



STRENGTHENING INDIAN SME CLUSTERS: UNIDO'S EXPERIENCE

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BACKGROUND

Evidence suggests that in an increasing globalized economy, efficient local business systems (clusters or industrial districts) tend to play a major role (Porter 1998 and Enright, 1998).

Clusters can be defined as sectoral and geographical concentration of enterprises, in particular Small and Medium Enterprises (SME), faced with common opportunities and threats which can: a) give rise to **external economies** (e.g. specialised suppliers of raw materials, components and machinery; sector specific skills etc.); b) favour the emergence of **specialized technical, administrative and financial services**; c) create a conducive ground for the development of **interfirm cooperation and specialization** as well as of **cooperation among public and private local institutions** to promote local production, innovation and collective learning.

An example might be a localized knitwear and garment industry, which includes within a small geographical area knitting firms, cloth-finishing, dyeing and printing units, garment producers, merchant buyers and exporters, and also producers of specialized inputs such as thread, buttons up to textile machine suppliers.

The SME within efficiently organized clusters have demonstrated to be particularly innovative and able to compete successfully in the global economy¹.

In India, it is estimated that there are approximately 350 Small Scale Industries (SSI)² clusters and around 2000 rural and artisan based clusters contributing to almost 60% of the manufactured exports and 40% of the employment in the manufacturing industry. These clusters have been in existence in India for several decades and sometimes even for centuries (Gulati, 1996).

Some of these clusters are very performing like the one of Tirupur (Tamil Nadu) which contributes to 80% of the country's cotton hosiery exports or Ludhiana (Punjab), a city that is also known as the Manchester of India, contributing to the

¹ Literature provides an extensive documentation of performing clusters in both industrialized and developing countries (Goodman, Bamford, and Saynor 1989; Pyke, Becattini and Sengenberger, 1990; Humphrey and Schmitz 1995, Sengenberger, Loveman, and Piore 1990, Nadvi 1995).

² Reference is made to SSI rather than SME as in India the SSI sector is subject to specific regulations and support programs and SSI are also the main beneficiaries of UNIDO's projects. SSI in India are defined in terms of gross capital investment. The investment ceiling for SSI is currently of 30 million Rupies (approx. US\$ 700,000).

production of 95% of the country's woollen knitwear, 85% of the country's sewing machines and 60% of the nation's bicycle and bicycle parts.

Nevertheless, despite these striking figures, the majority of Indian clusters are not fulfilling their potential. In many cases the firms in these numerous "lagging" clusters are merely surviving on the basis of low costs of labour. They do not participate in supportive production networks involving effective collaboration between firms and service institutions neither they compete on the basis of improvements in their market connections, products, technologies, and skills.

Some of the main obstacles hampering cluster development are the following: the lack of a cultural attitude towards cooperation both at the firm and at the institutional level; the significance of the transaction costs that need to be borne to identify suitable network partners and to forge relationships; the absence of incentives (i.e. financial, fiscal, etc.) to the implementation of common projects; the imperfect market functioning for the provision of crucial inputs for networking development such as information and innovation; and the high risk of "free riding" that is especially faced in contexts where the legal framework to back up joint endeavours is relatively underdeveloped (Ceglie, Dini, Clara, UNIDO 1999).

Evidence suggests that the intervention of an "external agent" (i.e. national/regional development agencies, SME support institution, international organizations etc.) that acts as a catalyst to facilitate the emergence of clusters and networks can greatly reduce the significance of the above factors. Among cases of developing countries, Nadvi (1995) provides interesting examples of successful interventions aimed at fostering co-operative relations within SME clusters drawn from the experience of Brazil, Mexico and India. Humphrey and Schmitz (1995) have analysed the Danish Networking Programme and the Chilean Development Projects (PROFO) both programs consisting of a carefully designed set of public incentives aiming at promoting networks of similar or complementary firms.

On the basis of its experience on SME promotion in developing countries and taking stock of the general reflection on policy to foster cluster development, UNIDO has been promoting cluster development projects in Latin America, Africa and Asia in the last five years. These projects are characterised by an emphasis on the **promotion of efficient systems of relations** between enterprises and between enterprises and institutions which allow enterprises to overcome their isolation and reach new **collective competitive advantages** beyond the reach of individual small firms. The projects also emphasise the development of local institutions to act as facilitators of the clustering/networking process (cluster

agents). These cluster agents are responsible to support the emergence of a joint entrepreneurial vision involving the whole business system - composed by firms, their suppliers, buyers and support institutions - and be able to enact that vision through common development projects (e.g. joint purchase of raw material, joint marketing, development of new products, creation of common services such as water treatment plants, information centres, etc.).

