Changing Paradigms of Cluster Development

- Conference Theme Paper

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Abbreviations

AHVY	Baba Saheb Ambedkar Hastshilp Vikas Yojana
BDS	Business Development Service
BMO	Business Membership Organisation
BMZ	Federal Ministry of Economic Cooperation and Development, Germany
CDP	Cluster Development Programme
CII	Confederation of Indian Industries
CSC	Center for Strategy and Competitiveness
CSR	Corporate Social Responsibility
DC-MSME	Development Commissioner Micro, Small and Medium Enterprises
DCSSI	Development Commissioner for Small Scale Industries
DFID	Department of International Development, Government of UK
DMIC	Delhi Mumbai Industrial Corridor
DPR	Detailed Project Report
DST	Department of Science and Technology
EDA	Enterprise Development Agency
EU	European Union
FMC	Foundation for MSME Clusters
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IDB	Inter-American Development Bank
IHDS	Integrated Handlooms Development Scheme
IIUS	Industrial Infrastructure Up-gradation Scheme
ILO	International Labour Organisation
ISIPO	Iran Small Industry and Industrial Park Organization
M & E	Monitoring & Evaluation
MIF	Multilateral Investment Fund
MPI	Ministry of Planning and Investment
MSE	Micro and Small Enterprise
MSECDP	Micro and Small Enterprise Cluster Development Programme
MSME	Micro, Small and Medium Enterprise
NABARD	National Bank for Agriculture and Rural Development
NMDFC	National Minorities Development & Finance Corporation
NSIC	National Small Industries Corporation
PAC	Political Action Committee
PIA	Pacchetti Integrati di Agevolazione
PIC	Promoting Innovation Clusters
PSIC	Punjab Small Industries Corporation
SDC	Swiss Agency for Development and Cooperation
SFURTI	Scheme of Fund for Regeneration of Traditional Industries

SGF	Strategic Growth Forum
SICDP	Small Industries Cluster Development Programme
SIDBI	Small Industries Development Bank of India
SITP	Scheme for Integrated Textile Parks
SME	Small Medium Enterprise
SMEDA	Small & Medium Enterprise Development Authority
SSI	Small Scale Industries
TCI	The Competitiveness Institute
TERI	The Energy and Resource Institute
TUP	Technology Upgradation Programme
UNIDO	United Nations Industrial Development Organization
UPTECH	Integrated Technology Up gradation and Management Programme
USAID	U.S Agency for International Development

I. Introduction

Often Micro Small and Medium Enterprises (MSMEs) producing a range of similar or same products co-exist in typical geographical locations for decades and even for centuries in many countries. This phenomenon is referred to as clustering of MSMEs. Such clusters are found in plenty, both in developed and transition economies. The foundations of this concept can be traced back to the work of the economist Alfred Marshall, who in Principles of Economics (1890) described the phenomenon as “the concentration of specialized industries in particular localities” and noted that these agglomerations of small-scale businesses enjoyed economies of scale comparable to those of large firms. Michael Porter was then instrumental in popularizing the concept of industry clusters is his book The Competitive Advantage of Nations (1990). He defined cluster as "a geographical proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and externalities". Thereafter, there has been a surge of interest in clusters as drivers of economic growth and hubs of innovation. Rosenfeld (1997) defines cluster 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. UNIDO defines cluster as concentration of micro, small and medium enterprises in a given geographical location producing same or a similar type of products or services and these enterprises face similar type of opportunities and threats. The cluster is known by the name of the product being produced by principal firms and the place they are located in.

Over the past two decade, there has been tremendous growth in the practice of cluster-based competitiveness initiatives. It has gained increasing prominence on the agenda of international development organizations, governments, companies, and other institutions over the last decade.. As a result, today, there are hundreds of cluster initiatives in action around the world, all with their unique focus and shape depending on where and how they emerged and who started the initiative and with what objective. The Cluster Initiative Green book, for example, identified more than 500 cluster initiatives around the world by 2003 which have reached to more than 5000 by 2013 according to an internal estimation undertaken by FMC. The bottom line is that cluster-based initiatives have now become a widely-used approach to promote economic development – in both industrialized and developing countries. It has also started getting recognized in under developed countries.

The purpose of this note is to provide an overview of the practice of competitiveness through cluster development approach. We begin by looking at some of the roots of the practice and how it has evolved to become a significant force in the way many organizations and many countries now pursue economic development. We then provide an overview of the practice of competitiveness, looking specifically at how cluster-based initiatives have been developed in the context of multilateral and regional organizations such as the UNIDO, the World Bank, the Inter-American Development Bank, USAID, and in industrialized countries.

This theme paper captures the key paradigms that will shape future cluster initiatives in the context of developing countries. It is not intended to provide any prescriptions or policy recommendations here but provide a list of key paradigms that need to be focused for discussions in the conference. It is expected that the speakers, participants and moderators will either provide some of the answers or add to the list of contemporary challenges thus increasing the knowledge base about the gaps.

II. Cluster Stakeholders, Types, Geographical Presence

Cluster Stakeholders

A cluster has a range of stakeholders, both within (the geographical limit) as well as outside the cluster. The firms producing 'the product' by which a cluster is known are called principal firms or principal stakeholders of the cluster. The principal firms obtain inputs from a range of supporting firms through backward and forward linkages. These include raw material suppliers and manufacturers of parts and machinery; intermediary buyers like traders, exporters and import agents; and technical and financial service providers like banks, technical institutions, private business development service (BDS) providers on quality, environment, design, energy, capital investment, etc. Various interest groups such as product and umbrella associations/forums of firms also contribute towards the dynamics of the cluster.

There is no rule either regarding the generality of the product, or largeness of the area that a cluster covers[1]. In practice, there exists considerable variety in classifying a cluster, especially with respect to how wide a product range and the geographic area a cluster should consist of. However, too wide a product range can make product group meaningless as the common opportunities and threats lose their sharpness or specificity. Similarly, too large a geographical area deprives the units in the cluster to exploit the development potential through proactive joint action. On the other hand, defining a product too narrowly, especially in the context of a transition economy can make the entire process of cluster mapping meaningless, as it becomes difficult to find a sizeable number of similar firms, with commonalities that enable interconnectedness. The size and product width characteristic of a cluster should therefore be judged country wise depending on the degree of industrialization and the nature of the product.

Cluster Types

There are varieties in cluster types in terms of its **spread (**Localised clusters are concentrated geographically while dispersed clusters are spread across wider geographic areas); d**ensity (**The density of a cluster defines its number of firms and or the volume of business handled by it. Accordingly a cluster can be dense or sparse); **breadth** (The breadth of a cluster defines the

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[1] *For example, in Austria, a successful wood cluster exists with less than a dozen firms, whereas the knitwear cluster of Prato in Italy had 9000 firms at one point of time. (MSME: 2006). Italy is probably the only country in the world that has a national law[1] for promotion of clusters, yet different regions within Italy have their own criteria for classifying areas as clusters, reflecting the need for diversity under the conceptual framework.*

availability of few (narrow cluster) or more (broad cluster) of its related industries within its geographic range); and **depth**: Depth of a cluster depicts the availability of supply chains in the cluster. Deep clusters contain not only an industry but also the entire support service. Shallow clusters depend on the support services from outside.

A cluster can be categorised based on its primary product, performance and thematic challenges as explained below.

a) **Product**: Product wise, a cluster can be micro (including handicraft and handloom), traditional manufacturing, mostly MSMEs and few large firms (plastics, leather, food processing) and high-tech (bi-technology, software, etc.).

b) **Performance:** Performance wise a cluster can be overachiever (performing) or underachiever (non-performing) or "wannabe" (latent).

c) **Thematic Challenges**: Based on thematic challenges, a cluster can have the following variants, energy intensive (scope for energy savings), pollution intensive (scope for reducing pollution), location based disadvantages (need for relocation), quality challenged (need for quality up-gradation), financially weak (requiring innovative financing products), socially not responsible (needs for CSR), etc. As the table shows above, for certain clusters, there can be multiple needs, although for some certain needs are overwhelming as compared to others.

