) per month per unit.

To help the units comply with pollution control norms, appropriate downstream pollution control equipment was launched. A dust collector system was designed, fabricated and installed in 14 units. Emission tests on the DBC with downstream dust collection system has given encouraging results with SPM levels much below the stipulated norms.

There has also been an impact by way of better (future) co-ordination between the local institutions implementing technology up-gradation and SIDBI. Similarly, local associations have become more active and 'informal' networks have evolved due to SIDBI's initiative.

SIDBI has recently started pursuing further initiatives along the lines of earlier interventions in evolving a park. The major reason for establishing a new park for the foundry cluster is the severe pressures imposed on the foundries in terms of closure notices issued by the PCB for the units that had not complied with evolving PCB norms.

There are also other constraints. Relocation away from Kolkata and Howrah cities had become a necessity. Foundry associations, particularly the Indian Foundry Association, has been working closely with the SIDBI on this project. They have secured support under the Industrial Infrastructure Up-gradation Scheme (IIUS) of the Department of Industrial Policy and Promotion to the tune of over Rs. 40 crores (US$ 9 million). The slated capital expenditure for the project is over Rs. 100 crores (US$ 22.5 million). Progressively, ILFS is working with the foundry units to implement the project.

Sustainability of Interventions

Sustainability and impact in the context of environmental consciousness as also inclination towards up-gradation is witnessed from the fact that members of the same 'network' who had implemented the Divided Blast Cupolas (DBC) option are now exploring further options towards compliance. The HFA, which was involved in the earlier up-gradation schemes is progressively working on further appropriate up-gradations which would not only improve profitability but also meet the evolving environmental norms. Enterprises have also graduated to pursue large infrastructural projects by means of common investments.

SIDBI has taken the lead in working along similar lines for the facilitation of common BDS to networks so as to reduce the cost per enterprise. Recently, SIDBI has initiated a 'CII-SIDBI SME Cluster Project', which targets foundry clusters related to downstream enterprises. Heterogeneous industries were offered common QMS related BDS in a project partly funded by SIDBI. Upstream (foundry related) metalworking units have also been involved in the programme. SIDBI supported the project by way of grant-in-aid assistance of upto Rs.50,000 per unit to 7-10 units. Reduction of waste and other interventions has ensured greater savings to participating enterprises.

As a result of these measures, energy savings up to the tune of 11.5 per cent of the energy bills of cluster companies have been realised. Greater worker involvement in management (akin to quality circles) was introduced. Further, there was a realisation of Rs.80,000 to Rs. 2.5 lakhs (USD 5,500) from sale of scrap in four companies. Overall the interventions have resulted in improvements in quality, delivery, inventory and productivity (business improvement). Quality up-gradation, red tagging for unnecessary items and fixing scrap disposal frequency were also facilitated.

Future Scope for Development

Due to infractructural bottlenecks the scope for modernisation and expansion at the current locations of the units is difficult. This has encouraged moves to establish a park. The park, covering over 900 acres, is expected to house about 200 existing foundry SMEs to be relocated from Howrah.

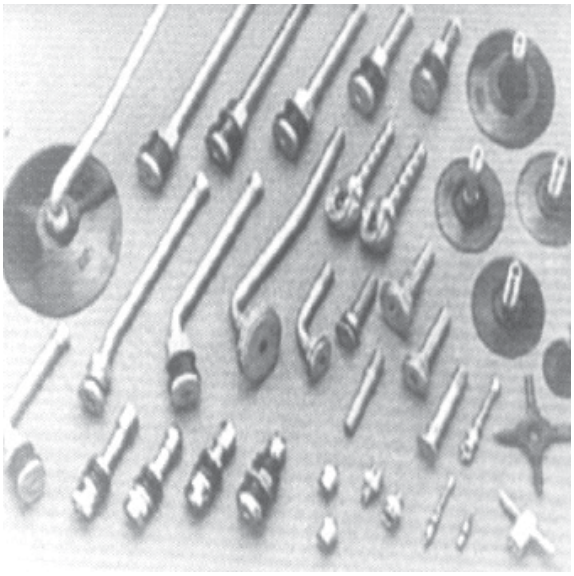
It is being established with support under the IIUS, and has a large project cost. The ILFS has recently started playing the role of project manager. The park includes industrial sheds, various utilities and resources and access and internal roads, the latter being a major component.

In addition to the Park, the need for technology up-gradation has also been identified as enterprises in the cluster are realising that the means to control emissions in a foundry are reducing pollution at source by energy efficient melting furnace and installing air pollution control equipment to treat the flue gases as an end-of-pipe method.

Better design of the melting furnace could help improve energy efficiency and also reduce fuel consumption. Investment costs are also attractive. Simultaneously, pollution reduction at source reduces the size of the Pollution Control System (PCS) necessary to meet emission standards. SIDBI is exploring the need to 'develop' on the intervention made earlier in cupola design changes.

As part of future intervention the induction melting option is to be introduced. SIDBI is willing to finance this initiative too. At present 10 per cent of the units in the region are believed to be employing such options.

The intervention at the Foundry cluster of Howrah was initiated by SIDBI in the mod-nineties. This intervention continues in some form. This case study was prepared by Mr V Padmanand, SME Consultant, Chennai.



Chapter 07
Jamnagar - Brass Parts

As a part of a Government of Gujarat supported cluster development initiative, the Entrepreneurship Development Institute of India (EDI) has helped in the process of a turn around of the brass parts cluster of Jamnagar. By providing information and identifying areas of critical interest in technology and marketing, through the cluster development techniques, EDI created trust with the stakeholders. The BDS providers as identified and put into service by EDI further alleviated this trust with actual delivery of results by solving technical issues, creating new market linkages, streamlining input costs, etc. In all these the local association was promoted to take lead and thus a mechanism of availability of such services in the future were also created in the cluster.

Evolution of the Cluster

The cluster evolved when a few pioneering entrepreneurs started manufacturing screws, pins and bulb holders. As their enterprises grew in volume and operation, others also joined the business. By 1954 there were 15 units in Jamnagar. Easy availability of raw material and technical competency contributed towards the emergence and growth of the cluster. The gradual development and improvement in brass parts for making machinery, tools, jigs, fixtures, die, also contributed to growth of the cluster. Moreover, there was a ready domestic market. During the early years, electrical pins, holders, cycle tube valves were marketed in Kolkata, Mumbai, Ludhiana and Delhi. It was the time when buyers from all over the country were eager to get brass parts from Jamnagar and they were ready to book orders by making advance payment. Thus by 1960 there were 250 enterprises in Jamnagar manufacturing brass parts.

In the early 1960s, the bicycle manufacturers within the country reduced their import of cycle valves substantially and started procuring it from the domestic market. This has resulted in an increase in the number of manufacturers making bicycle tube valves. This led to a further increase in the number of units to 700 units by 1967-68. Again in the late seventies, the leading cycle tube valve manufacturing countries like Germany, Italy, USA and Japan changed their product line from tube valve to precision components. Thus Jamnagar started exporting cycle tube valves to these developed

countries during the late seventies and early eighties. Establishment of GIDC industrial estate and availability of all infrastructure along with ports provided further impetus. Again, because of the small scale of operation and sub-contracting relationship, entrepreneurs were able to manufacture a wide range of brass parts with different shapes, sizes, configuration and tolerances in small lots. Thus by 1998 the number units rose to around 4,000.

The Cluster and its Major Stakeholders

There are around 4,000 brassware units. Of these most manufacture automobile and cycle tube valves (35%), others build hardware (25%), some units manufacture sanitary and bathroom fittings (15%) or precision components (5%) and other categories (20%). 80% of the enterprises are small scale units with an average investment of Rs. 50,000 to Rs. 80,000. 19% of the enterprises can be considered as medium scale units and only 1% falls under the large scale category. In the related enterprises there are manufacturers and suppliers of machines, parts, components and other inputs. Most of the machines used in the cluster are low-cost customized machines. Raw material is imported mostly from Latin American countries and countries like USA, Canada and Gulf countries. About 400 brass foundries supply treated raw material. Besides, there are 130 electroplating and metal finishing units.

One of the most important attributes of the Jamnagar brass part cluster is the existence of inter-firm and intra-firm linkages. Because of the low scale of operation and sub contracting relationship the cluster is capable of executing all sorts of orders. There are also firms with very little manufacturing base, that still take the order and get this executed at other plants and execute orders. The total value of output is estimated at Rs 525 crore (US $ 119317800), of which Rs. 224 crore worth of brass parts are exported and the rest are consumed in the domestic market. Around, 50,000 workers are employed in this cluster.

There are five industry associations, the apex industry association being the Jamnagar Factory Owners' Association (JFOA). Established in 1948, it has 3,000 members. In 1948 the brass parts industry faced severe problems due to shortage of coke and raw material. In order to overcome this problem, SME entrepreneurs joined hands together and established the Jamnagar Factory Owners' Associations. It has its own office infrastructure and organises regular meetings among its members. Banks and other financial institutions played an important role in fostering the growth of the cluster. In the initial years they did provide term loan and working capital loan, which helped several first generation entrepreneurs to launch their enterprises. However, being a small town there are very few support institutions which have offices in Jamnagar. The nearest location of NSIC and SISI is Rajkot, which is 90 kms from Jamnagar. The Central Machine Tool Institute is located in Rajkot, not Jamnagar. The Gujarat Pollution Board has opened an office here to take care of the pollution-related problems of the enterprises in the cluster.

Major Problems

Improper technology: The industry was facing a host of technical problems including of coring and segregation, improper barreling technology, brazing practices, no electro-polishing technology, no problems of plating pill-off, tarnishing and absence of critical instruments like spectrometer, temperature regulator, pressure die casting machine, etc. As a result there were problems with productivity and quality. Besides, there was lack of technology to manufacture precision. Inability to upscale manufacturing facility impeded the growth of the businesses. There was also lack of BDS providers and institutional linkages to support the firms in these areas.

Restricted market: The units often had a fixed clientele. However, with the passage of time especially after globalization, the enterprises started feeling the brunt of competition. Moreover, investment in marketing and export was not up to the mark. Very few enterprises in the cluster had a quality showroom. Also, the brochure developed by them could not attract much attention and barring a few, the enterprises were not used to participating in international exhibitions, a large numbers of them did not develop their website and there was no concept of visual merchandising. Moreover, majority (about 80%) of the export was indirect; materialized through merchant exports located in metro cities.

Limited services of the associations: There were five industry associations but they did not learn from the 'best practices' of others. Moreover, their time was mostly spent on solving problems relating to taxation, pollution, excise etc. They could hardly curve out a

developmental role for themselves and they could not offer any niche services to the firms.

Vision for the Cluster

The cluster vision developed by the cluster actors in active consultation with EDI was 'export-led growth with technology upgradation, marketing and networking'.

Implementation Strategy

To start with, various meetings, awareness seminars and cluster visits were organised to understand the major issues. This was followed by a need assessment survey to understand the precise requirements. These issues were addressed through enterprise upgradation programme, personal counselling, implementation and monitoring by qualified BDS providers. Post-programme/ intervention follow up was given due attention so as to achieve the desired outcome. Attempts were also made to carry out implementations in marketing, networking, export, packaging, health and safety, pollution control etc. All these led to the development of individual enterprises.

Efforts were made to ensure the stake of the cluster actors in the overall development process by ensuring their resource participation. A lot of 'best practices' were in existence in the cluster. Dissemination of information and learning from the 'best practices' of others were pursued to facilitate the multiplier effect. Linkages with institutions and BDS were strengthened to ensure sustainability of the development process. Strengthening local industry association was taken up with all seriousness. This was done with the intention that during the course of implementation of CDP the cluster actors would learn the development process so that they could continue the development momentum even on formal completion of CDP.

Major Interventions

Technology upgradation

EDI faculty members and BDS visited individual enterprises. They interacted with the owners, their managers, supervisor sand workers; saw material handling, manufacturing, quality control, marketing, health and safety practices etc. and identified lacunae in various operational and management areas. During the second visit the entrepreneurs were briefed on things to be done in order to improve the performance of their enterprise. Proper counselling was provided and monitoring was done to ensure that things were done according to plan. A few experienced engineers were engaged in this job.

In pursuit of demonstration

To start with, attempts were made to identify the most critical problems of the cluster. The problem so identified was coring and segregation. It was a perennial problem in the foundries in Jamnagar. This gave birth to a host of manufacturing problems. For example, this causes porosity in the tube valve resulting in air leakages. Thus the tube valves get rejected. EDI, after analysing the cause of the problem, introduced the homogenization process, which solved the problem of coring and segregation. Similarly, another pressing problem called pin holes and blow holes has been minimised with the involvement of a technical BDS. EDI invited the foundry chemical supplier from Pune namely M/s Foseco India Ltd. A composition called 'DS Tube' was purchased and a trial was taken in one of the enterprising firms. To ensure that the trial was taken properly, one technical expert from the said company visited Jamnagar. A successful trial was taken in a foundry. In order to disseminate the findings to a larger target group, a demonstration work was organised where the entrepreneurs could see the results after a comparison of the situation before and after.This was the first instance when the entrepreneurs could observe the result and started developing trust and confidence in the CDP.
At times demonstration was also organised for spread of information in a productive way.

The cutting edge

Cutting tool has an important co-relation with the productivity and quality of machining process. In order to sensitize the entrepreneurs and their employees about the utility of using the right type of cutting tool for the right application, a meet was organised in which reputed cutting tool suppliers like M/s. Sandvik Asia and M/s. Taegutec participated. They displayed their products for the entrepreneurs with machining units. Presentations were organised where the technical specification, utility value, application method and long-term benefits were discussed. As an outcome of this meet, more and more entrepreneurs started using quality cutting tools to get desired speed, feed and depth of cut while machining. This has improved the quality and productivity of brass parts.

These enterprise specific interventions resulted in entrepreneurs developing trust and confidence in the cluster development programme and led them to become increasingly associated with the development process. Some of the major technical upgradation that was carried out appears in the table below.

A few major technological implementations and their benefits

	Particulars of the Technology	Consequent benefits
1.	Homogenization of cast brass	Minimising coring and segregation and therefore stopping leakages of auto valves
2.	Change of material of construction of forging dies	Higher die life and better productivity
3.	Improvement in process of barrelling technology	Minimizing process time and therefore increase in productivity.
4.	Change in design of a process die	Better productivity
5.	Use of appropriate cutting oil in machining brass parts	Minimizing the stain and therefore less rejection (rejection is reduced by 7%)

Documentation to facilitate demonstration effect

Attempts were made to document various implementations carried out in the cluster in the areas of technology, marketing, export, health and safety, packaging etc. During the time of documentation, the beneficiaries (entrepreneurs) were delighted to share their experiences. The objective of this documentation was to spread the message among a larger target group. While organising workshops these experiences were shared with the participants. All these led to a multiplicity of 'best practices' in the cluster.

Market Development

Steps were taken to improve the marketing performance of the enterprises in the cluster. In order to facilitate direct market linkage, basic knowledge was provided to the entrepreneurs. Thereafter, a list of reputed traders and dealers of brass parts in various categories all over India was collected and given to the concerned entrepreneurs. Moreover a list of importers of brass parts in specific countries was also collected and distributed to the entrepreneurs.

Facilitating export tie-up

Mr. Kailashbhai of M/s Arun Udyog attended an export marketing seminar organised by EDI. The seminar was organised by hiring a consultant from Ahmedabad. The export procedure and documentation was explained to the participants and the scope of exporting brass parts was discussed at length. After attending the seminar, Mr. Kailashbhai wanted to know 'who could be my potential importers of tube valves in UAE, Saudi Arabia and other Gulf countries?' He wanted a list of importers of brass parts in these countries. EDI wrote to the Commercial Attaché in Indian Embassies in all these countries and also surfed the internet and read a couple of export-import directories. The response from the Indian Embassies was inspiring. The process of investigation yielded good results. The addresses of tube valve importers were passed on to Mr. Kailashbhai, who is now one of the leading suppliers of tube valves in those countries.

Proper follow-up was done so that the entrepreneurs could manufacture the parts as per the required technical specification. Sometimes faculty members of EDI had to write letters on behalf of the entrepreneurs, to the prospective clients abroad. All these led to the establishment of direct export linkage for the enterprises in the cluster. Their dependence on merchant exporters and agents were minimized. Large orders helped the entrepreneurs in utilizing their capacity at an optimal level.

Entrepreneurs were provided diversification opportunities as well. India imports several hundred crores worth of marine hardware and beryllium copper. However, no one in the cluster thought of manufacturing these products. They were not aware of the marketing opportunity, nor had the technology for manufacturing these products. In order to address the same, a seminar was organised wherein suitable diversification opportunities were explained to the participants. The technology of manufacturing and the prospect of marketing were discussed at length. Measures were taken to guide the entrepreneurs in the manufacturing process. As a result, a few entrepreneurs in the cluster started manufacturing marine hardware and beryllium copper (these are copper and copper alloy). All these are examples of

Export Linkage

The process of facilitating export tie-up developed considerable confidence in the entrepreneurs. There are even cases when some of the potential buyers contacted EDI to inquire into the credibility and export-worthiness of some specific suppliers. For example, M/s T. Plast Electric Co. Ltd., Turkey, wanted to import electrical items from M/s Meghna Corporation, Jamnagar. They sent a mail to EDI to get some specific information about their potential supplier. Accordingly, the information was passed on and Mr. Sushilbhai, M/s Meghana Corporation. Presently M/s Meghna Corporation is supplying different electrical parts to M/s T. Plast Electric Co. Ltd on a regular basis. Now the process has been institutionalised at the Jamnagar Factory Owners' Association (JFOA) level. The capacity building process has helped the JFOA in discharging above responsibilities.

related diversification where the existing facility, plants and machinery could be productively utilized for better marketing prospects.

In order to strengthen the backward and forward linkages in the clusters, buyer-seller meets were organised. At the 'Global Investors Summit' in January 2005, the participants could discuss the business opportunities with leading business houses in the country and outside. As a result of this initiative, a few entrepreneurs are in the process of finalising business tie-ups in countries like UAE. International exposure visits also contributed towards better understanding.

Networking and capacity building

Consortiums were formed in many functional areas. For example, a consortium is working to address technological development of the cluster, another group hired a technical consultant from the Indian Institute of Foundry, a separate group with an electroplating shop is working for CETP.

The apex local industry association i.e., the Jamnagar Factory Owners' Association (JFOA) is procuring molasses, one of the important inputs used in foundry, at bulk and distributing the same at a no-profit-no-loss basis. It has also started publishing and distributing newsletter for its members. JFOA submitted a proposal for the Technology Demonstration-cum-Training Centre (TDTC) to the State Government. JFOA is facilitating the hiring of a consultant to work in the areas of packaging, export, ISO etc. They have set up a rule to stop the 'taking away' of highly skilled workers from one factory to the other. The data bank of BDS providers help the firms in sourcing quality BDS from the cluster and outside. The FAQ (frequently asked questions) booklet helped them in finding a solution to their day-to-day business-related problems and the website of the JFOA is a permanent source of business generation.

The Jamnagar Electroplaters Association has identified the land for the proposed CETP and is discussing the modalities with the State Government. They played an instrumental role in hiring a consultant from Chennai who visited Jamnagar, observed the condition in plating shops, interacted with the owners and prepared an initial feasibility study report for establishing CETP at Jamnagar.

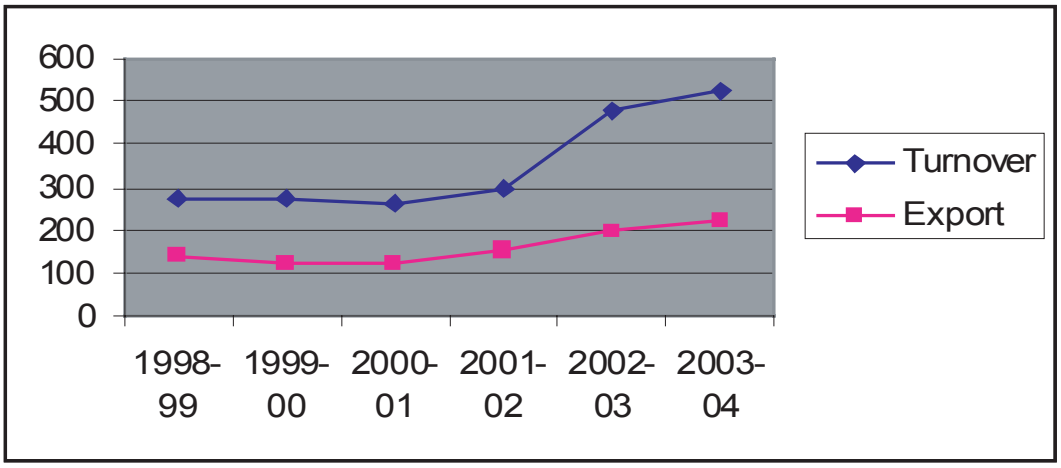
A global perspective

A delegation of 15 entrepreneurs visited Hong Kong, Shanghai and Yuhuan in China to understand their production taxation and marketing system and also explore business tie-ups. The delegates could see the manufacturing and quality control practices; interact with the owners and their employees; visited local market, interacted with the shopkeepers and saw the products available there and also interacted with the local associations. As a result of this visit, entrepreneurs understood the need to up-scale some of their manufacturing facilities to meet the demands of the international market. The delegates realized that they need to invest more in marketing, brochure development, establishing showroom, visual merchandising etc. Some of them have already changed their manufacturing and marketing practices. A few of them bought high productive machines from China. A few trade tie-ups were also established as a result of this visit.

Consolidated Results

Before commencement of the programme, the cluster was facing a steady decline. Some firms were also thinking of alternative business. This situation has changed. Some of the macro parameters of the cluster post intervention are as follows:

	Prior to intervention	After intervention
Turnover	260 crore	525 crore
Export	120 crore	224 crore
ISO 9000 Certificate	10 enterprises	22 enterprises
Improvement in quality and productivity		About 25% improvement
New technology introduced		15
Average rejection rate	20%	2%
Consortium	Nil	4



Rupees in crores
Rs 1 crore = USD 230,000

A databank of BDS providers has helped the firms in sourcing quality BDS from the cluster and outside. An FAQ booklet has been created and this helps the firms in finding day to day solution to their business related problems. The Website of the JFOA is a permanent source of business generation. A news letter published by JFOA also provides various information to the firms.

Sustainability Indicators

The ability of the cluster actors to guide the development process on their own can be considered as an indicator to measure the sustainability potential. As part of CDP, capacity building of the cluster stakeholders was pursued strategically to ensure that a self-governance mechanism for development is established. The local industry association is now providing value added services like raw material procurement. They are also going for the development of a technology development cum training centre (TDTC). A proposal for TDTC was submitted to the Government of Gujarat (GoG) and the central government. An SPV has been formed and meetings were organised by inviting potential sponsors like SBI, SIDBI and IL&FS.

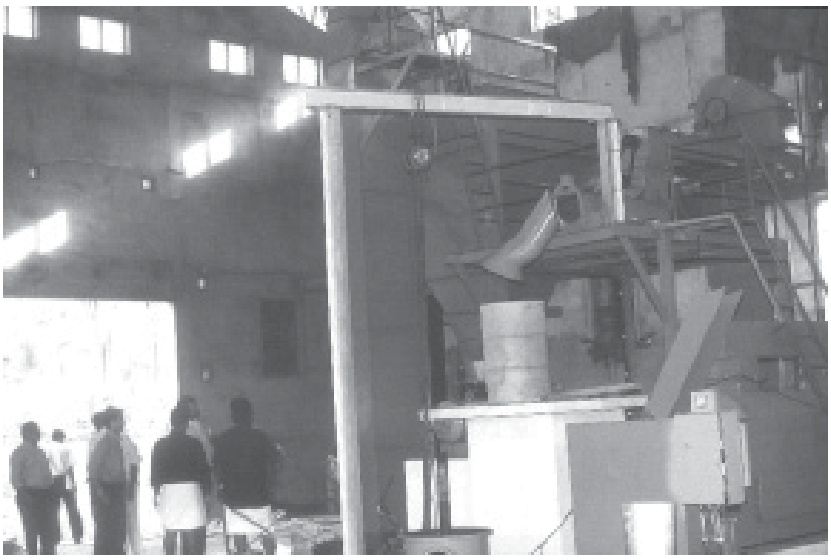
Consultants are being jointly hired by the firms in the ares of technology, marketing, export, health and safety. Linkages with institutions like CMTI, SISI, NSIC have been improved. Metallurgy being an important determining factor for the cluster and possibility was explored to ensure greater stake of institutions like National Metallurgical Laboratory, Jamshedpur and Indian Institute of Technology, Kharagpur.

Future Direction

The scope of future development lies in the following;

- The proposed TDTC needs to be established in Jamnagar. It is necessary to introduce certain high cost, high end technology into the cluster. The pressure die casting machine, electropolishing technology, brazing furnace and proper barrelling practices need to be inducted into the cluster as early as possible. All these can lead to substantial improvement in quality and productivity fronts and can improve the global competitiveness of the cluster.
- Efforts could be made to ensure that more support institutions, R&D centre and testing laboratories open up their offices in the cluster. Efforts can be made to increase the stake of concerned institutions in the cluster with all seriousness.
- Efforts can be made to ensure that more and more enterprises bank on innovation, R&D, value addition, new product and market development to sustain market competition. International benchmarking can also be nurtured with prudence and planning.
- The proposed CETP needs to be housed as early as possible

Initiative for development of the metal parts cluster of Jamnagar was started in the year 2002 by the Entrepreneurship Development Institute of India (EDI) under a project supported by the Government of Gujarat, Office of the Industries Commissioner and with the technical assistance of the UNIDO CDP. EDI is still involved with the process of implementation in the cluster. Mr Sanjay Pal, Faculty Member, EDI, Ahmedabad, has authored this article.



Chapter 08
Kalady - Rice Milling

The Industries Department of the Government of Kerala took lead in promoting proactivity in the rice milling cluster of Kalady through a consortium based approach. 39 rice mill units established the Kalady Rice Millers Consortium with an equity base of Rs 2 crores (USD 450,000). The consortium is now a marketing arm of the cluster. It also managed to reduce cost of inputs and is also venturing into tapping the profitability of byproducts. The consortium is now sustaining the interventions and is looking for further growth by exploring the export market and also innovative schemes such as bio-gas operated gen-sets. A CFC for rice bran oil extraction has been established. A refinery project and registration under Geographical Indication Act for high value rice are also in the pipeline.

