

# **CLUSTERING FOR PROGRESS**

**The Road Travelled and**

**The Way Ahead**

## Foreword

The role of policy in micro, small and medium enterprise (MSME) development is declining in certain ways and increasing in others. This is quite natural in the era of economic liberalisation, where re-allocation of resources, roles and responsibilities undergoes dynamic adjustments. In the new governance paradigm, private sector has a clearly emerging role in comprehending, planning, implementation and monitoring of development initiatives that have hitherto been the preserve of public domain. Indian policy has undergone a significant shift in many spheres of economic development over the last decade. Yet, the role of local communities and private sector representative bodies in taking up economic development initiatives, particularly in the MSME sector has not seen a major change. What does that mean in the context of enterprise development with omnibus set of objectives?

It would essentially mean that private sector undertakes to do all that it can, led by local community managed organisations. Industry associations, cooperatives, special purpose companies, self-help groups, voluntary associations and small consortiums of enterprises decide what is relevant for the growth of clusters of enterprises in the local area and contribute what they need to, in order to make it happen. On the other hand, policy and public institutions need to be provided with necessary flexibility, empowerment, decision-making capability at the lower levels and enter into new forms of not only public-private partnership but also public-public partnerships. When small enterprises deal with same, similar or complementary range of goods and services in the local area, the commonality of interests makes it more viable to respond to the challenges more effectively and efficiently. This is why clusters, whether industrial or micro-enterprises have found a great favour among policy makers, both in developed and developing economies. More than 50 countries have their cluster initiatives in place across the globe. India has probably more independent cluster initiatives than any other country in the world, thanks to the sudden spurt in interest since the year 2000.

With the blossoming interest on local economic development with the private sector led focus, policy makers are confronted with challenges that they may not have faced before. Understanding clusters, how they operate, finding ways to encourage private sector take up greater development role, keeping abreast with dynamically changing local priorities are all issues that confront the policy makers across the country that deal with local economic development. With cluster development initiatives already in place or in pipeline across more than a 1000 clusters in India, the pressure on human resources that need to locally coordinate, provide range of services, connect with value chains, build institutional capacities, link with public support and stimulate the various aspects of cluster development is increasing.

In the first chapter it provides an understanding of clusters, their typology, international understanding of clusters and the significance of clusters for the Indian economy. The second chapter captures the evolution of cluster initiatives, their institutional & geographical spread, comparative analysis and the policy support that is currently in place in India. The third chapter gives an insight into the range of methodologies that are in place by diverse institutions. Finally the last chapter is an attempt to understand the possible scenario on cluster initiatives in the next decade and the gap that one can perceive in the resource infrastructure. The resource gaps

are felt not so much in terms of the monetary requirements but the kind of human resources that are required to deal with local development aspects.

The policy document will be useful for the senior policy makers and perspective planners to draw their attention on the emerging gaps. It helps focus on what can and needs to be done to draw upon the local resources and build their capacities at different levels. This document is the first among the series of publications being brought out by the newly formed 'Foundation for MSME Clusters' set up by Entrepreneurship Development Institute of India with technical support drawn from United Nations Industrial Development Organisation. The Foundation finds its role in stimulating new thought in the area of local economic development, particularly with regard to clusters and provide an active forum to engage the policy makers and cluster practitioners not only in India but also other developing economies that aspire to build one of the foundations of their economies through community led growth. The document has been jointly written by Dr. Dinesh Awasthi and Mr. Mukesh Gulati, who have both been associated with different aspects of cluster development in India, over the last ten years.

This document we hope will help to stimulate the micro-economic policy debate and take up support measures to promote sustainable socio-economic growth.

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## Executive Summary

Existing clusters provide a ready framework to engage different stakeholders such as enterprises, their buyers, sub-contractors, raw material providers, machinery suppliers, business development service providers, local institutions and relevant regulatory authorities to evolve a local system that works for the possible betterment of the entire cluster. India has 388 documented industrial clusters, around 400 handloom clusters, approximately 3000 handicraft clusters and 2800 micro-enterprise clusters that contribute significantly to its economy, and provide employment to more than 20 million people. International experiences tell us that policy makers across the developing and developed economies have realised the need to focus on micro-economic aspects, while providing the necessary macro-economic policy framework that supports bottom-up, community led socio-economic development.

Within India, several institutions both at the national and state level have taken up cluster development as a means to undertake socio-economic development. Over a five year time frame, 20 independent institutions have taken up cluster development across more than 1000 clusters with very wide ranging objectives and methodologies. Considering the need for customisation of cluster development, the diverse range of initiatives not only need to be encouraged but also learnt from in terms of lessons for evolving best practices with potential for wider replicability.

Three diverse models of cluster development focusing on technology, consortia and local private sector led governance have emerged in the country over the last 15 years. There can be more ways to categorise cluster development initiatives distinguished by their objectives, implementing bodies and inputs. In the international context, clusters have also been fostered by linking them with global value chains, and attracting inward investments. However, the broad steps towards cluster development have centred around 6 heads i.e. cluster selection, diagnosis, engagement of cluster actors by trust building steps, action plan preparation, implementation and monitoring cum evaluation.

Considering a great deal of emerging interest among more institutions, not only in India but also across developing and developed economies, it is believed that over the next decade cluster development initiatives will cover all the existing manufacturing clusters in the country. Moreover, service clusters will be documented and policy makers will take steps to understand the special ways to undertake measures in those clusters as well. These steps will however face considerable challenges due to limitation of such human resources that can help to coordinate, connect and link clusters not only within but also outside. Some of the initiatives that the policy will have to deal with is not just allocating of more resources on cluster initiatives, but also to build resource infrastructure in the country that understands the issues of sustainable local economic development, and can benchmark the best practices, share knowledge and create new ways to deal with the ever increasing challenges of local empowerment and global connect.

## **Glossary of Terms**

AP: Andhra Pradesh  
APITCO: Andhra Pradesh Industrial & Technical Consultancy Organisation  
ARI: Agro and Rural Industries  
Art: Artisan  
BPO: Business Process Outsourcing  
CGCRI: Central Glass and Ceramic Research Institute  
CI: Cluster initiative  
DC (HC) Development Commissioner (Handicraft)  
DC (HL) Development Commissioner (Hand Loom)  
DCSSI: Development Commissioner Small Scale Industries  
DIPP: Department of Industrial Policy and Promotion  
DIPP: Department of Industrial Policy and Promotion  
DST-NSTEDB: Department of Science and Technology – National Science and  
Technology Entrepreneurship Development Board  
GCCl: Global Corporate Citizenship Initiative  
HC: Handicraft  
HL: Hand Loom  
IIRD: Indian Institute of Rural Development  
IIUS: Industrial Infrastructure Up-gradation Scheme  
IL&FS: Infrastructure Lease and Finance Company  
ILO: International Labour Organisation  
IMTMA: Indian Machine Tool Manufacturers Association  
IT: Information Technology  
KVIC: Khadi & Village Industries Commission  
MITCON: Maharashtra Industrial & Technical Consultants  
Mkt: Marketing  
MP: Madhya Pradesh  
SME: Micro and Small Enterprises  
MSME: Micro Small and Medium Enterprise  
NABARD: National Bank for Agriculture and Rural Development  
NIFT: National Institute of Fashion Technology  
NISLET: National Institute of Small Industry Extension and Training  
NSIC: National Small Industries Corporation  
P: Policy  
R&D: Research and Development  
R: Research  
RUDA: Rural Development Agency  
S/W: Software  
SBI: State Bank of India  
SIDBI: Small Industries Development Bank of India  
SSI: Small Scale Industries  
TC: Textile Committee  
UNIDO: United Nations Industrial Development Organisation  
UNIDO-CDP: United Nations Industrial Development Organisation-Cluster  
Development Project

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## Chapter 1: Introduction

### 1.1 Background

Clustering of enterprises as a phenomenon is found to be existing both in economically developed and developing countries. Geographical proximity among each other gives rise to specialized labour, nurtures subsidiary industries, stimulates innovative activity, enables technological spill-over and makes the economic and non-economic inter-firm linkages feasible. Such a form of industrial organisation is also known as industrial clusters or industrial districts. According to the well-known business economist Michael Porter, an industrial cluster is a set of industries related through buyer-supplier relationships, or by common technologies, common buyers or distribution channels, or common labour pools. Such a relationship leads to improved efficiency and international competitiveness of the micro, small and medium enterprises (MSMEs) on account of the economies of scale and scope.

In 1970, Alfred Marshall used the expression industrial districts while remarking that industries tend to concentrate in specific geographical areas. Marshall mentioned straw plaiting in Bedfordshire or cutlery in Sheffield. Industrial districts are an instance of the dictum that the whole is more than the sum of its parts. A cluster of competing and complementary firms, local institutions and shared values has more to offer on the international arena than the very same firms taken in isolation. Clustering, thus leads to collective efficiency gains, which individual firms can hardly achieve.

The international interest in the emergence and growth of SME clusters in 1990s has been fuelled by the success stories of Italian industrial clusters or what has come to be called as the 'Third Italy'. The concept of the Third Italy came up in the late 1970s. It referred to the north-eastern and central Italy, which witnessed fast growth, compared to the north-western (First Italy) and the poor southern part of the country (Second Italy).

Industrial clusters are quite popular in first world as well as third world countries. A Nadvi and Schmitz (1994) have reviewed industrial clusters in third-world countries and have highlighted that industrial clusters are thriving in developing countries. However, research on the subject in developing countries was prompted by studies on industrial clusters in developed countries. According to Tandler and Schmitz, clusters are viewed as an important factor for providing sustenance to micro, small & medium enterprises (MSMEs), which make up the industrial base of a large number of developing economies.

Despite the availability of information on industrial clusters in first world countries, empirical evidence and understanding pertaining to SME clusters in developing countries is only beginning to emerge now. Nadvi and Schmitz studied many clusters in developed and developing economies and have concluded that there is surplus labour in developing economies, which "induces competition based on low wages rather than innovation and quality improvement".

## 1.2 What are clusters?

Broadly defined, an industrial cluster is a loose, geographically bounded collection of similar and/or related firms that together create competitive advantages for member firms and the local economy.

Policy makers, researchers, authors and experts from diverse areas have evinced interest in small and medium enterprises (SMEs) in the wake of its success in the Third Italy.

Rosenfield defined clusters as *“geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications and dialogue that share specialized infrastructure, labour markets and services, and that are faced with common opportunities and threats”*.

United Nations Industrial Development Organisation (UNIDO) defines cluster as: “A sectoral and geographical concentration of enterprises faced with common opportunities and threats which: a) gives rise to external economies (e.g., specialised suppliers of raw materials, components and machinery; sector specific skills, etc; b) favours the emergence of specialised infrastructures and services; and c) enables cooperation among public and private local institutions to promote local production, innovation and collective learning” One of the predominant elements of clusters is the presence of micro enterprises. SMEs engaged in manufacturing related products get together and give rise to various kinds of economic and non-economic linkages.

A typical example of a cluster may be of knitwear and garment industry in a specific geographic region and includes knitting firms, cloth finishing, dyeing and printing firms, garment producers, merchant buyers and exporters, and producers of specialised inputs, such as thread, buttons, zips, etc. The rate of specialisation and the level of development may vary from cluster to cluster. A cluster may comprise firms that merely compete with each other.

Clusters do not recognise man-made boundaries, though they are geographically bound. Clusters need some basic components to operate. They include basic infrastructure, vertical depth, supply chain, and the presence of necessary public and private service providers. The soft components include levels and avenues of interactions and cooperative behaviour among cluster actors to successfully meet challenges and exploit opportunities, without adversely affecting fair competition; and, presence of an autonomous governance mechanism among them to achieve the same. It also includes government policies that encourage fair competition, investments and innovations.

Some of the key characteristics of industrial clusters are geographical proximity, sectoral specialisation, close inter-firm collaboration, inter-firm competition, social embedding, common infrastructure, common opportunities and threats, and state support. A large number of small and medium sized firms have to be physically present in the same geographical area so that they share infrastructure related advantages or disadvantages or opportunities or threats on an equal basis and they should all specialise in a specific sector, and vertical integration is must within a firm. Besides, these firms generally have a distinct socio-cultural identity.