Table-1: Thematic Clusters

	Thematic Area	Clusters (Products Only)
1	Energy Intensive	Castings & Forging, Steel re-rolling, Foundry, Ceramics, Brick
2	Pollution Intensive	Leather, Dyes, Chemicals, Plastics, Electroplating, Fly Ash, Glass, Detergents, Dry Cells
3	Location Disadvantage	Textiles, Chemicals, Leather
4	Quality Challenged	Agro-processing, Pharmaceuticals
5	Socially not responsible	Safety Matches, Textiles, Leather

Presence of Clusters Globally

There is no data or estimation on number of clusters present globally. However, some regions/ countries have their own estimates. For example, Cluster Observatory in Europe has identified over 1,000 clusters in Europe. Similarly, also estimates around 6400 clusters in India. However, there is no global estimation on number, types and presence of clusters across the globe.

III. The Evolution of Global Cluster Initiatives

There is no definitive or widely-accepted version of what a cluster initiatives constitutes of. Some of the development agencies call them as competitiveness practices and some use the the work cluster development initiatives. USAID once reviewed and interviewed a number of practitioners and found that that this has been far from a linear process[2]. Rather, competitiveness initiatives represent the confluence of at least three distinct and separate developments that emerged through the 1980s: (i) the perceived loss of U.S. competitiveness and the quest for solutions; (ii) the development of competitiveness theory; and (iii) the growing emphasis around the world on the role of the private sector as the engine of economic growth. Each of these developments emerged independently of one another during the 1980s. However, over a period of time, they have become more closely inter-twined to shape the strategies and approaches often used to promote competitiveness.

While a number of initiatives were launched in the early 1990s, much of the significant growth in the use of cluster-based approaches has emerged towards end of 2000. Concomitant with this growth, donors have also started to explore the use of cluster-based initiatives in developing countries. One of the World Bank's earliest efforts was in Morocco in 1995. Carried out in close cooperation with the **World Bank** and with financing from the **European Union**, Le Maroc Competitif facilitated cluster development in four areas: textiles and apparel, sea products, tourism, and electronic and information technology. **UNIDO** started its first cluster initiative in 1993 in Senegal. The mandate of the UNIDO is to promote and accelerate sustainable industrial development in developing countries and economies in transition. In recent years, UNIDO has assumed an enhanced role in the global development agenda by focusing its activities on poverty reduction, inclusive globalization and environmental sustainability. It has worked in 29 countries for various cluster development initiatives. The major focus has been in Africa, followed by Central America, Asia and Latin America.

In India, it was only in 2002-03 that cluster development programmes (CDPs), especially in traditional manufacturing, gathered noticeable momentum at the national level, with lead taken by the **Ministry of MSME** and the introduction of the Small Industries Cluster Development Programme (SICDP) scheme. The Scheme was later renamed as Micro and Small Enterprise Cluster Development Programme (MSECDP), in the year 2006. The Ministry has also launched a cluster development programme for household (khadi and village industries) enterprises called the Scheme of Fund for Regeneration of Traditional Industries (SFURTI) too and has also

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[2] *Promoting Competitiveness in Practice prepared by Prepared for The U.S. Agency for International Development for USAID*

initiated an MSME support scheme called the National Manufacturing Competitiveness Programme (NMCP).

USAID launched its first major cluster-based competitiveness initiative in Lebanon in early 1998 and there has been substantial growth after that. USAID is now becoming an increasingly important player in promoting cluster-based approaches to economic growth. It has around 2419 competitiveness related initiatives throughout the globe (Source: http://map.usaid.gov). Some of these initiatives are though not named as cluster development but it has components akin to cluster development.

Similarly, the **Inter-American Development Bank** has also featured competitiveness as the theme of its 2001 Economic and Social Progress Report and approved one of its first major projects for a cluster-based program in Panama in mid-2002 and after that there has been substantial progress in its cluster initiatives. It is important to note that the IDB also promotes competitiveness through large policy-based loan programs. These programs are not called as cluster initiatives but have all the elements of the same. It involves extensive public-private dialogue on competitiveness issues. For example, in Peru, nine public-private working groups (known as mesas de trabajo) were established, each one focusing on a key competitiveness issue highlighted by the World Economic Forum's Global Competitiveness Report (such as financial systems and capital markets, foreign trade and investment, infrastructure, human resources, education, and others). Facilitated by outside consultants, the participants collaborated to develop a policy matrix of key reforms needed to foster improved competitiveness.

Since the early 2000s, the IDB has been involved in 18 PAC, mostly in the Southern Cone, which embrace about 10 clusters. So in total, 180 clusters were supported by IDB (Source: Casaburi G. and Pittaluga L., 2014, "Lessons Learned from Case Studies of Cluster Development Programs", in C.Pietrobelli, A.Maffioli, R.Stucchi (Eds.), 2014, The Evaluation of Cluster Development Programs, Washington DC: Inter-American Development Bank, chapter 9).

Another 30 clusters were supported by programs in other countries (Dominican Republic, Guatemala, Honduras, Panama, Haiti, Ecuador). Moreover, the Multilateral Investment Fund (MIF), part of the IDB Group and in charge of providing mainly grants to private sector entities, has also been supporting cluster development programs. Until 2007 MIF financed 72 programs in 72 clusters, of a size around US$1 or 2 million, with variable local co-financing shares. After 2007 the MIF approach changed slightly, with more emphasis on Local Economic Development programs, engaging firms as well institutions in well-defined territories. Since then an additional 40 programs have been financed. In sum, by and large, about **322 clusters** have been supported by the **IDB** Group since the early 2000s in Latin America. Many other programs have been developed by each country, notably in Brazil, where clusters have represented a common approach to local industrial policy for over a decade now.

A case in point is Europe, where two-thirds of European Union countries have introduced the cluster approach in their innovation policy, while several European initiatives are based on the provision of incentives and funding to boost competitive territorial advantages (Oxford Research AS-2008). The interest in geographical concentrations of firms has not gone unremarked in developing countries. A body of research has shown that clusters are also a widespread phenomenon in developing economies and can display levels of dynamism and innovation similar to those in industrialized countries (Oyelaran-Oyeyinka B. and McCormick D.-2007). The high-tech industry of Bangalore, India, the Chilean wine clusters and the Sialkot, Pakistan, surgical instruments cluster are examples of many successful cases. These dynamic clusters have achieved high growth levels, gained a stable foothold in the international market and generated wealth and prosperity at the local level.

PRO INNO Europe Initiative, launched in 2006, was one of the first initiatives to foster trans-national cooperation in the area of innovation policy development, including clusters, through the INNO-Nets (www.proinnoeurope.eu). The first generation of INNO-Nets focused on cluster policy cooperation, support to knowledge-based SMEs and start-ups, transnational knowledge valorization, the links of industry and research as well as innovation in services with the aim of stimulating transnational co-operation among different national or sub-national innovation programmes. The four INNO-Nets focusing on cluster policy cooperation formed the European Cluster Alliance, bringing together 88 cluster regions.

To explore real possibilities of transnational cooperation among clusters in the Atlantic Area, and to connect them together in order to facilitate their development at EU and international level, the AT-Clusters project was commenced in mid 2009 by the EU Territorial Cooperation Programme for the Atlantic Area, with partners from Brittany, South West Ireland, Vale do Ave (North Portugal) and the three Spanish regions of Asturias, Cantabria and Galicia (Lead partner) (http://www.atcluster.org/). The project is exploring the possibility of building up **meta-clusters (clusters of clusters)** to bring together the most dynamic enterprises from the partner regions. The project intends to: a) Improve the capacity of regional authorities in the identification and promotion of clusters; b) Improve clusters capacity to offer efficient services to their members, and contribute thus to their development, modernization, innovation and internationalization; c) Promote the cooperation among knowledge driven clusters in the Atlantic Area, to increase their competitiveness in the global market.