Evolution of the Cluster

The Kalady rice mills cluster is the biggest rice-producing cluster in Kerala. Pure water from the Periyar River contributes to the taste and appearance of the rice when boiled. Technically the cluster passed through several distinctive phases.

Prior to 1955 paddy was boiled in small pots and dried in sunlight. The dried paddy was de-husked by means of hand pounding. At that point of time production was mainly at the home/cottage scale. After 1955 motorised hullers have been used for milling.

Since 1970 small rice milling units started operation in the cluster with an average production capacity of 3 to 4 metric tonnes per day. They par boiled paddy in mild steel boxes and dried the same in yards under sunlight, and milled this dried paddy in motorised hullers. At that point of time, these mills could not produce quality rice, as they did not have adequate paddy cleaning, par boiling, drying and milling facilities. Moreover, these mills remain closed during the monsoon period, as they are dependent on sunlight for drying. The number of mills gradually increased to 250.

Since 1990, a more modernised and mechanised par boiling and drying system of paddy emerged. The turning points in the cluster by way of upgradation on various fronts including incorporation of appropriate technology levels, were largely led by medium-size entrepreneurs. For example, the promoter of a medium-size enterprise visited China at the behest of machinery suppliers, and has been serving as the local dealer for Chinese as well as Japanese machinery since then. The modern automatic rice mills produce superior quality rice with the introduction of par boiling, steam drying and

Tapping a Chit Fund

This association operates a 'chit fund' to meet emergency fund requirements of members. Members pay Rs. 10,000 per month into the fund. About 50 members, in turn, contribute to a pool of Rs 500,000. Three 'divisions' have been created for bidding. On an average, about Rs 1 crore (USD 230,000) is the fund availed of per annum by different members from this financing operation. The chit fund plays a critical role in meeting unforeseen exigencies of members who may find it difficult to avail institutional finance.

modern milling systems. Rice is now free of mud, stone, husk, bran etc. However not all mills adopted this technological change. About 70 mills that went for technological change are performing, while the others had to close down as they were not financially viable.

The Cluster and its Major Stakeholders

The 70 odd SME rice mill units have a capacity of between 10 to 30 tonnes per day (TPD) each. In addition to par boiled rice, about 400 TPD of rice bran and husk were produced as byproducts. The turnover of the cluster is estimated at about Rs 2000 crores (USD 450 million) per annum. The cluster has a Rice Millers Association that has been functioning for over 30 years with full time staff. This association has been playing the role of policy advocator on behalf of members on rolls.

The All Kerala Rice Millers Association, Kochi, is the state-level nodal association for enterprises in this sub-sector. A District Rice Millers Association serves as the representative of the firms at the district level. Pattambi Rice Research Institute and the Mannuthi Agricultural University are located nearby. Nevertheless the industry was having scant linkages with such institutions. The Small Industries Development Bank of India, SIDBI, is also located in close proximity to the cluster. Cluster enterprises, nevertheless, have had strong linkages with commercial lending institutions.

Major Problems

The major problems of the cluster as identified by the CDA were as follows:

- Lack of an appropriate intermediary to address common business issues
- High cost of inputs in terms of fluctuation in the price of raw material, uneconomic sourcing of consumables and spares and also high packaging costs
- Skewed demand and inappropriate capacity utilisation: While production capacities warrant operation of enterprises throughout the month, the nature of consumption demand for the product is such that demand through retail outlets tapers out every month. Such patterns affect scope for utilising installed capacities to the appropriate extent and also leads to cash problems.
- Inadequate value addition and realisation of potential for byproducts, such as rice bran: Enterprises offer products like bran to middlemen who in turn, invariably, sell the same to bran oil refineries in other states. The value earning on this operation is not accrued to cluster enterprises.
- Inadequate common facilities for testing and R&D within the cluster: The charges of private laboratories located in the region were too expensive and lead times in testing products too long.

Vision for the cluster

The vision of the cluster revolved around addressing critical problem areas that have been identified. An implicit thrust was on moving up the value-chain by means of enhancing value to different products and on various processes.

Implementation Strategy

By the time implementation started in Kalady, the cluster development initiative in Kerala had already established a success story through consortium-based initiatives to address cluster-based issues in the rubber cluster of Kottayam. To start with, therefore, the implementation strategy involved experience sharing by the CDA and officers of the DIC (Ernakulam) with the cluster stakeholders of Kalady. This was followed by evolution (led by cluster

SMEs) of networks in the Kalady cluster with objectives that are of immediate interest of the units, implementing those activities and also ensuring that those add to the profitability of the units. Thereafter, long-term initiatives and projects were worked out, so as to further enhance competitiveness through the by then empowered networks.

Major Interventions

Creation of appropriate platform

The rice mill units were enthused by the successful experiences of the rubber cluster (Kottayam) SMEs in establishing Common Facility Centres (CFCs) in a Public Private Partnership (PPP) mode with the support of the Development Commissioner Small Scale Industries (DCSSI). Thus in October 2003, 39 rice mill units of the cluster established a consortium - Kalady Rice Millers Consortium - KRMC Pvt. Ltd, with assistance under the Margin Money Loan scheme (for consortia) of the Industries Department of the Government of Kerala.

In effect, the consortium now serves as the association's commercial arm for business. It essentially serves as the Special Purpose Vehicle (SPV) for members of the association to pursue various commercial and infrastructure development projects. It has also strengthened the bargaining power of the cluster SMEs vis-a-vis input suppliers and also customers.

Having attained a significant place in the developmental road map of the cluster, the consortium is now also taking lead roles in other not too directly profit-oriented initiatives. The Pattambi Agricultural University (Pattambi Rice Research Institute) located nearby is being encouraged by the consortium to launch a programme to motivate farmers to shift to high yield and value yielding rice varieties. Support from the Mannuthi Agricultural University has been leveraged to advise farmers about cropping patterns. The consortium is synergising the roles of the Government and also of such specialised institutions so as to help farmers appropriately orient cropping patterns towards paddy and also, possibly, cluster farming by developing the cluster model. This is expected to progressively contribute towards enhancing the availability of quality raw material.

Lowering costs of inputs

Upon continuous interaction with the implementing agency, the SMEs understood that together they buy a huge volume of 'consumables' like gears, shafts, belt drives, pulley items and other 'mill store' items, including rubber and nylon conveyor belts, etc. sourced from manufacturers in Coimbatore. Besides all of them own commercial vehicles and they also buy tyres for the same. They found that together these involve a huge sum of raw material inputs. They found that if sourced directly from manufacturers, this could provide them with a lot more discount and as such add to their profitability.

They estimated combined requirements and commonly negotiated with suppliers/manufacturers from Coimbatore in the neighbouring state of Tamil Nadu for combined purchase. Further, they negotiated with large tyre companies also and were offered considerable discounts on purchase. They established a physical infrastructure in the form of a warehouse, for stocking material purchased in bulk, and supplied the stock to member units in smaller volumes. The consortium also established a common administrative office. Seven staff was recruited to purchase, store and sell such material to the cluster and to manage the entire facility.

Purchase is made in cash from suppliers and so is sale to member units. Hence, there is not much by way of funds required in terms of working capital for operations. About Rs.15 lakh (USD 34,000) is utilised as a revolving fund. The activity of common purchase helps enterprises secure discounts varying from 15% to 20% for different products and around 4% for tyres. It is estimated that the consortium members save around Rs 11 lakhs (USD 11,000) per annum through this common procurement system. The consortium operates on a gross profit margin of 2 per cent. Net margins after salaries and expenses are about 0.5 per cent. Currently, net profits are retained in the account of the consortium. Member enterprises of the consortium save on an average about 15 per cent on the cost of various consumables. Additional funds are used for procuring tyres directly from manufacturers in other states.

In the same spirit a common packaging facility centre is also being established. This will also facilitate production of appropriate material for packing rice.

Market development initiatives

In 2005, a common market yard with a sound infrastructure was established. Prior to this, roadsides were utilised for the sale of inputs to millers. Today, farmers use the marketing yard developed by the consortium in cooperation with the association. About 120 vehicles come into the yard every day and trade is estimated at Rs. 2.5 crores (USD 570,000) per day. Different cropping patterns and seasonality even within Kerala ensure that the facility is operational around the year. The yard facilitates transactions and storage and contributes significantly to the procurement front of cluster SMEs.

Again to address the inappropriate capacity utilisation problem that resulted from the skewed demand pattern for rice, it was decided that a part of the produce invariably had to be pushed through alternate channels. Various options are being explored including sale for export, and also sale to the Civil Supplies Corporation, which may in turn distribute products through the Public Distribution System (PDS). To mitigate this problem, a common brand called 'Leads' has been promoted by the consortium members. Under this initiative, the consortium buys about 20 per cent of output of member enterprises at a fixed minimum price and then sells the same. This common branding initiative is still in a relative stage of infancy.

Inadequate value addition and realisation of potential of by-products

Rice bran[1] oil is considered a healthy cooking medium. Earlier, enterprises in the cluster were only involved in operations related to dehusking paddy and polishing rice. Very few units of oil extraction were located in Kerala. Bran was, therefore, neither processed by cluster SMEs nor by other enterprises in the state, but invariably sold to middlemen for processing in the nearby state.

The need for establishing an oil extraction facility and a refining facility in the form of a Common Facility Centre (CFC) evolved for better value realisation from rice bran produced by the units. The scope for establishing such facilities in the form of a CFC was identified by cluster SMEs learning from the experiences of SMEs and the Industries Department of the Government of Kerala in other clusters, such as the rubber cluster of Kottayam.

The consortium thereafter approached the Central Food Technology Research Institute (CFTRI) and became a member of the 'All India Solvent Extractors Association'. The latter, and also the 'Oil Technology Research Institute,' helped them secure preliminary information by way of literature. A Business Development Service (BDS) provider and the CDA worked with consortium members to prepare a project proposal. Information on project 'structuring' was secured from other experts and the related experience of evolving common facilities by rubber cluster actors at Kottayam was studied. Thereafter, a solvent extraction unit was established by the consortium with a mix of debt and equity finance. Each of the 39 member units in the network contributed Rs. 1 lakh (USD 2300) and procured land for implementing the project.

CFC solvent extraction plant that has been recently commissioned will increase the net earnings per member by about Rs. 2000 per day. This implies that the project would yield about Rs. 6 lakh (USD 13,500) per member and that members would, in total, earn about Rs. 2.20 crores (USD 500,000) per annum.

However, cluster SMEs perceive a great demand for refined oil. It is estimated tht earnings would increase from Rs. 40 per litre to Rs. 50 per litre with refining. It is proposed that refined oil will be sold as a common brand. A proposal has been submitted to the DCSSI seeking assistance under the Small Industry Cluster Development Programme (SICDP). The total project cost is about Rs. 645 lakhs (USD 1.5 million).

Promotion of common facility for testing

A Common Facility Centre (CFC) in the form of a testing laboratory for testing rice, bran and facilitating the standardisation of products has started off. Member SMEs have invested about Rs. 3.5 lakh (US $ 8000) for the same. The testing laboratory, which started off in a small way over the past four months, provides all the services offered by other private testing laboratories. The private laboratories charge about Rs. 250 per sample tested, while the common testing laboratory offers services @ Rs. 75 per test. Considering an average of 10 tests per day conducted by the laboratory the savings per month is over Rs. 50,000 (USD 1,100) for consortium members. The effective pay-back period for the investment is less than one year.

Consolidated Results

Firm level

- The consortium has availed of over Rs. 30 lakh (75,000 USD) as Margin Money Loan (MML), from the Government of Kerala. The equity base of the consortium company is about Rs. 2 crores (US $ 450,000).

- Annual savings of Rs 12 lakhs (USD 30,000) per annum for all consortium members taken together through common procurement of inputs and common testing facility

- Estimated enhanced earnings to the tune of USD 500,000 for all consortium members taken together
- Likely benefits to firms once the common brand is established and when the oil refinery unit will come through

Cluster level

- Evolution of common infrastructure for all cluster SMEs in the form of common marketing yard, common testing laboratory
- Creation of a proactive consortium that will continue to add value to the cluster units
- Various training programmes including a 3-month long growth programme to promote exports, sponsored by SIDBI and implemented by the Entrepreneurship Development Institute of India (EDI), is under progress.

Sustainability of Interventions

The sustainability of interventions by cluster stakeholders is amply evident from the fact that they were largely evolved autonomously and also implemented processes sans specific support during the initial phases. These aspects provide evidence of a strong governance framework amongst SMEs.

Moreover, interventions were not led by outside factors. The developments in other clusters had catalysed the concept of evolving networks on various fronts so as to enhance competitiveness. However, a few dynamic entrepreneurs largely led interventions. The CDA had played a role in terms of networking or synergising roles of cluster SMEs and other actors.

The cluster SMEs had availed the support of the Margin Money Loan offered under the unique scheme for promotion of consortia across all clusters in the state of Kerala. All other interventions were financed by SMEs themselves. This indicates their firm resolve to pursue activities that enhanced their bargaining strength.

Future Direction

The future plans of cluster SMEs are being conceived in the areas of market development and brand promotion and also in the area of adding value to products.

- New marketing channels: Cluster SMEs are planning to explore the development of a unique marketing channel. This will be in addition to their existing domestic marketing channels. Women identified by officials of the 'Kudumbashree Project' (a unique and highly successful initiative developing women SHGs) may be trained to be stockists. They will operate within small territories around their place of domicile and pursue door-to-door marketing of cluster products using a 'servicing' team located at appropriate points.

- Initiatives towards protecting and promoting uniqueness of related inputs and products: SMEs have realised the scope for registration under the Geographical Indications Act for specific rice varieties, for example 'Pokkali rice'. Further, cultivation of high value rice like 'Ngavara' is now being targeted. Policy advocacy in terms of 'cluster' farming is being pursued so as to undertake farming on a commercial basis. Varieties such as Ngavara are expected to cater to the elite and health conscious segments of the populace. The SMEs are planning to explore scope for securing GI for such products that have unique health benefits and are organically cultivated.

- A cluster information hub and greater export orientation: It is proposed that a technology-cum-business information centre will be established at the training facility being set up by the consortium. Inclination amongst enterprises for SA 8000, ISO 14000 is likely to increase as they progress into exports.

- Value added production and also exploring optimising power costs by converting waste into

bio-fuel or 'producer gas': Establishment of captive (co-generation) power plants and independent bio-gas operated gen-sets are being explored so as to reduce the cost of power. Consortium members are exploring options to progressively move into adding value to products - edible oil as well as byproducts which may be processed into several products. In addition, each individual unit in the consortium incurs electricity-related expenses of about Rs. 2.5 lakh (USD 5,700) per annum. Options of exploring installation of common bio-gasifiers are being considered by cluster SMEs.

- Further moves towards adding value to by-products: A refinery project which will help increase income realisation from the crude product of the extraction plant is proposed.

Kalady is situated in district Ernakulam in the State of Kerala. The initiative for development at the rice milling cluster of Kalady was started in the year 2003 by the Industries Department of the Government of Kerala. The Project is under implementation. The DIC as also the Small Industries Service Institute (SISI) of the DCSSI are now catalysing interventions. This case study of the rice milling cluster of Kalady is written by Mr V Padmanand, SME Consultant, Chennai.

Footnote

1. Bran is a layer that comes between the rice and the husk

Chapter 09
Kannaur - Handloom

The Rs. 300 crores (USD 70 million) handloom cluster of Kannur has displayed impressive performance over the years, particularly, in the front of exports. Nevertheless, co-operative societies who constitute an important segment of product manufacturers in the region have been experiencing severe competitiveness threats. The Directorate of Handlooms (Government of Kerala), the implementing agency in developing the cluster, had pursued several unique interventions. About 48 co-operative societies were networked into 4 consortia who established common marketing outlets, pursued common procurement and availed services of national and international BDS providers in design and product development. Many member societies doubled earnings and also benefited from various cost competitiveness enhancing options. Sales over exclusive fairs doubled by virtue of design and product development initiatives. Training in advanced weaving techniques and dyeing were imparted. Further strengthening of the cluster has been planned through registration under Geographical Indications (GI) Act, brand promotion with the assistance of the Indian Institute of Management (IIM, Calicut), capacity building in the area of packaging/export-import management, as also common procurement of specific raw material and dyes and chemicals are also on the anvil.

Evolution of the Cluster

Weaving was a traditional vocation of the *Chaliya* community at Kannur. In 1844, a Christian Basel Mission started a small handloom weaving factory in Mangalore, near Kannur. A German weaving specialist was introduced to initiate the first fly shuttle frame loom in the region in 1851. The BDS provider introduced a dyeing technique to colour yarns and also introduced a natural 'khaki' dye. Gradually these practices spread to the nearby areas of Khozikode, Kannur, etc. The first product to be manufactured in the cluster was the 'dhoti'. Technical assistance from Europe facilitated diversification of products to shirts and bed sheets with coloured yarn. There has been no looking back since.

A multitude of private handloom factories was established in the Kannur region in the 1930s. By the 1940s Weaver's Cooperative Societies were established under the cooperative movement in Kerala. Soon the Kannur cluster's handloom products became popular in Europe.

By the 1960s several more enterprises mushroomed. Crepe weaving was introduced in Kannur for the first time in India by SMEs. New products such as fire retardant items using imported German chemicals were introduced. Exporters pursued market penetration activities in close coordination with the Handloom Export Promotion Council (HEPC).

The speciality of Kannur fabric is that it is colour fast due to excellent dyeing quality, which allows it to live up to international requirements. The perennially available pure soft water facilitates dyeing and any shade can be matched using the traditional dyeing method. The major turning points in the area of technology, market and design were initially introduced by the Mission and thereafter by cluster SMEs.

The Cluster and its Major Stakeholders

The major products include table, kitchen and bed linen, furnishings, curtains, fabrics (shirts for example) and dhotis/lungis for the domestic market.

Key stakeholders of the cluster include 'cooperative' societies and also cottage units operating in the informal sector. Though the societies in the region produced a considerable quantity of handloom products, they have been largely dependent on another critical SME category, viz. private exporters. Barring a few, most societies faced the problem of poor demand and hence low profits. The cluster at Kannur has about 30 direct exporters and 75 indirect exporters. There are about 2,000 operational looms working in the unorganized sector and 3,000 operated by the 48 'societies'. One to four looms operate in each household in the unorganized sector.

Exporters in Kannur are largely merchant exporters who outsource production to 'informal' cottage units and societies located in the cluster. There is a low volume demand for handloom manufacture, while the rest of the demand is fulfilled by the powerloom-based production, either in Kannur or Karur in Tamil Nadu. Some buyers offer a premium and insist on handloom products.

The total exports from the handloom cluster of Kannur amounted to about Rs.250 crores (USD 55 million) on 2003, of which about Rs 45 crores (USD 10 million) is from societies. The total turnover of the cluster has increased to about over Rs.300 crores (USD 67 million) by 2005 of which the contribution of the societies is now only about Rs.30 crores (USD 6.7 million). Cluster SMEs also outsource production to some other clusters. Hence, any decline in local output may not necessarily be reflected in export performance.

The cluster has three major SME-related associations: the Handloom Export Organisation, the Kerala Handloom Association and a Kannur Handloom Societies Association. These associations represent the interests of concerned stakeholders such as exporters and societies. Many exporters are also members of the North Malabar Chamber of Commerce, a body including enterprises from other sectors in the region.

Only in recent years have associations been playing a more proactive role in terms of conceiving and implementing infrastructure upgradation projects on a Public Private Partnership (PPP) mode.

The cluster also has support from several institutions including the Directorate of Handlooms (Kerala), the District Industries Centre (DIC), the National Handloom Development Corporation (NHDC), the Textiles Committee, Weaver Service Centre (WSC), the Institute of Handloom and Textile Technology (IHTT), and also Government polytechnics that offer raw material procurement, yarn and product testing and technical training. The high export orientation of cluster SMEs has warranted utilising the services of Public and Private Service Providers (PPSPs) beyond Kannur, for example using SGS laboratories in Bangalore to meet requirements of importers. Close links with the Handloom Export Promotion Corporation (HEPC), with Indian and international designers and related institutions, has been facilitating export-led growth of the cluster.

Major Problems

The diagnostic study conducted by the CDA identified the following challenges to the cluster:

- Inadequate marketing efforts: There were not enough innovative and market-oriented designs and products. Also skill upgradation and technological advancement were lacking. Most societies have traditionally displayed a dependency syndrome on a government subsidy, which is fast declining and will not be available in the near future. There are dynamic societies with Quality Management Systems

(QMS) certification and also high export orientation, but most societies face the threat of increased competition.

- Lack of needed BDS facilities for growth: There was an absence of regular supply of service providers for various strategic business needs like designers, technical, market linkages, etc.

- Lack of appropriate joint forum towards promotion of such initiatives

- 'Infrastructural' gaps were visualised especially in terms of design facilities, loom upgradation and also effluent treatment. 'Larger' gaps in terms of physical infrastructure viz exhibition and other facilities were also identified.

Vision for the Cluster

'The Kannur handloom home furnishings cluster will evolve into a globally preferred sub-contraction base for home textiles by means of real and notional differentiation and securing niche market advantages by the year 2008'.

Implementation Strategy

The implementation strategy involved capacity building and training of officials on cluster development methodology, evolving a consensus among cluster stakeholders on addressing issues through cluster development methodology by organising exposure visits and discussions, organising the stakeholders into consortia, creating linkages with available support schemes for executing planned joint initiatives of consortia of units and also organising national and international support service providers who can assist them in such endeavours.

While many of the interventions pursued by the implementing agency were oriented towards the cooperative sector, several involved and targeted other enterprise segments. These included the informal tiny and small (non-cooperative) weavers and also exporters.

Officials of the Directorate of Handlooms and the District Industries Centre were trained at the Entrepreneurship Development Institute of India (EDI), Ahmedabad, the Kerala Institute of Entrepreneurship Development (KIED) and under the aegis of the KBIP. UNIDO experts also offered inputs. The trained CDAs from the Directorate (including several officials from the DIC on deputation to the Directorate), commenced initiatives in 2004.

A district-level meeting of the Board of Directors, president and secretaries of cooperative societies was called for by the implementing agency. It was decided that a 'consortium' would be evolved from amongst societies. An area wise rather than market-focused (exporting/non-exporting) consortium was believed to be preferable so as to facilitate closer coordination amongst members. The consortium was registered after inter-society visits by leaders of different societies. Simultaneously, a proposal for support under the Deen Dayal Hathkargha Protsahan Yojana (DDHPY) scheme of the (DCHL) was submitted. The strategy was to synergise support by way of grant-in-aid assistance to interventions on a cluster mode.

While inter-society benchmarking visits were encouraged, visits to various export-oriented handloom clusters such as Bhavani-Chennimallai in Tamil Nadu were also facilitated.

Various initiatives by the consortium were facilitated. For instance, technological and equipment gaps were assessed and training needs identified. A common machine and equipment committee was evolved to negotiate common purchase. Provision of various BDS was also explored and pursued on a consortia basis.

Major Interventions

Market promotion

This was done through design upgradation, quality training and support infrastructure creation. Design and product development initiatives have yielded considerable dividends. For instance, the Payyanur consortia members have doubled their turnover during the intervention period. A critical contributory factor has been the designs that were introduced and also the products developed by initiatives of support institutions and also by the earnest initiatives of member societies themselves.

In order to target gaps on the quality, cost competitiveness and market orientation front, various initiatives were taken. Training was given in quality control of handloom fabrics through the IIHT, in

dyeing techniques and also on advanced weaving with jacquards. The integrated Handloom Training Project that is facilitated by the Development Commissioner – Handlooms (DCHL), helps in training in jacquard and dobby, dyeing and designing. The projects were conducted by the WSC (Weavers's Service Centre). The Directorate at Kannur catalysed the same by means of collecting applications from societies, giving them to the WSC and thereafter following up on such applications. Over 100 persons have been trained over a series of programmes.

Pooling of resources to establish common showrooms (and spread per 'enterprise' cost of initiation and operation-reduce business risk): The consortia of societies have been establishing common marketing showrooms. Support has been received by way of grant-in-aid to the tune of Rs 50,000 (per society) to pursue such initiatives. The societies in a consortium pool invest their own funds and operate marketing outlets on a lease basis. Monthly sales achieved by some societies has been over Rs 1 lakh and total sales of over Rs 14 lakh has been achieved by one consortium through such outlets. Another consortium which is not in a prime location is exploring relocation and also other options such as 'mobile' (van) showrooms.

Initiatives in terms of linkages with tourism promotion agencies to bring tourists to these outlets are progressively providing dividends. Further, the SES Germany has facilitated product diversification options such as 'rolling curtains' (blinds). One consortium has availed of the services of SES, Germany and has already secured trial orders. The consortia successfully participated in trade fairs at New Delhi and Brussels.

Plan formulation and also implementation are being facilitated by the Directorate. Many of the resources expended over implementation were on a consortia basis. Societies that were dependent on a 'sub-contractor' are now directly approaching markets and participating in fairs in India and abroad.

Networks and their legal constitution

The Kannur South Handloom Weavers Cooperative Societies Consortium includes 12 societies, the Kannur Weavers Societies Consortium eight, the Kannur Handloom Weavers Cooperative Societies Consortium nine and the Irinavu Handloom Weavers Societies Consortium nine. These 'consortia' are legally constituted under the Charitable Societies Act, with representatives from each society serving as members of the relevant consortia. In all 38 societies are networked as consortia.

Common purchase to optimise costs

Common purchase of inputs by all consortia has been in terms of machinery and dyeing equipment. This was part of upgradation initiatives realising a discount of over 10 per cent. They are also progressively moving from purchase of capital goods to chemicals and yarn.

Evolution of the largest consortia in the country

The total number of working weavers networked as consortia are about 7000, making this network one of the largest in the country and also perhaps amongst the cooperative societies. Most of the 48 working societies are networked as consortia.

BDS

BDS was facilitated in the area of design and product development by synergising roles of the NIFT (National Institute of Fashion Technology), NID (National Institute of Design), IIHT and private (freelance) designers from India and abroad. Services were availed from the Netherlands Management Co-operation Programme (NMCP) and international marketing BDS providers, from India and also from the Senior Experten Services (SES, Germany). Inputs from BDS providers in the areas of exports and internet marketing have been also secured. The services of institutions such the IIM (Calicut) are also being availed of as are some services offered by the Kerala Bureau of Industrial Promotion (KBIP). Training programmes by the WSC and IIHT were facilitated and over 100 weavers have received advanced training.