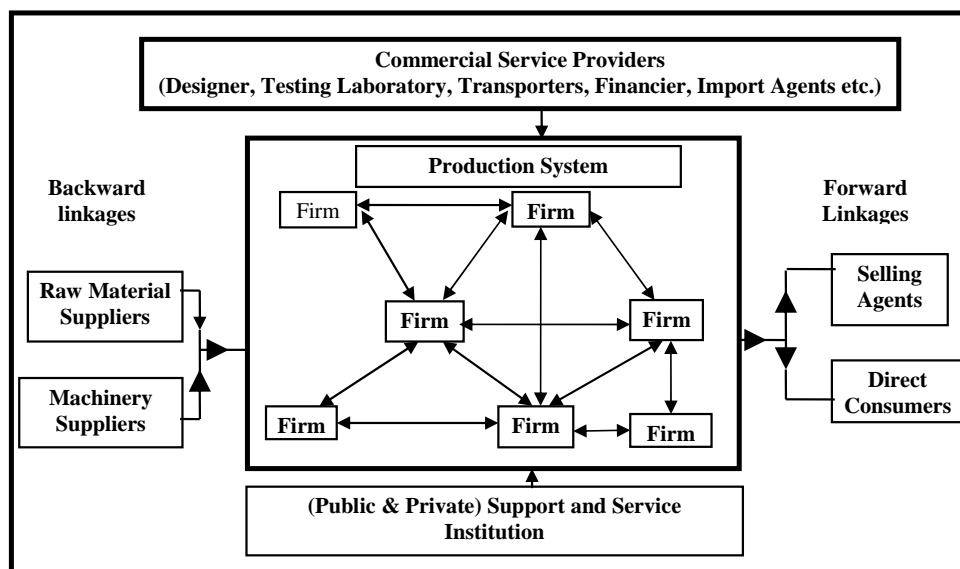
All enterprise clusters can be broadly classified into three categories in a developing country context and more specifically in the Indian context: industrial, artisanal and services.

**Broad classification of clusters:**

Industrial Clusters	Artisan Clusters	Services Clusters
Traditional SME Clusters (including power looms, but excluding Ancillaries and exporting clusters)	Handicraft clusters	Service clusters (e.g. Health, Information technology, Business Process Outsourcing, Software, Repair, Recycling, Tourism, Education, logistics, business & financial services, research & development services etc.)
Ancillary SME Clusters	Handloom clusters	
Export SME clusters	Tiny SSI clusters	

**A TYPICAL CLUSTER MAP**

POLICY ENVIRONMENT Formatted: Font: (Default) Arial



INTERNATIONAL ENVIRONMENT

**1.3 Why are clusters important?**

Clusters arise because they increase the productivity with which companies can compete. Cluster development initiatives are an important new direction in economic policy, building on earlier efforts in macroeconomic stabilization, privatization, opening up of markets, promoting investments and taking other monetary & regulatory measures.

Talking about economic geography in an era of globalisation is a paradox. The world is a global village and changes brought about by technology and competition has diminished the traditional role of geography. Yet, clusters remain as a main feature of a majority of national, regional, and state level economy, not only in the economically developing countries but also in the first-world nations. Clusters give an insight about the role of location in straightening competitive advantage.

New influences of clusters on competition have taken on a growing importance, in an increasingly complex, knowledge-based and rapidly changing economy. They represent a new way of thinking and necessitate new roles for companies, government, and other institutions in enhancing competitiveness. The biggest factor that has helped to demolish the geographical boundaries is the power of information technology and internet. Yet most of the software and information technology companies are themselves clustered around tight geographical boundaries, whether in Silicon Valley in Seattle of USA or Bangalore in India.

Taking yet another example, international logistic management companies have been responsible for explosion of production processes across several nations in the area of textiles, leather garments and shoes where different parts of the production process is carried out in different countries, coordinated by the logistic companies. Yet logistic management companies in Asia are clustered in Singapore and Hong Kong cities. There are more than 300,000 logistic companies in the city of Hong Kong alone as per information available in 2005. In the manufacturing processes among traditional industries as well, clusters continue to play a very significant role in taking up specialised roles in the value chain.

Better accessibility is one of the foremost advantages for firms operating within clusters. Skilled and experienced labour is spatially concentrated. Besides, raw material, machinery, equipment, designs, advisory and business development services are easily accessible. Both hardware and software components of business are easily accessible. All these advantages make clusters attractive business destinations. Clusters have economies of scale, which further leads to higher collective efficiency compared to enterprises that operate in isolation.

Clusters encourage healthy competition among firms functioning within a particular cluster. It helps create an environment for sustenance and growth through proper policy interventions. These mechanisms spur innovations, make the cluster dynamically responsive to market needs and formally or informally share such vital information that is crucial to keep clusters increasingly competitive. Clusters enable firms to take collective risk, develop product niches, access remote and international markets, upgrade skills and improve overall productivity.

In India, the numbers available according to one estimate suggest that clusters account for 77 % units, about 72 % employment, 61 % investment, 59 % output and about 76 % exports of small scale industries (SSI). Micro enterprises-employing up to five persons

or with a capital investment up to Rs 500,000 (US \$ 12,000) in clusters account for over 91 % employment and over 96 % of investment.

## **1.4 What international experience tells us?**

Geographic, cultural, and institutional proximity provides companies with special access, closer relationships, better information, powerful incentives, and other advantages that are difficult to tap from a distance. The more complex, knowledge-based, integrated and dynamic the world economy becomes, the more this is becoming paradoxically true. Competitive advantage lies increasingly in local things-knowledge, relationships, and motivation-that distant rivals cannot easily replicate. Therefore, cluster and clustering of small firms are becoming a much sought after tool in MSME development in both developing and developed economies.

### **Clusters in the developed economies:**

Clusters are a prominent feature on the landscape of every advanced economy, and cluster formation is an essential ingredient of economic development. Clusters offer a new way to think about economies and economic development; new roles for business, government and institutions; and new ways to structure the business-government or business-institution relationships. Over the years, hundreds of cluster initiatives have sprung up in many parts of the world.

The world's economic map is dotted with clusters. The most famous examples from developed economies are found in the Silicon Valley and Hollywood in the US. Clusters affect competition in three broad ways: first, by increasing the productivity of companies based in the area; second, by driving the direction and pace of innovation; and third, by stimulating the formation of new businesses within the cluster.

Interest in clusters has grown because they are a leverage point for action, not just a description of economic reality. European, Australian and American policy makers in particular have turned to cluster policy not because of a shift in priorities from macro to microeconomic issues, but to increasingly focus on the hitherto neglected aspects of local issues. Many European countries have made impressive progress in the monetary and fiscal policy areas, but their macro-economic progress was not adequate to ensure higher prosperity or continued economic growth. Targeted microeconomic efforts, often in a new partnership with the private sector, universities, and other institutions, are required to translate the economic potential into real productive improvements at the enterprise level. Clusters are a useful way to launch such effective action initiatives.

Private sector leaders are increasingly generating interest in the concept of clusters. The importance of location has gone up. In a global economy, a firm's location is one of the few sources of differentiation that competitors cannot easily copy. Firms are looking to understand the opportunities that clusters can provide, and many executives see their active participation in efforts to strengthen their home clusters as a new and important part of their role.

The U.S and European firms face extreme pressure to compete on the lines of innovation, rather than on productivity alone. Clusters provide a fertile ground for these innovations because they are well aligned with modern innovation processes.

Clusters are prevalent in both economically developed and developing economies. Krugman described how a narrow belt in the US Northeast and the eastern part of the Midwest dominated US manufacturing up until the mid-50s, with a 64% share of manufacturing employment. Schmitz described how the Brazilian shoe cluster, mostly concentrated in the Sinos Valley, was able to raise its share of world leather shoe exports from 0.5 to 12.3% during the period 1970-90. Nadvi and Halder described how Sialkot's stainless steel cluster in Pakistan, together with Tuttlingen in Germany, dominate the world surgical instrument market.

Other studies described how clusters dominated such industries as ceramics in Seto, Japan; precision engineering and watch making in Jura Arc, Switzerland; wind musical instruments in Elkhart, Indiana; fashion goods in northeast-central Italy. Porter listed some 30 clusters in the US (e.g., the auto cluster in Detroit, insurance in Hartford, and aircraft equipment and design in Seattle), and another 30 export-oriented clusters in Portugal (ranging from ornamental stones in Evora to horticulture in Faro).

### **Clusters in developing economies:**

Cluster development is an important means for a developing country's economic policies, whether aimed at technological improvement, poverty alleviation or employment generation. The new reality of the internationalization of economically developed country clusters poses an opportunity for clusters in regions of developing countries to link with them, and through them with international supply chains. This phenomenon is most visible in the areas of consumer electronics and traditional goods industries, especially in China and other South East Asian countries.

Over the last 15 years or so, there has been a significant interest about how the Emilia Romagna region, and others in the Third Italy have gained global competitiveness through its SMEs. A widespread opinion is that this feat is significantly due to a set of regional SME promotion policies aimed at strengthening local institutions, which help to articulate private and government efforts at a local level. Often these partnerships are aimed at the strengthening of clusters based enterprises. Italy has specific laws to recognise clusters, both nationally and regionally to enable specific policy measures depending on the typology of clusters.

The recent economic and social crises in several developing countries, particularly in Latin America, has also called into question the implementation of economic policies that tend towards macroeconomic issues without being accompanied by policies that promote SME competitiveness-especially managerial and technological innovation.

Unfortunately, in many developing countries and several of the economically developed countries as well, self-cooperation among enterprises and institutions within clusters is hard to find. Very low levels of trust, latent conflicts and absence of suitable discussion forums are the unequivocal markers of an under-performing cluster. Reverting under-performance may require prolonged efforts (sensitisation, trust building, conflict resolution, etc.) that the private sector will not usually undertake without some external facilitation and support. The external assistance of a development institution, based on public-private sector partnership, can therefore, greatly facilitate in the organisation and development of underachieving SME clusters.

Since 1993, UNIDO has been trying to assist the public and the private sector to co-operate in the implementation of programmes to support MSME clusters that have been achieving far less than its potential. The programme draws lessons from the experience of successful clusters and UNIDO's technical co-operation projects in many developing countries such as India, Pakistan, Thailand, Honduras, Jamaica, Mexico, Nicaragua, Morocco, Nigeria, Senegal, Tunisia and Zimbabwe.

The Indian small-scale industry sector contributes 40% to the country's industrial output and 35% to direct manufactured exports. Clusters that have been around for decades and centuries play an important role within the MSME sector. According to a UNIDO survey, there are 388 SME clusters and approximately 6,000 rural and artisan based clusters in India. These clusters together are estimated to account for 60% of the manufactured exports from India. They also contribute significantly in creating employment.

Some of the large clusters account for 90 % of India's total production output, in select product categories such as Ludhiana's knitwear cluster. The clusters of Surat and Mumbai account for almost the entire export of gems and jewellery. The clusters of Chennai, Agra and Kolkata are synonymous with leather and leather products.

There are some clusters that are small in size, but so specialized that no other craftsmen could probably match their output quality. For example, Paithani sarees (an Indian women wear) are made only in the village bound cluster of Paithani in the western state of Maharashtra. But the downside of such clusters is that they are declining in terms of number of enterprises due to the changing consumer demands and in that factor, low level of market & technological adaptability of the cluster enterprises. Some of the clusters located in India are the metal-working and textile industries of Ludhiana, the cotton knitwear cluster of Tirupur, the software cluster of Bangalore and the footwear cluster of Agra.

Despite several researches, knowledge of clusters, how they develop and what makes them successful or fail or what leads them to follow a particular trajectory of growth remains largely unknown. Information on clusters in developing economies remains rather superficial. For example, growth of clusters in developing economies is diverse. Clusters in Latin America and Asia have greater depth, while African clusters are quite weak as per different characteristics such as institutional support and inter-firm division of labour.

The goal of cluster development is to help enterprises to specialise, attract missing suppliers and buyers in the value chain, spread innovative ideas and build local capacities to innovate, and most importantly, engender co-operative action.

The cluster experiments in most other parts of the world draw their inspiration from Italy. The success of Italy in the area of industrial organisation and initiatives for local economic development under the aegis of local governments has been well documented. The effective functioning of a cluster and its ability to provide significant positive benefits to its participants depend on its economic relationship with the markets that the clusters also connect themselves to. In a global economy, this needs to be explained in terms of global value chains, which helps to bring together dispersed actors into networks of production, trade, finance and other activities that turn raw materials into furnished goods and services for end-markets. Such networks

are organised by lead firms, including global buyers and retailers, who exercise power over the chain, coordinating activities, and directly influencing the potential for local upgrading. In such an environment, an exercise of mapping local and external ties alone will provide a picture of the net distributional effects. This can be extended to show how such ties affect the workers, their families and the wider community.

Besides competitiveness, clusters have also drawn attention for their possible implications on poverty. Some of the studies demonstrate a clear link between clusters and poverty reduction evident in incipient rural and urban clusters that directly generate income for the poor, especially unskilled women and migrants. Moreover the study also shows that through agglomeration benefits and joint action, clustering can strengthen pro-poor impacts by enhancing the well-being of small producers and workers, reducing their vulnerability to external shocks. Social capital can further promote this and provide a basis for local social protection, especially for the most vulnerable households.

In a span of a little over two and a half decades, the Sinos Valley shoe cluster of Brazil transformed itself from a cluster of small enterprises producing mainly for domestic market to a combination of 500 small and medium and a handful of large exporters, exporting 70% of their output. Brazil's world share of leather shoes increased from 0.5% to 12.3% during this period by the mid-nineties. Interestingly, the shoe manufacturers were not alone in this journey and were backed by 1,000 suppliers of specialized inputs and services providers including tanneries, specializing in the finishing stages. The full range of components market, machinery producers and transport companies also contributed significantly in the growth. The various producers' associations and organizers of international trade fairs helped the small firms connect to the global markets. This 'easy phase' of success was then followed by some non-resulting tough negotiations as far as horizontal cooperation is concerned. In the meantime, alternate cheaper products gained entry into the US markets. The Sinos Valley shoe cluster, as a result faced major cuts in its export markets, the United States of America.