Cluster based initiatives are known to be in operation in more than 50 countries as per available literature. In a number of instances as identified by the Cluster Initiatives Green book, 2003, governments financed between 75 and 90 per cent, irrespective of the level of development of a country. Private sector has also chipped in, but its share is marginal. In most developed economies (e.g., France, Italy, Norway, Spain and South Korea) emphasis have been on promoting innovativeness in high-tech knowledge-based clusters through facilitating industry-academia-government networks; where as for developing economies the stress is on competitiveness. There is clear time framework of implementing a cluster initiative in most countries (at least 3 years) although in many cases such programmes are carried out as a dynamic long-term process. Different approaches are required.

While most of the cluster initiatives were initially targeted around manufacturing clusters but these initiatives are now being applied in agriculture and services sectors as well that include tourism, IT and other knowledge intensive industries. The knowledge driven cluster initiatives are however being seen mainly in the developed countries. In addition, several ministries that did not operate in the space of industrial development also began to see space for linking their interventions around social and environmental area around clusters. For example, in India, the ministries with a mandate on environment, gender, minorities, indigenous people, skills and labour also targeted some of their promotional programmes of assistance around clusters. The social area ministries such as Ministry of Minority Affairs and Women & Child Development have linked up some of their programmes with clusters. In India, there are also examples where though various development initiatives are linked to cluster development. A high investment national initiative called Delhi-Mumbai Industrial Corridor (DMIC) intends to connect with all the existing and potentially emerging clusters along the 1500 kms route in six states has been initiated. Similarly in Ethiopia, the Ministry of Urban Development and Construction has taken up setting up of new infrastructure for clusters in various cities that is intended to foster new enterprise development in clusters.

Cluster development initiatives during 1990-2000 were primarily focused on technology-intensive industries such as, medical devices, biopharmaceuticals, leather, auto components, etc. with broad objective of improving productivity and competitiveness of SMEs. However, during the period 2000-2010, many changes in terms of objectives have been witnessed. Cluster initiatives were subsequently applied for poverty alleviation, fostering business responsibility and inclusive growth by international agencies such as UNIDO and USAID while several countries developed focused interventions among Handlooms, Handicrafts and other rural enterprises in the informal sector. Innovation became focus of a number of European cluster initiatives across different sectors. In India, it is the Ministry of Science & Technology and National Innovation Council that initiated cluster initiatives with innovation focus. With a view to ensure cross learnings and promote commercial linkages across similar sectors in different countries, European Union and UNIDO supported select interventions across Italy, Vietnam, India and other European countries. With a view to support cluster branding, European Union and UNIDO undertook initiatives in Europe, Africa and Latin America to support a range of clusters across diverse sectors with unique products & services to offer.

A number of public schemes for cluster based development have also become operational with varying objectives, methodologies and scope, producing various results and lessons. However, there are few platforms and sources where evidence based learning of different cluster initiatives are readily available, particularly in the national context and more specifically in the developing country context. The cluster specific experiences and learnings from these initiatives is the least available. At international level, 'The Competitiveness Institute' (TCI) based in Barcelona has helped bridge this gap through its regular series of seminars and e-based learning platform.

Cluster Development Initiatives-Few examples

Italy: Approaches to supporting regional specialisation have broadened significantly over the years. It started of with programmes that focus on “traditional” industrial districts, which originated with the Law 317 (1991). Article 4 of the law was particularly significant because it formalizes the concept of “consortia” between small firms and gave prominence to the provision of collective services for groups of firms (often known as “real services”). This led to creation of a number of real service centers.

In 1999, a new national law on industrial clusters (140/99) simplified procedures and gave more power to the regions to develop their own strategies based on criteria that follow the national criteria but with some flexibility. Examples of regions that have successfully developed their own plans with regional funding to support clusters are Campania and Emilia Romagna. The Lombardia and Veneto regions have also developed their own legislative framework to support industrial districts.

Again, “Pacchetti Integrati di Agevolazione (PIA)” Networking is part of the 2000-2006 Country Operational Programme (Development of Local Entrepreneurship), promoted the consortia model for purchase of services, training, etc. Besides, there are programmes that have a strong regional development dimension, specifically programmes focusing on southern Italy. These are often co-funded through EU regional development funds. Finally, there are a number of more recent initiatives that emphasise high growth industries and that recognise the important regional concentration of skills and investment in these industries, including the Technological Districts.

Canada: In Canada, the Quebec Provincial Government was the first to adopt cluster development in 1991. They identified 14 clusters, established committees for each cluster and service centres. In 2002 Quebec Provincial Government entrusted cluster development activities to SGF, a government holding company. Some of the clusters which did exceedingly well included (a) Wine Cluster of Niagara, Ontario, which promoted unique “ice wines”, winning international awards and superior ratings through cluster level investment in advertising and marketing, (b) Silicon Valley cluster of Ottawa, whose success was linked to unprecedented R&D spending, access to laboratories, tax credits and start–up incentives, (c) Saskatoon Biotechnology Agriculture Cluster, etc.

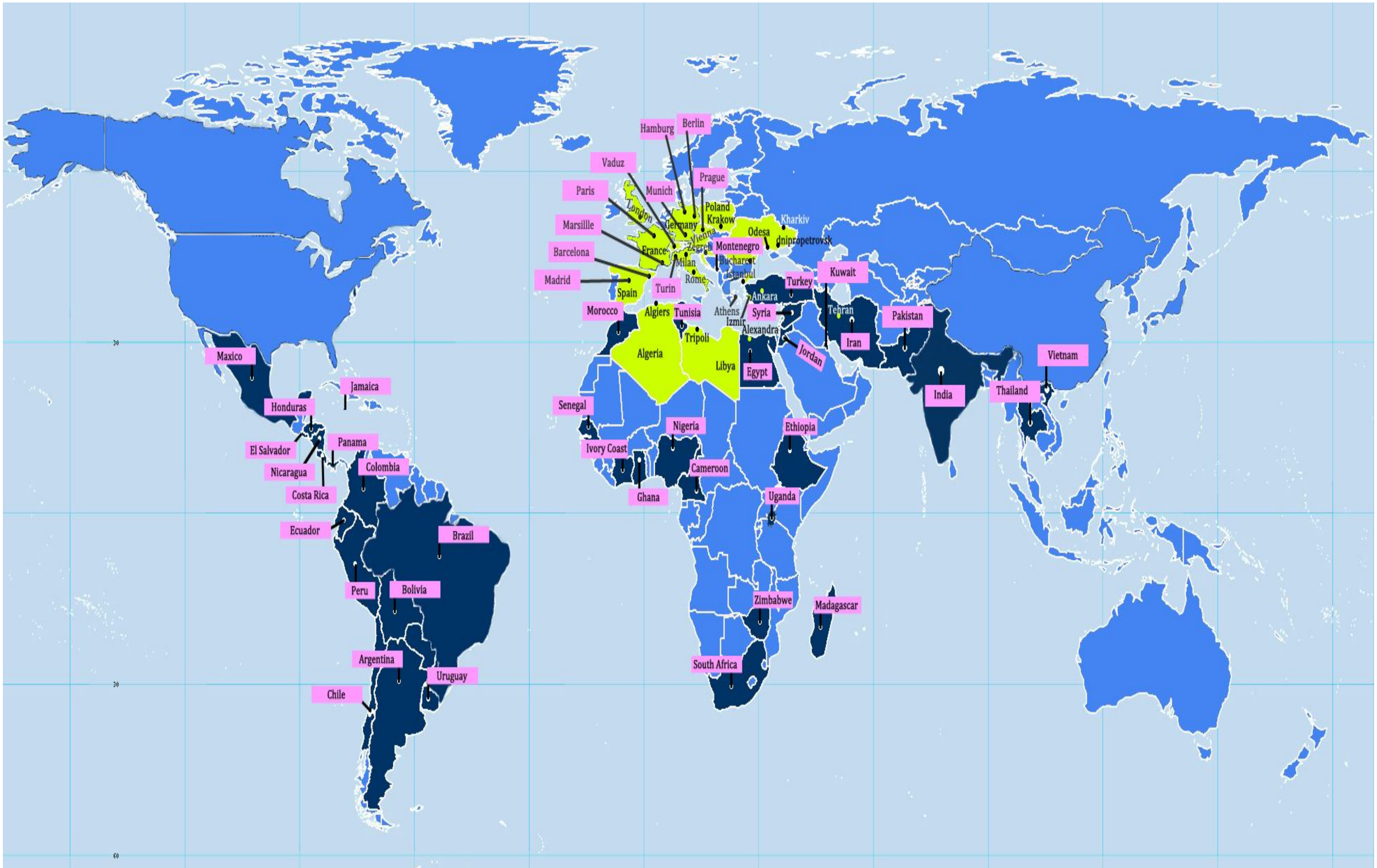
Pakistan: SMEDA in collaboration with PSIC and UNIDO has started “Cluster Development Program for SMEs in Pakistan The objective of this program is to help in developing over 7 SME clusters in various parts of Pakistan. SMEDA is also working exclusively with UNIDO in four clusters i.e. Sports Wear Sialkot, Auto Part Lahore, PVC Pipes & Plastic Products Lahore and Marble & Granite Rawalpindi/Islamabad.