Consolidated Results

Firm level

- Enhanced earnings from common marketing outlets and from utilisation of common BDS providers: Earnings of up to Rs 20 lakhs (USD 45,500) have been secured through common marketing outlets established by consortia. Two consortia have, in particular, benefited. Common participation in fairs has resulted in generating orders worth over Rs 10 lakhs (US $ 23000).

Utilisation of international BDS providers such as SES, Germany has, in the short span of about a month, generated trial orders for about Rs 1lakh (USD 2300).

- Doubling of earning from fairs: By means of appropriate design and product development, earnings from exclusive fair participation almost doubled. Sale in 2003 of 38 societies was Rs.76 lakhs (USD 173,000) in the 'Onam' fair organized by the Directorate at Kannur. This increased to over Rs. 1.8 crores (USD 410,000)in recent fairs due to the introduction of new saree designs, shirtings and garments and other non-traditional products.

- Savings by means of common purchase of equipment: Savings of up to 10 per cent or Rs 4 lakhs (USD 9500) has already been achieved by common purchase of equipment in the technological upgradation initiatives.

- Doubling of incomes of consortia: For one society sales have doubled over the intervention period, largely due to design and product development.

Cluster level

- Five societies were sanctioned Rs 43 lakhs (US $ 98,000) each by the Handloom Export Scheme (HES) of the Development Commissioner (Handlooms). The scheme is to facilitate design development, appropriate technology and skill upgradation as well as market development over a 3-year period. Societies that have been operated for three years, have secured profit and also have a turnover of over Rs.1 crore (USD 227,000) in terms of exports, have been selected for assistance.

- Rs 1 crore (US $ 227,000) has been sanctioned as grant-in-aid by the district panchayat to establish a CFC at Kannur for post-loom processing. The CDA serves in-effect as the 'implementing officer' of district panchayat schemes.

- Greater synergies have been established between support institutions and cluster SMEs. A schemata for brand building is being prepared for handloom clusters by the IIM, Calicut, under the facilitatory role of the Directorate. The services of the IIHT at Salem were synergised under the four-year DDHPY. Several interventions under the DDHPY have also been pursued by the WSC.

- Consortia has organised several workshops on its own initiative, such as a programme on quality assurance with the SISI. HEPC has been facilitating fair participation of societies in different countries. For instance one society is participating in a fair to be organized at Atlanta.

- Infrastructure development: The Directorate played a role in catalysing involvement of weavers and societies in large infrastructure projects largely pursued by exporters. These include projects being established with assistance of the Textile Centre Infrastructure Development Scheme (TCIDS) amongst others. Interventions in terms of design facilities and effluent treatment are also being facilitated.

Sustainability of Interventions

Sustainability of interventions is evident from the fact that most interventions have been led by a consortia of societies, with the CDA and the Directorate playing a catalytical role.

The consortia is functioning professionally with salaried professionals, some of whom are extremely competent by virtue of having successfully led QMS-certified export-oriented societies earlier. Apart from this, a critical indicator of sustainability has been the results that have been panning out of cooperative initiatives. Success on the business front is encouraging greater consortia-based initiatives.

Government schemes to strengthen cooperative societies have been appropriately synergised onto a cluster mode. No separate resources have been earmarked for intervention. Such a scenario is an indicator of sustainability, and progressive intertwining of interventions and support even amongst micro-artisans are to be pursued on a PPP mode.

A Cluster Development Coordination Committee (CDCC) monitors the progress of interventions with an emphasis on evolving sustainable models for cooperative societies.

Future Direction

Various initiatives are proposed as part of future interventions, one of them being the common procurement of raw material yarn as well as certain dyes and chemicals. Another is the protection of Kannur's uniqueness from spurious suppliers in other regions and also capitalising on its brand image. Future initiatives that are being explored are:

• *Registration of Kannur products under the Geographical Indications Act:* The soft water in the region lends a high level of colour fastness to products. Enterprises largely use VAT dyes. Expertise in dyeing in terms of colour fixing of yarn is also widely recognized. These attributes lend scope for registration under the Geographical Indications Act of the Govt. of India. There is scope for intertwining the GI with the brand promotion.
These attributes lend scope for registration under the Geographical Indications Act of the Govt. of India. There is scope for intertwining the GI with the brand promotion

• *Capacity building on the areas of packaging and the arithmetic of EXIM management:* Training programmes on packaging are to be pursued, availing the expertise of the Indian Institute of Packaging. Also management training with a specific focus on Export Import Management (EXIM) is to be pursued. Consortia members have approached the Small Industries Service Institute (Trichur) to explore support for conduct of these capacity-building programmes.

• *Organisation of exclusive fairs during festive seasons in other States:* Learning from the successful experiences of Pochampally (handloom) cluster actors and also from the Coimbatore (wet grinder) cluster actors, the consortia is considering the organisation of exclusive fairs for their products in other cities in India. The CDAs, representing the Textiles Committee as well as the SISI, had facilitated the organisation of fairs in Kolkata and Ahmedabad.

Kannur is situated in the State of Kerala. The initiative for development at the handloom cluster of Kannur was started in the year 2003 by the Directorate of Handlooms, Government of Kerala. The project is still under implementation. This article has been authored by Mr V Padmanand, SME Consultant, Chennai

Chapter 10
Kottayam - Rubber

The cluster of rubber processing units at Kottayam, Kerala, faced intense competitive pressures from South East Asian countries. Besides there were also problems of relatively high cost of production, poor infrastructure, marketing and entrepreneurial initiatives and an inadequate R & D base. These were resolved through a cluster based development approach by evolving purchase networks, leveraging support from Central Government schemes, establishing an integrated mixing mill, participating in domestic and international fairs and availing services of various national and international Service Providers. New products and technology were developed, targeting the export market and enterprises are establishing projects for manufacture of value added products. Efforts are also on to market 'Kottayam rubber' as a common brand. In the process the Government of Kerala has introduced a consortia-supporting Margin Money Loan (MML) scheme. The development of the cluster was initiated by the Industries Department of the Government of Kerala and was also supported by the office of Development Commissioner (SSI) and the UNIDO CDP.

Evolution of the Cluster

Rubber was first planted in India, in Kerala in 1902. The cluster of processing units at Kottayam evolved due to proximity to the rubber plantations, which account for a quarter of the state's production. The evolution of the cluster took place in three phases.

Manufacture of rubber products in Kottayam started in the 1950s. The major products were rubber mats, rubber bands, Hawaii chappals, etc. The Small Scale Industries (SSI) reservation policy for certain categories (such as rubber bands), encouraged the development of small units.

The second phase commenced in the 1980s with the emergence of large manufacturing companies such as 'Paragon'. A number of SSI units started up as sub-contractors to these companies and to medium-sized rubber and coir product exporters, based in the coir cluster at Aleppy. The evolution of the cluster in terms of product and market was led by the larger enterprises, which had established market linkages. The absence of large players operating in other product categories such as automobiles, etc. in Kerala, affected the scope for product diversification.

Evolution of the third phase should be seen in the light of intense competition from abroad. Since the Far East Asian currency crises (and subsequent depreciation and rationalisation of their currencies) in 1996, countries like Indonesia and Thailand became major competitors in cluster products. This phenomenon was also due to other advantages that they enjoyed.

By the late 1990s, the Industries Department of the State Government and industry stakeholders started exploring options to enhance competitiveness in a cluster mode.

The rubber band segment is expected to shrink as a result of growing competition from outside the state. Enterprises manufacturing rubber bands shifted to other product categories such as home furnishings (mats). In fact, there is a shift towards other products in many categories including footwear. The trend is ascribed to the growth of cheaper substitutes like polyvinyl chloride-based (PVC) products.

Kerela-based enterprises catered mainly to the domestic market and enjoyed an advantage as purchase tax was not imposed on natural rubber. This advantage has been nullified by the recent imposition of VAT at 12 per cent on natural rubber. Producers in other states have also become more competitive with advantages in of size, labour and other factors, conditions and costs.

The Cluster and its Major Stakeholders

The Kottayam Rubber Cluster consists of about 516 enterprises in different product groups, i.e. footwear (186), adhesives and rubber cements and solutions (39), latex foam (25), rubber bands, latex thread and gloves (100), thread rubber (51), rice polishers, rubber sheets, mats, tyre flaps, etc. (77) and other moulded products (38).

In 2002 (prior to interventions) the number of employees was about 15,500 and the total annual turnover was Rs. 390 crores (USD 88 million). Exports (largely indirect) stood at about Rs.100 crores (USD 22 million).

The cluster has a plethora of associations. Poovanthuruthu Industrial Association and the Rubber and Plastic Small Industries Association of Changanassery are the largest, and are the only ones that have independent office space. They have about 150 and 100 members respectively. The other associations comprising of tiny enterprises have hardly 10-30 members on their rolls. Prior to interventions, these associations had only one role-advocacy.

A number of technical and other support service providers are located within or close to the cluster. These include:

• The Rubber Board, functioning under the aegis of the Department of Commerce (Ministry of Commerce and Industry)

• Cochin University of Science and Technology (CUSAT - Polymer Technology Division)

• Common Facility Service Centre (CFSC), Changanassery, providing R & D and testing related assistance.

Prior to intervention, there was a lack of interaction between the cluster units and support service providers.

Major Problems

The Cluster Development Agent (CDA), representing the implementing agency, The Industries Department of the Government of Kerala, identified the major problems as:

- High cost of production due to sub-optimal procurement and weak linkages with financial institutions. This affected export competitiveness vis-à-vis Sri Lanka, Indonesia and Vietnam.
- Poor physical infrastructure (roads, overhead power cables, water supply distribution etc.) within the industrial estates.
- Technical line imbalances in the manufacturing process (of the 'mixing mills' vis-à-vis the 'press'). This affected capacity utilisation and hence costs, quality and scope for manufacturing high value-added products.
- Poor entrepreneurial initiatives and inadequate marketing and market development efforts. As a result, many cluster SMEs are predominantly sub-contractors to medium-sized exporters of the Coir Cluster at Alleppey.
- Inadequate R & D base and initiatives for product development, quality, product-mix and design of moulds for manufacture of floor coverings.
- Competition from non eco-friendly synthetic substitute products. (PVC tufted mats have a larger market share vis-à-vis rubberised or latex backed coir mats during the last few years.)

Vision for the Cluster

The vision for the cluster that was progressively evolved by the implementing institution was: 'The Rubber Cluster at Kottayam would have evolved into a globally preferred source for rubber related home furnishing products by the year 2006'.

Implementation Strategy

It all started off with a 'revitalisation' programme organised by the Industries Department in association with the Entrepreneurship Development Institute of India (EDII), Ahmedabad. The intervention served to evolve specialised purchase consortium and also underlined the need for evolving appropriate financing instruments for this purpose. The route to realising the cluster vision was further evolved over several stakeholder meets organised by the CDA in 2002-03. A Cluster Development Co-ordination Committee (CDCC) was formed with the involvement of key stakeholders and support institutions, which identified critical gaps on various fronts. During this period, the cluster was undergoing some product-related structural changes. Therefore the CDA focused its attention on SMEs making products with better market potential, such as mats[1]. A combination of training, awareness-generation programmes, workshops and exposure visits served to evolve consensus amongst specific SME segments on various common business plans. Throughout this process the State Government took special interest in promoting supportive policy framework. For example, in order to facilitate quick decision making in small but important issues, a nominal flexible funding (of Rs 10,000) is also provided to the CDA[2]. Dissemination of interventions was also simultaneously pursued for upscaling of initiatives.

Major Interventions

Major interventions to resolve critical problems include:

Reducing cost of production through purchase networks

A 'revitalisation' programme organised by the Entrepreneurship Development Institute of India (EDII), Ahmedabad, in association with the Industries Department identified the benefits of common purchase of inputs and the necessity for evolving appropriate financial instruments to increase financial resources to SMEs. Simultaneously, at the policy level a unique model of financing raw materials for the consortia of SMEs registered as corporate entities, by way of Margin Money Loan (MML) assistance, was evolved by the Industries Department. The scheme offers support by way of soft loans up to a maximum of 50 per cent, subject to a limit of Rs. 2.5 lakhs (US$6000) per member. Consortia are effectively to be evolved as special purpose vehicles (SPVs) of cluster SMEs for common purchase, CFCs, and common marketing.

Interventions facilitated the establishment of a large institutionally financed raw material and consumables purchase network. Thirty-eight member units of this network (NRFPMC), mainly manufacturing mats, are benefiting by way of optimal scale and source of purchase. From common sourcing of inputs (in cash) from large manufacturers in northern India, NRFPMC has now progressed to directly importing various high-quality, eco-friendly, fluorescent cleaning agents. The consortium is the commercial arm of the Changanassery Industries Association. Their raw material bank has opened its doors to shareholders from other associations.

Another consortium, 'Millennium Tread Rubber Consortium Pvt. Ltd', has benefited about 40 enterprises within and outside the cluster, through common import of synthetic rubber. A consortia of 20 SSI units is under registration at Poovanthurathu, which will initially focus on common purchase of inputs.

The Changanassery Association has taken the lead in advocating that pattayam (title deeds) be issued for land occupied by enterprises in industrial estates. After 20 years of dispute, enterprises within estates now possess titles to the land on which their business premises are constructed and can offer the same as financial collateral.

Removing gaps in physical infrastructure

The problem of poor infrastructure in industrial estates in clusters was reflected in the 'overturning' of container trucks transporting export shipments from cluster SMEs. The CDA led a team of entrepreneurs to the Special Economic Zone, Kochi, to expose them to the quality of physical infrastructure required to cater successfully to export markets.

A proposal was subsequently submitted to KINFRA, the State level nodal agency for considering projects seeking support under the Assistance to States for Developing Export Infrastructure and other allied activities (ASIDE). The Changanasserry Association made a presentation to a committee chaired by the Chief Secretary of the State, in January 2005. Ninety per cent of the proposed project cost of about Rs. 40 lakhs (US$91,000) was disbursed under the ASIDE scheme. The project was implemented within the first quarter of 2005.

Removing Gaps in Technical Line Imbalances in the Manufacturing Process

Rubber is mixed with the required chemicals in an open mixing mill where the quality of the mix is dependent on the efficiency of the operator and the mixing time. Thus quality variations are high. The problem was diagnosed and overcome by the installation of an internal mixer, which ensured consistent quality and high output. However, as per prevalent technology amongst SMEs, a mixing mill needs to operate three shifts for the press (for moulding operations) to be able to operate one shift. The introduction of three mills per shift to correct this line imbalance, would involve high capital costs and conversion to high-tension power connection resulting in higher power costs.

A project proposal to establish an inter-mix on a Public Private Partnership (PPP) basis was prepared by the Technical Consultancy Division of the Rubber Board in association with the CDA. The Small Industry Cluster Development Programme (SICDP) Committee sanctioned a grant-in-aid for 90 per cent of the cost of plant and machinery in February 2004 and an amount of about Rs 3.5 crores (US$796,000) was given to the newly created NRFPM Consortium.

Equipment and machinery are currently being installed at the facility offered on a lease basis by CFSC, Changanassery. There will be a three-fold increase in productivity and a reduction of about 5-8 per cent in cost per unit of output through savings on labour and energy. This will enhance competitiveness and better standardisation of products.

Marketing and market development efforts

The association organised a series of awareness and capacity building training programmes. These included workshops on social auditing, internet marketing, technical skill up-gradation, training for managers and workers, Management Development Programmes (MDPs) on communication/ management skills, quality management, creativity and innovation, etc.

In addition to purchase networks, a consortium involving Hawaii chappals and strap manufacturers was evolved to pursue common marketing initiatives to avoid exploitative middle men.

NRFPMC has participated in fairs such as India International Trade Fair (IITF-New Delhi), Rubber Expo (Mumbai), B2B Meet (Kochi), etc. These contributed to direct export turnover. International networking and exposure visits and networking meets with the trade facilitation desks of the Netherlands, South Korea, and the UK were organised. Meetings have been held with representatives of market information providers such as the Dun and Bradstreet. With the assistance of the DCSSI, members of the consortium visited the Domotex Trade Fair in Hanover, Germany. The visit encouraged consortium members to manufacture new export oriented, value added products. The BDS provider, SES, Germany, has facilitated market linkages with Scandinavian countries for export of latex and new product lines such as raincoats. A BDS provider in Dubai is assisting a cluster consortium with access to the Middle East markets.

As the first step towards the generic promotion of the 'Kottayam rubber' brand, data is being compiled to provide evidence on the uniqueness and quality of Kottayam rubber products. The quality of raw natural rubber in the region is unique due to agro-climatic conditions and well-skilled extraction techniques-tapping, preservation, etc. As a result, prices of NR from Kottayam are at a premium.

Interventions in Product Development: To mitigate international challenges, new products such as rubber tiles and rubber play balls have been developed by CFSC, Changanassery. Programmes on exploring product diversifications have been organised by agencies such as the Product Development Centre, Meerut, with DCSSI support, focussing on sports goods.

Another new product being explored has been latex-backed cotton fabric for the European markets. CFSC and the consortium (NRFPMC) have introduced new technology to manufacture fire and smoke-resistant mats as per European standards.

The product was approved by the British Laboratory and trial orders for Europe are being processed. The consortium members have met all the expenses, amounting to Rs 2.5 lakh (US$ 6,000), for product development and R & D expenses.

Consolidated Results

Firm level

Over seventy enterprises in the cluster are working together in the form of networks. Thirty-eight member units of one network (NRFPMC Pvt. Ltd.) have benefited in cost reductions of 20-30 per cent on many inputs. The consortium company secured a profit of Rs. 10 lakh (US$23,000) in the last 15 months of operation. Common purchase of inputs has resulted in savings of about Rs. 20 lakh (US$46,000) for consortium members.

Cluster SMEs utilised the services of private BDS providers extensively for management training and in preparation of common project proposals. Negotiations are on with a private supplier of Quality Management Systems (QMS), with experience in providing services to rubber product manufacturing enterprises, to provide BDS from outside the Cluster. A 'group' ISO 9000 option involving common training is expected to reduce the cost of relevant BDS by about 50 per cent.

Direct export turnover of network members increased by about Rs.10 crores (US$2,273,000) over the intervention period. The service provider representing the SES led a delegation of German buyers to Kottayam to inspect enterprises and place orders from cluster SMEs. Trial orders worth Rs. 4 lakh (US$9,000) have already been shipped.

Cluster level

An exchange for sub-contracting was established at the Changanassery Association premises with support from the DCSSI. This will enhance backward and forward linkages. The scope and model of the 'bank-financed' raw material network has resulted in similar consortia being evolving. A critical problem of SSIs with respect to institutional credit is being resolved. New products such as rubber tiles and rubber play balls and new buyers have been introduced.

The Changanasserry Association has taken the lead in constituting a Federation of Kottayam Rubber Industry Associations (FRIA), which brings together five specific associations representing about 400 enterprises. This lends critical mass to pursue strategic cluster level initiatives such as submission of a proposal for registration under the GI Act.

Policy level

The State Government has introduced two major policy changes. These include:

Interventions in the cluster have resulted in the creation of a consortia-supporting Margin Money Loan (MML) scheme by the Government of Kerala.

The implementation of the project supported under the ASIDE scheme (PPP mode) built up pressure on authorities to issue title deeds to SMEs. Thus land, as collateral to financial institutions, is now available to seventeen industrial estates (about 1,000 enterprises).

Sustainability of Interventions

Most of the broad interventions have been led by industry associations and are being closely monitored by a CDCC representing different stakeholders. All business ventures are being managed by business networks. None of these efforts are operationally subsidised. The Federation of Kottayam Rubber Industry Associations (FRIA) has been evolved. A Cluster Development Co-ordination Committee (CDCC) monitors progress, guides interventions and involves all relevant stakeholders. All these efforts suggest reasonably good sustainability of efforts made in the cluster.

Future Direction

Future interventions are expected to be largely led by SMEs and support institutions. Some of the important ones include:

Registration of Natural Rubber (NR) of Kottayam under the GI Act and Subsequent Promotion of the Brand: Upon getting protection under the GI Act, the SMEs propose to promote the brand, domestically and internationally.

Industry Institute Partnership: Department of Polymer Science and Rubber Technology, CUSAT, has submitted a proposal for support under the Industry

Institute Partnership Scheme of the AICTE, which has been sanctioned. CUSAT is expected to work closely with industry over implementation of the project for industry-institution linkages in the area of technical training and R & D, particularly for product and design development.

Large Projects to Manufacture Value Added Products: SMEs from Changanassery Association are implementing projects for rubber tufted coir mats and continuous rubber mat manufacture. These products offer better quality and feel and enhance export potential. The consortium has acquired 3 acres of land adjacent to the industrial estate at a cost of Rs. 90 lakhs (US$205,000). The total project cost is estimated at about Rs. 12 crores (US$2,727,000). This project would serves as a demonstration project for new technology and products.

Kottayam is situated in the State of Kerala. The initiative for development at the rubber cluster of Kottayam was started in the year 2002-03 by the Industries Department of the Government of Kerala. UNIDO, CDP, then recommended selection of the cluster for development by the Development Commissioner Small Scale Industries (DCSSI) and offered Technical Assistance to the CDA and stakeholders to facilitate initiatives. Long-term strategic interventions continue to be supported by the Department who remain an integral institutional partner of the cluster. This article has been authored by Mr V Padmanand, SME Consultant, Chennai.

Footnotes

2. Other product manufacturers with relatively better potential are being encouraged to emulate these options.

3. By the state government through K-BIP.

Chapter 11
Ludhiana - Hosiery

At the hosiery cluster of Ludhiana, the Project Uptech Programme of the State Bank of India (SBI) acted as a catalyst to make the participating units cost competitive and quality conscious so as to be able to face global competition in the post-quota regime. SBI acted proactively by involving specialists to organise training workshops. This was followed by unit level interventions where the units were provided finance at concessional terms by SBI on a priority basis. As a result, about Rs. 90 crores (US$20.5 million) have been invested in upgraded machinery for modernisation by the participating units. These interventions have enabled the SMEs to modernise and adopt a more professional approach by way of backward and forward process integration, employing of trained designers, merchandisers and textile technologists, introducing scientific inventory systems, etc.

Evolution of the Cluster

The knitwear industry is well diversified in our country. While Tirupur in South India is famous for cotton knitwear and Delhi/ Mumbai for synthetic knitwear, Ludhiana is famous for woollen, acrylic and acrowool/ blended wool knitwear. About 90 per cent of India's acrylic/ woollens are manufactured at Ludhiana. Over a period of time, Ludhiana also emerged as a producer of summer-wear from knitted polyester/ cotton or blended fabrics.

The earliest woollen knitwear unit in Ludhiana dates back to 1903. The circular knitting machines were first set up in 1935. Hand-operated flat knitting machines were introduced in the 1940s. In the 1980s the industry took a major step with the introduction of computerised circular knitting machines. At present, the Ludhiana Hosiery Cluster has about 50,000 flat knitting machines of which about 500 are computerised ones. There are about 4,000 circular knitting machines of which about 1,000 are computerised.

The Cluster and its Major Stakeholders

There are about 6,000 active SMEs engaged in the manufacture of various knitted items. The total production of Ludhiana Hosiery Cluster is estimated to be about Rs. 5,000 crores (US$1.1 billion), of which

exports account for about Rs.700 crores (US$159 million). The knitwear manufactured in the cluster is for summer and winter wear.

It is estimated that there are about 7,000 tiny, small and medium scale units engaged in manufacture of knitwear. The facilities installed in these units are for stitching, overlock, folding, buttoning, hand flats, computerised flats etc. There are about 50 large and medium-sized yarn-making units that manufacture different types of yarns for the hosiery industry. There is no dearth of yarn in Ludhiana and about 25 per cent of the total yarn produced is exported.

There are about 260 small and medium dyeing units. Most of these units are traditional dyeing plants using winches for hank dyeing and a few, about twenty-five, are modern dye houses. There is a lack of modern processing units for washing, finishing and dry cleaning. The existing process houses are mostly integrated units performing all the activities of fabrication, garment-making and dyeing. There are about 40 vertically integrated composite units catering to the high-end domestic market and exports.

There are a multiplicity of associations in Ludhiana, which are based on geographic locations and segments. Knitwear Club (Regd.) is the largest association of hosiery manufacturers with about 500 members. This association organises seminars and awareness programmes on the latest issues relevant to the hosiery industry. It had organised a buyer-seller meet in association with the China Chamber of Commerce in May 2002 at Ludhiana, which was sponsored by the SBI Project Uptech. The President of the Club takes active interest in exposing the hosiery entrepreneurs to modern practices. Apparel Exporters Association of Ludhiana (APPEAL) has 60 members. It also organise buyer-seller meets with export houses/ agents. The dyeing industry has many small associations, but the Ludhiana Dyeing Association (Cotton Division) is an active association of progressive dyers who keep upgrading themselves on environmental and energy issues.

The Federation of Knitwear, Textiles and Allied Industries Association (FEKTAA) is an umbrella organisation of ten hosiery, knitting, dyeing and allied industry associations. It was formed in December 2001 under the aegis of UNIDO for lobbying the government jointly and presenting a unified view of the hosiery industry. It has its own secretariat in the premises of the Knitwear Club (Regd.).

Major Issues

Ludhiana occupies an important niche on the textile map of India. The industry has developed from the traditional woollen base to modern day fashion-wear for all seasons. However, with the successive lifting of quantitative restrictions and quotas under the WTO regime, the industry will be subjected to global competition from China, Taiwan, Sri Lanka, Malaysia and Bangladesh. In such a free-market scenario, the hosiery manufacturers will have to continuously strive for cost reduction and quality improvement. These twin objectives can be realised by technology upgradation and modernisation of manufacturing processes, coupled with professional management.

Vision for the Cluster

The vision for the cluster, as formed by the implementing agency was "To modernise the hosiery cluster of Ludhiana by way of technology upgradation and dissemination of state-of-the-art textile practices, so as to make the hosiery SME's cost effective and quality conscious, thereby making them globally competitive to face the challenges of quota free regime."

Major Interventions and Results

The State Bank of India is a leading bank in the region and has a strong funding relationship with the SSIs of the area. This provided the basic level of trust for the interventions. SBI empanelled a team of in-house external technical consultants. The project team carried out a sample study to assess technology levels and scope for upgradation. For this purpose interactions with industrialists, their associations and other agencies were held. The bank's day-to-day interactions with its clients from the cluster also gave useful insights into their needs.