The surgical instruments cluster of Sialkot, Pakistan also excelled with 300 manufacturers accounting for about 20% of world export by the year 1994. They were the second largest exporter of surgical instruments in the world, next only to Germany. These manufacturers are also backed by 1,500 small enterprises deeply specializing in typical areas of the production process. Besides, there are 200 input suppliers and 800 units providing various types of services. Interestingly, the Sialkot cluster also faced a tough phase due to imposition of better quality standards by the US in the early nineties. US markets then accounted for 60% of the cluster's total exports. Horizontal cooperation was visible in both the clusters, but while Sialkot experienced relative 'collective success', there was 'collective failure' at the horizontal level in the Sinos Valley, in the later stages. Also, the Sialkot crisis was the result of lack of BDS whose output could be visualized and then be easily divided equally among the firms.

The Global Corporate Citizenship Initiative (GCCCI) conducted in 2003 identified more than 500 cluster initiatives around the world, primarily in Europe, North America, New Zealand and Australia. About 50% of the total clusters completed the online survey representing a broad range of technology areas. For the survey, the GCCCI had drawn up a new performance model with four components. The survey revealed that every Cluster Initiative (CI) is unique and its various models can be seen both in

the developed as well as developing economies. The latter however tend to focus on technology intensive areas such as Information Technology (IT), medical devices, production technology, communication equipment, bio-pharmaceuticals and automotive industries. Cluster initiatives are found in environments where science and innovation promotion is an integral part of government policy and where local governments play a strategic role.

The initiatives are undertaken in clusters that have national importance, besides regional importance. The objectives of these initiatives vary. While some of the objectives are pursued by a majority of cluster initiatives, other objects might be taken up by just a few of them. Almost 85% of those surveyed agree that the initiatives help improve the competitiveness of the cluster and 89% have helped their cluster grow. A significant high proportion of 81% of the surveyed initiatives met with their goals, while only 4% have been disappointing and did not lead to much change. The national, social, political, economic environment within which these initiatives are executed holds a lot of importance for their performance. For a Cluster initiative to succeed, a high level of enterprise trust in government initiatives is a must. Also having influential local government decision makers is directly related to the good performance of those initiatives. On the other hand, the negative aspect is that the government policy and other setting factors may have adverse influence on meeting the objectives.

## **1.5 Clusters in India, their typology and their economic significance**

Clusters have historically played a significant role in sustaining economic growth in India. According to the available estimates, 388 SME and 6,000 micro & artisan enterprise clusters exist in India. Besides contributing to significantly large employment, these clusters also contribute up to 60 % of India's manufactured exports. As per the typology given before, clusters are classified as industrial (SMEs), micro-enterprise, handlooms, handicrafts and service oriented. However, while some estimates have recently been worked out for the manufacturing type of clusters, no work has been done to estimate the service oriented clusters that are beginning to gain a great degree of importance in the Indian economy.

For the count of SME clusters, there are two different estimates from two sources using different parameters. UNIDO Cluster Development Programme has estimated the number of SME clusters with support drawn from the various district level institutions, both public and private. A concentration of more than 100 registered small-scale units (excluding household/micro units) manufacturing same or similar products make up a cluster as per the parameters used to collect the information. However, a few clusters with less than 100 units, but more than 50 units, but at least an aggregate annual turnover of Rs 10 crore (\$ 2.2 million) have also been included in the list of clusters. Service sector and handicraft/artisan sector have been ruled out under this. For the purpose of data compilation, plantation and quarrying are also excluded.

The second estimate is drawn up based on the national census on small industries undertaken by the national Ministry of Small Scale Industry. As per the census there are 2,042 urban and rural industrial clusters, as per the definition of small-scale industry that includes all enterprises with a capital investment of Rs. 1 crore (US \$

220,000 approx) and below. As per these parameters, those clusters have 1.5 million enterprises and employ 4.4 million persons and generate an output of Rs 422 billion (US \$ 1 billion).

On the other hand, the corresponding figures estimated by UNIDO are 388 clusters, 490,000 enterprises, employing 7.5 million persons and generating an estimated output of Rs. 1600 billion (US 3.8 billion). However, it may be noted that the information base of UNIDO is informal data based on industry estimates as provided by multiple sources viz. the local industry associations, state government bodies and other quasi public institutions engaged in industrial development. These estimates differ from the census based cluster estimates in four aspects. First of all they include medium scale enterprises with a capital investment range of Rs. 1-10 crores not included in the census. Second, the estimates include service related enterprises as well that are not covered under the census as per the definition of Small Scale Industry. Third, these estimates also tend to capture the parallel and unaccounted economy in the clusters that is not generally reported in the official census. Fourth, the UNIDO estimates tend to cover a cluster of not only the product but also its related enterprises such as machinery suppliers, related chemical manufacturers & suppliers that would be left out in the census. Currently it is the UNIDO estimates of SME clusters that are being used despite its range of limitations of data and data collection methodology.

For the micro-enterprise clusters, the 'Entrepreneurship Development Institute of India' (EDII) has tried to figure out the number using the national census of small scale industry. As per its estimates, 1,265 micro enterprise clusters operate in the urban areas and 1,566 micro-enterprise clusters in the rural areas. Besides, there are known to 2,960 handicraft clusters and 372 handloom clusters in the country. The below given table provides different estimates of the SME Clusters.

#### **SME (Industrial) Clusters in India**

<b>VARIABLES</b>	<b>DC (SSI)*</b>	<b>UNIDO**</b>
No. of Clusters	2042	388
No. of Units	1,535,357	490,000
Employment (No.)	4,392,256	7,500,000
Output (Rs. mn)	421,690.04	1,570,000.00

The names of the clusters, their relative size, estimated employment generated, regional pattern and more information about them is available on the web [www.smeclusters.org](http://www.smeclusters.org) for further reference.

About 2960 handicraft clusters operate in India, which cover 18 broad product groups. In the case of handicraft, heaviest concentration of clusters is in the textile sector with 709 clusters; followed by basketry, mat weaving and cane articles 406; woodwork 358; metal ware 317; earthenware 252; jewellery 155; leather 128; folk painting 105; stoneware 94; toys and dolls 91. The product composition overlaps in some of the 372 handloom clusters as most of these clusters produce more than one product. However, in all, the handloom clusters broadly manufacture 23 specific woven products like *dhoti*, *saris*, *durries*(*floor mattings*), *gamchhas* (*shoulder cover*), bed sheets, bed covers, pillow covers, napkins, table mats, curtains, etc.

\* Government of India (2004), Report on Third Census of Small Scale Industries, *Development Commissioner Small Scale Industries*

\*\* UNIDO Cluster Development Project, India, New Delhi



## **Chapter 2: Introduction of Cluster Development Interventions (CDIs) in India**

### **2.1 Initiation:**

Ever since the evolution of small enterprise development in the 1954, there have been specific measures to provide assistance in the form of common facilities in several clusters. The current national ministry of Small Scale Industry (SSI) has by itself and with assistance drawn from a range of international agencies set up tool rooms, prototype development centres, testing centres and industry specific research & development centres. Moreover, the government has also instituted liberal funding schemes in the recent past to augment the industry associations undertake the setting up and managing of similar facilities in their respective clusters.

Similar initiatives have also been taken up in the country by the union Ministry of Textiles, responsible for handloom and handicrafts. Moreover, Khadi & Village Industries Commission at the central level and Khadi & Village Industries Boards at the state level have also been assisting the growth of rural industries by way of measures that not only helped setting up local industry specific infrastructure facilities but also assisted formation of cooperatives by way of providing grants and soft loans.

Instances of state support for coir and jute are also available. But, targeting growth of enterprises through a more integrated cluster-based development, that begins with analysing the various gaps through a demand oriented market system and focus on private sector led economic value chain is a more recent phenomenon. State Bank of India (SBI) took up the first cluster-based initiatives in 1989 by way of focusing technology development in select clusters. This was followed by the Small Industries Development Bank of India (SIDBI) initiatives on technology centric cluster development a little later in 1991.

UNIDO then brought in a more comprehensive approach to cluster development in 1997, when it highlighted the importance of inter-relationship among the several cluster actors and the need to take specific measures that would improve the degree of mutual inter-relationship as also develop individual competencies of intermediary institutions. This approach took the cluster development focus beyond setting up of publicly sponsored common facilities and technology centric support initiatives. The real impetus for cluster-based initiatives in the country came after the year 2000 with a comprehensive cluster based development methodology available after 1997.

### **2.2 Action**

In the year 1997, the union ministry decided to focus on clusters as a future strategy to promote SMEs. The Government of India felt that clusters would be able to lower transaction costs, help realise informational economies and lower the costs of credit surveillance. Abid Hussain Committee formed under the Ministry of SSI, Government of India agreed that that "...this is a very practical approach to SME promotion in India since there already exist a large range of small scale industry clusters across the country..." An initial list of 138 industrial clusters prepared by the UNIDO in the year 1996 was annexed to the study to highlight the existence of clusters.

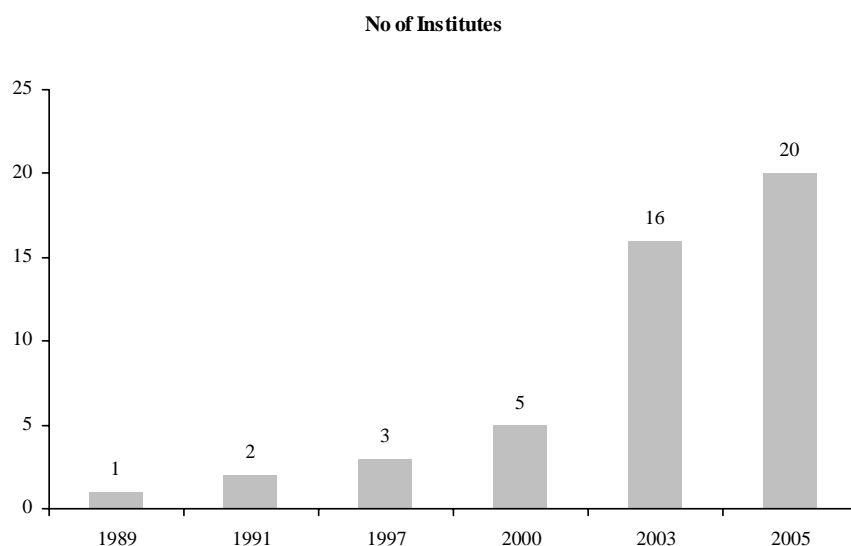
In 1997, UNIDO took up cluster development initiative in four clusters across the country. The Small Industries Development Organisation (SIDO) cluster-based initiative started in 1998 and the National Bank for Agriculture and Rural

Development (NABARD) interventions under National Programme for Rural Industrialisation (NPRI) started in 1999.

### 2.3 Spread

Soon after, cluster-based growth approach for small enterprises became popular with some of the state governments, institutions and even some of the NGOs as well. These include the state governments of Andhra Pradesh, Gujarat, Kerala and Madhya Pradesh. At the national level, select ministries and specialised institutions like the Department of Science and Technology (DST), Development Commissioner (handicrafts), Khadi and Village Industries Commission (KVIC), National Bank for Agriculture and Rural Development (NABARD), National Small Industries Commission (NSIC) and Textiles Committee are some of institutions that took up new initiatives. The growth of institutional involvement in clusters and the number of clusters taken up for development assistance appears in the following figures, respectively. The chart clearly reflects that during the years 2000-05, the number of institutions in the country funding main cluster initiatives has increased from 5 to 20.