Iran: The Iran Small Industry and Industrial Park Organization (ISIPO), with the support of UNIDO has initiated a cluster development programme in Iran. ISIPO has initiated cluster development in 41cluster, 3 of them by UNIDO. These are for holistic cluster development with high emphasis on capacity building and promoting networks to go for new business development with financing support to be organized from local sources.

Vietnam: The Ministry of Planning and Investment (MPI) of Vietnam has initiated with the support of UNIDO an "SME Cluster Development" in 2009. This project will help the Enterprise Development Agency (EDA) under MPI and selected industry associations to draw lessons from the successful experiences of Italy and UNIDO in SME Cluster Development. The project is also an important step towards the implementation of a number of measures under the SME Development Plan 2006-2010.

(*Source: FMC Working Paper)*

Fig-1: Cluster Initiatives across the Globe



(Source: FMC)

IV. Funding patterns and focus of different initiatives across the globe

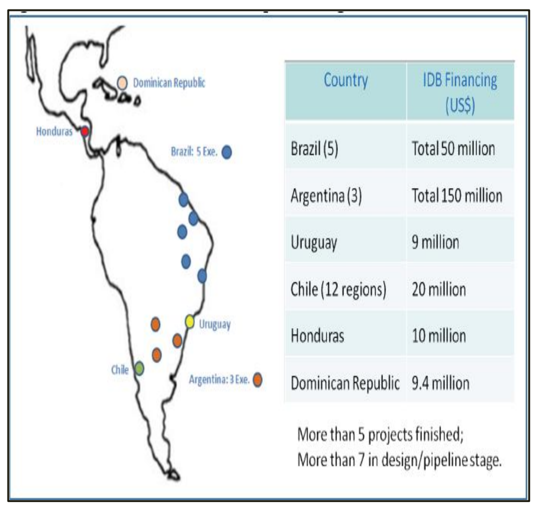
According to a World Bank document, cluster initiatives funded by the World Bank are generally a small part of a much larger project to promote policy reform or government reform. The overall size of the project may seem quite large in terms of funding and scope; however, the effort and funds devoted to cluster-based competitiveness are often quite small. In contrast, cluster initiatives funded by USAID are generally the centerpiece of a mission's competitiveness initiative – and often a major component of its economic growth portfolio in a country. In countries where USAID has a competitiveness initiative, the policy reform effort is usually cluster-driven; that is, the clusters are determining the key policy, legal and regulatory constraints to their improved productivity and engaging the government in a collaborative process to address these constraints. However, in some cases, USAID also provides technical assistance to address broader policy reform issues at the same time – either under the aegis of its competitiveness initiative (as in Sri Lanka) or in close parallel to its competitiveness initiative (as in its Competitiveness and Fiscal Reform Project in the Dominican Republic).

Like the World Bank, the IDB's counterpart is the host country government. As a result, the institutional locus for its competitiveness initiatives is within government ministries and government play a central role in project implementation and management. This is a key difference from the USAID approach.

All three of these competitiveness initiatives involve the establishment of a competitiveness fund. The primary function of these funds is provide matching funds for the implementation of national-level, as well as cluster-level, competitiveness strategies and initiatives. They also provide the funding for technical assistance to implement these initiatives.

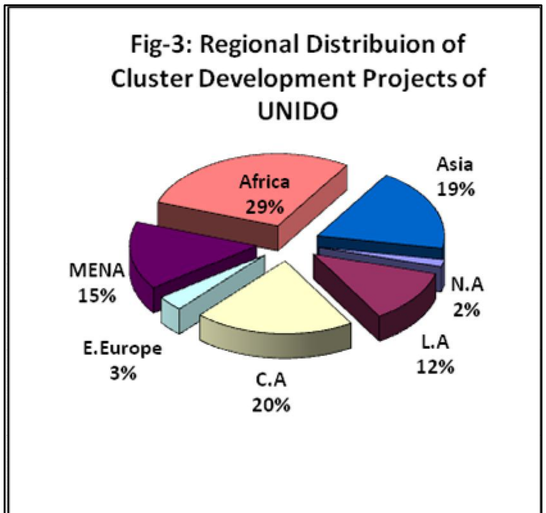
Examples of internationally renowned clusters, such as that of the Silicon Valley cluster in California, the information technology cluster of Bangalore in India, or the Australian and Chilean wine clusters demonstrate that clusters are environments where enterprises can develop a competitive and global edge, while at the same time generating wealth and local economic development in the process.(UNIDO) The UNIDO Approach to Cluster Development focuses in particular on overcoming of these impediments to SME competitiveness and on unleashing their growth and sustainable development potential. The UNIDO has executed numerous projects on competitiveness with a two-pronged approach in project design – one that addresses competitiveness issues in fairly broad terms and the other that focuses on clusters.

Fig-2: Cluster Initiatives by IDB



(Source: IDB-Discussion Paper No: IDB-DP-188)

In 2001, UNIDO launched the 'Development of Clusters and Networks of SMEs Program.' This program fosters inter-enterprise linkages as well as collaborative relations with local support institutions. It aims to promote collective efforts so that SMEs combine their strengths and jointly take advantage of market opportunities or solve common problems. The program covers horizontal networking (among SMEs), vertical networking (among SMEs and larger enterprises) and clustering. The clustering approach involves activities focused on the standard cluster methodology (viz., undertake diagnostic studies, identify priorities, and design a competitiveness plan), training courses for cluster 'brokers' or intermediaries, and cluster-to-cluster cooperation between countries by international study tours. UNIDO also undertakes research as part of its efforts to promote competitiveness. Its most recent Industrial Development Report (UNIDO, 2002) featured 'competing through innovation and learning' as its special research topic.