Based on its findings, about 35 seminars and workshops were organised by the bank to create awareness about issues like quality, productivity, pollution control, Management Information Systems, impact of WTO, etc. In addition, 11 short-duration training programmes were organised for operators of circular knitting, flat knitting and garment-making units to enhance their productivity.

Activity	NO. OF ACTIVITIES			NO. OF PARTICIPANTS		
	Till 31-3-2004	Year 2004-05	Total	Till 31-3-2004	Year 2004-05	Total
Launch of Project	1	-	1	120	-	120
Seminars & Workshops	16	-	16	457	-	457
Training Programmes	9	2	11	406	98	504
Special studies other activities	14	4	18	NA	31	31
Total	40	6	46	983	129	1,112

This resulted in a demand from the participants for unit specific techno-managerial studies such as:

• Manufacturing processes.
• Management information system and organisation structure.
• Product costing, waste minimisation and rejection control.
• Inventory management.
• Energy conservation.
• Vision building and development of business plan.

The cost of the study was shared between the SBI and each beneficiary firm. The outcome of the study was presented in the form of a report to the enterprise with recommendations for improvement. Thereafter, finance on concessional terms, was provided by the bank to the assisted units, on a priority basis. About 76 techno-managerial studies have been conducted so far in the cluster resulting in additional investment of about Rs. 90 crores (US$20 million) in upgraded machinery. These interventions have enabled the SMEs to modernise their age-old machinery, adopt a more professional approach and become quality and cost conscious.

Areas of improvements made by the units is given below:

- Upgradation from hand flats to computerised/ fully fashioned flatbed knitting machines.
- Induction of state-of-the-art computerised circular knitting machines from Japan and Germany in place of the cheap Taiwanese ones.
- Induction of multi-head computerised embroidery machines.
- Shift from winches to soft-flow dyeing machines to save water and energy.
- Usage of imported high-speed garment-making machines.
- Usage of CAD in place of manual patterns for garment making.
- Backward and forward process integration.
- Employment of trained designers, merchandisers and textile technologists.
- Setting up of modern dyeing/ processing units to cater to the demands of the cotton garment units.
- Putting in place scientific inventory systems.
- Savings in raw material usage and energy.

Box 1: A Firm Level Case Study

One of the units that went in for technology modernisation already had appropriate technology with respect to over-locking of stitches, folding of fabric, button attaching/ hole stitching and thread trimming. The following technical changes occurred:

Process Facility	Pre-Uptech Technology Level	Post-Uptech Technology Level	Comments
Fabric cutting	Manual with scissors as cutting tools	Manual with motorised cutters. The company has also a modern cutting room fitted with CAD/CAM for pattern making	A cutting room with CAD / CAM for pattern making with the addition of fabric laying and laser cutting machine is the highest level of technology available today. This upgradation was suggested for the long term when the unit achieves economies of scale.
Stitching of fabric	Part of the production was handled by indigenous umbrella sewing machines	Replacement of the machines by imported sewing machines of Juki/ Brother make.	Sewing machines with thread trimmers,computer controlled memory stitches capable to seam different patterns are the highest level in stitching technology available today. Such modernisation was suggested for the long term when the unit enters the premium quality market.
Collar making	Out-sourcing of the operation.	Addition of fully fashion/ computerised flat bed knitting machines	This is the appropriate technology for knitting best quality and variety of designs/ structures. Besides, the unit avoided dependence on outside sources for such operation.
Garment embellishments	Out-sourcing of printing/ embroidery operations.	Introduced computerised embroidery machines. Printing is still outsourced.	It is appropriate for the unit to outsource printing. The long term recommendation to install embroidery machines to reduce the process time and cost of operation has been implemented.

The total investment for the upgradation was Rs. 57.57 lakhs (US$131,000), consisting of equal values of Indian and imported equipment. The promoter's contribution for this upgradation was Rs. 11.52 lakhs (US$26,000), equity fund assistance was Rs. 1 lakh (US$3,000) and a term loan from SBI was given for Rs, 45.05 lakhs (US$102,000).

The success achieved by the enterprise after the modernisation plan under the SBI Project Uptech in terms of improvements in product quality, sales turnover, profitability and efficiency of the unit is reflected in the table below.

Box 1 Contd.

Financial Impact of Modernisation by Process Integration

Particulars (unit)	**Pre Uptech**	**Post Uptech**
Year	**2001-02 (Aud.)**	**2003-04 (Aud.)**
Production of knitwear (pieces per day.)	6,000	8,000
Sales Turnover (Rs. Crs.)	11.56	17.87
Export sales (Rs. Crs.)	0.83	2.23
Raw-material consumed (Rs. Crs.)	6.78	8.00
Net Profit (Rs. Crs.)	0.95	1.85
Paid up capital (Rs. Crs.)	0.69	0.69
TN W (Rs. Crs.)	2.63	5.59
TOL (Rs. Crs.)	2.38	2.65
Ratio analysis		
Profitability Ratio		
Net Profit to Sales (%)	8.74	10.36
Liquidity Ratio		
Current Ratio	1.82	3.11
Leverage Ratio		
TOL / TNW	0.90	0.47
Efficiency Ratio		
Raw material/ sales(%)	58.65	44.76

The impact analysis carried out for process integration vis-à-vis outsourcing of some operations gave the following observations:

Parameter	**Pre-Uptech study**	**Post Uptech study**
Average process time	10-12 days	7-8 days
Knitting faults in collars	8-10%	2-3%
Cutting waste	15-17%	10-12%
Quality of garments	Little control	Better control
Marketing	Domestic & exports	Enhanced Exports

Thus, the objectives of the unit level study under Project Uptech have been demonstrably realised.

The following changes took place in the participating units:

• Turnover growth: 23-60%
• Growth in net profit: 60-80%
• Reduction of wastages: 3-5%
• Saving in process time: 5-7 days
• Market orientation: More for top end market/exports
• Improved financial position in terms of better liquidity and solvency.

Sustainability of Intervention

The entrepreneurs realise the need of continuously reducing costs and upgrading quality to remain competitive in the business. Many more entrepreneurs have opted for modernisation and expansion through backward and forward integration. The Project-assisted units have experienced the advantages of modernisation through technology upgradation. The message has spread through the entire cluster and many members are upgrading their techniques/ technology even without the help of Project Uptech. The key players and local support institutions viz. the hosiery associations have been sensitised to the needs of the cluster and these institutions now help their member units. Further, the banks have substantially reduced the processing time for loan applications.

Future Direction

Ever since the quotas were lifted, the textile industry has enjoyed a boom phase in India. There is thus ample scope for further technology upgradations in the cluster.

The following initiatives are at various stages of implementation:

• An Apparel Park is being constructed in Ludhiana.

• An integrated facility centre which would house the common design/ exhibition/ convention centre is under consideration of the Government of India.

• A modern process centre is under construction at Ludhiana.

• A textile training institute has already been established by M/S Sportking in collaboration with Pearl Academy of Fashion. The first year of its academic session is in progress.

• An Apparel Design and Training Centre has been started by AEPC for upgrading the skills of operators and supervisors.

Project Uptech was started in 1988 at Coimbatore for the agro-pumpset industry. Since then, State Bank of India has taken up 24 clusters representing different industries all over India.
State Bank of India launched Project Uptech in the Ludhiana Hosiery Cluster in March 2001.
This document has been prepared by Mr A K Agnihotri, Task Force Leader, Project Uptech, State Bank of India, Sunder Nagar, Ludhiana.

Chapter 12
Mojari Clusters of Rajasthan - Footwear

For most of the artisans in this art form, producing Mojaris was the only source of livelihood and the skill had been derived hereditarily. By and large they have no land holdings or other sources of income. Hence the target was to create a model that can make the cluster competitive and ensure sustainable livelihood to artisans producing Mojaris in different places of Rajasthan. For the first time problem of this sector were addressed under NLDP[2]. The shoemakers in the Nagaur[3] district of Rajasthan were selected for a pilot initiative involving selected clusters of traditional rural artisans producing Mojari the traditional, ethnic footwear of the region. Encouraged by its success, a project was launched covering 2700 artisans in the mojari clusters of Jaipur, Jodhpur, Jalore[4] and Pali[5] districts. The Rural Non-farm Development Agency (RUDA) of the Government of Rajasthan implemented this project.

Evolution

Ethnic footwear is a sub-sector of leather products, which includes handcrafted footwear produced by artisans. These are ethnic in nature as it encapsulate craftsmanship passed on from generation to generation to artisans and also manifest cultural diversity of different regions.

"MOJARI"[6] is handcrafted ethnic footwear produced in Rajasthan, India made by artisans mostly using vegetable tanned (VT[7]) leather. The uppers are made of one piece of leather or textile embroidered and embellished with brass nails, cowries' shells, mirrors, bells and ceramic beads. It has a flat sole with round or pointed (sometimes extended) toes and closed counters[8], or with no counters at all, in the form of slip-ons. Even the bonding from the upper to the sole is done by cotton thread that is not only eco-friendly but enmeshes the leather fibers with great strength. Some product range also uses bright and ornate threads.

In Rajasthan there are about a hundred thousand households engaged in the production of this ethnic footwear. They belong almost exclusively to backward communities and the poorer sections of the society. While many of the elements of the production process involve exclusively men, women are associated at

critical stages of the process; in particular in the delicate embroidery work, as well as the punching and the cutting of the uppers that is the hallmark of this footwear. These are produced without restriction in terms of quantity with production topography being decentralized, unorganized and cluster centric. Family units carry out the production. Most of the family members are associated with production processes.

Cobblers have used leather to make Mojaris (soft shoes) with floral patterns known for their delicacy and beauty with durability and comfort. Rajas and Nawabs used to wear these shoes. Mojari of Rajasthan primarily suited the requirement of the local people and prevailing conditions. The most important factor in terms of foot comfort in this arid area is heat insulation properties of this footwear. The best varieties are found in Jaipur[9], Jodhpur[10], Barmer[11], Bikaner[12], Jaisalmer[13] etc. These are all Mojari clusters.

For the first time problem of this sector were addressed under NLDP[14]. The shoemakers in the Nagaur[15] district of Rajasthan were selected for a pilot initiative involving selected clusters of traditional rural artisans producing Mojari the traditional, ethnic footwear of the region.

Encouraged by its success, the project was launched covering 2700 artisans in the mohair clusters of Jaipur, Jodhpur, Jalore[16] and Pali[17] districts.

Major Stakeholders

Most of the clusters are static and process of decay is visible in almost all clusters. Family units carry out the production hereditarily. It has been observed that in all clusters the process of migration of artisans and their wards to other professions and cities has taken place. There is no formation of social capital and complete absence of horizontal and vertical linkages. There is no society/association of artisans in any cluster. Collective efficiency, which is hallmark of cluster centric activities, is absolutely missing.

During the year 1996-98, under NLDP as pilot initiatives 28 networks and 1067 artisan households mostly in Nagaur district were covered. Nagaur was selected as one of the districts because (a) it had a large concentration of livestock population (estimated in 1995 to be 3.4 million) and consequently availability of raw hides and skins (b) there are significant concentrations of leather based artisans in all 11 blocks of the district (c) of the encouraging response from the artisan clusters and (d) of the enthusiasm evidenced by district level functionaries, in particular by officials of the DIC[18]. The RUDA[19] was designated the nodal agency for NLDP interventions in the State of Rajasthan.

Artisans are mostly from the scheduled castes like Raigars, Mochis, Meghwais or the minority community of Muslims.

Major Problems

The problems being faced by the cluster can be broadly enlisted as follows:

- Product deficiencies
- Lack of standardization
- Absence of innovation and institutional framework for skill, technology, product upgradation and improved designs
- Onslaught of cheaper footwear produced by organized factories
- Low productivity and prevailing exploitative marketing channels.
- A low earnings of artisan's led to their migration to other professions and cities. Their children also started opting for other professions.
- Danger of extinction of this art and cultural heritage

Vision

The vision for Mojari was conceived as:
"To create a model that can make the cluster competitive and ensure sustainable livelihood to artisans producing Mojaris in Rajasthan".

Implementation Strategy

The technological upgradation of the Mojari on a conceptual level envisioned contemporarisation of the Mojari without changing the ethnicity of the footwear. There has been no technical change in Mojari for the last 400 or 500 years. By creating a left-right distinction, ensuring size standardization, addressing major issues related to footwear comfort, and introducing newer designs, the technical issues have been satisfactorily resolved. The need was only to address to marketing of the products on sustainable basis, as artisans being the source of the supply were never exposed to the retailing & therefore the trading activity because being conducted through middlemen.

One of the major issues that were addressed was packaging. There was virtually no packaging involved

in products. They were tied up with strings. It was not possible to realize the price of Mojari in the absence of good packaging but also was harmful for the product to be carted around without packaging.

World-famous designers from Italy and from Germany were brought in for design inputs. Institutions like FDDI[20], NIFT[21] were also roped in to lend a designer hand. Based on their inputs, standard synthetic lasts[22] were made and distributed to the artisans. Last factories in NOIDA[23] and Vadodara in western Indian state of Gujarat served the artisans.

The clusters were introduced to retailers and distributors of the ethnic footwear manufacturers. This was done at the time of international fairs where major retailers participated.

A publicity plank was deliberated and followed strictly.

Major Interventions

Skill upgradation & technology induction

For most of the artisans, producing Mojaris was the only source of livelihood and the skill had been derived hereditarily. By and large they have no land holdings or other sources of income and were poorly equipped in terms of tools and above all had very little knowledge about costing and productivity as they were still practicing traditional methods that were centuries old.

Mojaris also lacked an important comfort feature of becoming de-shaped in a shorter period and of the most usage of nails for fixing the sole. As these are leather made of vegetable tanning, durability is less in comparison to common footwear. Intense training programme was imparted to the artisans in these areas as the artisans who were working in this sector had little concept of scientific costing.

Initiatives were standardize the products throughout the production base by integrating it uniformly with the international British standard sizing and fitting conventions. The artisans were also upgraded with on various sizing systems and its conversion from one system to another, optimization in cutting of leather, on designing, on finishing and ascertaining product prices with rationalized ways of costing.

Mechanizing these operations reduced drudgery, improved aesthetics and finish but at the same time retained the basic hand stitched nature. This included introduction of elementary machines like Heavy-Duty Stitching, Compressing machine, Die Cutting, Finishing machines, etc. Also, some useful hand tools like size and design punches, plastic hammers, cutting blocks, etc., were provided.

Product standardization

The most important deficiency in the product - the left-right distinction was introduced. This was achieved by giving the artisan households standard polymer shoe moulds, called Lasts and Patterns[24] conforming to the 3 dimensional shapes of the moulds. Appropriate efforts were taken to identify and eradicate the basic and typical discomfort features liking pinching at the heel top line, incorporation of more scientifically cut patterns, appropriate socks[25], etc. Qualified footwear technologists were deployed to train the artisans at their workplaces exposing the artisans to the modern scientific techniques and methods of footwear manufacturing.

The marketability of the footwear made on improved lasts and with new methods and designs was tested initially at village markets, and then at the district level. Enthused by the response, the artisans subsequently took the lead in organizing a community "Panchayat" a formal meeting of the artisan community of eastern Nagaur district in April 1997, to appraise other clusters of the potential. It greatly facilitated the task of reaching out to other clusters.

Designs and product diversification

The artisans were mainly producing plain or uni-colored Mojaris due to non-availability of appropriate coloring agents and all the above treated leather. Simple and subtle designs through introduction of chrome tanned leather dovetailing the existing skills with contemporary designs through design inputs from the leading national institutes like NIFT, FDDI and Pearl Academy of Fashions, Jaipur. Roping in reputed designers, the Mojari was given a truly contemporary look by incorporating textiles, nets, tetron and different coloured leathers. Some of the pairs even sport the famed blue pottery beads.

Market facilitation

CDC[26] at Jaipur, Rajasthan was created in May 2001 that met the most pressing need of the sector and mainstreamed the product in domestic and international market. Providing the artisan households exposure to

collective manufacturing, marketing in the strong niche urban markets, as also to establish linkages between the artisan groups and the organized sector markets.

A boutique opened at Jaipur has achieved exceptional sale figures.

The centre manned by professional people to promote the products in the markets of Delhi, Mumbai, Punjab, Haryana, Bangalore, Uttar Pradesh, Kerala etc. The center ensured booking and distribution of orders seamlessly among group of artisans. The center facilitated inspection for quality and on-time delivery of orders. The center took special attention in ensuring timely payments to artisans supplying goods to the center.

Tie-ups were made with major distributors and apex bodies for logistic support to facilitate export marketing. More than 450 pairs of Mojaris manufactured project have been displayed at various international fairs.

To create a greater awareness and to target customers on a wider spectrum and as the next step forward in marketing the Mojaris, a website with e-commerce facility has been setup and is available under the URL: www.mojari.com.

Consolidated Results

Firm level

• In the year 2003, revenue from export of Mojaris was Rs. 3.4 lakhs (USD 7800)and it increased to Rs. 99 lakhs (225,000) in 2004 and to Rs. 1,35 lakhs (USD 306,000) in 2005.

• The impact was visible and independent evaluation carried out by ORG Centre for Social Research, fielded by UNDP, reported that income of artisans have increased 30% - 40% and the artisans are able to get jobs throughout the year.

• Mojari has participated in prestigious marketing events like Garda, Italy, GDS fair in Dusseldorf, Germany, Asia Pacific Fair in Hong Kong, International Shoe Fair & India International Trade Fair in New Delhi. Besides, Mojari has had a successful performance in marketing meets at Dilli Haat, India Habitat Centre and the Desert Pastorale at Jaipur and Mumbai.

• Mojaris have been exported to fashion conscious places like Italy, Germany, Belgium, USA, Canada, South Africa, Japan, Taiwan. There are encouraging inquires from Australia, Spain, Hong Kong, Singapore, Korea & Thailand.

• In the national markets organized distributing and retailing are already in place in the States of Delhi & Haryana. The markets of Mumbai, Kamataka and Tamilnadu are slated to be opened up shortly. Mojaris have also been lifted by the organized sector in the national markets.

• "Mojari" from Rajasthan was displayed during an Exhibition held at ALSO (a boutique), Hyderabad (13 to 16 October 2003).

Cluster level

• It is gratifying that standardization, left and right distinction etc. has been introduced. Design inputs provided by local and international designers have added value and element of exclusiveness and differentiation to the product. The responsiveness of artisans to technological change has indeed been heartening. Appropriate packaging materials were developed so as to improve the marketability of the product in domestic and international markets.

• The net result of intervention has resulted in enhanced earnings of artisans as well as providing them employment for the whole year.

• For rural woman artisans making 'Mojaris' a training programme in beading & embroidery work was organized at Annopura village in Jaipur from 11th March 2004 to 31st March 2004. SMART , implemented it to meet the most pressing need of the sector and mainstreamed the product in domestic and international markets.

Sustainability

In order to ensure sustainability of the initiatives and ownership of the target group, a society named SMART[27] has been formed, registered under the Societies Registration Act, 1860 and is undertaking the management and operation of marketing functions for products of artisans / MEs at Jaipur. Steps have been taken for creating e-commerce facilities for the products and the same will be launched within few months.

Future Direction

RUDA has also made several initiatives in the "Post-Operation Mojari" era.

Training: An International TOT programme has been organized in the month of May 2005 under IPI- World Bank Project through International footwear designers for the master craftsmen's of Operation Mojari's five districts, keeping in view that they will disseminate their acquired skills further down to the cluster participants. RUDA has tied up with CLRI under the HRD Mission Programme to impart quality improvement parameters and modern technical skills in an integrated mode in these selected Mojari Clusters i.e. Udaipuria, Savarda, Harmada, Bansoor, Shri.Ganganagar. Twelve selected leather craftsmen from Operation Mojari districts have been sent to CLRI Chennai in August 2005 for a month long training. The project will address all their day by day problems under a year long project. This will benefit about 2000 crafts persons in various districts of Rajasthan.

Marketing: Apart from SMART, RUDA has taken up the market facilitation of Leather Mojari rural artisans of the five districts by facilitating their participation in various fairs, melas, and exhibitions free of cost. Such as in fairs organised by Ministry of Rural Development (SARAS fairs), Gram Shree, IITF, Dilli Haat, DCH's National Expo etc. This has given a sustainable support for their marketing plan and further Design Feed Back for more innovative products. RUDA has also conducted the cluster study of Mojari cluster i.e. Udaipuria, Savarda & Harmada through the students of NID Ahemdabad to design dissemination strategies for these potential clusters of leather future in Rajasthan.

Technical Backstopping: In order to address Technical problems faced by the Tanners, Mojari & Goods artisans, RUDA has started a telephone HELPLINE and has conducted group sessions for hands-on operations.

Footnotes:

1. This article has the approval of Mr Rohit R Brandon, IAS, Chairman and Managing Director, RUDA

2. National Leather Development Programme, a UNDP assisted Govt. of India programme.
3. Nagaur district, with a geographical area of 17,718 square kilometers, is situated almost at the centre of Rajasthan State.
4. Jalore, also known as Jalor, is a city in Rajasthan state of western India.
5. Pali is a town in Rajasthan state of western India. Located in the Marwar region.
6. An ethnic footwear, the most important factor in terms of foot comfort is its heat insulation properties which was found that even if the outside temperature varies between 50 - 60 deg. C., temperature inside the shoe remains within comfortable limits.
7. A method of hide tanning which utilizes materials from organic materials such as bark instead of the traditional chemicals. Vegetable tanned leather has greater body and firmness than traditionally-tanned leather.
8. A piece of stiffening material which passes around the heel of the boot / shoe to support the outer leather.
9. Jaipur, also popularly known as the Pink City, is the capital of Rajasthan state, India.
10. Jodhpur, one of the largest districts comes under arid zone of the Rajasthan state is centrally situated in Western region of the State.
11. Barmer is a desert town just 153 kms from Jaisalmer.
12. Bikaner is situated in the north of Rajasthan.
13. Jaisalmer is a border district of India located in the state of Rajasthan and touching Pakistan. Most of the district is part of Thar Desert and offers excellent camel safari options.
14. National Leather Development Programme, a UNDP assisted Govt. of India programme.
15. Nagaur district, with a geographical area of 17,718 square kilometers, is situated almost at the centre of Rajasthan State.
16. Jalore, also known as Jalor, is a city in Rajasthan state of western India.
17. Pali is a town in Rajasthan state of western India. Located in the Marwar region.
18. District Industries Centre
19. Rural Non-Farm Development Agency, an agency for development of non-farm sector
20. Footwear Design & Development Institute, NOIDA
21. National Institute of Fashion Technology, New Delhi
22. Last is a wooden or metal or synthetic mould over, which the footwear is constructed that gives the footwear its shape in accordance with the volume of the foot.
23. NOIDA, a satellite town near capital New Delhi
24. Sheets of metal or paper board or any synthetic material shaped to the outline to which the upper / bottom components are cut
25. The lining material that covers partially or completely the insole of footwear.
26. Centralized Distribution Centre
27. Society for Marketing of Artisan & Rural Things, a society promoted by the Footwear Design & Development Institute

Chapter 13
Nagaur - Hand Tools

The Hand Tools Cluster of Nagaur was facing hurdles with respect to low price–low quality syndrome, management knowledge, restricted product and channels and also energy inefficiency. The activities initiated by a UNDIO Project, through a consortium as well as BDS led approach; has unfolded a process of turnaround in the cluster, in a short span of two years. The cluster is experiencing introduction of modern technology, energy savings, improvement in quality and productivity and even a beginning of ISO 9001:2000 certification process. Joint initiatives are also showing signs of production of new items and creation of new marketing channels.

Evolution of the Cluster

From smoking cannon to precision calipers makes a long and rather interesting story of how a hand tools cluster came to be established in the remote town of Nagaur, near Jodhpur in Rajasthan, India. It all started in the sixteenth century, when the Maharaja of Nagaur invited four master craftsmen from Multan, now in Pakistan, to make cannons and revolvers to defend his fort. The big guns weighed up to 500-550 kgs and consumed a large quantity of iron ore, which was available nearby. These craftsmen set up their furnaces and settled in Nagaur.

All manufacturing was done manually, using hand blowers to heat the iron and basic tools to shape the weapons. Over time, the demand for cannons declined and the descendants of these craftsmen started making ploughs and locks. Nagaur then emerged as a major lock-making centre in the eighteenth century. During the late nineteenth century, tools for goldsmiths were introduced and supplied to goldsmiths all over India. In the early twentieth century, these craftsmen started making hand tools, shifting from labour-intensive to capital-intensive processes resulting in improved quality. By the 1970s, the hand tools industry had became the most prominent industry in Nagaur, with about 800 small units.

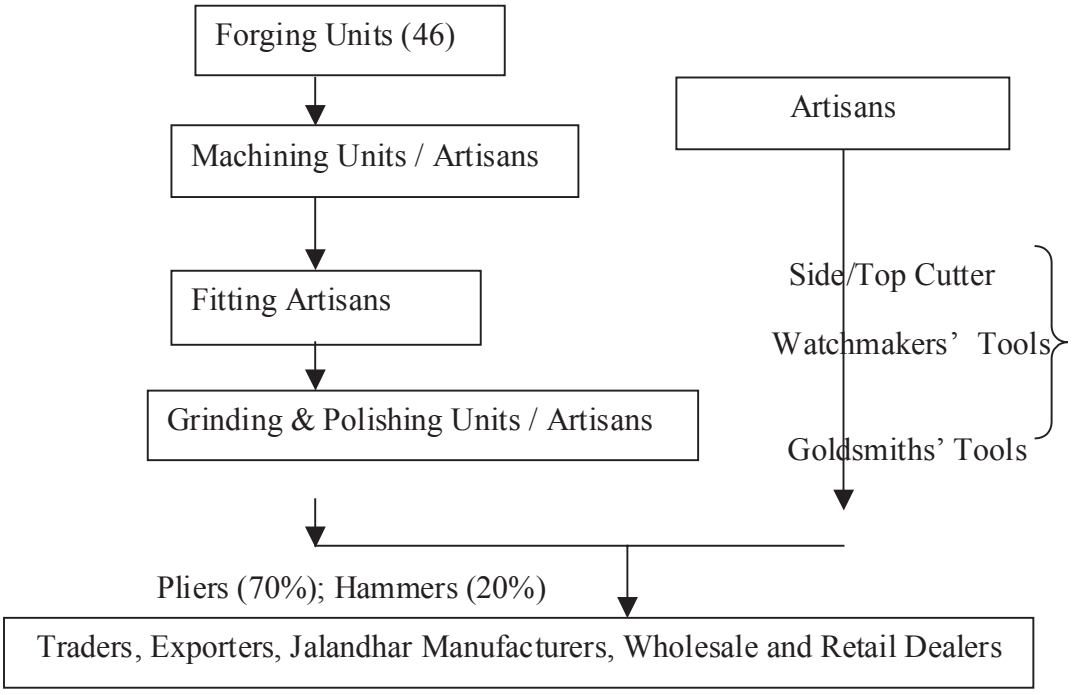
UNIDO and the Ministry of Small Scale Industries initiated a project titled 'National Programme for Promoting Energy Efficiency in Hand Tools SSI Sector in India' in 2003. Jalandhar and Nagaur were chosen as the main focus areas.
UNIDO was the chief implementing agency.