### Institutions Undertaking Cluster Development Initiatives



1989: SBI

1991: SBI, SIDBI

1997: SBI, SIDBI & UNIDO

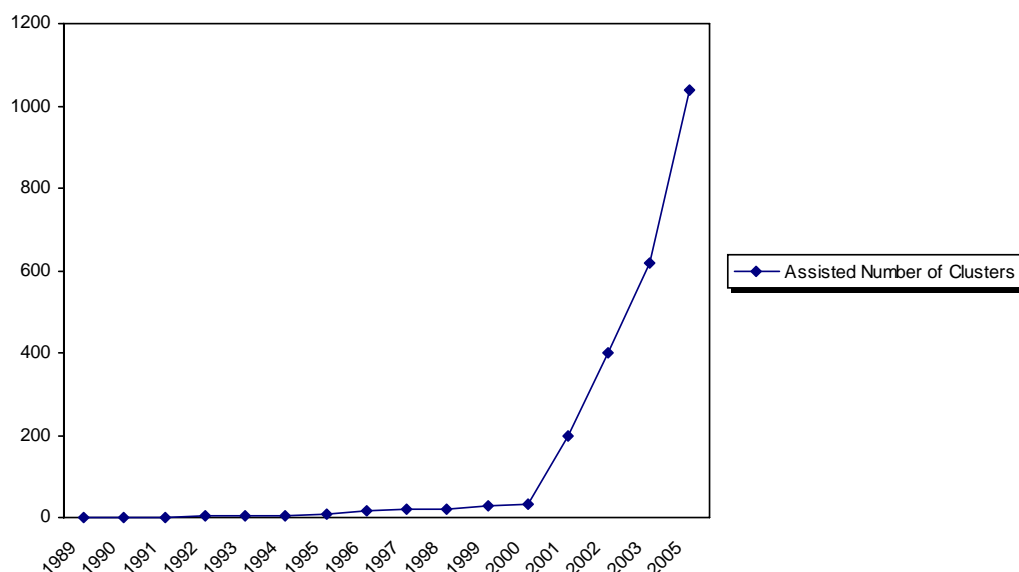
1998: SIDO

2000: SBI, SIDBI, UNIDO, GUJARAT & SIDO

2003: SBI, SIDBI, UNIDO, GUJARAT, SIDO, MP GOVT, AP GOVT, DST, TC, NSIC, NABARD, GDS, RCCI, KVIC, DC (HC) & Kerala

2005: SBI, SIDBI, UNIDO, GUJARAT, SIDO, MP GOVT, AP GOVT, DST, TC, NSIC, NABARD, GDS, RCCI, KVIC, DC (HC), Kerala, DC (HL), Orissa, ARI, DIPP, Wool Board

## Cumulative No of Clusters undertaken for Development



- 1989: SBI:2
- 1991: SBI: 2
- 1997: SBI: 7, SIDBI:8, UNIDO:4
- 2000: SBI:9, SIDBI:18 & UNIDO:7
- 2003: SBI:23, SIDBI:38, UNIDO:12
- GUJARAT:11, SIDO:51, MP GOVT:2, AP GOVT:2, DST:2, TC:25, NSIC:30, NABARD:46, GDS:2, RCCI:16, KVIC:66 & DC (H) 293
- No. of clusters with completed initiatives: 34 (SBI:9, SIDBI:18 & UNIDO:7)
- No. of clusters with initiatives in pipeline:63 (kerala:35, Govt of API:9 & NABARD:19)

Meanwhile, the level of awareness about the cluster-based growth was rising in different parts of the world. Liberalization highlighted the need for promotional policies and doing away with protectionist policies in India ever since 1991. Cluster-based growth started to be seen as a way of supporting small enterprises in the changing equations of the world economy. Thus, at the policy level, there was clear recognition of promoting joint initiatives by a group of firms in a cluster, although the choice of support issues and the routes taken for implementing those initiatives differed.

Initially, SBI, SIDBI, SIDO and Gujarat government's initiatives were based on technology up-gradation and infrastructure development but the scope widened thereafter. A few of these initiatives also focused on the services provided by these organisations in a cluster. For example the SBI and the NSIC initiatives focused on improved off-take of the services they offered. The execution of the various initiatives was undertaken through the technical agencies or private consultants.

The initiatives adopted by UNIDO and the SSI ministry were wider in their approach. UNIDO used the help of technical agencies and consultants to identify problems and helped in creating social capital in the cluster, which in turn empowered the cluster to face future challenges and opportunities. This approach rightly recognizes the

importance of networking with other associations and, creating social capital in the process.

#### **An illustration of the different institutional objectives on cluster initiatives in the country**

- State Bank of India: Strengthen its current portfolio of loanees
- Small Industries Development Bank of India: Build competitiveness with a thrust on technology up-gradation
- UNIDO: Assist policy formulation on clusters for local governance and build national capacities for cluster development
- NABARD: Achieve Multiple Objectives
- SIDO, Ministry of SSI, Govt. of India: Build competitiveness of clusters with integrated support beyond technology
- State Government of Gujarat: Make the clusters dynamic through technology development

### **2.4 An analysis of the Cluster Initiatives in progress in India**

An analysis of the different cluster initiatives in terms of parameters such as implementation channel, degree of fund leveraging, major areas of interventions and whether social capital building is a thrust area is given as under.

## An analysis of cluster development initiatives

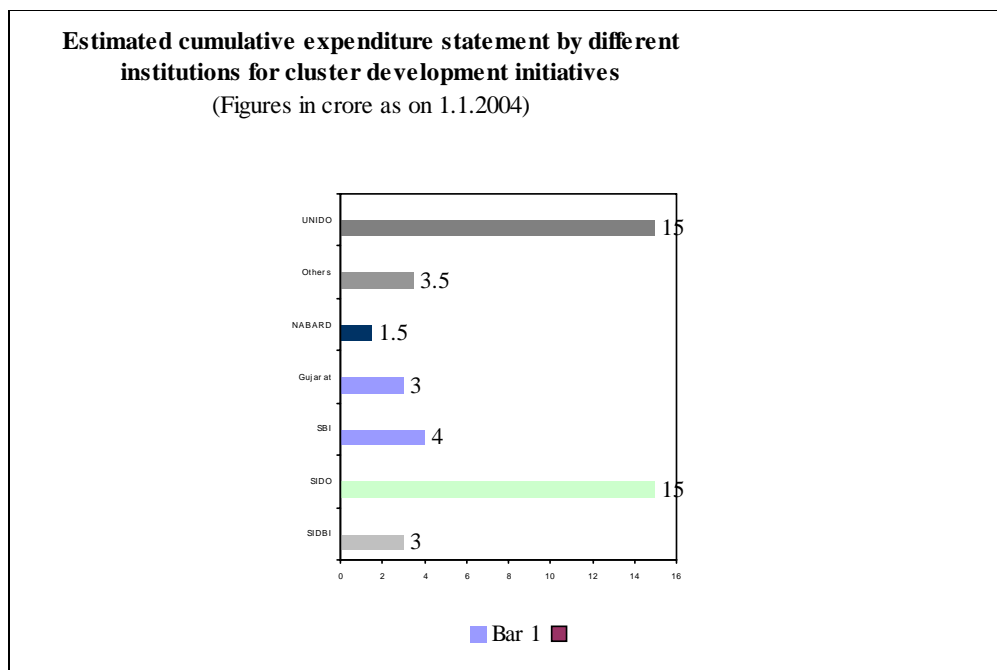
	Cluster Implementation		Whether Fund leveraging for cluster development undertaken with		Major areas of interventions				Is Social Capital Building a thrust area in cluster initiative?
	done by		Private > 20%	Public >20%	Credit	Technology	Employment	Infrastructure	
	Own employees	External Institutions	Private > 20%	Public >20%	Credit	Technology	Employment	Infrastructure	
AP		Yes	NA	NA					Yes
DC (HC)		Yes	NA	NA		Yes		Yes	Yes
Gujarat		Yes	NA	NA		Yes			
KVIC		Yes	NA	NA	Yes			Yes	Yes
MP	Yes		NA	NA					Yes
NABARD		Yes	NA	NA	Yes		Yes		
NSIC	Yes		NA	NA	Yes				
SBI	Yes		NA	NA	Yes	Yes			
SIDBI		Yes	NA	NA	Yes	Yes			
SIDO	Yes		NA	NA		Yes	Yes		Yes
Textiles Committee	Yes		Yes	Yes		Yes			Yes
UNIDO	Yes		Yes	Yes					Yes

**Note:** *There may be other thrust areas too*

*Absence of a primary thrust area does not mean that it is not a thrust area at all for that organisation.*

*Absence of any upfront thrust area implies that the organisation necessarily has an open mandate.*

The estimated expenditure undertaken on cluster development initiatives by different institutions by the year 2004 appears in the following chart. This chart does not provide the budgeted allocation, which is significantly higher than the estimates provided herein. While the expenditures undertaken so far are only Rs. 45 crores (US \$ 10 million), the budgetary allocations are likely to exceed Rs. 400 crores on the various initiatives (US \$ 100 million approx)



Total cumulative expenditure Rs 45 core (US \$ 10 million)

Others: State governments of Madhya Pradesh and Andhra Pradesh, Department of Science & Technology, Textile Committee, National Small Industries Corporation, Khadi & Village Industries Commission, Development Commissioner (Handicrafts)

## 2.5 Policies

With most of the cluster initiatives having begun only after the year 2000, they are at a nascent stage in India. The approaches and methodologies are still evolving and are far from perfect. UNIDO has done some pioneering work in this regard and its cluster development programme is one of the earliest in the country. Government of India through the Ministry of SSI and Ministry of Agro & Rural Industries have introduced the 'Industrial Cluster Development Scheme' to promote and provide financial support for cluster development to be taken by in-house as also external institutions.

Even before UNIDO took up the cluster development initiative, two major initiatives were taken up to develop clusters. The first was taken up by State Bank of India (SBI) under the aegis of SBI Project UPTECH way back in 1988-89. Under the Project UPTECH, SBI identified agro pump-set industry cluster in Coimbatore, diesel engine cluster in Kolhapur, huller rice mills cluster in Palghat (Kerala), foundries

cluster in Agra, glasswork cluster in Firozabad and auto component cluster in Pune for its intervention.

A group of 40-50 units with scope for technology up-gradation were identified from among its loanee enterprises and selected for project based intervention. SBI officers implemented and supervised the projects in each cluster and were supported by specialists and consultants. Initially funded by SBI, the project subsequently began to charge fee from the beneficiary units. Each project takes about two to four years to complete. The SBI approach focused on developing an industrial sector at a particular location and it highlighted scope for technology up-gradation besides provision of selective management inputs to the firms.

The Small Industries Development Bank of India (SIDBI) also took up cluster development initiative in 1991. Like SBI, SIDBI also focused on technology up-gradation and not on developing networking and co-operation among the SMEs. SIDBI took up the development work in 20 clusters spread across the country. A group of technical experts were roped in, who identified and helped units to develop their technology modernisation plans. Subsequently, these plans were submitted for funding to the respective state financial corporations (SFCs) and commercial banks. Several of these initiatives did not translate to expected levels of success because the SFCs and banks did not always cooperate and the clusters were heavily dependent on these financial institutions for funding.

The dawn of the new millennium has witnessed a surge in cluster development with increasing focus on multi-disciplinary areas and networking among cluster actors. Almost 35 ministries and national and international organisations of repute are directly involved in cluster development activities, either as implementing agencies or as agencies undertaking research on clusters or monitoring and evaluating the impact of cluster interventions or funding cluster development activities, or carrying out a combination of these activities. Apart from UNIDO, the International Labour Organisation is the other international agency that has started working in this area recently.

The Government of India is deeply involved in the development of clusters. The specific ministries involved are the Ministry of Small Scale Industries (through the Office of the Development Commissioner Small Scale Industries) and Ministry of Textiles through the four offices of the Development Commissioners of Handlooms, Handicrafts, Textile Committee and the Central Wool Board; Khadi & Village Industries Commission; National Small Scale Industries Corporation; Coir Board; NABARD, SIDBI; National Institute of Fashion Technology; National Institute of Small Industry Extension and Training; Central Glass and Ceramic Research Institute; etc. There are also the national non-government organisations like Infrastructure Lease & Financial Structure and Indian Machine Tool Manufacturers Association that are engaged in financing and implementation of cluster related projects.

State governments like Gujarat, Kerala, Andhra Pradesh, Madhya Pradesh, Orissa and Rajasthan have also initiated cluster development activities in a big way. There are a few technical consultancy organisations involved like Andhra Pradesh Technical Consultancy Organisation, Maharashtra Industrial and Technical Consultants; and an NGO viz. Indian Institute of Rural Development, Rajasthan that are also engaged in implementation of cluster development programmes. These

organisations and agencies have so far covered 1037 clusters (both artisan and industrial). For reference, the following table is given as under;

**Status of Institutions Engaged in Cluster Development in India**

*(As on 30<sup>th</sup> June, 2005)*

Name	Years of Experience	Primary Role/Objective for taking up Cluster Initiative	Likely New Future Role	Type of Clusters assisted	No. of Clusters taken up for Direct Implementation with at least 2 years of intervention therein + (In Progress in June 2005)
<b>International</b>					
UNIDO – CDP	9	G. Im, P, R, Tr.	Forum for best practices, Consultancy	Ind., Art.	12+ (3)
TDSP – UNIDO	4	G. Im. (Te)		Ind. Art.	3 + (0)
Hand tools & Energy – UNIDO	2	G. Im. (Te)	More clusters	Ind. Art.	2 + (0)
ILO	5	G. Im. (Work conditions), R		Art.	1 + (1)
<b>National Govt./Public</b>					
DCSSI	6	G. Im., P, F		Ind., Art.	20 + (11)
TC	3	G. Im., F		Tex: Ind, Art.	18 + (0)
SBI	16	G. Im. (Te.>Gen)		Ind.	20 + (4)
SIDBI	14	F (G. Im)		Ind., Art.	25 + (0)
NABARD	5	F (G. Im)		Art. Rural	60
DST - NSTEDB	3	F (G. Im-Te)		Ind., Flor.	2 + (0)
DIPP	2	F (Inf.)		Ind.	1 + (83)
DC(HC)	4	P, F (G. Im.)		Art.	0 + (314)
DC(HL)	-	P, F (G. Im.)		Art.	0 + (20)
ARI	-	P, F (G. Im.)		Art.	0 + (197)
KVIC	5	F (G. Im.-Inf.)		Art.	50
NSIC	3	G. Im. (Te, Fin.)		Ind.	15
Wool Board	0	F (G. Im)		Tex: Ind, Art	0 + (5)
NIFT	3	G. Im (Mkt, Des.)		Tex: Ind, Art.	12