(Source: UNIDO, Vienna)

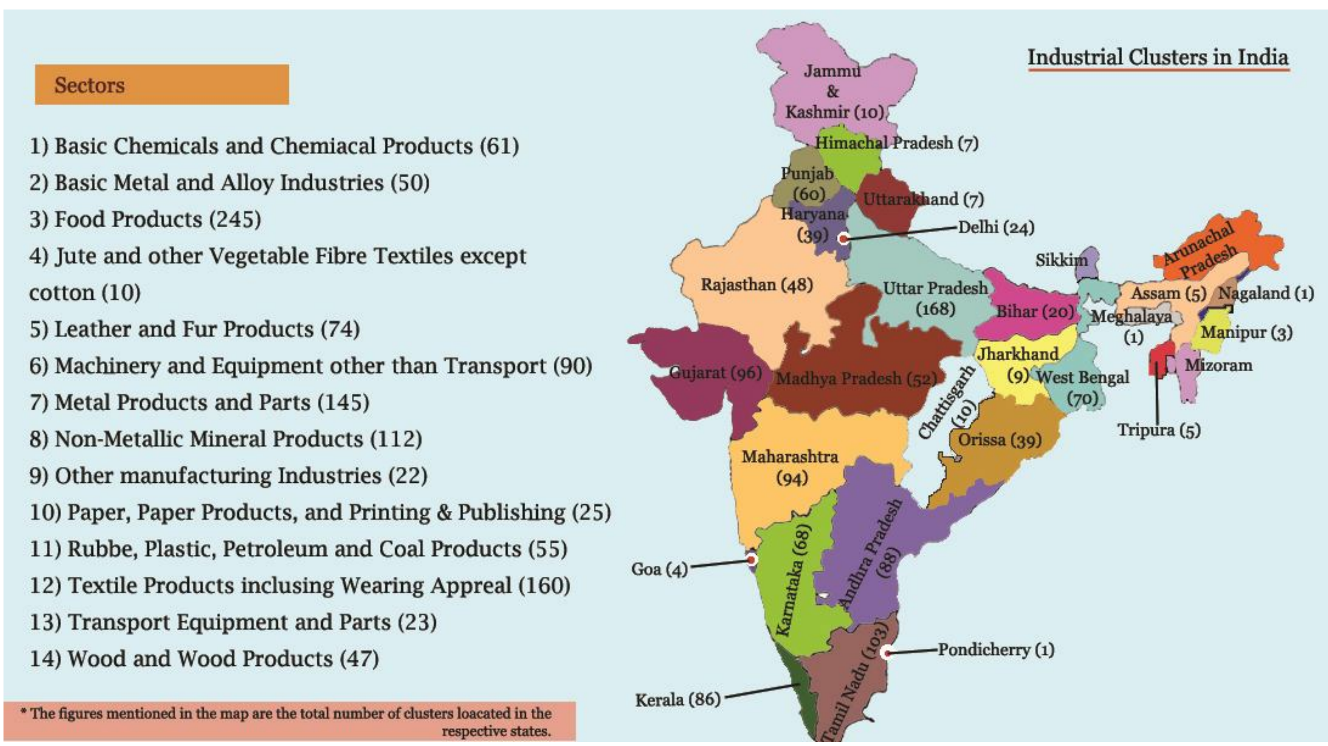
V. Clusters and Cluster Development in India

V.I Clusters in India

With an estimated over 6000 clusters mapped, India has the highest number of clusters compared to any other country across the globe. As per the 4th All India census on MSMEs, conducted by the Ministry of MSME (Govt. of India) in 2009, there are 26.1 million enterprises, employing 59.4 million people. The census estimate MSME sector contribution to national industrial output and industrial export at 45 per cent and 40 per cent respectively and is responsible for 9 per cent of the country's gross domestic product (GDP). The estimates provided by the Cluster Observatory (www.clusterobservatory.in) have taken into account only 1156 industrial clusters which include 694,379 enterprises, and a total of 15,692,736 employed persons.

It is estimated that 77 percent of all industrial MSMEs with around 72 percent of employment, 61 percent investment, 59 percent output, and about 76 percent exports of the small scale industry sector exist in clusters in India. The following map illustrates the presence of industrial clusters in India.

Fig 4: Presence of Industrial Clusters in India



(Source: www.clusterobservatory.in)

V.II Cluster Development in India

While many clusters have existed for centuries and have proven to be advantageous over enterprises outside clusters, cluster based development of MSMEs in India is not more than two decades old. The cluster development phenomenon hinges on the basic principles of promotion of joint action, including competition among buyers and suppliers of BDS, for value chain and productivity improvements.

Conscious policy and promotional support has been given by the Government of India to develop MSME sector in the country. Over the past 60 years of planned growth, there is hardly any aspect of intervention that has not been touched upon in the context of the promotion of MSMEs. Numerous schemes and programmes have been launched to address vital issues such as credit, technology up gradation, skill formation, marketing support, export promotion and infrastructure creation.

In late eighties to late nineties, cluster development in India was based on select thematic areas e.g. technology/quality up-gradation, etc. often termed as technology up-gradation (UPTECH) programmes and was initiated by financial institutions like SIDBI, State Bank of India and the then Ministry of SSI. It was in 1996 that UNIDO conducted a study and mapped 138 clusters in the country. In the same year, the Government appointed Abid Hussain Committee underlined the importance of promoting MSEs through clusters and also the role that can be played by various stakeholders in that process. During the subsequent years, UNIDO also did implementation of cluster development programmes in 7 clusters with a special emphasis on social capital as a key strategy for cluster development. UNIDO also developed and propagated a methodology on how to undertake cluster development keeping social capital as the central pillar. However, it was only in 2002-03 that cluster development programmes (CDPs), especially in traditional manufacturing, gathered noticeable momentum at the national level, with lead taken by the **Ministry of MSME** and the introduction of the Small Industries Cluster Development Programme (SICDP) scheme. The Scheme was later renamed as **Micro and Small Enterprise Cluster Development Programme (MSECDP), in the year 2006**[3]. As mentioned above, this was soon followed by a scheme called **SFURTI** and later a scheme for promoting competitiveness of MSMEs called **NMCP**.

Since then the holistic cluster development programmes have gathered a noticeable momentum at the national level. Till date around 30 schemes/programmes have been introduced based on cluster development by various institutions including ministries of the Central government, different State Governments, financial institutions, technical institutions apex business member organization and international agencies.

Besides, there are other ministries, like **Ministry of Textiles and Department of Science & Technology** that have taken up cluster development in a bigger way. Moreover, various other

[3] *Policy and Status Paper on Cluster Development, 2007 by FMC*

government institutions like NABARD and SIDBI besides various international organizations like **DFID, GIZ and ILO** have also embarked on holistic cluster based development initiatives for a sufficiently longer duration. Industry Associations like **Confederation of Indian Industries (CII)** also has supported 240 clusters in last one decade impacting about 2500 units through its cluster initiatives.

Established in 2004, Chandigarh based **CII-AVANTHA Centre for Competitiveness** for SMEs is a one stop shop for SME development. With a pan India approach, the Centre plays role of a guide and mentor for SMEs by its 'Cluster Approach', which enables SMEs to learn through sharing of knowledge with other Cluster companies. Best Practices and a detailed road map for enhancing productivity and efficiency for Cluster firms is charted and implemented by the seasoned counselors of the Centre. The Centre works exclusively to enhance the competitiveness of MSMEs, through interventions in areas such as Manufacturing Excellence, Energy Efficiency, Cost Management, Total Employee Involvement, e-Learning, Corrosion Management etc.