The Cluster and its Major Stakeholders

The Nagaur hand tools cluster is an old cluster of artisan-based cottage units and a few SSI units. Given below is the broad structure of the Nagaur hand tools cluster, along with the number of units and major products:

The Hand Tools Industries Association in Nagaur played the role of policy advocacy and took up common issues related to the government. The Government of India, through the Ministry of Small Scale Industries, set up a Hand Tools Design Development and Training Centre at Nagaur. It provides training, consultancy and various common facilities. There are no other business service providers in the cluster.

The estimated sales of the cluster in 2003 were Rs. 30 crores (USD 6.8 million), out of which indirect exports, domestic sales and sales by artisans were about Rs. 11 crores (USD 2.5 million), Rs. 12 crores



As can be seen, there is a high degree of specialisation. Forging units, manufacturing mainly pliers and hammers pass on the forged material to machining units who transfer the machined material to fitting artisans. The fitting artisans send the products for grinding and polishing before the traders do the packaging. The artisans manufacture side and nose cutters, watchmakers' tools and goldsmiths' tools on orders from traders. Semi-finished and finished products are transported from one unit to the other within the cluster by small trucks, manually operated tricycles and even bicycles.

(USD 2.7 million) and Rs. 7 crores (USD 1.6 million), respectively. There are no direct exports from the Nagaur cluster. Most of the domestic sales are through traders.

Major Problems

The National Productivity Council carried out a diagnostic study of the Nagaur cluster and identified the main problems afflicting it as follows:

• The cluster was caught in a low price, low quality cycle. To produce goods at lower and lower price, they sacrificed on quality. The manufacturing technology in practice was very old. There was vast

scope for using better, modern technology, especially for the riveting of pliers, heat treatment and finishing. Moreover, to reduce costs, some companies used non-standard raw materials.

• There was a lack of awareness of quality management and its importance. There were no quality standards or quality control cells in the units. Quality control was done by visual inspection on a sample basis.

• Energy constitutes about 10 per cent of the total cost of production. But the industrial units had not adopted even basic energy-saving measures like preheating of fuel and air, waste-heat recovery, proper insulation, etc. There was tremendous scope for improving energy efficiency in the units.

• The cluster manufactured a limited range of products, with the result that buyers found it more convenient to use the Jalandhar hand tools cluster, which offered a greater range of products.

• The Association was weak. It hardly performed any developmental activity. Units resorted to undercutting each other to win orders.

• Marketing of products left much to be desired. It was mainly done through traders who pocketed most of the profits.

• Since the units did not maintain any records, they were unable to get credit from banks.

Vision for the Cluster

After identification of the problems, which were discussed in detail with the cluster stakeholders, the vision of the cluster was progressively evolved. The cluster decided to have as its vision: 'To market a wide range of quality hand tools at competitive prices and to double its turnover by 2008'.

Implementation Strategy

To achieve the vision, various interventions were made in the cluster. The implementation started with sensitisation of the industry to its problems. The industry leaders were taken on exposure visits to the hand tools clusters in Jalandhar and China. The strategy for technological up-gradation involved demonstrations of proven technologies during the exposure visits followed by linkage with the technology providers.

To enhance energy efficiency in the units, a training programme was conducted. It was followed by detailed energy audits of a few units.

To introduce product diversification, it was necessary to first have market linkages. Negotiations were brokered between a major large-scale national hand tools manufacturer and the Nagaur hand tools cluster. Backward linkages were then attended to.

To ensure sustainability of these activities, the Association was involved. Strengthening the Association was thus a major part of the implementation strategy. The Hand Tools Design Development and Training Centre was involved in all technical matters. Efforts were initiated to strengthen this Centre so that it could cater to the emerging requirements of the hand tools cluster.

Major Interventions

Sensitisation on the Importance of Constant Technological Up-gradation: One of the first interventions taken up in the cluster involved a change in the mindset of the entrepreneurs. When the project was launched and the diagnostic study carried out, the Nagaur hand tools entrepreneurs were of the opinion that their handcrafted tools were the best in terms of quality and the cheapest in terms of cost. They believed that they could achieve the same dimensional accuracy working manually, as that achieved by the use of sophisticated technology elsewhere.

The Industry leaders, through the Association, were taken on an exposure visit to the Jalandhar hand tools cluster. This was followed by the visit of two entrepreneurs to China. These visits exposed the industry to the latest manufacturing techniques in the world. They realised the benefits of machines and modern technology and decided to opt for state of the art technology. These entrepreneurs were then helped in finalising suppliers of machinery.

Some of the machines that were introduced in the cluster for the first time included a riveting machine and an induction-hardening machine. The broaching machine was improved upon to enhance its productivity two-fold and to improve the quality of the cutting edges of the pliers. Some entrepreneurs are now seriously planning to buy powder-coating machines and spark erosion-making machine for making dies.

A new technology introduced

Riveting is the process of joining the two handles of the pliers together. The units in Nagaur used the hot riveting process in which riveting is done manually by the artisans. It has inherent problems of black oil oozing from the rivets and stiffness in opening the jaws of the pliers. The cold riveting process was demonstrated to a few hand tools manufacturers of Nagaur by taking them on an exposure visit. Some manufacturers initiated the process of buying cold riveting machines. In the meantime, another manufacturer was able to develop this machine locally. Riveting is now being done using a hydraulic press. It has completely eliminated the problems of black oil and stiffness. It has also resulted in higher productivity.

Energy Conservation: A workshop was organised by the Association with the help of the North India Technical Consultancy Organisation, Chandigarh, on improving energy efficiency. The participants were informed about various energy-saving measures. This was followed by energy audits of some of the units. The energy audits pointed out various areas where energy could be saved. About ten units have already implemented most of the recommendations of the reports. Some of the improvements carried out by them are:

• Use of better insulating material for the walls of the furnace
• Insulation of pipes carrying oil
• Preheating of oil
• Use of temperature recorders
• Waste-heat recovery
• Monitoring daily usage of fuel, etc.

As a result, the units have reported energy savings to the tune of 10-25 per cent.

Gas-fired furnaces were demonstrated in collaboration with Hindustan Petroleum in the cluster. Although gas is slightly more expensive than furnace oil, it has advantages of reduced scale loss, better quality and low pollution. Some units are seriously considering switching over to gas.

Product Diversification: One of the very successful and need-based cooperative spirits seen among the entrepreneurs of the cluster is in development of a new product-spanners. The Association was able to convince Om Sons International, Jalandhar, a well known name in the hand tools trade in India, that the cluster could supply them with spanners, a product they had hitherto, never made.

From investment to savings

Mr. Ghose Mohammed, of M/s Praveen Forging, was inspired by the demonstration given during the Workshop on Improvement of Energy Efficiency. Making use of the literature provided in the Workshop and with telephonic inputs from NITRA officials, he designed and installed a waste-heat recovery system for preheating air for the burners. His efforts bore fruit and he reported a saving of more than 20 per cent.

Mr. Muzafer Ali, Proprietor, M/s Kohinoor Forgings, went a step further. Apart from the waste-heat recovery system, he made the following additions:

- Improved insulating bricks (3 layers of bricks - two 3" layers of 40 per cent bricks and one 4.5" layer of better insulating 70 per cent bricks),
- Oil pumping system,
- Electric heaters with auto-cut for preheating oil and
- Temperature recorders.

He got a saving of 25 per cent on fuel. All this was done for a very low investment. Mr. Muzafer Ali spent only about Rs. 40,000.

Three entrepreneurs got together on the project to supply spanners of various sizes. They got the technology from Jalandhar and Ludhiana and developed their own dies. Each company of the group took up spanners of different sizes. By getting together they will not only be able to meet the buyers' demands but have also shared the risk involved. The sourcing company has already approved the samples. They are now developing the complete set of spanners containing 12 sizes. Initially, only forged pieces will be supplied. Gradually, once the required technology is available locally, it is envisaged that finished pieces will be supplied.

Similarly, the cluster has also been successful in diversifying into the manufacture of chisels and slip-joint pliers. These are to be supplied to Hindustan Everest Tools Ltd, Sonepat, a well known large-scale manufacturer of tools in India.

Use of Standard Raw Materials: Some of the units in the cluster, in order to reduce costs, used TOR as raw material instead of carbon steel. This led to low price-realisation and low quality of products. Some members of the Association raised this issue and the Association took it up. After a series of meetings it was able to prevail upon its members not to resort to such tactics. This also resulted in increased confidence of the members in their Association.

Improvement in Quality: An immediate benefit of the various initiatives is the improved quality of the pliers. This has resulted in opening new vistas as the industry moves up the value chain and gets better margins for its products. Gradually, the industry is moving out of the low cost, low quality circle.

A direct result of the increased awareness among the entrepreneurs is that two companies have initiated the process of getting themselves ISO certified. The current level of the cluster can be gauged from the fact that to date none of the units in the cluster had any quality management systems. ISO accreditation will not only improve the quality of the systems and the products being manufactured but also help the industry to preserve the knowledge that the entrepreneurs have gathered over the years from their forefathers. This is a unique selling proposition for the cluster and needs to be documented in order to percolate to the next generation.

Marketing Initiatives: To establish direct linkages between the Nagaur hand tools manufacturers and the market, their participation in two fairs, one international and one domestic, was supported under the Project. This gave them the much-required exposure. Not only were they able to establish direct contacts with buyers and get new customers, they were also able to negotiate higher prices with existing dealers.

The Nagaur hand tools manufacturers are now aiming at larger and more lucrative markets. However, they have very low capacities and are thus unable to supply large quantities. Getting together not only gives them the opportunity to execute larger orders but also to increase their product range. Thus, efforts were made to get them together in the form of a consortium. The entrepreneurs have accepted the idea and are in the process of developing a common catalogue and website. To start with, they will work as a loose network and in the course of time they will formalise their association into a consortium. The network plans to visit Dubai shortly, for which initial contributions have been collected from seven entrepreneurs.

Strengthening the Hand Tools Industries Association: Before the Project commenced, the Association was virtually non-functional. It used to get together only when there was some common cause, basically related just to taxation issues or some government department. The Association is now much more proactive. Its membership has more than doubled. It takes up developmental initiatives such as organising training programmes, negotiations with suppliers, etc. It has also taken up the issue of strengthening the Hand Tools Design, Development and Training Centre at Nagaur. The Association has gained in confidence and plans to start a sub-contracting exchange for which it has applied to the Development Commissioner, Small Scale Industries.

Upgrading the Hand Tools Design, Development and Training Centre: The Hand Tools Design, Development and Training Centre is an institution of the Government of India providing technical consultancy, training and common facilities to the Nagaur hand tools industry. In the wake of the emerging needs of the Industry, it needs to be strengthened. The Association has identified various machines that the Training Centre needs to have, in order to service the hand tools industry satisfactorily. It is of the view that the Centre should be converted

into an autonomous institution. This would make the staff permanent and non-transferable; it would enhance the commitment of the employees and also provide more autonomy to the Centre. The Association has taken up these issues with the government. It is hoped that with their perseverance and constant follow up, the Training Centre will be strengthened to serve the industry better.

Consolidated Results

Results were visualised at the firm level as also the cluster level.

Firm level

Introduction of modern technology in a few units
Energy savings to the tune of 10-25 per cent in about 25 per cent of the forging units
Improvement in quality and productivity due to advancements in broaching machine
ISO 9001:2000 certification of two companies in progress.

Cluster level

Development of cooperative spirit among the members of the cluster
Use of standard raw materials for making hand tools
Better and faster riveting of pliers
Improvement in broaching machine
Addition of spanners to the product range of the cluster
A stronger, more representative and proactive Association.

Sustainability of Interventions

Most interventions were either firm-specific or Association-led. Some of the initiatives involve strengthening the Training Centre.

Firm-specific interventions like technological up-gradation, adoption of energy-saving measures and adoption of Quality Management Systems (QMS) would be sustainable, as the enterprises will realise their benefits.

Association-led initiatives such as common marketing, standardised raw materials, development of spanners and the establishment of a sub-contracting exchange would also be sustainable as they are results of the needs felt by the cluster companies themselves. Moreover, it is felt that the Association and the Training Centre would continue doing good work and take up new challenges and projects as they are now strengthened and motivated.

Future Direction

The Nagaur hand tools cluster has inherent strengths due to its unique technology. But the cluster needs to constantly improve the quality of its products by upgrading its technology and adopting Quality Management Systems. This has to be coupled with aggressive and common marketing since the financial position of most of the entrepreneurs here is weak. At the same time, the Hand Tools Design, Development and Training Centre also needs to constantly modernise itself, not only to meet the demands of the cluster but to act as the bellwether of the cluster, to anticipate and cater to the emerging trends in the hand tools industry.

The United Nations Industrial Development Organisation (UNIDO), in collaboration with the Ministry of Small Scale Industries started intervention in this cluster in 2003 under a Project "Promoting Energy Efficiency in Hand Tool SSI Sector in India". The programme is under implementation. This paper is written by Mr Sanjay Malhotra, IAS and Project Manager of this UNIDO Project.

Chapter 14
Narsapur - Crochet Lace

The products of this cluster are having very good demand especially in garments. But the cluster is making traditional products like doilies and table mats which neither get good price nor have good demand. With proper training of the artisans for producing better quality standard products, making available appropriate designs and developing international marketing networks the cluster can diversify into garments and become global sourcing point for crochet lace garments in post quota era and in the process increase the wages of the artisans. The activities in the cluster have been initiated in 2004 by NISIET with the support of DCSSI.

Evolution of the Cluster

The crochet lace cluster of Narsapur is 168-year-old. It all started off when a Scottish lady by name Macrea who came here on missionaries work in year 1844 and taught the house wives the art of lace work by needles. Since that time the skill spread in the district and women took up the activity as a hobby and pass time activity, which also fetched them income. Most of the women do the lacing in there respective houses..

Traditionally the families have been making this product for generations. In some places women gather at a common place in the village and work collectively. Narsapur is located in East Godavari District of Andhra Pradesh. The cluster is spread in and around Narsapur in various villages like Sitarmpiuram, Palkol, Venkatrayapalem, Antarvedi, Royapeta, Mogaltur, etc. The cluster is specialised in doing lace works like dollies, furnishings, garments, tablemats, etc

The Cluster and its Major Stakeholders

There are around 2,00,000 women working in the cluster. Many of these women are working through 12,000 women Self Help Groups (SHG) with a membership of 10 to 15 in each group. Most of them treat it as a part-time job than a full-time profession.

Around 50 SSI units procure the orders from the domestic buyers and export agents. A few such units are also exporting directly, mainly catering to the lower end of the markets. The SSI units operate with the support of liners (Line Supervisors). The liners are

hired by the units on job work basis. They go to the field and distribute yarn to the lacers (the women workers) and explain them about the design pattern. Once woven, the liners collect the finished product from the lacers and deliver it to the SSI units. The liners are responsible for the maintenance of the quality of the product and maintain delivery schedules.

Besides there are around 50 cooperative societies of the women workers who also market the products of artisans. The Society also fund the members in times of need. Some women SHGs, market their products directly in exhibitions and at times they also do job work for exporters.

The turnover of the cluster is estimated around Rs. 50 crores (USD 11.4 million). Eighty per cent of the products are exported. The average income per week for a woman worker is around Rs.400/month whenever they have work.

Government of Andhra Pradesh is also helping these women through various group schemes. The Government of Andhra Pradesh has developed in association with Coir Board & Development Commissioner (Handicrafts) a state of the art infrastructure facility - Lace Park; for facilitating training and export marketing assistance to the SHGs and Societies. The National Institute of Fashion Technology (NIFT) is closely associated with the activities of Lace Park.

There are around 6 to 10 dyers in the cluster who are doing traditional dying. Some exporters are getting their material dying places like Tirupur & Salem.

All India Crochet Lace Exporters Association (AICLEA) is an association of exporting (SSI) units formed around 70 years back. The association is weak and inactive. Neither the president nor the secretary of the association is at present in this trade. There is no association secretariat and the members meet as and when they get any common problem.

Some of the other important stakeholders are SISI, APBC Welfare Corporation, AP Women Welfare Corporation, SBI, NSIC, Andhra Bank, SIDBI, EPCH, etc.

Major Problems

Quality of product: At home, many a times weaving is done in a very casual way (e.g. cleanliness) and the quality is sub-standard. Again due to the absence of proper dyeing and bleaching facilities most of the products are made in white color (natural). The design pattern is age old and the changes being made are only marginal.

Market is not explored to the potential as the units are only supplying to small part of the international market and because of their poor quality reputed companies are still not their buyers. There is also not much of exposure for the exporters for marketing of the product. There is also a huge unexplored domestic market. The cluster is also not following the latest trends and designs in the fashion world.

Raw material costing: At times, the artisans, SSI units and the Societies are not fully aware of the measurement of the threads. They are only focused on cost factor. But the lace work depend on the length of the raw material, the more the length more will be the number of pieces made. One kg Coimbatore thread is as big as 200 grams of Madhura Coats. Again, the raw material is supplied in spindles and it is then given in small bundles to the weavers. This adds to the cost.

The association is weak and running in makeshift premises and all the office bearers work in isolation.

Vision for the Cluster

The vision the cluster was that the cluster should become globally competitive in design, quality, marketing, and exports and increase the turnover to Rs.100 crores (USD 22 million) and in the process double the wages of women artisans.

Implementation Strategy

The strategy for implementation was to create a success story of joint action, provide appropriate training and exposure and thereby diversify into high value products and clientele and encourage consortia formation for capturing these new marketing channels. Provision of support infrastructure was also planned.

Major Intervention

Strengthening of Association

• Created awareness on benefit of joint action through regular meetings.

• Submitted Memorandum to Govt. Of Andhra Pradesh for allotment of land to the association for construction of association

• Association led delegation to Chief Minister of Andhra Pradesh for excluding the lace trade from VAT.

Market Development

• Organised a workshop on export marketing

• Created awareness on participation in exhibitions for developing marketing networks

• Facilitated Participation in exhibitions through information dissemination

• Organised training on Crochet language

• Supplied latest design patterns

Association Strengthening

This is a three-tier architecture cluster where SHGs, NGOs and SSI units are the principal actors. There are around two lakh women artisans working for these organizations.

In the Crochet Lace Cluster of Narsapur, SSI units are the pioneers in exporting lace products since 1946. In the year 1947, at the behest of the buyers to procure quality products, all SSI units came together and formed All India Crochet Lace Exporters' Association (AICLEA). The association has 52 members. Initially, the association is very active and helped the members in exporting products to various countries. Over the period of time the association became a nominal body and used to work from a make shift office, which is part of Association Secretary's house.

When NRCD started the cluster development process at Crochet Lace Cluster, Narsapur, one of the main issues was the weak association. In the initial days of cluster development implementation, the members of the association never used to cooperate and for six months no meeting could be organized by the cluster development agent (CDA). Only a handful of members used to attend the meetings.

Then came the problem of provident fund (PF) wherein officials of PF department started issuing notices to the SSI units for payment of PF to the artisans. This threat created a sense of insecurity and urgency among all SSI units to come together. At this stage, all units came to the CDA and requested him whether he could help them in this regard. CDA expressed that this problem can be solved only if they come together. The members of association accepted the suggestion and the association convened a meeting and reached a consensus on this issue. For the first time all members attended the meeting. Simultaneously they also raised a fund of Rs.125,000 (USD 3000) to meet the future contingency. This taste of success which they achieved together has made the members realise the need for coming together and also created enormous trust on the CDA.

Taking inspiration from the success, the members started solving their problems with the guidance of CDA. For example, the members have submitted a representation to the Government of Andhra Pradesh for allotment of land for constructing the association office and also for installing a common facility for dyeing in the association premises, The District administration of West Godavari has responded positively and allotted 600 sq.yds of land at Madhavaipalem in Narsapur at free of cost and is in advanced stage of transferring the ownership of land in the name of association. AICLEA members and Revenue Divisional Officer (RDO) visited the site and AICLEA had given consent for the land. AICLEA members already raised Rs.88, 000 for meeting the initial expenses like registering of land, preparation of budget, approval of building plans, etc.

Quality Up-gradation
• In association with Textile Committee, Hyderabad, a seminar was conducted on "Testing process and quality standards of yarn"
• Awareness seminar was organised on ISO Standards
• Demonstration of Stain Removing machines by M/s Ramsons Viet

Costing
• Organised seminar on bookkeeping

Consolidated Results

Strengthening of Association
• AICLEA raised corpus fund of Rs.125,000 (USD 3000)
• Associated representation to PF Dept., AP Trans Co., Dist. Collector.
• Government of AP gave exemption through G.O No. CCT'S REF. No.AIII (2)/111/05 dated 09/09/2005 to lace industry from 12.5% to 4.5% at the request of association.
• Land allotted by State Government for the construction of association building and for common dyeing facility in the premises and association already raised Rs.88,000/- (USD 2000) for the construction of the building.

Market Development

• Consortium of seven units formed and developed web site www.lacecon.org and registered the web site with 45 search engines. Four units participated in DC(SSI) supported exhibition in Switzerland and Birmingham through SISI, Hyderabad
• 5 units participated in Heimtextile exhibition, Frankfurt, Germany
• 8 units participated in EPCH Spring Trade Fair at Pragati Maiden, New Delhi
• Fab India, an Indian Arm of Fab Inc. Cincinnati, USA visited cluster for marketing tie-ups. Prototypes developed by clusters as per designs and patterns

Quality Up gradation
• Units started testing their products at the Lab of Textile Committee, Hyderabad and are sourcing products as per international standards.
• 10 units came forward for ISO 9000 implementation
• 20 Units purchased machines and started using it for stain removing purposes

Some artisans are now earning up to Rs.650/- per month by lacing garments.

Future Direction

The programme is running into its second year. The following has been planned:

Strengthening of Association: Construction of own infrastructure for Association and install dyeing machines for common purpose, as the cluster units are getting their products dyed at tirupur and Karur

Quality Improvement: Assessment audit for ISO certifications of SSI units for the purpose of improving quality standards.

Capacity Building: Two-weeks training programme for women artisans on latest trends and fashions in crochet garments in association with SES German consultant

Narsapur is located in the East Godavari District of Andhra Pradesh. Intervention in the cluster was initiated by NISIET in the year 2004 with financial support from the Development Commissioner Small Scale Industries (DCSSI), Ministry of SSI, Government of India. Implementation is under progress. This article has been authored by Mr Y V S Mahadev, Technical Adviser, NRCD (NISIET).

Chapter 15
Pune - Floriculture

Through a Project supported by the National Science and Technology Entrepreneurship Development Board (NSTEDB) of the Department of Science and Technology (DST), Maharashtra Industrial Technical Consultancy Organisation (MITCON) – a technical consultancy organization consolidated efforts of farmers in several blocks in the Pune District by networking them and thereafter successfully helping them to pursue common activities in terms of input purchase and establishing common testing laboratories. Marketing linkages were facilitated by means of tying up with 'customers' in various cities in India. Effective sub-contraction to large farmers was also facilitated by means of product diversification of some networks. Quality and related issues were targeted by means of evolving a Technical Manager's Forum for mutually identifying and disseminating best practices. In order to encourage adequate exploitation of potential resource base and domestic as well as export markets, programmes to develop new enterprises in the cluster were successfully catalysed. As part of future interventions cluster actors are exploring evolution of a Federation of Societies to strengthen the 'advocating' base amongst small farmers. The stakeholders are also considering establishment of an auction centre to enhance realisation.

Evolution of the cluster

The floriculture industry in India is only a couple of decades old. In Maharashtra the floriculture industry encompasses the belt of Kolhapur, Nasik, Sangli and Satara. The region is nationally reputed for flower cultivation in terms of 'hi-tech green or polyhouse floriculture' rather than mere open flower cultivation. Agro-climatic (soil, water and temperature conditions) as well as factors conducive to infrastructural and transport facilities in tandem with conducive Government schemes, encouraged development of the cluster at Pune.

Many enterprises that pursued export-oriented 'farming' did well. They launched operations in the area in the early and mid-nineties. Soon, Pune evolved into a leading floriculture cluster of the country following Bangalore. However, from the late 1990s onwards foreign technical collaborators led to a far higher price realisation than the large farmers. This, together with irregular and erratic power supply, affected the performance of enterprises. The cost of cold storage and refrigerated vans added to the burden of larger units in particular. Moreover, the relatively smaller scale of operations (of even large units) for the auction markets worldwide, affected competitiveness. Enterprises sell to smaller importers and dealers which in turn affects price realisation. Further, input

costs are on the higher side. There are German, Dutch, New Zealand, and Israeli breeders offering planting material for patented varieties. Exporters pay a royalty for cropping particular exportable varieties.

The Cluster and its Major Stakeholders

In the year 2002 around 100 (small greenhouse operating) farmers were cultivating gerberas and carnations in about 25 hectare (average farm size of 500 - 4000 sq. metres), with an estimated turnover of about Rs.12 crores and employing around 500 persons. They mainly supply the national market. Besides there are 16 corporate units, set up by large Indian enterprises from across the country. They have established medium-sized operations in the cluster. They are working in about 65 hectares (average farm size of 2 - 7.5 hectares) and largely cultivating Dutch roses. Their total turnover is estimated at about Rs.80 crores and they employ around 1600 persons. The corporate units are largely export-oriented. In addition to such core 'farming' enterprises there are several enterprises supplying plants to farmers either upon doing tissue culture or on importing those varieties. The cluster had a single industry association 'Western India Floriculture Association' (WIFA). The association is small with just about 16 members. The association plays a significant role in the context of policy advocacy.