Name	Years of Experience	Primary Role/Objective for taking up Cluster Initiative	Likely New Future Role	Type of Clusters assisted	No. of Clusters taken up for Direct Implementation with at least 2 years of intervention therein + (In Progress in June 2005)
NISIET	3	Tr., G. Im.		Art.	1
Coir Board	1	F		Art.	1
CGCRI	3	G. Im. (Te)		Ind.	3
<b>National Non-Government</b>					
EDII	10	Tr, G. Im, R.,P		Ind., Art.	8 + (7)
IL&FS	5	G. Im (Inf)	G. Im.	Ind.	1 + (23)
IMTMA	2	G. Im		Ind.	1 + (2)
<b>State Govt.</b>					
Gujarat Ind.	5	P, F [G.Im. (Te., Inf)]		Ind.Art.	14 + (4)
Kerala – Ind.	3	P, F (G.Im), G.Im.		Ind.	20 + (5)
Kerala - Coir	1	P, F (G.Im), G.Im.		Art.	15 + (4)
MP Rural Ind.	3	P, F (G.Im), G.Im.	Exp.	Art.	2 + (7)
AP Ind.	3	P, F (G. Im)		Ind.	10
Orissa Ind. HL HC	½	-		Ind. Art.	0 + (13)
RUDA	7	G. Im.		Art.	8? + (5)
<b>State Non-Govt.</b>					
APITCO	7	G. Im.	Exp.	Ind, Art, Hort.	3 + (10)
MITCON	3	G. Im.	Exp.	Flor.	1 + (0)
IIRD	6	G. Im.	Exp.	Art.	5
				<b>Total: 1037 [314 + (721)]</b>	

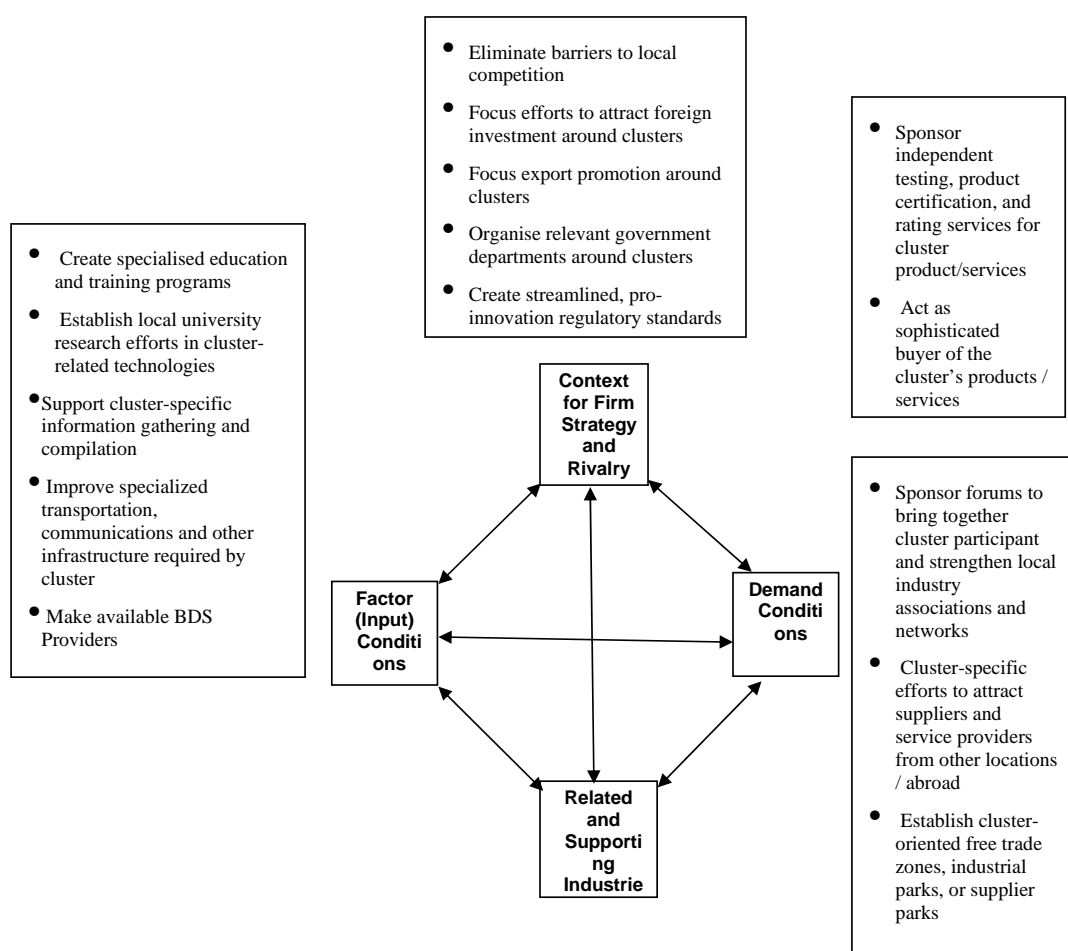
Source: Cluster Development Programme (India), UNIDO.

While several organisations have taken up UNIDO approach for development of clusters, some of the organisations have either carried on with the ongoing methodologies or evolved new variations with a different focus. The EDI followed the UNIDO approach in its initiative in the Jamnagar 'brass parts and components' cluster.

### Cluster development in the post-liberalization era

In the pre-liberalisation era, the entire responsibility of developmental and promotional activity laid with the government. The government was expected to drive economic development through policy decisions. Post-liberalisation, the role of the government has shrunk and it is increasingly being limited to facilitating development (see the figure below). Now, with the changing environment, the private sector is expected to shoulder a lot of responsibilities. With further economic development, more and more stakeholders shall be involved in sharing the burden of conceptualisation of cluster initiatives, funding of the cluster activities and managing of common facilities that may form an important part of the cluster initiatives.

### Role of Government in Cluster Development: Illustrative Cluster-Specific Policies



The UNIDO approach suggests that there must be demand for intervention. Only if there is demand for a certain service or product, will the beneficiaries be ready to not only pay for the services, but also make the best use of those. And no intervention can be sustainable unless all the stakeholders, including local industry, have stakes in the process of cluster development for their own benefit.

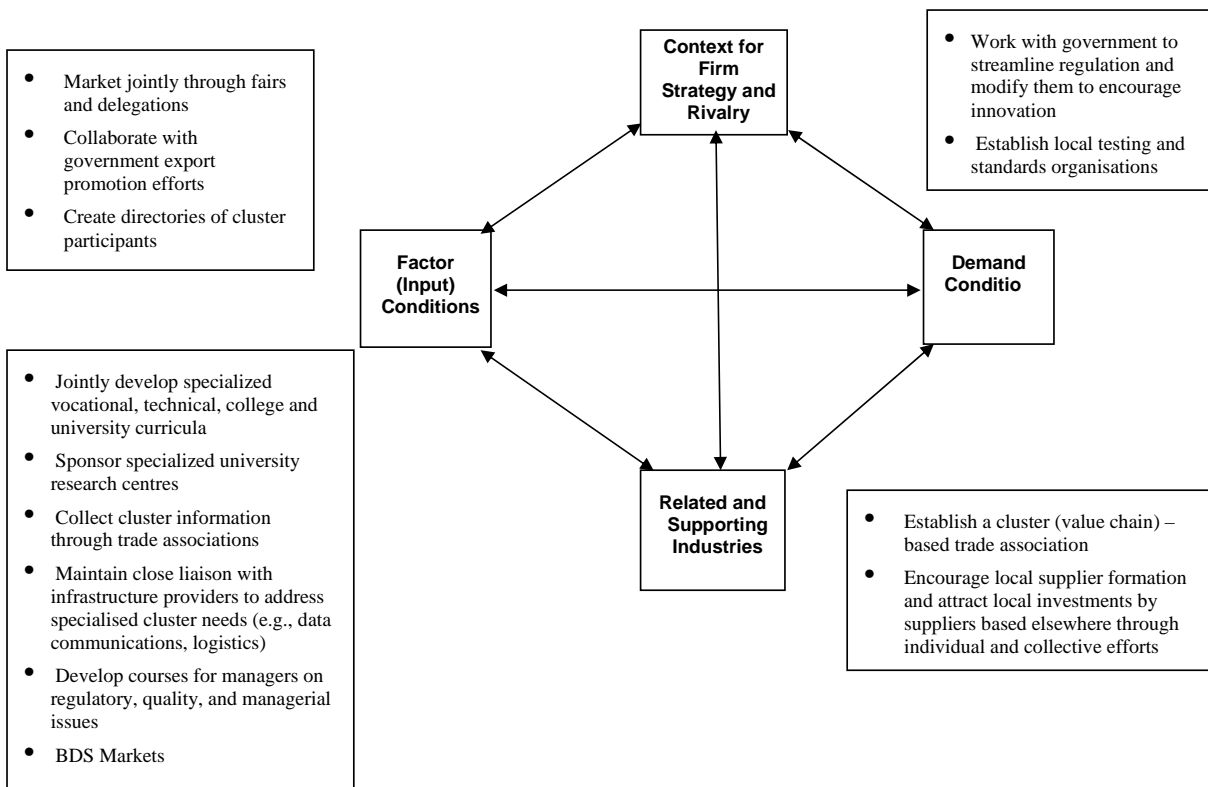
As per the available information, there are 14 public-private partnership initiatives operating in various parts of the country that have brought forward good lessons for future development. The agreement between Vatva Industries Association and the municipal corporation of Ahmedabad is one such case. According to the agreement, the industry association collects the property tax, water tax, etc. falling under the purview of municipal authorities, from the enterprises operating in Vatva. The association uses 75% of the revenue so collected on the industrial estate's infrastructure development and the corporation gets the remaining 25% of the total collection. This indicates how an industry association has taken over the responsibility of managing what was till now managed by the government alone.

The Government of India's Department of Industrial Policy and Promotion (DIPP) under the Ministry of Industry & Commerce has launched the Industrial Infrastructure Up-gradation Scheme (IIUS) to address the infrastructural requirements of the clusters under the private-public partnerships framework. Financial assistance is provided to the industrial clusters through grant-in-aid to the special purpose vehicle set up by the implementing agency, in most cases promoted by the industry associations and its members. Funding assistance in the form of grant in aid is available up to 75% of the project cost with a ceiling of Rs 500 million (US \$ 11 million approx.). The remaining 25% could be financed by other stakeholders with a minimum industry contribution of 15% of total project cost. In the 10<sup>th</sup> five year plan period, the scheme has a provision of Rs. 6,750 million (US \$ 150 million). So far 26 projects have been sanctioned by the DIPP.

It is not feasible for either the public or the private sector to make clusters competitive. Training of relevant infrastructure involves people and skills, which in turn play a deciding role in making cluster development a success. Therefore, both public and private sector need to join hands in setting up common R&D facilities, develop technical training systems, testing facilities and modern industrial estates to upgrade the cluster productivity. The figure below provides a framework for public private partnership in the clusters for similar ventures.

One of the reasons why many R&D facilities have not been set up in India is due to the weak industry associations. Therefore, they are unable to raise funds from their peers and lack adequate resources. Several new measures will have to be taken, drawing upon the best practices and their governance in the Indian conditions. Sharing of best practices, mandatory membership and provision of clear roles for the industry associations and other forms of business membership organisations can be useful instruments to encourage industry investment in clusters.

## Road Map for Cluster Upgrading: P&P Partnership



Free and fair competition is a must in clusters in order to make them competitive and innovative. The public and private sector should jointly organise trade fairs; take up export promotion in a major way and create a system of sharing market intelligence. PPPs will ensure quality, which in turn will enhance competitiveness of clusters.

## **Chapter 3: Illustrative Cluster Development Initiatives**

The aim of cluster development programme in India is to contribute to the overall performance and collective efficiency of the MSME clusters for sustainable development by assisting select local communities of firms and associated institutions in the clusters. The advantage of adopting a cluster-based approach helps enterprises overcome disadvantages of economies of scale and weak capital base on one hand and on the other hand, increases competitiveness by leveraging the advantages of flexible structure and faster decision-making process. At the cluster level, it helps to respond well to the market challenges, facilitates quick dissemination of information, ensures sharing of best practices, promotes skill development, technological innovations, offers better cost effectiveness due to distribution of many common costs and promotes wider public appropriation of benefits.

The first step in most of the cluster development initiatives is the selection of an appropriate cluster based on the cluster's socio-economic importance, promotability, viability and initiative's potential sustainability. Second key step is to undertake a diagnostic study to better understand the potential for the cluster growth in the context of socio-economic environment that it is placed in. It promotes gathering of dispersed knowledge through a participatory study of constraints, potential, local linkages and support mechanisms. Third, step to be taken up is trust building of the representative implementing institution with the cluster stakeholders and trust building among the local stakeholders, enough to drive some of small steps forward. It helps in building a realistic action plan that will have support from clients, service providers and the support agencies.