Foundation for MSME Clusters (FMC), which draws its technical roots from UNIDO is instrumental in providing broad based service services to the 'Micro, Small & Medium Enterprises' (MSMEs), their representative 'Business Membership Organisations' (BMOs), Technical agencies, Financial institutions and Government (both state level and national level) in India and many other transitional economies. FMC was set up for conceptualisation and implementation of such initiatives for MSME sector across various thematic areas of specialisation that include productivity & competitiveness, energy efficiency, business development services (BDS), business responsibility, common infrastructure development and innovation. FMC has provided training and policy advisory services both nationally and internationally in the area of MSME development and helped draft a number of public schemes of assistance followed by training of policy makers & practitioners to then implement those schemes effectively. FMC has worked in more than 150 clusters in India. Like FMC, there are around 10 national organisations who work in the area of MSME based cluster development.

While majority of such targeted CDPs have been planned to promote productivity, of late, a select CDPs have also targeted poverty reduction, responsible business behaviour, energy efficiency and BDS providers' markets. In contrast, CDPs in developed countries have focused primarily on promotion of innovation. It is only of late that with a programme 'Promoting Innovation Clusters (PIC) in India', the Department of Science and Technology (DST) under the Ministry of Science and Technology, Government of India, has taken up cluster based initiatives to promote innovations across three sectors viz: Life Sciences, Foundries and Information & Communication Technology during 2007-2012.

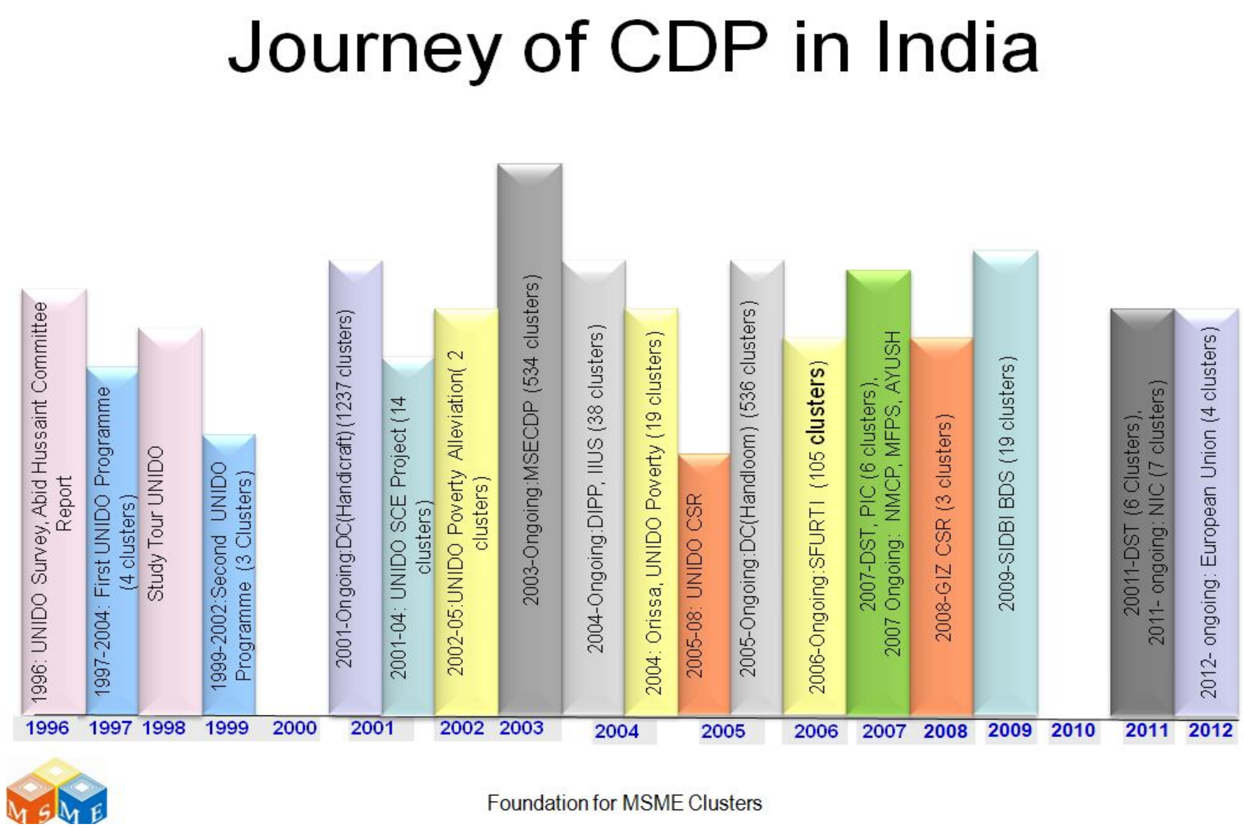
Table 2: Schemes and Programmes for Cluster Development in India

	Name of the Scheme/Programme	Name of the Institution	Major Focus of the Scheme/Programme
		Schemes	
1	Micro and Small Enterprises Cluster Development Programme (MSECDP)	Development Commissioner (MSME), Ministry of MSME	Productivity and competitiveness, Infrastructure
2	National Manufacturing Competitiveness Programme	Development Commissioner (MSME), Ministry of MSME	Energy, ICT, IPR, Design, Lean Manufacturing, Quality, Market, Technology, etc.
3	Scheme of Fund for Regeneration of Traditional Industries (SFURTI)	Khadi and Village Industries Commission and Coir Board, Ministry of MSME	Productivity and competitiveness, Infrastructure
4	Scheme for Integrated Textile Parks (SITP)	Ministry of Textiles	Infrastructure
5	Baba Saheb Ambedkar Hastshilp Vikas Yojna (AHVY)	Development Commissioner (Handicrafts), Ministry of Textiles	Development of Handicrafts clusters
6	Integrated Handloom Cluster Development Scheme (IHCDS)	Development Commissioner (Handlooms), Ministry of Textiles	Development of Handloom clusters
7	Industrial Infrastructure Up gradation Scheme (IIUS) (Now Modified IIUS)	Department of Industrial Policy and Promotion, Government of India	Infrastructure
8	Mega Food Park Scheme	Ministry of Food Processing Industries	Infrastructure, Technology, Quality
9	Common Facilities for Ayurveda Clusters	Department of Ayush, Ministry of Health and Family Welfare	Infrastructure
10	Margin Money Scheme for Cluster Development Activities	Department of Industries, Government of Kerala	Productivity and Competitiveness
11	Grant Assistant to Cluster Development Activities	Industries Department, Government of Kerala	Training/Skill
12	Scheme for Assistance to Cluster Development	Office of Industries Commissioner, Government of Gujarat	Competitiveness
13	Integrated Cluster Development Programme	Rural Industries Department, Government of Madhya Pradesh	Competitiveness
14	NMDFC Micro Financing Scheme	National Minorities Development & Finance Corporation (NMDFC)	Employment
		Programmes	
1	Umbrella Programme for MSMEs	BMZ, GIZ, DCMSME, SIDBI	Employment, Sustainable development
2	Promoting Innovation in Clusters	DST	Innovation
3	Promoting Innovation in Clusters	National Innovation Council	Innovation
4	SBI Project UPTECH	State Bank of India	Technology
5	National Small Industries Corporation (NSIC)	National Small Industries Corporation	Machinery and Equipment
6	National Programme for capacity building of textiles SMEs through cluster based approach	Textiles Committee, Ministry of Textiles	Capacity Building
7	NABARD Cluster Development Programme	National Bank for Agriculture and Rural Development	Competitiveness
8	NMCC-Project Vikas along with	National Manufacturing	Competitiveness

	Microsoft	Competitive Council	
9	Technology Upgradation Programme (TUP)	SIDBI	Technology and Finance
10	Cluster Development Programme	UNIDO	Productivity, Competeveness, Poverty Alleviation, Responsible Production
11	Small and Medium Enterprise Financing Development Project	SIDBI-DFID	BDS and BDSPs, Financing, Energy Savings
12	IICA GIZ programme for CSR	GIZ-FMC	Business responsibility
13	Promoting Sustainable Development	EU-FMC, EU-TERI	Business responsibility
14	Scheme for promotion of Energy Efficiency in MSMEs	Bureau of Energy Efficiency	Energy Savings
15	Boosting employment through Small Industries Development (ILO)	Industrial Labour Organisation	Health & Hygiene, Working Condition

Sources: Ministries/Institutions concerned as mentioned above and FMC 2007

A quick overview of CDP journey in India can be seen in the following figure.