The article describes the main features of the UNIDO cluster programme in India and aims to demonstrate that an external agent like UNIDO can effectively promote cluster development. The next section highlights the main features of the UNIDO cluster programme in India, then the intervention in a specific cluster, namely Jaipur is discussed, methodological principles are presented and finally some lessons learned are drawn in the last section.

THE UNIDO PROGRAMME

Until UNIDO's intervention there were neither truly specific government policies nor national type of initiatives aiming at promoting cluster development. The State Bank of India (SBI) and the Small Industries Development Bank of India (SIDBI) have promoted initiatives defined as cluster development programmes aiming at upgrading the competitiveness of selected firms located in some clusters. The rationale of these initiatives was that by assisting geographically concentrated firms working in the same sector the impact would be maximised through demonstration effects. Nevertheless these initiatives still considered the firms as individual entities and did not try to promote collective efficiency, which should be the main purpose of a cluster intervention.

In December 1995 the Department of "Small Scale Industries and Agro & Rural industries" (DSSI & ARI), Ministry of industry, set up an Expert Committee on Small Enterprises (also known as the Abid Hussain Committee, from the name of his chairman, former member Planning Commission). The Committee report, which was released in 1997, advocated cluster development as the approach to be followed to promote SSI. The report stated: "Focus on clusters is the centre-piece of the new approach in an increasing public private partnership in setting up support systems for small scale enterprises. Such public-private partnership would thrive particularly in clusters of small scale enterprises...The Expert Group therefore recommends that state governments identify the existing SSI clusters and then promote new types of organisations which are joint ventures between the state governments or local authorities and business associations in these clusters".

In 1996 UNIDO was requested by the DSSI, Ministry of Industry, to conduct a mapping of SSI clusters, promote pilot projects in selected clusters and assist the Ministry to formulate a national cluster development programme.

With an initial contribution from the Italian Ministry of Foreign Affairs recently joined by the Swiss Agency for Development and Cooperation, UNIDO prepared a four year comprehensive programme (now extended to seven years) for cluster development. The aim of the programme is to develop sustainable Indian capabilities to promote SSI networking and cluster development by:

- Assessing the competitiveness and organization of SSI clusters through diagnostic studies.
- Assisting the clusters' actors (firms and their associations, support institutions, NGOs, local governments, Universities, etc.) in developing and implementing joint projects and a common strategy to improve the cluster performance.
- Building up through training, workshops and study tours, the capacity of "cluster development agents" (employees of local development agencies, SSI support institutions/associations, etc.) to promote cluster development activities.
- Promoting cluster benchmarking at the national and international level.
- Networking with local and national SSI support institutions and association to ensure their support in the implementation of the clusters' action plans.
- Providing policy advice on SSI cluster development, including advice on re-orienting the services of SSI supportive Institutions/Associations towards cluster needs.
- Assisting the Indian Government in organizing and implementing a sustainable national cluster programme.
- Documenting and disseminating the methodological experiences and gains made at the cluster and national levels during the course of the programme.

Data on more than 100 clusters have been analyzed by UNIDO to prepare a first mapping of Indian clusters in order to appraise their geographical spread, sectoral distribution and relevance to the economy. Moreover detailed diagnostic studies were conducted in ten clusters, namely Tirupur (cotton knitwear), Pune (food-processing), Jaipur (textile-printing), Ludhiana (knitwear), Phagwara (diesel engines), Surat (diamonds), Calcutta (fans), Chennai (leather), Noida (electronics) and Batala (machine tools).

The objective of the diagnostic studies was to assess the structure of a sample of SSI clusters in India, identify issues related to their development, and draw lessons on how to develop pilot initiatives together with local firms that would deepen their mutual linkages and improve their performance. Thus, unlike previous approaches, neither the ministry of industry nor UNIDO would decide what services to provide or what initiatives to undertake; but rather the main cluster actors would do so in collaboration with UNIDO and public agencies, based on a joint understanding of local conditions and sectoral prospects.