Fourth key step is to prepare a workable action plan. This helps develop and foster working relationships among the cluster players while delivering tangible results on the field. Implementation of the action plan is the fifth step on the cluster methodology. It includes cultivating a radical change in the way cluster players interact with one another and conduct their businesses. Responsibility for implementation is slowly but surely shifted to the local cluster stakeholders and their groups. Special purpose vehicles in the form of a company or any other legal entity, formed by the cluster actors may be formed to undertake specific initiatives such as infrastructure and common facility setups. The last, but not the least, is the monitoring & evaluation of the entire process. The quantifiable outputs are to be monitored and disseminated for strengthening the mutual trust and the best practices in the cluster in such a manner that the process becomes sustainable.

Some of methodologies as developed and implemented by a range of different institutions, are elaborated as under:

### **3.1 Technology focussed interventions**

The State Bank of India (SBI) Project UPTech is one of the schemes meant to support small scale industries and help them upgrade their technologies so that they are able to "...survive forces that would be unleashed by liberalization and globalization..." The project stemmed from a perception of two principal concern areas viz. technological up-gradation and a greater share in the new global markets.

As an initial step, Project UPTECH modernization programmes for small and medium enterprises are on a location and industry-specific (cluster) approach. The three purposes for adopting this approach are optimal utilization of human resources, coverage of a large number of firms and the spread effect. The choice of clusters is influenced mainly by the availability of a large number of bank's loan units in close proximity with potential for quick technological up-gradation; supportive infrastructure and the local SBI's preparedness and interest to handle the cluster.

Under Project UPTECH, the process of up-gradation is conducted through a comprehensive techno-managerial study of individual units and is generally prescriptive of incremental changes. The project appreciates the need for beneficiary firm's market needs and appreciates that the process needs to be a continuously planned, stepped-up process. Optimising the effectiveness of existing process and facilities, systems improvement, contribution analysis of product mix etc. have themselves been seen to lead to appreciable improvement. Radical technical up-gradations are also carried out. Moreover, project UPTECH emphasized the toning up of individual performance. Each programme lasts for three to five years and around 40 enterprises are targeted for technological up-gradation within that period.

The project has already covered 12 clusters of agro pump-sets, diesel, and I.C. engine components, huller-rice mills, foundries, glass, auto components and machining & fabrication. Individual firm-level projects have been taken up for technology up-gradation under the programme. More than 300 units have been studied and 83 seminars/workshops organized in these projects. At times, links have also been made with technical support institution.

The benefit accrued from the project is unit-specific and the SBI project has taken the technology route to cluster development. The concept of cluster is only for concentrating efforts in a geographic area of operation, to facilitate support in an economical way, and to enrich the probability of spreading the learning to more number of units in the same geographical area.

Two specific cases of Project UPTECH viz. 'The Glass Industry in Firozabad' & 'Auto Component & Light Engineering Industry in Bangalore' are explained as below.

**The Glass Industry in Firozabad:** The dusty town of Firozabad in the northern state of Uttar Pradesh is historically known for its bangles. It has the largest concentration of people working in glass industry, anywhere in the world. About a hundred thousand people are involved in the industry in this town. But the industry faces several handicaps. It has a high percentage of wastage through breakage or rejections. There is gross misuse of resources and working conditions are poor. Traditional technology reigns and the human resource in these clusters are reluctant to change their age-old ways. However, progressive thinkers who desired to do better got the project going.

The UPTECH team studied the area and found the pollution levels way beyond the permissible limits prescribed within the Taj Trapezium, a geographical area with special environment pollution limits. Moreover air pollution, both inside and outside the area, was aggravated by extreme temperatures prevalent in the work place. High fuel costs, low and uncertain life of the glass melting pot were the other pain points.

The product quality was nothing to write home about and it was well below international standards. The top-three problems that had to be addressed were:

- Pots used in coal fired furnaces had uncertain life, varying from a couple of days to a month, causing wastage of material, of time and of money. External technical assistance as sought for, the problem was analysed and the causes were ascertained. An improved pot mix was developed and new systems to dry pots under controlled conditions and pre-heating the pot in a scientific manner was introduced. The result was that the average pot life increased by 35-40 meltings per pot.
- Coal fired pot furnaces, the most commonly used in glass melting, were highly inefficient, using only 6.3% of energy, while the rest of energy was wasted. To achieve better efficiency, it was recommended that an open pot furnace with specially designed three-layer insulated crown, comprising Slimnite, insulated bricks and ceramic wool insulation be used, instead of the old single crown. This brought about a reduction in fuel consumption by about 17-20%.
- The coal fired tank furnaces were highly polluting and inefficient. New oil fired tank furnaces were introduced with better refractories and fuel-efficient burners, which led to increase in glass draw per day, by approximately 30%; reduction of fuel costs by approximately Rs. 5,000 per day or about Rs 15 lakh per annum; substantial reduction in air pollution-emission levels that helped to bring the pollution level within permissible limits. This also led to improved work atmosphere for workers.

The project led to three-fold development in the clusters. One, technology up-gradation in terms of conversion of coal fired *bhattis* or furnaces into oil fired ones, providing oil-fired pre-heaters for pots and production aids, and low-cost automation for improving productivity. Second, visible improvement in terms of quality were modification of production processes; shop-floor training for better work culture and practices; and appropriate raw material mix in terms of both quality and quantity. Third, technology and quality development automatically led to cost efficiency as the number of rejections spiralled down and there was effective utilization of inputs; search for better inputs and proper input mix in the cluster. Now, there were some firm-level challenges that had to be addressed. The challenges were varied; their dimension and complexity were dependent on factors like size of the unit, products, processes, prevalent practices, installed equipment, etc. Solutions had to consider not only the economic feasibility of investment, but also improved working conditions, pollution abatement, quality enhancement, cost reduction, long-term gains through productivity and profitability improvement.

**Auto component and light engineering industry, Bangalore:** The Bangalore cluster comprised family-owned conventional machine shops, auto shops, press shops, fabrication shops, CNC machine shops, forging shops and foundries which mainly supplied to major brands like MICO, TVS Suzuki, Ashok Leyland, VDO, TAFE, Bajaj Auto, Maruti etc. Very little of what they produced was exported.

The project took off in 1996 and the entire process and the technology were revamped. Carbide and multi-edged cutting tools were introduced and the

productivity shot up by 30%, cycle time went down by 50% and the standard of finishing improved. Integration of two processes and reduction in air-cutting time improved the cycle time by 30%. Manufacturing thorough-put time reduced to a day from 3-4 days in a company merely by reducing the batch size and introducing a product flow-line system. Production planning & control system was introduced in many units, which was reflected in manufacturing system and reduced inventory. A lot of emphasis was laid on systematic analysis of data and actions for continuous improvement. A new system was introduced for product costing.

In 1999, the cluster units managed to brave recession and show better growth than their other counterparts. Growth rate went up to 86%; far above the industry growth of 18%. The revamped units witnessed 66% growth in net profit and 94% in cash accruals and that too despite price cuts. Visioning exercise resulted in change in entrepreneur attitude towards more focus on quality, continuous improvement and growth. A lot changed in individual units too. The turnover went up from 30% to 215% in some cases. Value addition to existing components improved by 10% to 75%. Rejection levels reduced spiralled down from 4-5% to 0.5% in many units. Among the UPTECH cluster firms, 50% have been certified as ISO 9000 companies; 25% more were in the pipeline.

Their market acceptability went up as most of the units have introduced total quality systems. Many units started supplying to MNCs like Hyundai, Delphi, Volvo etc. They even started exporting their products. A company's exports went up from 5% to a whopping 45% within two years. These cluster level interventions were aimed at improving the overall efficiency of the cluster through a range of inputs to all its members.

### **3.2 Consortia based interventions**

The industry department of Kerala was introduced the concept of cluster development only in the year 2002. The private sector driven but public institution supported aspects of cluster development approach provided an opportunity to reorient the District Industries Centre officials. The purpose of instituting the cluster approach was to retrain the district officials to shift their roles from being providers, monitors and regulators to facilitators for development of small enterprises. The economic geography of Kerala reflects that there are few strong agglomerations of small enterprises and most enterprises of one kind are spread across the southern coastal state of India. The cluster approach therefore needed to be modified to focus on consortia of a few firms rather than clusters in the classical sense. The modified model of cluster development reflects the support of government in bringing together private enterprises for a common cause, assist them in forming a special purpose vehicle with partial equity support from the government and facilitation in getting support grant from the national ministry for taking up specific development ventures as per the need. Two of interventions are described herein briefly.

**Handloom Cluster at Kannur:** Several handloom enterprises are based in the Kannur district in Kerala. Four consortia have been formed in this cluster under the cluster project framework and they have taken the lead role in the cluster development activities. As a result of the initiatives taken by these consortia, some of the agencies from abroad have visited the cluster and created market awareness

among the cluster members regarding the requirement of handloom products in the international market.

As the weavers got their acts together to face challenges expected after the dismantling of the quota regimes in 2005, the Irinavu Handloom consortium, one of the four of its kind in the district, made a head start in taking efforts to increase productivity in the sector and equip themselves with innovative products and designs to attract domestic and international demands. The consortium sought the services of a German agency, 'Senior Experten Services' to improve product, increase productivity and launch new products to cater to the needs of international markets. The consortium inaugurated a common show room, ICON, at Kannur for showcasing and retailing handloom products.

Indian institutions, BDS providers and international support agencies are collaborating with the handloom industry to provide design inputs to weavers since they lack in terms of professional designing and are unaware of the western market. These agencies have also introduced supply chain knowledge to manufacturers and exporters. For example, an Australian designer conducted a five-day workshop at the Institute of Handloom Textile Technology at Kannur to help them get a proper design perspective as relevant in the international markets. Only those producers who were in the top and exclusive design end of the spectrum could draw the attention of the buyers in the west.

Vision Tranzbiz has identified 23 centres across the world, including one centre in Australia, for marketing handloom products from here. Understanding the market and how the available material could be translated into a product that would be agreeable in the west are crucial areas as far as the producers are concerned. The designer centre that Vision Tranzbiz is planning would also give practical exposure to fashion technology students and weavers.

**An Oil extraction Plant in Ernakulam district in Kerala:** There are 160 modern rice mill units functioning in the Ernakulam district in Kerala, under the SSI sector and a majority of them are concentrated at Kalady and nearby areas of Ernakulam district. The capital investment in the industry is roughly around Rs 280 crore (USD 63.6 million). Total turnover per annum is about Rs. 1,000 crore (USD 227.2 million). Rice mill industry in Ernakulam district is creating employment opportunities directly to 7,000 persons. The power requirement per rice mill unit is around 150 hp. The main raw material used in the industry is paddy. A series of processes include raw paddy cleaning, par boiling, paddy drying, paddy milling etc. that convert the raw paddy into rice as main product and rice bran as by-product.

Units cannot sell rice bran at a reasonable price, as rice bran extraction units, outside Kerala, control the price of rice bran. For getting high quality edible bran oil, the rice bran should be processed immediately after rice milling. The absence of sufficient bran extraction units in the near by area create problem to rice millers, such as the deterioration of bran before processing and there by rice mill units will not get the right value for their by product.

To solve this major problem of rice manufactures in Ernakulam District, the problem was discussed in depth among the various enterprises. They decided to start a

common facility centre for processing rice bran in the Kalady area. They formed a consortium and a bran oil extraction plant is being set up at Kalady. The processing capacity of the proposed plant is 100 metric tones of rice bran per day. Rice bran is the raw material used. Consortium member unit supply the raw material. Thirty three rice-manufacturing units promoted the company as consortium. The bran extraction unit consisted of five sections, namely-preparatory section, extraction section, meal de-solventising section, distillation section and solvent recovery section. The approximate project cost, including preliminary and pre-operative expenses was Rs 315 lakh (US \$ 700,000).

### **3.3 The UNIDO Cluster Development Programme (CDP) in India**

UNIDO cluster development program in India aims to contribute to the overall performance and collective efficiency of the MSME clusters for sustainable development by assisting selected local communities of firms and associated institutions in the cluster. This entails the implementation of cluster support initiatives in selected pilot clusters, as well as assistance to a national programme of MSME cluster modernisation and restructuring. UNIDO considers network development, network creation and local governance issues as central to its initiative of cluster development. In fact, it consciously avoids funding individual firms.

The programme has undertaken diagnostic study preparation in a number of clusters like, 'hand block printing of textiles' cluster of Jaipur, food products cluster in Pune, stationary diesel engines and components at Phagwara-Ludhiana and cotton knitwear in Tirupur. In four clusters namely Jaipur, Tirpur, Ludhiana and Pune the UNIDO approach has been implemented over 1997-2001 and further work was undertaken in the clusters of Drugs & Pharmaceuticals at Ahmedabad-Baroda, Machine tools at Bangalore and Food industry in Pune during the years 1999-2003. Subsequently the cluster programmes were implemented in a few handloom clusters for poverty alleviation. A specific 4-year programme has subsequently been launched in the year 2005 in the state of Orissa for industrial, handloom, handicraft and forest based product clusters there.

UNIDO CDP has tried to bring out the standard elements for cluster intervention that consist of selection of cluster, preparation of diagnostic study, trust building, action plan preparation, implementation, and finally monitoring & evaluation. In the first stage, as per the UNIDO approach the implementing agency conducts a diagnostic study about the likely constraints and potential of the cluster and subsequently chalks out a need-based programme. It focuses on capacity building of various local institutions through activities like training, participation in fairs, organisation of workshops and study tours in the clusters. Activating associations and building trust goes hand in hand as the UNIDO has learnt from its experience.