The reach of cluster development programmes (CDP) in India by some of the larger programmes programmes have been captured in the following table.

Table 3: Clusters Covered under Select CDP Schemes/Programmes in India

Scheme/ Programme for Cluster Development	No of Clusters Covered
Scheme	
Micro and Small Enterprises-Cluster Development Programme (MSECDP)	534
Scheme of Fund for Regeneration of Traditional Industries (SFURTI)	103
Industrial Infrastructure Upgradation Scheme (IIUS) by DIPP	38
Baba Saheb Ambedkar Hastshilp Vikas Yojana (AHVY)	1237
Integrated Handlooms Development Scheme (IHDS)	585
Scheme for Integrated Textile Parks (SITP), Ministry of Textiles	40
Mega Food Park Scheme	15
Common Facilities for Ayurveda Clusters	12
Programme	
NABARD Cluster Development Programme	48
SIDBI Technology Up-gradation Programme	45
UNIDO Cluster Development Programme	40

(Source: Estimated by FMC based on data available in Ministry websites and documents including Planning Commission report on Handicrafts for 12th Five year plan, KVIC-SFURTI press release of Jan, 2012, Evaluation study of MSECDP undertaken by GoI, FMC Status Paper, 2007, CII)

It is estimated that interventions in the forms of study/implementation has taken place in around 2500 clusters, as in many cases there have been repetitions.

Micro, Small Enterprise Cluster Development Programme (MSECDP) by Ministry of MSME, India

With intent to propel economic activities in Micro & Small Enterprises (MSE) sector, the Ministry of Small Scale Industries (SSI), had launched a scheme known as Technology Upgradation and Management Programme called UPTECH in 1998. Although it was having a cluster based approach for development of MSE, but was mainly technology-focused for quicker diffusion of technology across the cluster of small enterprises. Later, in August 2003, the scheme was renamed as Small Industry Cluster Development Programme (SICDP) and made broad based, by adopting holistic pattern of development of the cluster encompassing marketing, exports, skill development, setting up of common facility centre, etc.,. In March 2006, the scheme guidelines were revised so as to give equal emphasis to infrastructure (hard) component, which is directed towards assisting technology improvements, quality standardization and testing mainly in the form of ‘Common Facility Centres’ (CFCs). 105 SME clusters were assisted under SICDP Scheme till end of 2007. (Source: Laghu Udyog, SIDO online)

With Government of India passing Micro, Small and Medium Enterprise Development (MSMED) Act in June, 2006, the Ministry of Small Scale Industries (MoSSI) was rechristened as Ministry of MSME. Subsequently in October 2007, the erstwhile cluster development scheme ‘Small Industries Cluster Development Programme (SICDP)’ was renamed as ‘Micro and Small Enterprises – Cluster Development Programme (MSE-CDP)’. It was also decided that the ‘Integrated Infrastructural Development (IID)’ Scheme which takes care of physical infrastructure needs of MSME clusters be subsumed in MSE-CDP for providing developed sites for new enterprises and up-gradation of existing industrial infrastructure. A comprehensive MSE-CDP is being administered by the office of Development Commissioner MSME (DCMSME) of the Ministry of MSME, Government of India.

So far under the Scheme, a total of around 500 clusters have been supported. While preparation of DSR is completed in all these clusters, soft interventions were completed/ ongoing in 304 clusters. 20% of these diagnosed clusters have either initiated/ completed hard component.

Since its inception in 1998, the scheme has evolved from mere technology facilitation to a holistic cluster development approach. However with advent of time, scheme started emphasizing on infrastructure interventions and 90% of the budget is earmarked for the same. This is the only cluster scheme in India which supports all the sectors in a holistic manner.

Major components covered under MSECDP Scheme:

S.No	**Component**	**Maximum Component cost**	**GoI Grant (%ge against component cost)**
1	Diagnostic study	2.50	**100%**
2	Soft Interventions	25.00	**75%** (For cluster with more than 50% micro, village based, women. SC/ST the grant is 90%)
3	Preparation of Detailed Project Reports (DPR) for establishment of hard components	5.00	**100%**
4	Hard Interventions (Setting up of CFCs like Testing Facility, Design Centre, Production Centre, Effluent Treatment Plant, Training Centre, R&D Centre, Product Display Centre etc.)	1500.00	**70%** (For cluster with more than 50% micro, village based, women. SC/ST the grant is 90%)

6	Infra Structure Development (Development of land, provision of water supply, drainage, Power distribution, construction of roads, common facilities such as First Aid Centre, Canteen etc.)	1000.00	**60% (**For cluster with more than 50% micro, village based, women. SC/ST the grant is 80%)

(Source: Ministry of MSME)

VI. Changing Paradigms of Global Cluster Development Initiatives

While a number of cluster initiatives were launched in the early 1990s in select parts of the world, much of the significant growth in the use of cluster-based approaches has emerged towards end of 2000. Thereafter, there has been a tremendous increase in the practice of cluster-based competitiveness initiatives. As a result, there are currently thousands of cluster initiatives in action around the world, with their unique focus and shape depending on where and how they emerged and who started the initiative. The Cluster Initiative Green book identified more than 500 cluster initiatives around the world by 2003 which have reached to more than 5000 by 2013 according to an internal estimation undertaken by FMC. Of these, two thirds are estimated to come from developing countries. The interventions of Inter American Development Bank targeted several initiatives in agro and manufacturing industries in Latin America. Cluster development is now being used in several under-developed countries as well. While most of the cluster initiatives were initially targeted around manufacturing clusters but these initiatives are now being applied in agriculture and services sectors as well that include tourism, IT and other knowledge intensive industries. The knowledge driven cluster initiatives are however being seen mainly in the developed countries.

This section captures the key paradigms that will shape future cluster initiatives in the context of developing countries. It is not intended to provide any prescriptions or policy recommendations here but provide a list of key paradigms that need to be focused for discussions in the conference. It is expected that the speakers, participants and moderators will either provide some of the answers or add to the list of contemporary challenges thus increasing the knowledge base about the gaps.

1. **Clusters are being linked with other wider policies & non-economic agendas:** Cluster initiatives in the initial stages suffered from criticism that they were too narrowly focussed around local issues of clusters and their stakeholders. So researchers and policy makers increasingly suggested the need to link clusters with global value chains and look for integration with other non-cluster development initiatives. In addition, several ministries that did not operate in the space of industrial development also began to see space for linking their interventions around social and environmental area around clusters. The ministries with a mandate on environment, gender, minorities, indigenous people, skills and labour also targeted some of their promotional programmes of assistance around clusters. The social

area ministries such as Ministry of Minority Affairs and Women & Child Development have linked up some of their programmes with clusters. In the Indian context, a high investment national initiative called Delhi-Mumbai Industrial Corridor (DMIC) intends to connect with all the existing and potentially emerging clusters along the 1500 kms route in six states. In Ethiopia, the Ministry of Urban Development and Construction has taken up setting up of new infrastructure for clusters in various cities that is intended to foster new enterprise development in clusters.