A team of Indian consultants, who later became the UNIDO Focal Point of the programme, conducted these studies through interviews with local firms, producers associations, public sector agencies and research institutions. They mapped out existing business practices, inter-firm relationships and the structure of production in each selected cluster. Their study identified the nature and role of institutional support and market linkages available to SSI in each cluster. It also outlined the main issues raised by firms regarding the problems and opportunities they faced in their particular sector (Tewari, 1997).

Jaipur, Pune, Ludhiana and Tirupur, were jointly selected by the Ministry of industry and UNIDO for pilot initiatives.

The UNIDO Focal Point is currently based in New Delhi and includes four economists and two support staffs. This small group is responsible for interacting with each cluster, assist the local actors in preparing and implementing their action plans, creating awareness about the importance of building local ties among firms, linking them with relevant institutions at the regional, national and international level, monitoring local initiatives, and encouraging exchange of experiences among different clusters.

In order to illustrate a concrete example of cluster development activities, the following section analyses UNIDO's intervention in Jaipur, one of the four clusters assisted by the programme. Jaipur has been chosen as an example of a cluster which has being stagnating - if not declining - for many years despite its enormous potential for growth and where the role of an external actor can produce considerable impact.

THE CASE OF JAIPUR

Jaipur (capital of Rajasthan) is known worldwide for its hand printed textile products (e.g. bedspreads, furnishing items, running cloth and readymade

garments). There are two kinds of hand printing processes, namely traditional “Block printing” and “Screen-printing”.

It is estimated that in Jaipur there are approximately 900 firms in this industry employing almost 10,000 persons. In the related business and trading activities it is estimated that another 5,000 persons are dependent on this industry for their livelihood. There are two main locations where the firms are concentrated in the Jaipur cluster: the villages of Bagru and Sanganer. The village of Bagru houses 150 hand block printing firms. The village of Sanganer has 250 units of traditional hand block printing and almost the same number of screen printing units.

Until the 60’s, block printing was the only method of production for both utility products and exclusive items. During the early 1960’s the screen-printing process was adopted in Sanganer. Chemical and synthetic dyes, which simplify considerably the production process, were increasingly used to obtain brighter colours as well as to increase the product variety. Instead of concentrating on the high-end market, which requires eco-friendly natural dyes and the traditional process of hand printing, the Block printers began to compete with the Screen printers.

During the 1980’s and 1990’s export of hand printed textiles increased considerably thanks to the worldwide appreciation for ethnic designs and usage of ecofriendly natural dyes. Nevertheless Jaipur’s hand printed textile cluster, with an export volume of only 30 million US\$, enjoys a share of less than 15 percent of the 204 million US\$ national exports of hand printed textile. Moreover few companies reap the benefits of the expanding foreign markets (i.e. USA, UK, Japan, Italy, France, Australia and Canada).

The hand block printing industry in Jaipur is currently competing on the basis of low prices, use of cheap materials and cheap labor. Lack of innovation and infighting among various actors in the industry are the other characteristics of the cluster. The industrial units despite sharing the same challenges and opportunities are not united to take up common issues for their long-term development. The level of co-operation between the printers, traders (who have been able to maximise their benefits at the expense of the other cluster actors) and designers is poor.

UNIDO’s intervention

From the cluster diagnostic study emerged that the main problem was clearly the cluster disarticulation (i.e. lack of linkages among the different cluster actors, absence of common initiatives and of a shared development vision). The

development of efficient and effective linkages between producers, buyers, suppliers, service providers, technical and financial support institutions and Government agencies was considered to be a priority as well as instrumental to address the other cluster's problems. This required the revitalization of existing SSI associations and the creation of new private-led intermediaries' actors (networks³) through which reaching the individual firms. A broad cluster action plan was prepared to address these issues with a long-term objective to exploit the opportunities offered by the national and international market.

The block printers of Sanganer were approached through their old association, the Calico Printers Co-operative Society Ltd. This 55-year old cooperative which in the past had been very active (i.e. by sourcing the raw material on behalf of the printers and marketing their products through a common showroom) had not provided any services to its members in the last 12 years. Membership had declined from 100 to 26. With UNIDO assistance after several rounds of discussion, a new president was elected in 1997 and a programmatic platform prepared.

The Block printers of Bagru did not have any umbrella association. Historically, attempts to promote such an association had not yielded positive results. It was therefore, attempted, to create smaller groups/networks of printers at Bagru. A local NGO, the Indian Institute for Rural development (IIRD) was given the responsibility of coordinating the project activities in Bagru.