The approach pays a lot of attention to global value chains in which the clusters are embedded. In Jaipur in the state of Rajasthan, the artisans who were involved in the textile printing were not aware about the exporting destinations of their products. The international markets that the exporters were then catering to were also limited. UNIDO linked the cluster actors to some of the new export markets. Similarly, in Ahmedabad, it was the drugs and pharmaceutical cluster where the intervention helped introduce the entrepreneurs to new markets through joint participation in

international trade fairs and study tours abroad. Foreign delegations were also invited to enable cluster-to-cluster co-operation. Yet another example is the Tirupur knitwear cluster, which is already operating in the international market, but at the low end. UNIDO initiated the process of building the 'Made in Tirupur' brand so that the cluster members could migrate to the higher end of the global value chain.

UNIDO tailors its strategy to the needs of individual clusters identified in the diagnostic study. There is ample scope for flexibility within the general framework of cluster development methodology. For the various activities undertaken in the cluster, the local actors are required to pay substantively in terms of financial resources. The contribution of the private sector in case of industrial clusters could be in the range of 50-60% where as in case of artisan and micro-enterprise clusters, the private sector contribution would be much lower. The organisation spends considerable time in all the clusters for awareness building through seminars, tours abroad or to other clusters, establishing links with other institutions for research and development. As a result of all these efforts, the clusters tend to link up with more than a dozen institutions regionally and nationally, on an ongoing basis, at the end of cluster initiative. An important aspect of the sustainability of any cluster initiative is to check if the local institutional structure in the cluster has been able to not only identify what needs to be done, but have also built up capacities to do what needs to be done.

**3.4 An analysis of the Different methodological options for cluster development:** The above three sections provide an insight into three broad varieties of cluster development methodologies as are being implemented by different institutions in the country. However the possible combinations could further vary depending on the cluster needs and institutional mandates. The analysis of different approaches reflects possibilities of focussing on a specific theme such as technology, market linkages, credit linkages, training inputs, R&D, infrastructure or a combination of various themes under one programme. Second, the approach could focus intervention through a cluster broker often called 'Cluster Development Agent' (CDA) in the Indian context, or could bring in a service provider, public or private, to execute the cluster initiative. Third, most of the implementation could be focused through external implementing institutions/ persons or a specific focus on rejuvenation of local private sector associations could be targeted for better sustainability in the long run. Fourth, depending on the critical mass of the cluster, focus may be on working with bigger industry associations/ cooperatives and other forms of business membership organisations or smaller consortia comprising of a few enterprises. Fifth, the objectives and mandate of the implementing agencies could target general economic growth and competitiveness of the clusters or choose to work with those cluster actors to undertake such common initiatives that have the highest potential to target poverty alleviation or other socio-economic objectives.

There is no standard methodological recipe that would fit in with the different clusters, their socio-economic setups, institutional mandates and aspiration levels of the cluster actors. Every cluster being unique, customisation will have to be undertaken in terms of the methodological approach to be used.

## **Chapter 4: Development Resources Infrastructure in India and its adequacy**

An estimation of the development resources required at the national level is dependent on what the key achievements are desired. Therefore defining the mission and the road ahead will have to be taken care of and will be the first step. Industrial development, more particularly the MSME development falls under the purview of state governments. Socio-economic backgrounds vary from state to state as do the types of clusters present in the states. Therefore it is natural to expect that different states will have different focus and routes to enterprise development. Some of the states may favour new enterprise development by way of entrepreneurship development while others would provide greater thrust on promotion of external investments into the clusters, thus linking them up with global value chains. The goals for some would favour policies to build international or national competitiveness, while others may envision enterprise development for poverty alleviation, employment generation and greater social equity. The central ministries focusing on small industries, agro & rural industry and the textile industry look upon clusters enterprise as an important means for socio-economic development of the MSME sector. Broadly the thrust of cluster based policies whether at the state level or national level could focus on building competitiveness and social development in varying proportions for different type of clusters.

Despite the fact that more than 1,000 clusters have already been taken up for development in India, using differing means and strategies, there is no specific stated goal for the cluster development initiatives to be taken up in India.

Drawing from the available sources of information as elaborated above and on the basis of interactions that the 'Foundation for Micro Small and Medium Enterprise (MSME) Clusters' has with different institutions, it has drawn up a draft vision that is stated as under.

### **The Foundation envisions that:**

***All existing industrial, handloom, handicrafts, micro-enterprise and service clusters will have been taken up for development under specially drawn up cluster initiatives by a range of public and private institutions in India by the year 2010.***

The purpose of all cluster level initiatives will vary from building local industry competitiveness, poverty alleviation, employment generation and building local governance systems. The entry route of the institutions will vary as per their mandate and competencies. These areas may be technology up-gradation, credit facilitation, entrepreneurship building, skill development, livelihood promotion, quality up-gradation, market linkage facilitation etc.

With different set of objectives and strategies on cluster initiatives in all the 6,500-odd known clusters, a responsive, efficient and effective local governance structure primarily driven by the private sector will be a cross cutting priority to ensure sustenance of the initiatives. Local institutions in the clusters, both private and public, individually and collectively, will identify the strategic bottlenecks, map the

opportunities, draw up medium to long-term action plans for the cluster development execution and develop necessary special purpose vehicles wherever required, to deal with some of the identified strategic issues and undertake desired actions.

The various apex public institutions mainly the union and state government ministries, special institutions & corporations set up with enterprise development perspective bodies and some of the private institutions like industrial chambers will drive the cluster development initiatives. The various diverse schemes and support programs of the union and state governments, but primarily those of the former, will be better integrated at the cluster level through the respective local governance systems in the clusters.

Critical resources must be identified and mapped to realize the above-mentioned vision. The fundamental premise while mapping the resources is that there are large financial resources and technical resources available, but they are not synergized well at the cluster, state and national levels. Some of the previous cluster initiatives undertaken by different institutions have demonstrated that the leveraging of public resources with private sector resources can be quite high while implementing different cluster initiatives, provided the initiative is designed and implemented well. Therefore, the realization of the above-mentioned vision is contingent not so much on the availability of additional public financial resources, but the human resources that can channelise the already available public and private financial resources efficiently and effectively.

The mapping of resource requirement is based on the methodology of cluster development designed by the Cluster Development Program (CDP) arm of UNIDO, which comes with a decade long experience in the country. This cluster-based methodology relies mainly upon harnessing the resources of local membership-based organisations of small enterprises in the clusters and business development service providers that the cluster enterprises can access.

The integrative function of building the institutional capacities of the local membership-based organisations in the clusters and developing necessary linkages with business development service providers as also public institutions is undertaken by a specially-trained person, designated as **Cluster Development Agent or CDA**. A mapping of different type of human resource personnel for realization of the above-mentioned vision is given as under, while the financial requirement projections follow thereafter.

CDAs are armed with special traits and are suitably trained to drive the cluster initiatives in every cluster among the currently listed 6,500 clusters. They are known by different names in various institutions that have taken up cluster initiatives at the apex level. Some of the nomenclatures used are CDAs, cluster development executives, cluster development officers or even cluster brokers. However, considering their primary role in facilitation of cluster development work, they can also be called as 'local cluster system integrators'. To keep the nomenclature simple, this document shall refer to them as CDAs. They are currently high in demand and there are about 10,000 potential slots and an entire cadre needs to be trained so that about 5,500 of them can be deployed at each cluster and a group of two to three CDAs can be posted at the bigger ones.

**Technical advisors (TAs)** or mentors are senior and experienced personnel who assist the CDAs so that the latter can carry out their jobs effectively and efficiently. TAs would mentor the CDAs, provide necessary methodological support to them and link them with private or public BDS providers. TAs are also very much in demand as a group of three to four clusters would require a TA to act as a guide and provide strategic inputs. This adds up to the requirement of around 2,000 such mentors across the country, depending upon their specialisation and possible deployment across different regions.

**BDS providers:** They help the MSMEs to become more competitive by providing a range of necessary **business development services**. These services range from management, policy advisory, credit linkages, research & development, skill up-gradation, technology, marketing, environment, intellectual property, designing and infrastructure development. Not all MSMEs or their representative bodies need to seek formal and paid business development services. And this is on account of the expertise and knowledge that is shared among enterprises and by way of sharing the common local reservoirs of workers, supervisors, machinery suppliers and raw material providers who carry their pool of tacit knowledge when they move from one enterprise to another. However, in most clusters, there are a series of specialized strategic services that are in short supply, usually among the innovator top-end enterprises. For example, process related technical solutions that seek to reduce quality problems within enterprises, facilitation for exports, management strategy formulation for growth and product diversification related services are required, especially by innovative small firms in clusters at a price that they can afford to pay, but that's not found easily. The demand for strategic services is quite high for even a small segment of MSMEs. While industrial clusters can well afford anywhere between five and 20 specially trained BDS providers per cluster, every artisan cluster would certainly need at least two such BDS providers on an average. Therefore, the need for such service providers is around 15,000 by the year 2010, against the estimated current availability of around 2,000.

**Socially relevant service providers:** These HR personnel assist enterprises and institutions engaged in cluster development to develop socially relevant aspects of clusters like literacy (including business literacy), gender mainstreaming, health including occupational health, safety & work hazards, drug addiction, etc. Such social animators have been usefully deployed in several artisan clusters by a range of apex national and international institutions in taking up cluster development with social objectives.

With more than 5,000 clusters in the micro enterprise segment, the artisans and micro-entrepreneurs need specific services that have a strong relationship not only with their economic productivity levels, but also social wellbeing. New areas of socially relevant services will emerge as cluster initiatives expand further across the country. They are likely to emerge in the areas of conflict resolution, community relationship management, community leadership and socio-spiritual well being of people. Such service providers may emerge spontaneously in some micro-enterprise clusters, while in most others active engagement of such specially trained persons by cluster development implementing agencies is likely to enhance the effectiveness of the initiatives.

When the international markets particularly in the west are focusing their attention on the social responsibility dimension of the supplier firms, service providers in this area become very relevant for the industrial enterprises. Some of the sectors that are highly dependent on international markets will need to draw upon such expertise in large number across clusters. They would require 5-6 such social animators per cluster thus projecting the estimates to be around 30,000 as against the possible availability of a much lesser number that is difficult to be estimated currently.

**Network Brokers and Network Managers:** Several MSMEs will form small networks not only to seek a range of business and socially relevant services, but also undertake to do business jointly. These networks may have a membership of three to twenty enterprises. Some of the joint business operations that can be successfully undertaken are joint purchase of raw material & machinery, joint production, provide collective guarantee to seek formal loans and market goods & services in the domestic or international markets. Whereas there are known 300 networks that have been formed in different clusters across the country in the last three years, there has been a strongly felt need of network coordinators or brokers. These persons can not only facilitate the formation of such networks, but also manage their collective business operations thereafter.

**BMO executives: Business Membership Organisations** is a generic name given to bodies such as industry associations, chambers of commerce, trader organisations and artisan guilds. In the Indian context however, the definition is extended to artisan cooperatives as well. They are essentially non-governmental bodies and are based upon membership fee from business enterprises. In the Indian context, it is estimated that there are around 3,500 small industry associations and more than several thousands existing artisan cooperatives in different sectors and clusters. Most of the small industry associations and artisan cooperatives have in the past only undertaken lobbying work with policy makers and regulatory agencies to extract maximum gains in the form of tax concessions, quotas and special favours. Ever since development initiatives have become an integral part of cluster programmes, the need for an expert has become imperative to conceptualise, plan, raise necessary financial resources and implement activities with a medium- to long-term perspective. Most of the BMOs in clusters do not have any paid executives except for some clerical personnel who carry out routine administrative work. Professionally trained executives to run the functions of BMOs are the need of the hour in all clusters. Most of the artisan cooperatives have to set up and manage common facilities, market their produce professionally, draw up plans and communicate them to their members and public institutions when seeking their support. Therefore, the BMO executives are essentially a necessity for better functioning and development of clusters.

**Policy research and analysts:** Analysing the MSME related policy framework, schemes of assistance, drawing upon the international best practices and building information resource base on clusters and what works there is extremely relevant and timely. While clusters in India have been around for centuries; sadly very little India based cluster literature is available in India. Research in the areas of social capital and its effect on competitiveness; BDS and its markets; industry associations and clusters; poverty and clusters; network development and methodologies associated with them, have largely been drawn by the economic and social research

institutions is based outside India. Several topical issues pertaining to developing country context need to be understood within the Indian framework where both clusters and research institutions exist in large numbers. There is hardly any cluster specific and local area development work that has been undertaken in India except for by UNIDO cluster development program that had an impact on the policy, methodological and training dimensions either in India or abroad. Academic institutions and technical research agencies of different streams not only need to take up agenda specific to their area of expertise, but also inter-disciplinary areas to develop new frontiers of knowledge that can be gainfully deployed for socio-economic development in the country with clusters and local areas as the focus. Some of the areas of work that demand research attention are local governance, building of cluster databases along with social indicators, methodologies of cluster development and measurement frameworks for monitoring & evaluation.