Support institutions include the Department of Horticulture which operates under the Agricultural Department of the State. This State Department often subsidises to the maximum, approximately Rs 70,000 per green or polyhouse facility (with full temperature and humidity control). The National Horticulture Board (NHB) offers up to 20% subsidy of the project cost up to a limit of about Rs 25 lakh for floriculture. The Maharashtra State Agriculture Marketing Board (MSAMB) has established a National Post Harvesting Technology Training Centre. The Agriculture College, Pune, also offers training and R&D support to farmers. The training centre established by the college also offers post-harvest and cold chain facility. They are also encouraging their graduates to proceed into green (or 'poly' house) related entrepreneurship. The National Chemical Laboratory operates a tissue culture laboratory. NGOs such as the 'Rose society' organises exhibitions amongst other activities. The MIDC is involved in establishing a floriculture park.

Major Problems

The specific problems in the context of small and large farmers were as follows:

- *Low value realization by farmers due to high cost of production and weak marketing linkages:* Greenhouse floriculture is capital intensive agribusiness. Cost of production is also high due to high costs in terms of water-soluble fertilizers, pesticides, insecticides and irrigation and electricity charges. Again, farmers secure low price realisation due to inadequate access to markets and the high cost of production.

- *Gaps in quality and related issues amongst small and large farmers:* Production of quality flower warrants usage of quality inputs. This implies high operating costs. Yet another major problem is the poor quality of flowers due to attack by pests and disease. Inappropriate agricultural practices, inadequate cold chain and also relatively poor linkages between farmers and R&D/training and support institutions were obvious. Even in the case of large growers, gaps in technical information were evident.

- *Exogenous challenges to large units:* Even large growers face relatively higher cost of production in terms of international freight and also (in fu-

Transport and power infrastructure and costs: Advocacy fructified

The WIFA has been successful in some critical advocacy-related fronts. They have ensured that the cost of power is only about Rs 1.10 per unit. The cost, though double the rates levied on the agricultural sector, is far less than industrial charges that are in the range of about Rs 4.50 per unit across conventional manufacturing units in the country. They have also ensured that a cold storage has been established at the airport with assistance from the Agriculture and Processed Food Export Development Authority (APEDA).

Problems galore for large growers

There is inadequate Government investment in R&D for breeding new varieties that meet international standards. The cost of importing the variety and planting material is high and accounts for a significant portion of the project cost. Replacement of plant varieties every three years serves as another major cost implication. Further, freight charges from competitors Kenya or Ethiopia to Europe is believed to be only about USD 1 per kg while from India it is USD 3 per kg. Besides, there is need to replace polysheets every few years given the weather conditions in the area. Another problem is that taxes are believed by association members to be 'exported'. This is in terms of higher cost of diesel which is about 30 per cent over CIF-landed prices and also high import tariffs on imported fertilizers. The high rate of duty by the EU (European Union) on Indian exports vis a vis competitor in Sri Lanka, for example, also contributes to competitiveness threats in world markets.

ture) power tariffs and diesel costs. They also experience severe quality and cost competition from countries like Kenya. Low margins are also due to inadequate direct access to consumers by these larger firms. Exogenous factors are believed to contribute significantly to problems of this category of actors.

Vision for the Cluster

The vision of the cluster as worked out by the implementing agency was to enhance the business potential of the cluster by increasing the area under cultivation by 20 per cent by 2005 by (means of) networking, developing market and institutional linkages and by building capacity of growers (farmers) for sustainable development.

Implementation Strategy

The broad objectives of intervention include increasing the area under cultivation, exploring new markets, capacity building of farmers, improving infrastructure, product diversification and developing institutional linkages. The strategy for doing the same was worked out by first targeting the farmers, as discussion revealed that they were more responsive to exploring joint initiatives. Exposure visits of farmers were organised from Pune to benchmark enterprises and co-operatives.

The interactions and travel to different locations also helped evolve greater levels of mutual understanding and trust amongst the small farmers. This was followed up by meetings and it was found that the farmers were willing to cooperate for a higher bargaining power. Monthly brainstorming meetings helped identify different activities as part of an action plan. Thereafter, further initiatives such as establishment of testing laboratories and diversification, to export-oriented flowers were pursued. Having delivered with the small farmers, interactions with larger enterprises were taken up at a later point of time.

Major Interventions

The major interventions that were undertaken in the light of identified problems were as under:

Enhanced value realization by small farmers

Farmer meetings helped share 'best' practices amongst themselves. This led to the creation of networks to reduce input costs. Seventy five per cent of enterprises in four blocks networked in the form of cooperative societies. In total over a 100 enterprises were networked. Three of these networks have been commonly purchasing inputs. The input supply centres purchase about Rs 2 lakh worth of inputs every year. A savings on cost of fertilizers and pesticides of about 10 per cent is realised. One more society involving over 30 members is evolving in yet another block. This society is in the process of formal registration.

Several visits were organized to explore markets for cooperative societies. The visits were to Hyderabad, Indore and Ahmedabad. The visits involved presentation of samples to traders and also negotiation for direct sale. Common marketing initiatives in distant domestic markets have already resulted in sales of about Rs 15 lakh. Other than direct market linkages in different geographical markets, linkages to new market segments were also facilitated. Over a dozen farmers diversified production towards cultivation of Dutch roses from gerbera and carnations. Meetings were arranged between farmers and some large

enterprises and annual contracts were finalised between the two stakeholders. Common marketing to large EOUs and also distant domestic markets has resulted in considerable direct sales earning a higher price realisation by about 15 per cent. They have invested more in operations in terms of both debt and equity finance.

Quality and related issues

Taking the networks of farmers as the base units, gaps between farmers and R&D and training institutions were addressed by catalyzing training programmes for product diversification and skill upgradation for members of networks. A common testing laboratory commenced operations so as to reduce testing costs (in comparison to availing services of private laboratories) and also to understand PH and electrical conductivity levels of soil for application of appropriate dosage of fertilizers. This helped optimize fertilizer use and relevant costs.

With the support of SIDBI and various other institutions, training programmes were organised by roping in a relatively new but specialised institution - the Horticulture Training Centre, Talegaon; to train new and existing growers. Of the 50 odd trainees trained, most are progressing into entrepreneurship. About 10 new units were established with an investment of Rs.1 crore. These projects have been largely financed by the Bank of Baroda and the Central Bank of India. Meetings with bankers and support institutions were organised to smoothen the flow of debt capital as well as subsidy leading to new enterprise creation in the cluster. In total about 35 new enterprises were established. The total area under floriculture (green/poly house) cultivation has been enhanced by about five hectares after intervention.

Other issues

The Technical Manager's meets enabled the identification and also the dissemination of best practices amongst larger enterprises. For instance, Exodus is a chemical (pesticide) that was preferred by some, while others were not very impressed by its effectiveness. Discussions helped narrow down upon the deviations in performance in different farms. Best results are when plants are sprayed in the mornings. The temperature is low and the pesticide remains in the plant for more time than if sprayed when the sun is out and temperature high. Similarly, right specifications and source for instruments employed for cutting operations and so on were evolved.

The Talegaon Floriculture Park (TFP) has been created by the MIDC under the Agri-export Zone scheme of the Department of Commerce (Ministry of Commerce and Industry). However, while plots have been sold, a few units had established themselves in the park due to various reasons such as uncertainty in export potential, high cost of plants (royalty to international breeders), and various adversities to operations as indicated earlier. In this context, the agency has organized meetings of potential park based 'enterprises' so as to resolve issues and encourage establishment. Some units have thereafter established operations - understanding that regardless of export markets even the domestic market has scope. A judicious market mix could serve as an ideal option.

Consolidated Results

• Seventy-five percent of enterprises in 4 blocks are already networked in the form of Co-operative Societies. In total over a 100 enterprises are networked. Three of these networks have been commonly purchasing inputs. One more society involving over 30 members are evolving in yet another block. This society in under process of formal registration.

• In the case of some Co-operative Societies member incomes have increased by about 20 percent. They have invested more in operations in terms of both debt and equity finance.

• About 10 new units were established with an investment of Rs.1 crore (USD 227,000). These projects have been largely financed by the Bank of Baroda and the Central Bank of India. The CDA facilitated meetings with bankers and support institutions to smoothen the flow of debt capital as well as subsidy and has thus facilitated new enterprise creation in the cluster. In total about 35 new enterprises were established.

• Common marketing initiatives in distant domestic markets have already resulted in sales of about Rs. 15 lakhs so far.

• About 12 small floriculture units have diversified from Gerbera and Carnation production to Dutch roses. They are members of a society and demonstrate options by which small farmers may work as sub-contractors to EOUs successfully.

• The total area under floriculture (green/poly house) cultivation has enhanced by about 5 hectares after intervention.

• Monthly meetings of technical managers have served as a forum to mutually share knowledge and resolve technical difficulties.

Sustainability of Interventions

The sustainability of the intervention beyond 2005 is guaranteed because of the business models created in the newly formed cooperative societies, wherein the commercial benefits of the joint activities provide revenue. It is imperative for the networks to continue to explore similar joint initiatives in the future.

In fact the networks have also started collecting a fund @ about Rs 100 per sq. metre in 'poly' house from members to pursue various developmental activities. The networks also avail the services of Network Development Agents (or NDAs - who are salaried staff) to pursue administrative work.

Future Direction

As part of future interventions a federation of block level cooperative societies is expected to be evolved. This will facilitate moves towards playing an advocacy role in the context of interest of small farmers. The cooperative societies are expected to take a lead on initiatives themselves. Successful implementation of a flower auction centre is being considered by the Maharashtra State Agriculture Marketing Board/ MAIDC and is a priority for all actors.

The WIFA understands that there are several advantages that India has in the context of European markets. For instance, Pune has a seasonal comparative advantage. During the winter seasons demand in Europe shoots up viz. Valentine's day and Christmas, when prices realised shoots up by several times. Local production in these regions is low during those periods. The ability to offer volumes in those periods by encouraging small farmers to diversify during such seasons is an option to encourage.

Similarly, some of the larger stakeholders feel that a consortium for freight optimization can also be evolved. There is a freight subsidy of 20-25 per cent available on exports. However optimization of storage space has not been achieved. Enterprises could share containers. But then the question is in whose name will the airway bill be made to claim the subsidy? Hence, some Bangalore-based entrepreneurs are working on a consortium mode. The airway bill is raised by one individual of a 'network' and the whole group shares the benefits. Such options may have to be explored to a greater degree in addition to advocacy for 'support' on relevant areas.

The implementing agency facilitated an exposure visit to Bangalore for networks who participated in the visit to understand the importance of an auction centre amongst other options for competitiveness. Upon return the delegates (cooperative societies) took up the issue with the authorities.

Support institutions were already in the making and a likely centre at Pune is expected to involve a capital outlay of about Rs 22 crores. Such projects are fiscally supported by the Agriculture and Processed Food Export Development Authority (APEDA). This project may be implemented by agencies such as MSAMB/MAIDC.

The initiative for development at the floriculture cluster of Pune was started in the year 2002 by MITCON under an NSTEDB (DST) supported initiative. The project has been concluded. This article on the floriculture cluster of Pune has been written by Mr V Padmanand, SME Consultant, Chennai.

Chapter 16
Rajkot - Engineering

The seeds of the engineering cluster of Rajkot were sown in the 1940s when some entrepreneurs began manufacturing the spare parts of diesel engines. Today the cluster is a thriving one consisting of 6000 enterprises with a turnover of about Rs 3000 crore (USD 700 million). Initiative for development of the cluster at Rajkot was taken by the Entrepreneurship Development Institute of India (EDI) and several interventions were made from which the cluster has positively benefited from, especially with respect to technological developments and new market opportunities. These were made possible with the support of BDS providers and a group based approach of the firms in handling their development opportunities. A major role was played by the Rajkot Engineering Association which took special interest in these activities.

Evolution of the Cluster

Diesel engine was the lifeline to agriculture in the water scarce Saurashtra region. In the 1930s all diesel engines were imported from abroad. During the Second World War there was a problem so far as availability of imported spare parts was concerned, which meant that users faced difficulties in repairing diesel engines. To overcome that problem, some of the pro-active entrepreneurs started manufacturing diesel engine spare parts in the 1940s, and later they started manufacturing the entire diesel engine. Shri Laxmanrao Kirloskar was the first to indigenise the diesel engine and his brand 'Kirloskar' is still one of the most reputed. Later, other entrepreneurs joined the business of assembling/manufacturing diesel engine and parts and this gave birth to the engineering cluster at Rajkot.

The industry got further impetus after Independence when industrial estates were set up in Saurasthra State, including Rajkot. The GIDC estate was established which provided basic infrastructure to the entrepreneurs, including residence for workers. Meanwhile, subsidies on the purchase of diesel engines by farmers continued to boost this industry. Also, import substitution as a strategy dominated the Government policy regime, in which the indigenous

production of diesel engines was encouraged. Gradually, Rajkot emerged as a major centre for the production of the slow speed, low horse-power diesel engines by small scale enterprises, while the old, established and larger enterprises in the organized sector shifted to higher speed, more sophisticated high HP engines.

During 1970, diesel engines manufactured in Rajkot became popular in the entire country. The two types of diesel engines manufactured for irrigation purpose were the Lister and Peter type. NABARD provided funds to the state-level banks for land development and the diesel engine was included in their national-level scheme.

After 1970, the entrepreneurs started realizing the importance of quality standardization of the diesel engine. About 60 to 70 enterprises got the ISI mark, which helped them enter the Middle East market. Support and allied industries like foundry and forging also started emerging and the process of manufacturing machine tools was also introduced in the cluster. There was horizontal growth and the manufacturing of other products like agricultural implements, kitchenware, pumps, watch cases etc. began in this cluster.

The cluster thrived because of its "first mover advantages", despite the fact that both raw material and the bulk of the final consumers were located outside the Saurashtra region.

The Cluster and its Major stakeholders

This cluster has around 6,000 units with a turnover of about Rs. 3000 crore (USD 700 million), employing about 250,000 workers. These include not only the 70 odd diesel engine manufacturers but also a multiple of sub-assembly makers and allied product manufacturers. On an average 300,000 pieces of diesel engines are manufactured annually in this cluster. In fact 60-70 % of the diesel engines manufactured in the country come from this cluster. About 70% of the enterprises in the cluster are SSI units. 70% of the products manufactured in the cluster are consumed in the domestic market and 30% are exported. Most of the products are basically industrial in nature and the customer base consists of reputed units like Bajaj Auto, TELCO, Kirloskar, Kinetic, Mahindra & Mahindra, Gujarat Tractors etc.

The allied support firms include 955 foundries. 90 enterprises are actively engaged in assembling, sub-assembling, trial and testing and manufacturing of diesel engines parts, 30 enterprises in manufacturing agricultural implements including assembled products and spare parts, 90 enterprises engaged in submersible pumps and 2000 units are engaged in producing machine tools parts, diesel engine parts, agricultural implement parts, pumps, motors, etc. and are also suppliers of cutting tools, cutting oil, pig iron, scrap, plating chemical, foundry chemical etc.

Some of the leading industry associations working in the cluster are Rajkot Engineering Association, Diesel Engine Manufacturers Association, Bearing Manufacturers Association, Lodhika Industrial Association and Aji Industrial Association. Rajkot Engineering Association (REA), established in 1963, is considered to be the apex industry association. The two local industry associations in existence since pre-independence were Rajkot Manufacturers Association and Rajkot Industrial Organisation. These two were merged and took on the name REA in 1963. REA has since played a very active role in the progress of the overall cluster development programme.

The leading bank here is State Bank of Saurastra, which has a major customer base. Some enterprises have already taken advantage of the SIDBI Credit Link Capital Subsidy Scheme (CLCSS) scheme. The Corporation Bank also has a strong customer base. Other supporting institutions include the National Small Industries Corporation Ltd., Small Industries Service Institute, Central Machine Tools Institute etc. Before the cluster development programme (CDP) these institutions had limited links with the enterprises in the cluster. However, during the course of implementation of the CDP, the involvement of these institutions has been assured.

Major Problems

The major problems identified in the cluster were as follows:

Serious technical drawbacks: These included problems that arose with the product quality due to lack of certain process standardisation, lack of some appropriate measuring instruments, limited awareness/knowledge of certain processes, certain products not in tune with the international requirements, non-monitoring of quality of basic raw materials in some cases.

Lack of appropriate market linkages: The enterprises in the cluster suffered from weak market linkages especially in the field of export. They could not develop a proper marketing strategy and invested very little in this. Very few enterprises could think of developing new market segments or diversifying their product mix. It is also important to mention here that the majority of exports from the cluster were indirect ones released through the merchant exporters in Ahmedabad, Delhi, Kolkata, Mumbai etc.

Price escalation: Price escalation of important raw materials has remained a matter of concern for the entrepreneurs. The price of coke and pig iron has increased three to four times in the recent past and there was a sharp increase in the price of steel including ferrous metal.

Limited proactiveness for joint activity: The networking among institutions, enterprises and BDS was limited. Business development services were not available in many of the operational and management areas.

Vision for the Cluster

The vision developed for this cluster was "Improving competitiveness of the cluster through technology upgradation, counselling, marketing and networking".

Implementation Strategy

On completion of the training of the CDA, the implementation process started with several awareness seminars, group meetings and unit visits, wherein there was interaction not only with the unit owners but also with the managers, supervisor and workers. This created the initial trust among stakeholders. This was followed up by an exact need assessment on identified issues. Then followed the field demonstration on technical issues and continuous handholding to achieve demonstrated results by providing access to service providers in the project. Since technology was observed to be the main impediment, intervention started off with activities that could give positive results to the entrepreneurs in this area. For marketing issues due linkages were provided to the stakeholders. Again while implementing any programme/activity the stake of the cluster actors, especially the local industry association, was ensured with the objective that the cluster understood the development process seriously. A Cluster Development Coordination Committee (CDCC) was formed to monitor the developments and suggest corrective actions.

Major Interventions

Addressing technological issues

There were various technological problems in the areas of casting, machining, barrelling, brazing, electro-plating, heat treatment etc. On completion of the diagnostic study a list of all the critical technological problems of the cluster were identified and a time frame was drawn up to address these problems in a phased manner. Accordingly seminars and workshops were organised to address the technological problems. The units played a very important role in deciding the topic of the seminar and hiring the BDS. As a result of these seminars and workshops, not only did the technological awareness of entrepreneurs and their employees improve, but they put into practice what they learned too. Special emphasis was given to implementation. A total of 90 technological implementations were carried out dur-

Learning together with IOC

It is prudent to use the right type of cutting oils for the right machining operations. In order to sensitise the entrepreneurs, their managers and supervisors about the utility of various types of cutting oils, a workshop was organised in association with Indian Oil Corporation (IOC), one of the leading suppliers of cutting oils in the country. Representatives from IOC made presentations about their products and their applications. The above workshops provided a good platform for the participants to understand the utility of using the right type of cutting oil and cutting tool to get proper speed, feed and depth of cut. All these immensely benefited the enterprises involved in various machining operation.

Some Technological Implementations and their Benefits

Technological Implementations	Consequent benefits
Introduction of oxidization process for minimizing blow holes in gray iron casting	Percentage of rejection due to blow holes has come down from 14% to 3%
Increased speed, feed and depth of cut by application of appropriate cutting tools.	The productivity has increased by about 17%
Introduction of burnishing technology for machining engine valves	Resulted in better surface finish and improved quality.
Introduction of Silico Manganese Phosphating of bearing cages	Improved corrosion resistance property of the metal and produced better surface characteristics.
Toughening of crank shaft and improvement in fatigue life.	Ensured longer life of the parts
Adoption of Alkaline Black Oxide	Improved aesthetic & corrosion resistance properties of the products.
Electro polishing of 304 stainless steel Improved productivity and quality.	The productivity has increased by 10 fold.
Sub zero treatments of bearing material	No dimensional variations in bearing after packing
Introduction of flux-less filler metal for brazing	Offered better brazing joint, quality finish and improved productivity.
Resulpherising process for SG iron casting.	A new technology introduced in the foundry.

ing the course of the project. Efforts were also made to synergize the requirements of the cluster with a proper supply of machinery, raw material, accessories and other inputs. At times international exposure was also provided to learn international best practices.

Such implementation solved quality and productivity-related problems of the enterprises. The entrepreneurs were able to observe the improvements in their own factory. Some of these implementations resulted in improvement in productivity by about 20%. Others decreased the rejection rate from 12% to 5%. Proper attention was paid to documenting the impact before and after the implementations, and this was shared with other entrepreneurs in the cluster to facilitate the multiplier effect. Again, learning from the utility of BDS providers in this process, some entrepreneurs also hired international BDS on a cost-sharing basis. For example, an expert in foundry technology was invited from the Netherlands and the cost was borne jointly by the members.

Global sourcing of some of the machinery and components has increased and some of these are being pursued through informal networks. There has been an increase in the number of ISO registered enterprises in the cluster to 150 enterprises.

Optimising cost of raw material

There are a range of raw materials that are required in general by most of the units. These raw materials include furnace oil, sodium silicate, coal dust, carbon dioxide, fluxes, molasses etc. With the objective of ensuring a smooth supply of quality raw material at a reasonable price, the Rajkot Engineering Association has started procuring raw material like pig iron and coke in bulk and distributing this to its members at a no-profit-no-loss basis. They have also formed a technical committee, which is taking care of the technology upgradation requirement of the cluster. In the process the right quality supply has now been made available at reasonable prices.

Market Promotion

Marketing has always been a problem for the enterprises in the cluster. They were dependent on the traders and merchant exporters in places like Ahmedabad, Kolkota, Mumbai, Delhi etc. Majority of the exports from the cluster were indirect exports. As part of the project, attempts were made to establish direct market and export linkages for the firms in the cluster on a demand-led basis.

For example, the manufacturers of bearing wanted information about the importers of bearing having particular technical specifications in countries like USA, UK, South Africa, Brazil etc. Once this information was provided it led to the establishment of direct export linkage for the firms in the cluster. Similarly, information on the leading traders and wholesalers of various engineering products were collected and given to the concerned entrepreneurs, which led to the establishment of marketing tie-ups. A visit to potential markets also added to market generation.

Similarly 'Buyer-seller meets' provided a good platform for customers to understand and observe the products offered by the enterprises and also for the enterprises to understand the requirements of the buyers. A couple of buyer-seller meets were organised as part of the cluster development programme. The profile of the buyers and sellers was prepared, proper promotion was done and cost implication and possible sources of funding were explored. Moreo-

How technology transforms

Mr. Manharsinh K. Jadav of M/s S. S. Valves received a sample of engine valves from an importer in UK. The buyer wanted a particular Ra value in the stem portion of the valve. The conventional process did not produce the right Ra value. EDI faculty members visited his factory and provided him with the technology of burnishing tools. He purchased the tool from a supplier (M/s Bright Burnishing Tools) in Coimbatore. As a result he was able to accept the UK order and today he is regularly supplying engine valves there.

SME Linkage 2004

The 'SME Linkage 2004' was jointly organised by Confederation of Indian Industry (CII), Govt. of Gujarat and EDI. The objective was to forge ties among small, medium and large industries. Corporate sectors and public sectors undertakings like Railways, Defense etc. who wants to get some supplies from the SSI units, participated in this meet. During this meet, they interacted with the SSI units and explained their requirements. They also made presentations to appraise the SSI sector about their product requirements and their technical specifications. The Meet has helped the participating SSI units to plan their manufacturing process to meet the requirements of the corporate sector and public sector undertakings. 26 participants attended it.

Local entrepreneur turns national supplier

Mr. Bhaveshbhai of M/s Vadgama Industries had been manufacturing gear pumps for several years. He was concentrating on the Rajkot and Ahmedabad markets and developed dealers network there. As a result of increased competition and abundant supply from other factories his profit margin began declining day by day. He always had a desire to supply to the PSUs (public sector undertakings). He thought that their bulk orders would cut down some of his costs. He attended one of the buyer-seller meets organised as part of CDP. Today he is a registered vendor of the Indian Railways.

ver, the objective and projected outcome of the meet was explained to the participants. As a result of the meets various business tie-ups were established. Enterprises went for vendor registration and started supplying products to the private and public sector undertakings.

Strengthening Local Industry Association

The role of the Rajkot Engineering Association (REA) in the holistic development of the cluster has been very pro-active. Only after a few initial meetings it realized the objective of the CDP and started providing full support to the implementation of the action plan. The association took interest in developing the cluster vision, chalking out the action plan and implementing various activities in the cluster. It organised a visit of a group of manufacturers of diesel engine manufacturers to R. A. Lister & Co., UK and also organised on regular basis an industrial fair called IMTEX at Rajkot.

The visit to the International Machine Tool Exhibition in Taiwan was jointly organised by EDI and REA. It has also formed several committees to take care of various functional areas in the cluster. The REA has also started a sub-contraction exchange programme, developed its own website and started publishing a news bulletin for entrepreneurs in the cluster. REA also created various sub-committees for managing business development of their members. These include the following:

Committees of REA

1. Raw Material (PIG IRON) Committee
2. Auxiliary (SCRAP) Material Committee
3. Coal Committee
4. Technical Committee
5. Diesel Engine Technical Committee
6. Diesel Engine Committee
7. Government Taxes and Grievances Committee
8. Membership Committee
9. Auditorium Hall and Board Room Committee
10. Export Committee

Consolidated Results

Firm level

• The technological awareness of the entrepreneurs has improved substantially. Use of precision machines like CNC and VMC is getting increasingly visible in the cluster. . They are using new cutting tools supplied by reputed companies like Taegutec, Sandvik Asia etc. As result, the quality and productivity have improved and the entrepreneurs are able to manufacture precision parts.

• There has been an increase in the number of ISO registered enterprises in the cluster. Presently 150 enterprises in the cluster have obtained ISO. The rejection rate has also come down drastically.

• Enterprises diversified in product lines which offer better marketing prospects. For example Mr. Nayanbhai Patel, M/S L.N. Technocast Pvt. Ltd. has diversified in manufacturing S.G. Iron Casting. There are very few S.G. Iron units in Rajkot. As a result of this diversification, the entrepreneur is getting almost monopoly market. Another entrepreneur Mr. Ajaybhai, M/s Shreeji Metal has started manufacturing fluxless

brazing filler metal. No enterprise in the cluster is manufacturing fluxless brazing filler metal. This has opened a floodgate of business opportunity in the cluster. Lucas-Milhaupt Inc, USA is the only suppliers of fluxless brazing filler metal in the country. However Ajaybhai could offer his products at lower price because of no or limited marketing and administrative overhead, minimal transportation cost etc.