Finally, before UNIDO's intervention there was no association of exporters dealing with hand printed textiles products. However, need for such a group was felt to strengthen exporters' backward linkages with the printers and forward linkages with foreign markets. Simple activities like workshops on internet, design, etc. were conducted to start interaction among a few targeted exporters. These exporters after several meetings formed a "Consortium of Textile Exporters" (COTEX).

The newly established or revitalized associations and consortia have with UNIDO assistance prioritized their needs and identified a number of joint initiatives.

In both Sanganer and Bagru the projects undertaken were both of a commercial and promotional kind such as marketing programmes, training courses in design,

³ The term **network** refers to a group of firms that co-operate on a joint development project -- complementing each other and specialising in order to overcome common problems, achieve collective efficiency and conquer markets beyond their individual reach. (Ceglie, Dini, Clara, UNIDO 1999)

preparation of common catalogues and web-sites, joint participation to national and international fairs. These projects contributed significantly to engender optimism and trust among the cluster's actors and to consolidate their willingness for further cooperation.

The organization of product exhibitions in Jaipur and Delhi as well as the participation to international fairs in Japan and Italy has proved to be particularly effective. The participants have been able to better understand the clients' needs and requirements and have learned to work together for the success of the initiatives jointly undertaken (e.g. preparation of catalogues, organization of stands, etc.). Thanks to the national exhibitions the sales of the hand-block printers have more than doubled in a year. Spurred by this successful comeback the block printers are now planning to have more exhibitions in other parts of the country. They have also reopened their showroom in Sanganer, which had remained closed for more than 12 years and they are planning to open other showrooms in Delhi and Mumbai.

The exposure to new customers has motivated them to improve the quality and variety of their products. With the assistance of the National Institute of Design, Ahmedabad, brought in by UNIDO, the Calico printers have developed a new clothesline as well as new products such as file folders, handbag, purses, wall hangings and furnishing. These activities have been mainly funded by the participating enterprises. For the most expensive ones like the participation to the international fairs UNIDO has negotiated with institutions like SIDBI the concession of grants. The printers association is now working out a loan scheme for technology upgradation with the Government of Rajasthan.

Several local and national institutions are currently involved in UNIDO project in Jaipur such as the: Indian Institute for Rural Development (IIRD); National Bank for Agriculture and Rural Development (NABARD); Small Industries Development Bank of India (SIDBI), PHD Chamber of Commerce & Industry (PHDCCI), Rajasthan Chamber of Commerce and Industry (RCCI); Rajasthan State Industrial Development & investment Corporation (RSIC), Development Commissioner (Handicrafts), National Institute of Design (NID), National Institute of Fashion Technology (NIFT), Development Commissioner (Handlooms).

Continuous interaction is slowly ironing out the elements of doubts and hesitance from the minds of the cluster actors (e.g. the printers of Calico, the networks of Bagru, the exporters of COTEX etc.). With UNIDO assistance and the close involvement of the above mentioned institutions, the cluster actors are preparing the feasibility studies for strategic projects such as the rebuilding of a common

washing facility, the development of a common brand, the organization of credit guarantee cooperatives, the creation of an ethnic industrial estate and the setting –up of an information resource centre on fashion and market trends. These strategic projects are the outcome of joint ventures between the public and private sector as also recommended by the Abid Hussain Committee.

Until now the results are quite satisfactory: more than 120 firms have benefited from the project, there has been a sharp increase in sales and exports, more than \$60,000 private funds have already been raised for common projects and above all the cluster has found the energy and willingness to move ahead and exploit the considerable opportunities for growth offered by the Indian and international market.

Finally, the UNIDO Focal Point is gradually reducing its assistance as representatives of the networks and Associations established or revitalized have been empowered to continue the cluster development process.

METHODOLOGICAL PRINCIPLES

On the basis of the experience described above it is possible to draw some indications on the methodology, which UNIDO has followed in its intervention at the cluster level.

Four phases can be outlined: 1) the diagnostic phase; 2) the pilot phase; 3) the strategic and institutional networking phase and 4) the self-management phase. These phases should not be considered in a rigid manner especially for the institutional networking component, which is clearly present in all three phases but more pronounced in the last one.