2. **Generic cluster development goals giving way to more targeted goals:** Cluster development initiatives during 1990-2000 were primarily focused on technology-intensive industries such as, medical devices, biopharmaceuticals, leather, auto components, etc. with broad objective of improving productivity and competitiveness of SMEs. However, during the period 2000-2010, many changes in terms of objectives have been witnessed. Cluster initiatives were subsequently applied for poverty alleviation, fostering business responsibility and inclusive growth by international agencies such as UNIDO and USAID while several countries developed focused interventions among Handlooms, Handicrafts and other rural enterprises in the informal sector. Innovation became focus of a number of European cluster initiatives across different sectors. In India, it is the Ministry of Science & Technology and National Innovation Council that initiated cluster initiatives with innovation focus. With a view to ensure cross learnings and promote commercial linkages across similar sectors in different countries, European Union and UNIDO supported select interventions across Italy, Vietnam, India and other European countries. With a view to support cluster branding, European Union and UNIDO undertook initiatives in Europe, Africa and Latin America to support a range of clusters across diverse sectors with unique products & services to offer.

3. **Variety of cluster development forms are being tried by different countries:** In order to achieve a diverse range of goals, different countries and public institutions began to experiment with their unique recipe of initiatives suiting to their context. While some countries drew up explicit cluster policies before rolling out action for cluster initiatives, others chose to undertake implementation while embedding the reasoning in broader economic development policies. There is thus no understanding of any best model but the model that suits the most for one country or even a region against another one in one country. This also led to definitional issues regarding clusters in terms of their geographical boundaries, size and what constituted their commonness of opportunities & challenges.

4. **Funding contribution continues to be largely from public agencies:** Cluster initiatives have become widespread. Almost every continent has witnessed some initiatives mostly funded by national, regional or local public institutions. Multi lateral and bilateral agencies also funded a large range of cluster initiatives. There are select interventions that are fully funded and steered by the private sector but the numbers and volumes are small. Proportional contribution from industry stakeholders for common initiatives is still small. There has been a substantial increase in involvement of industry associations in implementing cluster programmes.

5. **Cluster initiatives are going beyond collective public good action to market development models:** Agglomerations of firms have been extensively encouraged by government interventions. Traditionally, cluster was focused because of ease of promoting collective actions to address various cluster based needs, opportunities and challenges, but gradually it is realized that, market based models even without collective actions can also be promoted through cluster. In such cases, cluster is viewed as a potential market for service providers and service seekers. For example, Value Chain investment promotion or BDS development to not necessarily require collective actions, but if linkages are forged in clusters these can generate sustainable results. For the market based models, cluster as an aggregate of enterprises is a better option rather than targeting individual enterprises because of the benefits of scalability, selective customization and low transaction costs.

6. **Contemporary challenges are leading to new policy options in clusters:** New opportunities and challenges are emerging in the industrial development area. Some of the growing challenges are in the areas of sustainable product designs, environment degradation, waste material recycling and over exploitation of natural resources. At international level, European Union has a Switch Asia programme that targets sustainable production and consumption while the World Bank funds energy efficiency initiatives through Global Environment Facility (GEF) initiatives. At the national level, Ministry of Environment & Forest and Ministry of MSMEs support select common initiatives that help tackle environment challenges. However, there are not enough programmes to address these challenges. With the growing urbanisation around existing industrial clusters, regulatory authorities and judiciary call for cluster relocation. This is fast emerging as a significant policy challenge that is yet to be matched by a coherent and substantive policy response. Moreover methodologies and positive case examples are yet to emerge in this arena.

7. **Cluster information and knowledge backbone on clusters is weak:** The cluster concept has gained increasing prominence on the agenda of international development organizations over the last decade. A number of public schemes for cluster based development have also become operational with varying objectives, methodologies and scope, producing various results and lessons. However, there are few platforms and sources where evidence based learning of different cluster initiatives are readily available, particularly in the national context and more specifically in the developing country context. The cluster specific experiences and learnings from these initiatives is the least available. At international level, 'The Competitiveness Institute' (TCI) based in Barcelona has helped bridge this gap through its regular series of seminars and e-based learning platform.

8. **Monitoring & Evaluation (M&E) framework is not standardised:** Despite a range of cluster initiatives and with high level of investment on cluster initiatives, cluster initiatives remain challenged by the lack of robust M&E framework. One of the challenges pertains to the lack of base lines to capture before and after effect while relying on anecdotal evidences. Second the process of interventions and their effect is often ignored while tracking the progress. Third, many of these initiatives have an impact that goes beyond the

project duration that gets missed out for capturing with the project cycle. The practitioners therefore miss out from taking corrective actions during the ongoing process while policy makers miss out on the expected benchmarks of outcomes and redesigning of future initiatives. New tools need to be evolved that can help measure impact and make initiatives accountable. Such M&E frameworks need to be designed at cluster level, scheme/programme level, and policy level.

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Annex 1: Cluster Resources

Cluster Development Knowledge Portals, Practitioner's Network and Data Base

TCI Network

TCI is the leading global network for practitioners, policy makers, researchers and business leaders working towards improving competitiveness in regions and clusters. TCI is a non-profit, non-governmental organization, with a global scope, open to members from all countries throughout the private, public and voluntary sector. Their member base currently consists of 4.000 leading practitioners from 111 countries. TCI is financed through annual membership fees. By sharing knowledge and experience, TCI members gain access to leading insights and expertise and the most recent global developments about competitiveness and innovation.

Interactive Platform by UNIDO

Clusters are considered as a means to promote the development of competitive industries and to facilitate local economic development and the achievement of pro-poor growth. (UNIDO) Focusing on the specific challenges faced by developing countries, UNIDO has formulated a modular approach to guide the formulation and implementation of cluster development initiatives. through the detailed presentation of**:** Training modules- Training resources to promote self-learning (practical exercises, self assessment tests, quizzes and presentations); Templates (to support the implementation of cluster development initiatives); Case studies and project-related videos; Expert network and partner institutions. With the support from Agency for Development and Cooperation (SDC**),** UNIDO has created an interactive platform http://www.clustersfordevelopment.org/ to familiarize the interested reader with the main elements of the UNIDO Approach to Cluster Development.

Global Cluster Observatory (http://www.clusterobservatory.org)

The Global Cluster Observatory is an access point to cluster observatories and other leading cluster resources throughout the world. It is provided by the Center for Strategy and Competitiveness at the Stockholm School of Economics in Sweden. It assembles a selection of the foremost cluster resources. The resources presented here represent some of the best cluster resources in terms of quality in the data they provide, in coverage, and in the methodology they apply.

EU Observatory (http://www.clusterobservatory.eu)

The European Cluster Observatory, launched in June 2007, is the most comprehensive database on clusters, cluster organisations, and cluster reports in Europe. This observatory is managed by the Center for Strategy and Competitiveness (CSC) at the Stockholm School of Economics, and is financed by the European Commission, DG Enterprise and Industry. Anyone can access EU observatory and take information for free.

India Cluster Observatory by FMC (www.clusterobservatory.in)

The Foundation for MSME Clusters (FMC) specializes in promoting MSMEs in clusters by creating cutting edge methodologies and tools, providing appropriate linkages and creating enabled institutions. To make information available on various MSME clusters, BMOs, support agencies, support schemes and programmes, the FMC has created a online database named as clusterobservatory.in

US Observatory (http://www.clustermapping.us/home/)

The U.S. Cluster Mapping website is an interactive platform for data visualizations on clusters of industries and innovation across the country, designed to benchmark the economic performance and competitiveness of U.S. regions. It forms part of a national economic development initiative led by the Institute for Strategy and Competitiveness at Harvard Business School and sponsored by a federal grant from the U.S. Department of Commerce, Economic Development Administration.

Canada Cluster Observatory (http://www.competeprosper.ca/index.php/clusters/data/)

Though this is not an observatory but the portal -competeprosper.ca hosts data on various clusters of Canada. It has assembled data on employment, wages, and location quotients for the 41 clusters of traded industries (based on NAICS) in each of Canada’s 25 city regions (CMAs) and 10 provinces as well as national data. This work is based on the Cluster Mapping Project of the Institute for Strategy and Competitiveness.