• Enterprises established direct export market linkages. They are supplying products to buyers in USA, UK, Italy, Germany, South Africa, Mexico, UAE, Uruguay etc. As a result they are getting better price for their products. Some of the pro-active entrappers started participating in international trade fairs. They are visiting different countries in search of customers and trying to establish long term business relationships.

• Some of the pro-active entrappers started benchmarking their products as per the world's best manufacturer in that particular product segment. For example products manufactured by M/s Patel Brass, M/s Joyti Limited, M/S Amul India Pvt. Ltd. are in line with the best international standards.

• BDS data bank has been developed and distributed among enterprises. This helped the entrepreneurs in sourcing quality business development services within the cluster.

Cluster level

• Entrepreneurs developed trust and confidence among themselves. Some of them established soft network and working on specific developmental areas. For example 7 firms in the cluster manufacturing diesel engine have formed an informal network. They have purchased a light weight diesel engine from China. They are trying to develop a similar light weight version by dismantling the imported one. The aluminum body of the engine makes it light weight and easily carryable.

• Enterprises are joining hand in hiring consultants. The cost involved in the process is equally shared amongst the members. For example they have invited technical experts from Indian Institute of Foundry (IIF), Netherlands Management Co-operation Programme (NMCP), Netherlands etc.

• The local industry association - REA, has been strengthened. They are distributing raw materials like pig iron, coke at no-profit-no-loss basis. The Raw Material Committee within the REA is looking after the requirements of the cluster. It is also running a sub-contraction exchange programme. This has benefited the member enterprises. They are organizing visits abroad.

• Support institutions are taking greater interest for the development of the cluster. NSIC, SISI, SIDBI have organised several programmes for the benefit of the entrepreneurs here.

Sustainability of Interventions

Support institutions like NSIC, SIDBI, SISI, etc. are taking increasing interest in the development of the cluster. NSIC has organised several programmes for the benefit of the entrepreneurs here. The Credit Linked Capital Subsidy Scheme of SIDBI has been well accepted by the entrepreneurs in the cluster. They are using it to support their expansion and diversification plans. SISI has started providing active services in the area of technology.

There has been an increase in the number of enterprises that have gone for EEPC registration. The BDS data bank has helped the entrepreneurs in sourcing quality services and there has been a steady increase in the firms obtaining ISO certification. The local industry association REA has been sensitised and strengthened. Majority of the interventions in the cluster have been implemented in active association with the REA. Thus, the CDP pursued in this cluster has been able to establish a strong local governance mechanism. It has succeeded in putting the cluster on its growth trajectory.

Future Directions

For the future, the following issues need to be addressed:

1. A Common Facility Centre is the need of the hour. The cluster requires certain cutting edge technology that needs high value investment, which can be established as part of the CFC. Identification of the required plant and machinery has already been done. A proposal will be submitted to the concerned department in due course of time.

2. Attempts could be made to internalise research and development (R&D) at the enterprise level. The entrepreneurs should constantly look out for better

products, value addition, quality enhancement, product development etc. Moreover linkages with specialised R&D institutions and CSIR laboratories, which are located outside the cluster, can be strengthened. The key cluster actors have realized that the mantra for success is 'innovation.' All they have to do is put it into practice.

3. As a result of the Cluster Development Programme a lot of implementations have taken place at the enterprise and cluster level. These implementations can be made more broad-based by developing a 'best practices manual'.

4. More testing laboratories need to be encouraged to take care of diverse testing requirements of the cluster. This can reduce dependency on one or two laboratories. For some specialised testing, the entrepreneurs sometimes need to go to Mumbai and Ahmedabad. All these facilities should be available in the cluster.

5. More and more entrepreneurs, especially those involved in manufacturing diesel engine (since the diesel engine market is already saturated), should be encouraged to diversify and add new products to their existing product line. For example, diversification opportunities can be provided in the areas of mehanite manganese steel casting, manufacturing of auto parts for four wheelers like cars and light commercial vehicles etc. These are the areas, which could fetch better returns at the end of the day.

The township of Rajkot is situated at district Rajkot in Gujarat. The initiative for development at the engineering cluster of Rajkot was started in the year 2003 by the Entrepreneurship Development Institute of India with the support of the Development Commissioner Small Scale Industries (DCSSI) and also ICICI Bank. The project is under implementation. This article has been authored by Mr Sanjay Pal, Faculty Member, EDI, Ahmedabad.

Chapter 17
Rengali - Brass and Bell Metal

The NABARD intervention at the brass and bell metal cluster of Rengali has created a difference in the lives of the artisans. From 176 artisans with a daily production of Rs 5 lakhs in the year 2000, the number of artisans increased to grown to 279 with a total production of Rs 9.5 lakhs per day in 2005. The wage rate has also increased from Rs 40 per day to Rs 120 per day. The average employment has also increased by 60 per cent. A CFC has also been created. These were made possible with the proactive support of all possible stakeholders including the local bank (SBI), DIC and district administration. The implementation was done by an NGO. The major learning is the need for appointment of a full time coordinator in the cluster for at least 3 years, promotion of local leadership and planning of interventions with a built-in withdrawal phase so that artisans slowly take up higher responsibilities.

The Cluster and its Major Stakeholders

Rengali is a small block, situated at a distance of 25 kms. from Sambalpur, a premier city in western Orissa. As on 2000, 176 artisans belonging to 50 artisan families were traditionally working here (mostly in the villages of Chauldhi and Ganesh Nagar) on brass and bell metal craft. Production was being done on work order basis with traders supplying raw materials, giving consumption loans and procuring the finished products.

The cluster is in existence for over a century. However the craft was dyeing and the cluster depicted a situation of abject poverty. Many artisans were continuing with the activity since employment opportunities in agriculture were limited and they were not trained in any other non-farm activity. Young artisans were not showing interest in taking up the activity and instead preferred manual labour in Sambalpur.

Districts Industries Centre (DIC), the District Rural Development Authority (DRDA) and financial institutions like State Bank of India and NABARD can play major role for the development of the cluster.

The macro status of the cluster prior to intervention were as follows:

1	Number of artisans	50 families, 176 artisans
2	Employment per month per artisan	15 days on an average
3	Monthly income per artisan	Rs. 1200 – Rs. 1400
4	Value of total cluster production	Rs. 500,000 per day
5	Technology & tools used	Traditional
6	Products	Traditional with very poor finish
7	Furnace	32 soil & bricks furnace in working condition

Major Problems

Artisans were traditionally working on recycled brass scrap, which was of poor quality. The furnaces were made of soil and bricks. Heat & beat method of traditional production process was followed. Hence productivity was low. Besides there was lot of raw material wastage in the work process. Again the products were not able to command good price because of poor finish. Working environment was unhealthy and unhygienic.There was complete dependence on traders on marketing issues. Here, the demand was cyclic and low in late summer & rainy season. There was very little exposure to formal sources of finance.

Vision for the Cluster

The overall vision was that of development of the artisans leading to their improved life style as reflected through higher employment and income levels by improving their work environment, production methods, product diversification better product designs with their active involvement. Accordingly the following growth objectives were identified:

• Stabilizing and increasing per month employment from 15 days to at least 21-22 days
• Improving the quality and design of the products
• Establishing a linkage with formal credit channel in a phased manner
• Improving the production and productivity through upgradation in existing production set up, partial mechanization of existing units by installing grinding, polishing and drilling machine at every unit and enlarging the product range, e.g. through introduction of decorative items

Implementation Strategy

While NABARD took lead in the development process, it involved all the nearby local stakeholders including the DIC, the DRDA, the local SBI, etc. A diagnostic study was conducted by NABARD in close coordination with DIC and Bharat Integrated Social Welfare Agency (BISWA - an NGO) in July 2000. This study in addition to identifying the constraining factors of the cluster also laid down a road map of activities to be taken up in the next 3 to 5 years. The following interventions were planned:

• Rural Entrepreneurship Development Programme (REDP) for all artisans with inputs on skills of casting, engraving, etching, embossing, repouse and enameling by bringing master craftsman from Kantilo (Orissa) and Moradabad (UP).
• Group mobilization/motivation/sensitization of artisans and mobilizing artisans and their women folk into Self Help Groups (SHGs)
• Exposure to new techniques on design development
• Creating a Common Facility Center for artisans
• Promoting tie up with brass metal cluster at Moradabad (UP)
• Marketing interventions including participation in exhibitions and a show room for products of the cluster

A Cluster Development Committee (CDC) comprising of District Magistrate (DM), Sambalpur, Project Director (PD) DRDA, General Manager (GM) DIC, Lead District Manager (LDM) of the local banks, Block Development Officer (BDO) Rengali, SBI Rengali, NABARD & BISWA was constituted. This committee reviewed the progress at regular intervals. The NGO BISWA was the principal implementing agency. DIC played the role of technical adviser.
The artisans being the primary stakeholders were

involved in entire exercise of growth and it has been ensured that the decisions emerge through a process of interaction between artisans and various other stakeholders in a manner that it reflect the needs and aspirations of the artisans.

Major Interventions

The following interventions have been undertaken during the last 5 years:

Exposure and awareness

• Two Awareness programs were conducted in the initial phase of the programme. 113 artisans were covered.
• Exposure visit was organised to Kantilo in Nayagarh district for 10 artisans for 6 days
• DDM Sambalpur,GM DIC Sambalpur and cluster coordinator BISWA visited Moradabad for study of Moradabad cluster on brass & bell metal.

Training

• Six REDPs were conducted. Inputs on skills of casting, engraving, etching, embossing, repouse and enameling were given to the artisans by bringing master craftsman from Kantilo and Moradabad. 120 artisans were covered in these programs. NABARD sanctioned Rs.3.5 lakhs (USD 8000) for organizing these programs.
• Two Design Development Workshops were conducted for 20 artisans with budgetary support under Baba Saheb Ambedkar Hastshilp Yojana of the Development Commissioner (Handicrafts)

Infrastructure creation

• NABARD has sanctioned Rs 5.8 lakhs (USD 13,200) for establishing a common facility center. The CFC is being used for conducting training programs and also as technology demonstration unit. 15 artisans are working full time in the CFC. Other artisans are using it depending on their needs and requirements. The working of the CFC is at present being coordinated by BISWA (NGO). Eventually the ownership and working of the CFC will be transferred to federation of SHGs of the artisans.
• Rs. 10 lakhs (USD 23,000) grant assistance is being mobilised for construction of work sheds by the artisans under the Baba Saheb Ambedkar Hastshilp Yojana of the Development Commissioner (Handicrafts). District Administration and DIC are helping to channelise the fund.

Formal channel of financing

• SBI is the Lead Bank of the district. Both the manager and the field supervisor of the SBI Rengali branch are proactive and meet the artisans from time to time. The Bank has already financed 61 artisans to the tune of Rs. 17.54 lakhs (USD 40,000). SBI has financed through Artisan Credit Cards and in SHG mode. Around 10 to 12 SHGs were created. Average loan size per unit is Rs. 29000/-. The average capital requirement, (mainly working capital) of artisan units is around Rs. 60000/- for one operating cycle. BISHWA is also operating in a micro finance institution mode and is willing to lend to the artisans directly.

Marketing

• The Cluster Products are being sold through outlet of BISWA at Sambalpur. BISWA also procures orders from export houses and traders in Delhi, Kolkata and Vishakapatnam.
• District Administration and DIC helped in opening of marketing outlet `Laxmi Priya', providing constant technical guidance

Consolidated Results

Artisans have started making cost benefit analysis and also elementary exercise on costing and pricing of products. They are now confident about marketing of their products. Artisans have shown tendency to shift towards improved production methods and as a result, other people are returning to this activity. Artisans are now looking for new and modern machinery and also training in new technologies like lost wax technology and sheet work methods of production. There is a remarkable increase in income levels too. District Administration and DIC have offered land for construction of Rural Industrial Estate at Rengali. Following are the findings from the field study and interview with the artisans:

S.No	Parameters	Year 2000	Year 2005	Remarks
1	No. of artisan	176	279	56.81% increase
2	Daily production & sales	Rs.5-6.5 lakh	Rs.8.5- 9.5 lakh	46.15% increase
3	Wages	Rs.40/-	Min. Rs.75/- average wages Rs 120/-	300 % Wages increase
4	Employment	100-150 days in a year	At least 240 days in a year	60 % increase
5	Product diversification	Only one unit producing inferior quality decorative items	New designs and new products have been adopted	
6	Trust levels between agencies	Not visible	NABARD , DIC, BISWA (NGO) ,local banks and District Administration have developed good relationship	
7	Financing	Dependent on traders mostly	NGO has developed as MFI, ICICI Bank, UTI Bank, ABM-AMRO are giving funds for micro enterprise. SBI and Bolangir Aanchalik Grameen Bank are now willing financiers.	
8	Products	Traditional products like garei etc	12-15 new products introduced	Shift from heat & beat method of production to melt & mould method of production.
9	Perception	Training seen as unnecessary diversion from income generating activity	Artisans are willing to undergo training now.	Cluster has adopted diversion to improved production methods. As a result, people are returning back to this activity.
10	Women	Only housewife	24 women organized into 2 SHGs.	

Sustainability

Results of our past efforts in cluster development have shown that in this approach of rural development, it is possible to:

• Save the traditional skills.

• Address the issues of poverty amongst rural artisans who are uneducated and deprived of resources needed for development.

• Bring technology up-gradations with gradual introduction of new tools, production process, refinement in existing production systems.

• Make artisan products market driven in regard to design and acceptability.

• Empower artisans to take vital decisions related with their work, families & lifestyles

The cluster was able to cross the threshold of stagnation and poverty. Much faster growth is expected now. As of now the cluster has improved considerably and so as the sustainability. In future, its growth path is expected to be in a manner where maximum part of incremental growth benefits will reach the huts and hamlets of the artisans. State Government and public representatives have appreciated the success of this cluster and advocated further replication. The CDC has suggested for involvement of master craftsmen from Kerala, Hyderabad & Moradabad and exposure of artisans to different markets/clusters/ technologies.

Future Direction and Major Learning

Overall: Fresh survey of all 279 families needs to be conducted for arriving at training, marketing, infrastructure, and product planning matrix needs of the cluster. A package of activities accordingly needs to be planned for next 5 years. This will ensure continuity of the program and each stakeholder would be clearly aware of his roles and responsibilities.

Exposure: Exposure to bell metal craft cluster of Kerala and Andhra Pradesh (Hyderabad) can also be considered. One master craftsman from Moradabad may be brought to work in CFC.

Training: Four advance programmes on skill upgradation & design development may be conducted to cover remaining artisans. Women SHGs need to be trained on packaging of the cluster products. There is heavy demand for gun metal statues. It will call for introduction of moulding of separate parts, welding and electroplating. These aspects can be incorporated in future training programs.

Governance: Initially artisans have been organized into SHGs. This has helped in smooth financing through formal sector, i.e. banks. Now the artisans need to be organized into artisan guilds.

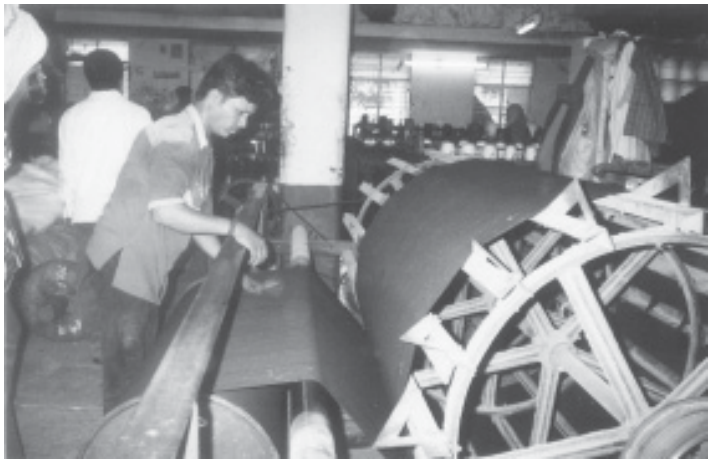
Technological developments: In order to improve the daily production and sales of the cluster products, new technology and mechanization need to be introduced. These include introduction of gas fuel based furnace and spot welding machines in the CFC and also other machinery like circle machine, press & sheet cutting machine, 3-piece roller for moulding and electroplating process/machine. Introduction of lost wax method of production, switch over to virgin brass instead of recycled brass is necessary to have better product quality.

Marketing: There is need to tie up with export houses and dedicated web site for sale of the cluster products. This may call for cataloguing of products, visit by export house executives to cluster, etc. One educated person from amongst the artisans need to be trained in AUTO CAD software to have better product design. Long term collaboration with the Brass Manufacturing Association at Moradabad association is proposed will not only update the cluster with technology, but also buyers through Moradabad market can gradually get to know Rengali market. BISWA has started talks with M/s Bhusan Steel (a large firm) for meeting their requirement of Brass nut and bolts by outsourcing it from the cluster.

Some of the major learning is as follows:

- There is need for appointment of a full time coordinator in the cluster for at least 3 years. Subsequently leadership should emerge from the cluster
- Exposing artisans to new markets, new technologies in phased manner helps
- Commitment of various stakeholders can make vital difference between success and failure
- One must give time to artisans for adopting new methods of production and emergence of local leadership
- Artisans who have grown should be encouraged to take lead in formation of artisans' guild
- Interventions should have built-in withdrawal phase so that artisans slowly take up higher responsibilities
- Segmented growth of the cluster has made it necessary that process of ancilliarisation may be introduced and artisans may be encouraged to master one aspect of total production process. e.g. one artisan may specialize in casting and moulding, another in buffing and finishing and third in welding process. This can increase the total market size and production scales.

The brass and bell metal cluster of Rangeli is situated in district Sambalpur in the State of Orissa. National Bank for Agriculture and Rural Development (NABARD) adopted this cluster for development under the National Programme on Rural Industrialisation (NPRI) in July 2000. This article has been authored by Mr Sudhanshu K.K.Mishra, AGM, NABARD, Mumbai and Mr S P Mohapatra, Manager, NABARD, Bhubneshwar.



Chapter 18
Solapur - Terry Towel

The Textiles Committee, which specializes in handling technical support to textiles industry, took self-initiative for the development of this cluster, as a part of its mega cluster development project throughout India. The CDA of the Textiles Committee, addressed identified issues related to information gaps, inadequate quality, non-professional product and market development efforts and also infrastructure gaps; in a step-by-step approach of exposure to relevant benchmarks, networking of units and linkage with appropriate public and private BDS providers and also support institutions. These interventions got catalysed through creation of several networks that went for common purchase and marketing. Consultancy was also provided in ISO 9001:2000 Certification as also testing for quality regulation by the Textiles Committee Laboratory.

Evolution of the cluster

Solapur is nationally recognised for its chaddars (bed sheets), terry towels and grey fabric. The weaving communities from Telangana (Andhra Pradesh) started migrating to Solapur in the 1800s at the invitation of the then ruling 'Maratha' dynasty. These handloom weavers laid the foundation for the Solapur cluster. The first composite spinning and weaving mill of Solapur was established in 1877. The mill was established following the location of a railway station at Solapur, an important factor leading to the development of the powerloom cluster in the region. Subsequently, similar "large" units came up in the region. Workers from some such units were sent to Manchester (United Kingdom) in the early 20th century for training. Thereafter, jacquard was introduced to the cluster. This was a significant turning point from the technology point of view.

Since the 1930s several enterprises were established which incorporated the jacquard technique in handlooms. With business picking up, many workers of larger mills and other weavers took to 'entrepreneurship' by establishing small enterprises. In recent years, the cluster got a boost with exports to the erstwhile Soviet Union. The export trend faded away with the dissolution of the Soviet Union, but the export orientation of the enterprises remained. Upon the decline in trade with the Soviet

Block, the focus shifted to other markets such as Western Europe and the USA. Exports were, however, led by merchant exporters in Mumbai and not cluster SMEs.

The Cluster and its Major Stakeholders

In 2002 the cluster had about 700 enterprises operating about 25,000 looms and providing employment to about 150,000 persons. Of the total cluster turnover of about Rs.800 crores (USD 182 million), Rs.250 crores (USD 57 million) were exported (both directly and indirectly). The cluster has about 15 functioning spinning mills. Other critical related enterprises include those of suppliers of dyes and chemicals and other inputs.

The cluster has four polytechnics and Solapur University located within its geographical boundaries. However, there were only a few programmes or other projects oriented to cater for the needs of cluster enterprises. The Bombay Textile Research Association-Powerloom Service Centre (BTRA - PSC) has been playing a facilitator role on several fronts, such as the provision of testing and training facilitites. The Maharashtra Industrial Development Corporation (MIDC) and also the Solapur Municipal Corporation, are the key stakeholders that have been contributing to development initiatives.

The former have established industrial estates for cluster SMEs, and both have assumed the lead in securing assistance under the Textile Centre Infrastructure Development Scheme (TCIDS) for upgrading infrastructure in industrial estates. The cluster has the benefit of presence of over 15 financial institutions. Other institutions such as the District Industries Centre (DIC) and the Maharashtra Industrial and Technical Consultancy (MITCON) Services Private Ltd. are offering Business Development Services (BDS). The latter has facilitated preparation of project proposals for infrastructure upgradation under the TCIDS.

There are about 15 industry associations in the cluster, mostly related to cluster SMEs. The Solapur Zilla Yantramag Dharak Sangh (SZYDS), involving almost all SMEs in the Terry Towel cluster is effectively the apex association of SMEs, while the Textile Development Foundation (TDF) plays the role of a 'technical' service providing body, facilitating various BDS and initiatives for the benefit of industry. The SZYDS serves as the lead platform for policy and related advocacy. Many SMEs hold 'dual' membership in these two associations. The other associations are smaller and location/product specific. Many members of SZYDS and TDF are also members of the Solapur Chamber of Commerce and Industries. Some of the other relevant associations include the Akkalkot Road MIDC association (ARMA) and the Solapur Textile Manufacturers Association (STMA). The primary activity of most associations is policy (e.g., fiscal) advocacy. In recent years, many of the associations have been involved in pursuing infrastructure upgradation projects on a PPP mode.

Major Problems

Technical upgradation: The industry lacked adequate information on quality and productivity enhancement options. There was insufficient exposure to appropriate technology options in weaving and processing and also for other areas such as water and energy conservation. Need for information on better dyeing techniques and procedures and on improved machinery was also evident.

Limited product and market development: Most enterprises restrict themselves to production of conventional products (terry towels, bed sheets and grey fabric) and did not explore other value added made-up products (e.g. kitchen aprons). Inadequate information on product diversification and value addition hindered this process too.

Poor quality and non-competitive input: Inferior quality of raw materials in terms of yarns and dyes/ chemicals, inadequate facilities for relevant testing and also lack of exposure to other options were evident. Problems were identified on aspects with regard to weight, cost and inferior quality of yarn, and in particular on yarn testing facilities. Rising costs of inputs and competitiveness from other countries, sub-optimal sourcing of inputs in terms of location (sources) and volumes of purchase - both at the spinning stage and also in weaving - was evident.

Infrastructure gaps: Gaps in critical infrastructure such as water supply and effluent treatment options were also identified.

Training in dyeing

The diagnostic study revealed that one critical need for training was on the dyeing front. The Textiles Committee took the lead. The Government polytechnic of Solapur was offered a course outline that was drawn up after discussion with industry stakeholders. Thereafter, faculty and support were mobilised from a wide range of institutions including DKTE, Ichalkaranji, and the Victoria Jubilee Technical Institute (VJTI, Mumbai). Three fee-based programmes were conducted by the Government polytechnic with the TDF actively promoting the programme.

As a result there have been substantial improvements in bleaching and dyeing practices and on water absorbency in many units. Water softener equipment have been introduced in the bleaching and dyeing process and also the consumption of dyes and chemicals was reduced. The programme covered inputs such as the application of reactive and azo free dyes and cabinet dyeing options. Many enterprises have converted to such dyes from prevalently used dyes so as to meet exporting requirements and have also shifted to cabinet dyeing options. Moving towards cabinet dyeing is also facilitating similar enhancements in competitiveness. Material handing has reduced adding value and consistency to the dyeing process. It has also resulted in improvement in lustre, softness, absorbency and shade matching.

Again, during the training programmes importance of softness in water, water softening (machine) plant, boiler options, pre-treatment, methods and procedures for dyeing, post treatment options, need for effluent treatment plants (ETPs) and different testing options were also highlighted.

Vision for the Cluster

The vision that evolved upon conduct of a diagnostic study was: 'Solapur will export products worth Rs.600 crores in the form of terry towels and other value added products by 2007'.

Implementation Strategy

The strategy for implementation hovered around (a) technical information provided to the cluster by the technical resources of the implementing agency, (b) technical training and exposure visits facilitated by the implementing agency with the support of other developmental agencies and associations, (c) promotion of private BDS providers for more focused business interventions by organising the units in the form of formal networks and (d) firm level services provided directly by the implementing agency. Provision of technical information creates initial trust and give birth to new areas of implementation. Handholding support to make the units experience the results consolidates the confidence in joint activity. All these were planned with the direct intervention of local associations to enhance its delivery capacity and using the services of various development organisations to maximize impact.

Major interventions

Technical upgradation

The implementing agency used its own resources in technical upgradation by facilitating upgradation in water quality treatment to reduce hardness levels. This contributed to reduced consumption of dyes and chemicals. Also, samples of yarn, water and dyes and chemicals were studied by the Committee and findings in terms of inadequacies and these were shared with the industry. The Textiles Committee also offered its own BDS ISO QMS 9001-2000 and facilitated in getting ISO by 10 units.

About 16 programmes covering a wide gamut of areas ranging from quality management systems to internet marketing were offered to industry during interventions. Industry and local stakeholders met with most expenses in conduct of such programmes. During the training programmes importance of relating to broader issues was also highlighted. Different service providers, whose interventions were catalysed by the Textiles Committee, conducted these training programmes.

Exposure visit to Ichalkaranji

During an exposure visit to Ichalkaranji cluster SMEs visited enterprises and also benefited from presentations made by faculty from local institutions (such as the DKTE). SMEs that participated in the visit could narrow down on upgradation options like 'air- jet', 'rapier' loom and so on. Thereafter, enterprises went in for appropriate options depending on their preference with regard to necessary capital outlays and operating costs. One enterprise, for example, returned from such visits and imported second hand Saurer Terry Rapier looms from Europe.

Exposure visits to enterprises and institutions in other clusters, also led to technical upgradation.