A key tool for cluster development is the **diagnostic study**. This study, if properly conducted, does not only generate crucial information about the economic and social conditions of the cluster analysed, its potentials, the inter-firm relationships, and the institutional support mechanisms. If conducted in a participatory way, it also provides a means for building awareness, promoting trust among the cluster actors and developing initial cluster action-plans in which the local firms and institutions are closely involved. Moreover, the diagnostic study helps to strengthen institutional mechanisms for the implementation of these plans, by (a) fostering cooperation among the cluster actors through the very process of assessment- formulation, and (b) identify leaders and suitable counterparts who are available, willing, and competent to assist ongoing implementation.

As we have seen, the cluster action-plans are not once-for-all prescriptions. Rather, they are delineation of important initial cooperative steps to be taken by the local players and to be constantly adjusted as circumstances change and the basis for local cooperation and trust are built up. Thus the diagnostic study is the essential first step in developing long-term local capacities to handle evolving economic and technical circumstances.

While the diagnostic phase ends with the preparation of a broader action plan for the overall cluster, it is during the **pilot phase** that groups of firms sharing similar constraints are formed (i.e. networks and association like COTEX and Calico) and specific action plans and initiatives are prepared and implemented. During this phase co-operation should start bearing concrete results to the participating enterprises. In general as we have seen in the case of Jaipur, the projects undertaken are of a commercial and/or promotional kind: joint participation in fairs, joint purchase of raw material, design of a collective catalogue, etc. The idea is to generate visible results (although of a short-term nature) in order to engender optimism and trust and consolidate the networks/associations' willingness to undertake long term strategic initiatives.

During the **strategic and institutional networking phase** long term strategic projects are conceptualised, their feasibility studies are conducted and their implementation begin. These projects generally entail an increase in the degree of specialization by process and/or by product of the firms involved; the restructuring or creation of common service facilities; the launching of new product lines and common brands.

During this phase the involvement of both technical and financial institutions becomes essential for the realization of the strategic projects. Thus UNIDO consultants ensure that the networks/associations assisted can draw the assistance they require from the available institutions. In a relatively weak institutional environment, this task often implies upgrading the capacity of specialised service centres or, in some cases, even bringing about their establishment.

The final phase of a cluster intervention is the **self-management phase**, which coincides with the networks/associations earning greater autonomy from the UNIDO consultants and the capability of independently carrying out further joint activities. Self-management is not always an easy step and it has been observed that often networks/associations tend to lean on UNIDO's assistance for a longer time than initially envisaged. In order to avoid dependency the

workplan established by the network members and the UNIDO consultant must have a specific time-frame and must not continue for an undefined time period. In this way, the cluster actors know from the beginning that they can count on UNIDO's assistance only for a limited period of time and must use this time wisely.

The last element, which is worth stressing, is the role of the UNIDO consultants. In the initial phases of network/association establishment or revitalization, the consultants are the real leaders. As networks/associations develop, the function of the consultants must shift towards softer co-ordination and a progressive transfer of responsibilities from them to the entrepreneurs must be ensured. Often, in order to balance the reduction of the assistance by the consultants, networks/associations contract a manager to assist in the implementation and up-grading of the actionplan (Ceglie, Dini, Clara, UNIDO 1999).

FRAMING A SUSTAINABLE NATIONAL PROGRAMME

With the aim of broadening the scope and increasing the impact of the cluster intervention the challenge ahead has become the development of a sustainable national SSI cluster programme. This required the extension of the interventions to other clusters by involving state directors of industry and a closer association to the programme of key national SSI support institutions and development banks. At the same time it became necessary to frame an "institutional mechanism" to ensure proper coordination among national, state and cluster level institutions.

In November 1998 the Department of SSI and UNIDO organized in Mysore a national workshop on "Evolution of Cluster Development". The objective of the workshop was to discuss the results of UNIDO cluster activities as well as the experience in this field of other institutions such as SIDBI, SBI and NSIC and on this basis to develop a sustainable national cluster development programme.

One of the main outcomes of the workshop was the definition of the role and responsibilities of national, state and cluster actors. Three tiers were identified and the following recommendations were made:

1. A National Advisory Committee including those private and public institutions relevant for cluster promotion activities will be responsible for the overall coordination of the programme, for defining together with the DSSI the resources to be allocated to the programme, to promote the exchange of

experiences among the initiatives undertaken in the different states and to reorient the services of national institutions when needed.