**Projection of Financial Resource Requirements:** UNIDO cluster development methodology is currently being used by four union ministries across 200 clusters in the country. Besides, six state governments across 60 clusters are also following the same elements in 2005. The deployment of financial resources per cluster by the different institutions across the country varies from Rs 50 lakh to Rs 3 crore (USD 0.68 million) per cluster. These resources primarily include for local capacity building and kick-starting common initiatives, but sometimes they also include cluster-specific small and technical common service facilities. Whether coordination expenses are included in the budgetary expenses or not varies from institution to institution. It also depends on whether they re-deploy their existing in-house human resources from the government or hire additional services from the job market. Considering that the average usage of financial resources of all the three types over five years may be around Rs 1 crore(USD 0.227 million) per cluster, including setting up of some of cluster-specific infrastructure, the gross requirement of financial resources across all the clusters may be projected as Rs 5,000 crore (USD 1,136 million)for additional 5,000 clusters. This adds up to Rs 1,000 crore (USD 227.27 million) per annum for all the clusters at its peak when initiatives may be in progress in all the 5,000 clusters, if the age of a cluster development initiative is estimated to be five years.

Since the ceiling for initiating cluster-based programmes per annum is set at 1,000 clusters, the requirements will be staggered over the years as per the table given below. Though the projected budget requirement for the first five years adds up to Rs 3,000 crore, there is a remote possibility that the central government which is currently the main source of financial assistance re-deploys resources for cluster development initiatives. Besides, some of the state governments also have their individual budgets for enterprise development that can be re-deployed for integrated cluster development initiatives.

## Projected Budgetary Requirements for taking up Cluster Development Initiatives

Year	Number of Clusters additionally taken up	Cumulative no. of clusters being assisted	Likely spending in Rs. Crore
Yr. I	1000	1000	200
Yr. II	1000	2000	400
Yr. III	1000	3000	600
Yr. IV	1000	4000	800
Yr. V	1000	5000	1000
<b>Total for the first 5 years</b>			<b>3000</b>
Yr. VI	Nil	4000	800
Yr. VII	Nil	3000	600
Yr. VIII	Nil	2000	400
Yr. IX	Nil	1000	200
Yr. X	Nil	Nil	Nil
<b>Total for the next 5 years</b>			<b>2000</b>
<b>Gross total for the 10 years</b>			<b>5000</b>

Besides, **special programmes of assistance** will require to be undertaken in the areas elaborated in the following paragraphs. These areas highlight the gaps at the national level, which need to be plugged to help foster local initiatives under cluster initiatives. Some of these areas, considering their strategic significance, go beyond clusters and will help small enterprise development even outside the clusters. The areas given below not only help to identify the gaps, but also suggest possible directions in which measures need to be taken to do so. Additional financial resources of the magnitude of a few hundred crore may be required to ensure that the support infrastructure becomes ready for small enterprise development across the clusters. While it is not feasible within the scope here to work out the estimates, but the figures may be to the tune of Rs 500 crore over a five-year period to achieve the desired levels.

**Policies that support initiatives for joint action in clusters:** A review of the existing policies and schemes is a must. That will determine the extent to which they promote local private sector led collective action that may be more sustainable. A review of similar schemes of assistance in some of the other countries where SMEs have done quite well through joint action will help to decide what public schemes of assistance may be useful to induct in the Indian context. Small enterprise policies that recognize existing and emerging clusters on the basis of clear parameters provide a strong basis for support from other public institutions within the country. Existing and emerging clusters may, for example, differentially require specific infrastructure support, trading policies, international investments, intellectual property aspects and issues of social relevance such as labour, social equity and justice.

**Public institutional restructuring and re-training:** Several institutions set up for small enterprise promotion, have lost their relevance in light of emerging challenges. They were not geared to respond effectively to perform multiple tasks. Such institutions exist both at the national and state level. District industries centres, small industry service institutes, industry tool rooms, research & development institutions, testing & quality marking centres, production-cum-training centres, export promotion

councils and local training institutions are some of the examples of institutes struggling to reinvent their role.

Cluster development initiatives provide a strong instrument for engagement with real problems of the enterprises on a dynamic basis. These institutions, besides improving their areas of technical competence, also need to become more responsive to the industry requirements, encourage greater private sector role through public-private partnerships, restructure the way they operate and re-assess their roles on a dynamic basis. To ensure higher degree of effectiveness, cooperation among different public institutions themselves at the local level is very necessary. Staff retraining will have to be undertaken so that they can undertake systemic approach towards enterprise development, which forms the cornerstone of cluster approach.

**Infrastructure development in clusters through public-private partnership:** A major obstacle that keeps the clusters from becoming globally competitive is deficiency of infrastructure. Infrastructure for clusters can be divided broadly into two types, viz. generic infrastructure such as roads, ports, water supply and electricity, and more specifically, common facilities that can be managed jointly by local industry associations/NGOs on their own or in partnership with local public institutions. Such infrastructure is made up of industrial estates, common industrial waste treatment facility, testing centre, design facility, common processing centre, common marketing complex, etc.

There are several examples of ongoing schemes of assistance where the union ministries and the state government departments provide necessary grants generally ranging from 25% to 50% of assistance and still more liberal in special cases, to the local industry associations, NGOs and cooperative institutions if they wish to conceptualise, plan, set up and manage such cluster-specific infrastructure facilities. Most of the clusters do not have BMOs such as industry associations, NGOs or cooperatives that currently have either the inclination or the capacities to take up such initiatives and make use of such public grants. Alternate commercial organisations willing to set up and manage the entire facilities on behalf of BMOs do not exist, by and large, in India. The primary reason for this is the lack of explicit demand from the BMOs that would be willing to put in their share of the financial contribution. In 2005, an institution called Infrastructure Leasing & Financial Services (IL&FS) has taken up a pioneering initiative at the national level to focus on cluster related infrastructure directly. The initiative is operational in 24 clusters, and the results will start showing over the next few years. However, considering the large number of clusters in the country and their infrastructure inadequacies, several more institutes will have to come forward and lend a helping hand to IL&FS in this endeavour, while at another level, capacity building of the BMOs in various clusters will need to be made concurrently through cluster development initiatives.

**Linking of clusters with global value chains:** The relevance of global value chains with clusters has gained crucial importance in the era of economic globalisation. Yet in more than 200 cluster initiatives currently operating in the country, the focus on global value chains is minimal. Most export-oriented clusters and clusters with strong linkages with trans-national corporations either based within India or other countries need to explicitly link up their value chains that transcend the national boundaries.

Several global initiatives on cluster development, both in the developed and developing countries have their primary focus on building linkages with global value chain. This may either be due to already high degree of internationalisation of their economies or a means to reach higher level of integration with the international economies. Such cluster initiatives require a strong partnership at the local, regional and national levels that provide new knowledge, promote innovations and help to build synergies among diverse public institutions and private stakeholders such as raw material providers, machinery makers and chemical suppliers.

Promoting linkages among diverse clusters at a national or international level in the same product economies leads to mutually beneficial relationships for enhancing competitiveness. Promoting industrial investments from industrially developed clusters with high labour costs to the clusters that provide advantages in labour costs is one area that needs special attention on cluster development in several sectors. These labour intensive sectors are textiles, ready-made garments, leather, leather garments, soft toys, moulded glass, ceramics and several engineering products including auto-components.

**Strengthening of BMOs and BDS providers:** The civil society plays a vital role in industrial and non-industrial economic development. Though the degree of specialization required in different areas of enterprise development has gone up significantly, service providers have been unable to up-grade themselves and are lagging behind the required levels. Besides, the public institutions as service providers can never have the reach that is required to serve the enterprises, considering their numbers and diverse requirements. BMOs can serve two significantly important roles besides their conventional role of lobbying. These are the provision of some technical, management and infrastructural services directly to their members and the other is to facilitate the provision of required services by linking up the service providers with the potential seekers, i.e. member enterprises.

The catalytic role of BMOs in developing and making the local BDS market functional is indeed critical in the efficient and effective governance of clusters. BMOs can help to link up and synergise the public support to the clusters. There are some inspiring examples that exist in the country where BMOs have taken upon themselves to carry out the development work in those areas of clusters where public institutions either failed or had significant deficiencies. However, such examples are rare and extremely hard to find. Documentation of best practices, sharing among the BMOs and developing necessary training modules to help them develop their competencies is a national need to which there has not much a significant institutional and policy response. Some programmes of assistance that exist for the cooperatives and NGO management are limited in number and often in quality that does not address the current need.

Considering their size, small enterprises cannot be expected to have in-house competencies required to grow and manage themselves well. They depend, therefore, on several BDS providers in the production and supply value chains. There are generic business development services in the field of general accountancy, communication, documentation for regulatory authorities and preparation of financial statements the improved effectiveness of whom does not

have significant scope for enhancing the competitiveness of the enterprises in the clusters.

On the other hand, strategic business development services such as new technology provision, process improvements, new market developments, design development as per special markets and common infrastructure development have a strong impact on the socio-economic growth of small enterprises in clusters. Such strategic business development services should ideally be available in and around the vicinity of the clusters so as to ensure easy accessibility for small firms. However, such strategic BDS providers that not only have the necessary competence in their areas of knowledge, but also know how to deal with the small enterprises, are very few. A database of such BDS providers that has been prepared by the UNIDO Cluster Development Programme in India during 2005 reflects this deficiency strongly.

There has been virtually no policy and public support focus on creation of effective BDS markets ever in the past. In the early years of small enterprise development in the 60s and 70s, the policy focus was on setting up public institutions to provide a range of technical services directly to individual enterprises. Over the next few decades, the need for specialised services and equipment required therein became stronger in all the sectors. In the current context, there is not only a need to identify the strategic BDS requirements among different clusters at the local level, but also to undertake public measures to develop vibrant markets for these services. The suppliers of BDS across different regions will need to be grouped to help them share best practices, organise to identify their common needs and find sources to plug the gaps. On the demand side, public support needs to be provided to groups of enterprises to stimulate the off-take of strategic services resulting in improving the competitiveness of clusters.

**Assist creation of new knowledge and institute forums for sharing of knowledge and best practices:** With 20 independently funded initiatives underway in cluster development in the year 2005 across the country, there are several models that are emerging with wide ranging best practices. While some are effective in certain contexts, the others are best suited elsewhere. Moreover, globally there are cluster initiatives being pursued in more than 50 countries, some of which have been documented by public and private institutions affiliated to specific countries as also multilateral agencies. The Competitiveness Institute, a forum of cluster practitioners across the world has in collaboration with a Swedish policy research institution documented different type of cluster initiatives. All of these, however, relate to the economically developed countries with focus on enhancement of economic goals and not the social parameters. Moreover the context in which these initiatives are functional, are very different from the developing economies. The Indian context largely in the domain of economically developing countries requires benchmarks and best practices that can help to reduce poverty enhance employment, reduce environment degradation while still ensuring competitiveness.

Under a programme of cluster development in India, UNIDO in collaboration with Ministry of SSI, Government of India, organised workshops for sharing best practices in the years 2001 to 2003. However, there is a need to institute indigenous forum(s) that can carry on the process of documenting best practices and support mutual learning on an on-going basis. Such forum(s) also need to find alternate ways of

cluster development that are best suited for different clusters and the objectives therein. Currently, there are two national institutions viz. Entrepreneurship Development Institute of India, Ahmedabad and National Institute of Small Industries & Extension Training, Hyderabad, besides two state-level institutions that are aspiring to take up the role of such forums and provide necessary training in the areas related to cluster development. Considering the wide regional and sectoral variety of the Indian economy, institutions at the regional level need to be encouraged to take up such a role in their regional contexts. A projection of the human resources required to undertake cluster initiatives has been mapped below. It reflects the wide gap at different levels requiring synergic institutional interventions.

**Resource Infrastructure Requirements for taking up Cluster Initiatives across 5000 additional clusters**

<b>Human Resources</b>			
	<b>Projected Requirements for 5 years by 2010</b>	<b>Estimated availability in the year 2005</b>	<b>Likely Level of education requirements</b>
CDAs	10000	350	Graduates and Post graduates
TAs	2000	12	Graduates and Post graduates
BDS Providers	15000	2000	Post graduates and technical graduates
Socially relevant service providers	30000	10000	Graduates and above
Network Brokers	30000	300	Graduates and above
BMO Executives	20000	300	Graduates and above
Policy and Cluster related Researchers	300	10	Post graduates and above
<b>Total</b>	<b>107300</b>	<b>12972</b>	

## **Bibliography**

- Awasthi, Dinesh (2005), "Dynamics of Cluster Development in India: Emerging Lessons and Future Strategies
- IKED: The clusters policy white book
- MG-I: Mukesh Gulati, Building Competitiveness Among small enterprises using cluster approach
- CIGB: Cluster Initiative Greenbook
- PC: Planning Commission, Employment creation and skill development through development of clusters of small establishments
- Rahul Varman: Comparison between....cluster approaches
- SBI Uptech Brochure
- Tamal Sarkar, PhD thesis chapter 2 & 3