Demonstration of technology options and exposure visits has facilitated greater competitiveness of cluster SMEs. The installation of Saurer rapier looms is expected to ensure 50 per cent reduction in labour costs. Power and other costs are also expected to turn competitive.

The operating cost per kg. of output (towels) is expected to be reduced from Rs.60 to about Rs. 44 per kg in one case. This implies a 25 per cent reduction in costs on a per unit basis. The savings to one medium-sized enterprise with a current turnover of about Rs. 10 crore is expected to be in the range of about Rs.80 lakhs per annum, thereby enhancing competitiveness.

Product and market development

Projects on product innovation and diversification through design and value addition were simultaneously pursued. Samples of such innovative products using existing technological base in the cluster was developed by the National Institute of Fashion Technology (NIFT). TDF met with the expenses on account of NIFT.

Again various industry organisations have been focusing on facilitating workshops and training related to exports. The North Solapur Industries Association, MIDC (Chicholi) and Rotary Club organised one with the DGFT. BTRA-PSC and MIDC (Akalkot) and PDEXCIL (Mumbai) and SZYDS have organised several training programmes related to export marketing availing the services of various private and public BDS providers. Here the implementing agency took the support of several specialised export BDS provider for continuous handholding beyond initial training on exports to realise additional business.

The cluster members were also of the opinion that products of Solapur need legal recognition so as to ensure that products are not duplicated/copied by enterprises in other regions. It was in this context that terry towels and allied products (chaddars) from the cluster was sought to be protected under the GI Act. The applicant for GI for both terry towels as well as chaddars was made by the TDF.

Evolution of an Export Consortia

To start with, an export promotion workshop was organised by a specialised BDS provider. The BDS provider then organised a one-to-one interaction with the interested firms and suggested the formation of a consortium based on an ideal combination of firms with near similar thought process and growth plans. Thus was born the Terry Towel Consortium which started getting consultancy from the same export BDS provider. They are also exploring the services of a German consultant under the aegis of the Senior Experten Services (SES, Germany). The classic terry towel consortium members have realised a total direct export turnover of about Rs. 70 lakh. Most orders were secured through participation in fairs in India. Some were also secured through B2b (business to business) meets in Europe. Similarly, the Euro Terry Towel consortium is availing the services of an export and internet marketing BDS provider from Ludhiana to help promote their website to directly access export markets.

Cost competitiveness in input

To handle this issue, several formal networks were evolved for common raw material procurement. The Euro Terry Towel consortium, for instance, has been sourcing raw material yarn from textile mills in Maharashtra. They travelled to South India to negotiate common and bulk purchase. Thereafter, they found that for particular counts of yarn it would be more competitive to source in bulk from Maharashtra and Gujarat-based mills. This was also (particularly) due to multiple sales tax incidence over inter-state transfer. However, they are now proposing to travel to South India again to explore sourcing specific counts of yarn from mills in that region. The network has purchased over Rs. 7 crores of yarn, together realising a cost reduction (savings) of over 3 per cent.

Similarly, the Euro Terry Towel consortium and Solmart Terry Towel consortium are also involved in the sourcing of various inputs including yarn and/or packaging material in bulk. All consortia have been visiting exhibitions to understand markets, competitors and scope for technology upgradation. Some also visited spinning mills in different regions. The Euro Terry Towel consortium, involving 42 members, has realised a reduction on purchase costs of yarn by about Rs. 25 lakh by means of common purchase. The classic terry towel consortium involving 9 members is progressively and commonly sourcing dyes and chemicals (including hydrogen peroxide, packing materials, lubricating oils etc.) targeting a savings of Rs. 18 lakh on this front in one year.

Infrastructure gaps

Under the TCID scheme, the development of MIDC (Akkalkot road) and Chicholi (Solapur) industrial area is envisaged to comprise upgradation of water supply facilities, construction of a Common Effluent Treatment Plant (CETP) with tertiary treatment, providing drainage collection and disposal systems, upgradation of internal roads, waste disposal facilities, textile design centre, and a common facility centre (with fashion design centre, office for NIFT etc.). The project is under implementation. About Rs.13.5 crores (USD 3 million) in grant-in-aid has been provided by the Government of India. Industry stakeholders have contributed approximately Rs. 3.2 crores (USD 728,000).

There remains some concern on the implementation of some components sanctioned as assistance by way of grant-in-aid under the TCIDS. This has reference to the extent of user charges (to meet operational expenses) of the CETP and also with regard to operational responsibility of the same. However, these are expected to be resolved and the project will be implemented in the near future.

Consolidated Results

• Adoption of ISO QMS 9001-2000 by about 10 units was facilitated. The Textiles Committee offered BDS on this front. As a result of the training programmes on yarn dyeing there have been substantial improvements in bleaching and dyeing practices and on water absorbency in many units. Water softener eqipments have also been introduced in the bleaching and dyeing process, as also consumption of dyes and chemicals reduced.

• The Euro-Terry Towel consortium involving 42 members has realised a reduction on purchase costs of yarn by about Rs. 25 lakh (USD 56,000) by means of common purchase. The classic terry towel consortium involving 9 members is progressively and commonly sourcing dyes and chemicals (including hydrogen peroxide, packing materials, lubricating oils etcetera targeting a savings of Rs. 18 lakh (USD 41,000) on this front in one year.

• Demonstration of technology options and exposure visits have facilitated greater competitiveness of cluster SMEs. The installation of Saurer rapier looms is expected to ensure 50 percent reduction in labour costs. Power and other costs are also expected to turn competitive. The operating cost per kg. of output (towels) is expected to reduce from Rs.60 to about Rs. 44 per kg in one case. This implies a 25 percent reduction in costs on a per unit basis. The savings to one medium sized enterprise with a current turnover of about Rs. 10 crore (USD 2.3 million) is expected in the range of about Rs.80 lakhs (181,000) per annum thereby enhancing competitiveness.

• The classic terry towel consortium members have realised a total direct export turnover of about Rs. 70 lakh (USD 160,000). Most orders were secured through participation in fairs in India. Some were also secured over b2b meets in Europe.

• Close to 50 firms have been sustainably networked and are pursuing common business plans. Rest of

industry may emulate such options. Similarly, by virtue of exposure visits industry is getting exposed to benefits of different technology upgradation options.

• Gaps between (local and appropriate other) institutions and industry have been reduced over interventions- this is in particularly in terms of usage of testing facilities and also specific courses offered.

• At the behest of the Textiles Committee the Municipal Corporation authorities have upgraded quality of water treatment which reduced hardness levels leading to beneficial impact on consumption of dyes and chemicals.

Sustainability of Interventions

Overall, close to 50 firms have been networked and are pursuing common business plans. The rest of industry may emulate such options. Similarly, by virtue of exposure visits industry is exposed to benefits of different technology upgradation options, such as rapier looms, air jet looms etcetera. They have since been pursuing relevant options. Enhanced proactivity between institutions and industry, along with capacity building of industry associations, while implementing various joint activities, will further empower the cluster. At the behest of the TC the Municipal Corporation authorities have upgraded the quality of water treatment which reduced hardness levels leading to beneficial impact on consumption of dyes and chemicals.

The three demonstration consortia that have evolved have sustainability as their focus. They are registered as private limited entities. Some have appointed a common manager for operations and some of them have also increased their membership base. A cluster Development Coordination Group involving critical stakeholders in Govt., financial institutions and industry was evolved to monitor and also guide progress. The same is however at a relative stage of infancy.

Future Direction

Cluster stakeholders envisage several initiatives to be pursued as future interventions. Some of them are elaborated below.

Specialised academic programmes for industry: Post-graduate courses are believed necessary to develop a specialised skilled labour pool for industry. These may be offered as part of the BE and ME degree programmes. Similar inputs are offered at the Salem (Thyagarajar Polytechnic). The Textile Development Foundation is working in close coordination with the Solapur University on such options to target the gaps in terms of a skilled labour pool. Short-term certficate courses for weavers may be also explored. The Textiles Committee has successfully facilitated rather similar options with private training institutions at Tirupur and is catalyzing the intervention with the university.

Interventions on input cost front:
Spinning mills in the region are not empowered in a manner as to globally source cotton in accordance with cheaper rates in different regions (a factor dependent on cropping seasons). Hence variations in prices of between 10 to 15 per cent in some years are common.
A few spinning mills alone have never pursued import of cotton off-season (in India) from Benin and other African countries or the USA for that matter so as to be more competitive. Raw material yarn accounts for the majority share in annual cost of production of terry towel units and unless the spinning mills are competitive, weaving units will be at a disadvantage.

Cotton (yarn) and energy costs are critical and optimization on these fronts are vital. The Textiles Committee-led agenda for the future may be also visualised in this context. With the latter's support in terms of facilitation, the TDF is to explore options to turn the industry into being more environment friendly and also more cost effective by exploring solar energy options so as to facilitate reduction in reducing the lead time in drying yarn and also explore energy efficiency.

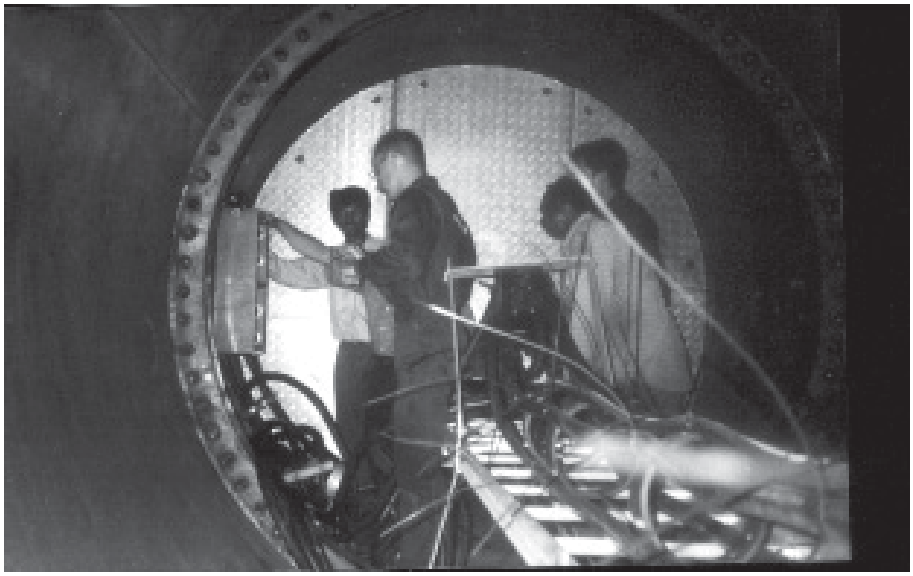
A business meet on 'Energy efficiency and solar hot air technology for textile and dyeing industries' is proposed to be organised by the Textiles Committee. The Planters Energy Network (PEN) - an NGO working on solar air heating - is also a service provider in this context. The bio-gas option (being explored

by some medium-sized units) is also to be progressively introduced so as to explore viability by smaller units in the cluster.

Dyes and chemicals constitute about 4 to 5 per cent of the cost of production. The option of possibly sourcing the same through the NSIC (with their benefit of discount for purchase from public sector enterprises) is also to be explored.

Promoting Registration under GI Act: A unique feature of the cluster is that the smallest weaving enterprise carries out all pre and post-weaving activities, in one premise and under one roof. The use of doubled yarn in warp threads is also a unique feature of the weaving process and yarn is dyed before weaving. The creation of woven designs with the help of jacquards is yet another unique feature. All these qualities have lent a distinctiveness to the products of Solapur. In this context, upon being formally registered under the GI Act, generic promotion of the Solapur brand is to be considered by cluster actors.

Solapur is situated in the state of Maharashtra. The initiative for development at the terry towel cluster of Solapur was started in the year 2002 by the Textiles Committee. The project is under implementation. This article has been written by Mr V Padmanand, SME Consultant, Chennai.



Chapter 19
Trichy - Heavy Engineering Fabrication

At the heavy engineering fabrication cluster of Trichy, the Trichy Regional Engineering College – Science & Technology Entrepreneurs Park (TREC-STEP) has served as the implementing agency for the Cluster Development Programme sponsored by the National Science and Technology Entrepreneurship Development Board (NSTEDB) of the Department of Science & Technology (DST) since 2002. Here, a proactive industry association was further empowered to address various issues in the area of QMS in business, high costs of energy and power, scope to enhance labour productivity and its supply. The interventions went beyond identification and led to actual deliveries of results by identifying and ensuring appropriate supply of service providers.

Evolution of the Cluster

The cluster was essentially promoted by the Bharat Heavy Electricals Limited (BHEL) and its Trichirappalli (Trichy) operations. The Trichy unit commenced operations in 1965 and focused primarily on the manufacture of high pressure boilers. The high fabrication content in boiler manufacturing is labour intensive and also design related. The BHEL, therefore, encouraged technical entrepreneurs such as fabricators and machinists, to pursue such work on a contractual basis.

The State Industrial Development Corporation (SIDCO) of Tamil Nadu progressively established several industrial estates contributing to the birth of the cluster. Here cluster structure has been largely skewed in favour of fabricators.

During and after the 1980s, BHEL has been establishing separate units at various locations in Tamil Nadu and other regions. The enterprise has been encouraging local jobbers to economise on transport costs related to outsourcing. These initiatives served as a reminder to cluster SMEs that excessive reliance on BHEL could prove risky as the company could now outsource activities from any location of its choice.

On the other hand around this period several entrepreneurs (ex-employees) of BHEL who had started their own manufacturing operations,

Cooperative beats middlemen clout

Quality consumables were not available at reasonable prices to cluster enterprises due to exploitative pricing by middlemen traders. Therefore, cluster enterprises established BIDASS to procure consumables in bulk and retail the same to member units. There are currently over 150 members availing of this facility. The turnover last year (2003-4) was about Rs.17 crores and the target in the year 2005 is about Rs 30 crores (USD 6.8 million). BIDASS supplies consumables at about 15 per cent less than the market price and is a price setter in trade circles! BIDASS is perhaps the oldest and also the largest initiative of its kind in SME clusters in India.

progressively grew to medium-scale operations. These enterprises also outsourced some fabrication work.

In the 1990s BHEL's orders plummeted, which adversely affected the jobbers. Around the mid-90s Wind Energy Generator (WEG) companies establishing their facilities in nearby locations, discovered the fabrication strength of cluster units. While the WEG did not provide a stable demand over the years, this customer category is now turning out to be significant.

The Cluster and its Major Stakeholders

The heavy engineering fabrication cluster at (Trichy) largely caters for the sub-contracting requirements of the power industry, with specialised competence in heavy fabrication and machining. The cluster of 300 largely small-scale industrial units (SSI) had a turnover of about Rs 200 crores (USD 45.5 million) in 2002 and created jobs for about 8000 people, most of whom were Bharat Heavy Electrials Limited (BHEL) jobbers.

Three units are into manufacturing power equipment like boilers, pressure vessels, heat exchangers and so on. They also provide work for some jobbers. Besides, there are around 50 tiny or small units involved in other activities including short/sand blasting, galvanising, bending and drilling, paint and electrode manufacture etcetera. A cadre of specialised labour contractors provided the labour force for the cluster enterprises. BHEL is the only large enterprise that propels cluster activities. However, progressively, a few enterprises have also been offering services to L&T and other such companies that undertake fabrication for the electrical power generation industry.

BHEL Small Scale Industries Association (BHELSSIA) comprising those on the BHEL vendor list, is today taking the lead in pursuing several interventions for industry. Established in 1980 BHELSSIA today has about 130 members. Its role had been earlier largely restricted to liaisoning and resolving issues with BHEL. A critical contribution of BHELSSIA over the years has been the evolution of the BHEL Industrial Development and Service Society (BIDASS), constituted as a section 25 company. BIDASS sources a number of consumables by way of bulk input purchase.

The Trichy District Tiny and Small Scale Industries Association (TIDITSSIA) representing all SSI units in the district, plays the critical role of policy advocacy on behalf of cluster SMEs in the context of sales tax imposition on fabricators. The Thuvakudi Industrial Estate Manufacturers Association (TIEMA), constituted largely to implement infrastructure projects (road development in industrial estates etc.), also has an important agenda. The local chapter of the Confederation of Indian Industries (CII) at Trichy has some representation from cluster SMEs.

The National Institute of Technology - NIT (earlier known as the Regional Engineering College - REC), Trichy, is a prominent institution located at the cluster. However, technical and management expertise available at the NIT are yet to be adequately or appropriately synergised by cluster SMEs. SIDCO is a critical player. The Welding Research Institute (WRI) established at BHEL premises with UNDP assistance, offers research and development (R&D), testing and training facilities. Certifying and inspection agencies such as Lloyds Register of Industrial services and the Indian Institute of Quality Assurance also provide strategic services to the industry.

Major Problems

Some of the major problems identified were:
• Relatively high input cost in the form of cost of energy and transport
• Lack of quality certification that restricts independent growth, i.e. growth beyond BHEL
• Critical infrastructure gaps including 'designing' facilities which are required to help move towards large projects and markets
• Lack of infrastructure upgradation of estates on which cluster enterprises are housed

Vision for the cluster

The vision that progressively evolved in the cluster was 'To emerge as a world class cluster in engineering and fabrication in the global market by the year 2007.' The mission of cluster enterprise was "To achieve a turnover of Rs 900 crore (USD 205 million) by the year 2007, using our core competency in the field of fabrication and machining developed in the course of the past 25 years by more than 300 entrepreneurs".

Implementation Strategy

It is evident that the cluster had several capable implanting agencies already in place. Hence the implementation strategy was to initiate activities by providing exposure and conducting a series of brainstorming sessions to further promote a culture of business cooperation among the units. Thus, pilot activities by way of exposure visits to other clusters, such as the machine tool cluster at Bangalore and the knitwear cluster at Tirupur were facilitated. Management Development Programmes (MDPs) were conducted for owner-managers. Such pilot activities, including two MDPs that involved about 50 entrepreneurs, led to fostering mutual trust and understanding.
Many of the interventions being pursued till date are led by participants of the MDPs. This was followed by creating trust of the units in the newly-created process by ensuring unit level benefits on areas of immediate needs (e.g. input cost reduction), by working through appropriate intermediaries - existing or newly created and moving strongly towards a 'beyond BHEL syndrome' by working towards creating alternate markets for the units. Here the need for creating appropriate support facilities to back up this progression towards independence was also felt.

Major Interventions

Cost optimisation

Pilot activities in terms of power consumption study and energy audit of a small sample of enterprises were initiated.

TREC-STEP initially facilitated conduct of an energy survey. The initial power costs for units were as high as about Rs 128 lakhs (USD 291,000) per annum with many in the Rs 50 lakh (USD 114,000) per annum range. Two units were randomly selected for energy audit. Implementation of inverters was a critical suggestion recommended by the auditors and so the two units invested in inverters. The Petroleum Conservation Research Association (PCRA) helped conduct a one-day energy awareness seminar focusing on energy saving strategies (especially the new findings) for cost cutting.

Energy Audits pursued by PCRA in a few more units also recommended discontinuing usage of the generator-type welding machines and adoption of inverters for reducing power costs. Thereupon, support was leveraged from the NSIC to offer collateral-free loan to purchase inverters. The association (BHELSSIA) members again jointly negotiated with four vendors and as a result the cost of the inverters was reduced by about Rs 35,000. A ten per cent reduction in the annual power cost of enterprises was achieved.

It was also demonstrated that even basic housekeeping measures could help save energy costs by identifying and tackling idle conveyors and inefficient motors. One such energy audit was conducted for a unit primarily catering to BHEL job works. The electrical section of the unit underwent audit pursued by consultants and facilitated by the TREC-STEP. In the two days of study the recommendations were to install three welding machine-energy savers (saving 2800 units/year), viz about Rs 15,000 in terms of power cost, at an investment of Rs 45,000. The break-even period is less than three months. Installation of appropriate equipment could save on power by 1500 units (Rs 8100 per annum) at an investment of Rs 2500. In total about 4300 units/annum or about Rs 23,000 per annum could be saved at an investment of Rs 47,500 (USD1100), the payback period being about three years. Implementation in one unit encouraged

adoption of recommendations by others. Direct mailers by TREC-STEP and circulars from BHELSSIA served as an instrument for such dissemination.

The cluster enterprises also evolved small informal networks to pursue cost reduction. A 'BHELSSIA transport consortium' was created to curb rising transportation charges by transporters. Each firm used to send representatives to BHEL with vehicles to collect inputs and also deliver them back. The transport consortium worked out an optimum transportation matrix for collection of raw material from BHEL and delivery of finished goods to BHEL. The total number of vehicles used was also reduced from 90 to 40 by cluster SMEs. Manpower rationalisation was also made possible. Moreover, transporters were pressing for a rise in charges when BHELSSIA negotiated a reduction in the rate of about 20 per cent, from about Rs 140 per tonne to Rs 100 per tonne.

Quality upgradation for new markets

Certification under ISO 9001:2000 related initiatives were launched by TREC-STEP jointly with BHELSSIA and the quality department of BHEL. While this prepared the job working units to become quality producers and search for independent job work, it also helped reduce BHEL's investment in terms of time and money on the inspection front and also prompted exploring on-site fabrication possibilities. A quality manual template was circulated amongst BHELSSIA members. With BHEL encouraging them, BHELSSIA negotiated with a few BDS providers. BHEL could reduce inspection costs of material received from vendors if they are certified. Further, upgradation of vendors was part of BHEL's Total Quality Management (TQM) drive. Common negotiation, the option of group training and the offer of a large number of clients, reduced consultancy fee to Rs 20,000 per enterprise from the usual Rs 45,000.

Increasing scope for new market

A 'BHELSSIA product cluster' was also initiated to pursue various initiatives with regard to exploring new markets and products. As a means of resolving logistical constraints affecting the scope for reaching out to markets in far away regions in India, BHELSSIA targeted the development of new markets and process industries. Further, access to 'volume' customers was made possible by initiatives such as common negotiation and sale to the Koodamkulam power project. Exclusive reliance on BHEL is also being progressively reduced. Market risk reducing options have been demonstrated by cluster enterprises.

Again this drive to independence from BHEL (both for product designs and order) needed to be addressed by developing own design capabilities. BHEL and also medium-sized enterprises in the cluster have their own facilities but not smaller units in the cluster. Hence, about 40 enterprises pooled in about Rs 15,000 each to establish basic design facilities in the cluster. Equipment and software had been installed but this is currently being used largely by a medium-sized enterprise. Nevertheless, in-plant training of a year's duration is being offered by BHEL to a batch of 50 students. This pool is to be available to work with (senior) private BDS providers in the cluster, utilise design centre facilities and help enterprises develop and offer design support to customers.

Welders training interventions are being pursued at the Government Polytechnic with faculty support from the WRI. DST is supporting the training of about 300 welders and BHELSSIA contributes to about 50 per cent of the expenditure. WRI services for upgrading skills of welders on-the-job are also being availed of.

Interventions by stakeholders on developing cluster infrastructure

BIDASS, that had been commonly sourcing and supplying welding materials to cluster enterprises, progressed to establishing an oxygen plant so as to ensure uninterrupted oxygen supply cylinders to firms at reasonable prices. BHELSSIA and TIDITSSIA are now considering filling up other infrastructural gaps by way of quality roads in the Thuvakudi estate and a developed design centre amongst others. A proposal seeking support under the Industrial Infrastructure Upgradation Scheme (IIUS) of the Department for Industrial Policy and

Promotion (DIPP), is now being finalised.

Consolidated Results

Firm level

• The number of cluster enterprises and their turnover in 2005 stands at 300 and at about Rs. 600 crores (USD 136 million) . The turnover has doubled over the intervention period - largely propelled by BHEL job works. Employment levels in the cluster today stands at about 15,000. In 2002, export turnover is believed by industry representatives to have been negligible, while by 2005 the same is estimated to be at about Rs 20 crores (USD 4.5 million). This turnover was largely contributed by two medium-sized companies.

• Over 64 enterprises have been certified under ISO 9001 over the intervention period. Enterprise savings have been to the tune of about Rs.1.5 lakhs (US $ 3400) per annum or more. Certification is on in several more enterprises.

• About 36 enterprises operate the transport cluster. Savings to the tune of about Rs. one lakh per annum for enterprises is envisaged. Raw material is commonly collected from BHEL and finished goods similarly delivered.

• The ties with the Koodamkulam Atomic power plant for bulk orders have already generated orders worth about Rs 2 crores (USD 4.5 million)

• Another Rs 5 crores worth of orders is expected.

• About 300 inverters have been installed resulting in energy saving of several crore rupees per annum for cluster enterprises.

• As was envisaged by stakeholders and UNIDO in the second year of intervention, industry progressively assumed greater responsibility for intervention. TREC-STEP transformed its responsibilities to BHELSSIA in order to play a supportive rather than a lead role. The activities slated and pursued since have included skill upgradation programmes (welding, fitting, grinding, painting) amongst others. A portal on cluster enterprises is also on the anvil.

Cluster level

• Own designing capabilities are being developed by enterprises. A trained pool of 50 persons will soon be available for cluster enterprises. The design centre established independently by about 40 enterprises remains at the infancy stage. Support for strengthening its infrastructure is now being progressively explored under different schemes of the DCSSI and also the DIPP.

• Capacity building of industrial associations has taken place in terms of independently pursuing QMS, design, transport, training/ITRD and product development initiatives.

• Strong institutional linkages have been established in terms of the Government polytechnic pursuing training initiatives in association with the WRI. A multi-pronged approach to develop the supply and also skills of the labour pool has resulted in a series of welder training programmes for fresh trainees. Capacity building of existing manpower is also being pursued.

Sustainability of Interventions & Future Directions

Most interventions were association-led. The association progressed towards common negotiation in terms of BDS provision (for QMS accreditation), transportation, and inverter purchase amongst others. The association has also been retaining a common manager. The sustainability of interventions is also evident from the fact that with regard to financing of inverters, NSIC had progressively withdrawn support for debt financing purchase due to changes in internal policy regarding financing. Nevertheless, cluster actors jointly approached other institutions such as the Technology Investment Capital Corporation (TIIC) and the installation spree of inverters has continued. BHELSSIA is progressively evolving 'governance' on various fronts in terms of commonly and efficiently resolving various threats, and exploiting opportunities.

Trichy is situated in district Tiruchirapalli in the State of Tamil Nadu. The initiative for development at the heavy engineering fabrication cluster of Trichy was started in the year 2002 by TREC - STEP under a project sponsored by DST. This article has been authored by Mr V Padmanand, SME Consultant, Chennai.