2. The States through their Director of Industries will organize a comprehensive assessment of the needs of their clusters, promote the creation of local committees at the cluster level, support the cluster action plans by providing financial assistance as well as by improving the regulatory framework.
3. The Local Committees at the cluster level composed by representatives of the private and public sector should play a catalytic role in developing a cluster action plan and in supporting and monitoring its implementation which will be the responsibility of the private sector.

With this new embryonic structure taking shape the role of UNIDO is changing. From direct intervention at the cluster level, UNIDO is gradually shifting its focus on building the capacity of those policy makers, State Directors of Industry and representatives of those SSI support institutions (including development banks) which are taking the lead in the national cluster development programme.

Awareness seminar and workshops on cluster development are being organized at the national and state level. Training courses on how to conduct cluster diagnostic studies, prepare, implement and monitor cluster development action plans have been organized. Sharing of cluster development experiences and benchmarking between clusters have also been promoted.

Finally, several options for the long-term sustainability of the UNIDO focal Point (i.e. its absorption by an existing national institution, its long-term support as an autonomous unit/foundation by a coalition of players from the private and public sector) are currently examined.

LESSONS LEARNED

From the UNIDO cluster programme in India the following main lessons can be drawn:

- Cluster development is essentially about bringing change in the way people (i.e. firms, institutions, government authorities, NGOs) interrelate among each other to promote a more conducive business environment and in the way they manage their own development process. Therefore cluster interventions focus

on “soft” factors of production such as information (on markets, regulations, technology, etc.), knowledge/skills and organizational capacity as compared to more traditional types of assistance where the technological and financial components are prevailing. The emphasis on the whole business system - and not on the individual enterprise – is another important difference between cluster development programmes and other traditional technical assistance programmes. The peculiarity of this approach entails three main consequences:

1. Human resource development is the main focus of the programme as people are its key asset. Building awareness on the principles of clustering and networking, training of cluster development agents, organizing study tours aiming to give first hand exposure to successful cluster experiences, documenting and disseminating the methodological experiences and gains made during the programme implementation are among the main activities of a cluster programme.
2. Traditional technological and financial types of assistance are a necessary complement to cluster development, which usually enhance their use by the enterprises. The collective projects generated by the cluster actors demand technical and financial inputs for their execution. This demand is not directly satisfied by the cluster development project (as it is not part of its core functions) but is channelled by the project to other available providers of technical/financial services. This way the relationships between the enterprises and the local service providers can be optimised while the usage rate of the services is increased (Ceglie, Dini, Clara, UNIDO, 1999).
3. Conventional evaluation criteria are not sufficient to assess cluster projects' impact and cost effectiveness. Both traditional qualitative (related to the specific objectives and outputs of the work plans) and quantitative criteria (e.g. sales, exports, performance, employment, etc.) provide a partial measurement of the overall impact of a cluster project. Important indirect outcome such as the increase in the culture of cooperation, the re-establishment of a local community identity (like in the case of Jaipur), the emergence of community leaders, the improvement of the quality of work and life of the smallest member firms, the attraction of new firms, the linkages established with institutions and the impact on state or regional policies should also be taken into consideration to measure the project success (Rosenfeld, 1996).

- In each cluster, intervention must be tailor made to the specific needs to be identified and prioritized together with the cluster actors (demand orientation). These actors must be committed to reach the established targets and therefore must own the project from the very beginning (beneficiaries' ownership).
- Initiatives that expose networks of firms to potential customers/markets requirements are an effective stimulus for firm restructuring and modernization. Similarly, benchmarking with successful clusters (preferably in the same country as the conditions are more similar) can be particular effective in identifying and then filling the gaps responsible for a lower performance.
- Cluster development is a long-term process. UNIDO's experience in India indicates that three to four years is a minimum period to generate a sustainable development process at the cluster level.

FINAL CONSIDERATION

Three years have passed since the recommendations of the Abid Hussain Committee have been published as well as from UNIDO's first pilot intervention in selected clusters.

Concepts such as cluster development, collective efficiency, catalytic role for the Government and private-led initiative have become familiar and widely accepted among policy makers and government officers responsible for SSI promotion.

The Ministry of Industry has reformulated the recently launched "UP-Tech Programme" designed to foster technological upgradation at the cluster level to include the above concepts and make it a more holistic approach.

Several Indian states are formulating comprehensive cluster development programmes.

In spite of all challenges still ahead to develop an effective and sustainable national cluster programme, the above factors are all positive signals indicating that the cluster approach could become an effective new way for promoting SSI development in India.

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