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295

# **Clusters, Networks and Markets** in the Asia-Pacific Region



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Clusters, Networks and Markets in the Asia-Pacific Region

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## CLUSTERS IN INDIA AS AN INSTRUMENT FOR ENHANCING THE INNOVATION, PRODUCTIVITY AND COMPETITIVENESS OF MICRO AND SMALL ENTERPRISES\*

Abstract: Indian policy towards micro and small enterprises uses a simple definition of a cluster. According to the official Indian documents a cluster is a group of enterprises located within nearby locations and producing the same or complementary products or services. That simple approach is very useful in Indian conditions where cluster policy is strongly connected with development policy for rural areas and small cities. The Indian Ministry of Micro, Small and Medium Enterprises has adopted the cluster development approach as a key strategy for enhancing the productivity and competitiveness of MSEs and binding it with creation of industrial infrastructure. The main concept behind that scheme is to build small local cooperation networks of MSEs, which will change their surroundings in a positive way.

Keywords: clusters, micro and small enterprises, development policy, India.

#### 1. Introduction

There are many definitions of clusters used in the economic literature. Some of them emphasize the networking aspects of cooperation between companies, others stress the need for creating a regional core for business cooperation composed of governmental and scientific entities. In most cases (maybe because clusters are in fashion) clusters are perceived as quite big structures the regional economy can be proud of. On this background, the definition of a cluster used in Indian policy towards Micro and Small Enterprises may surprise. According to the official Indian documents a cluster is just a group of enterprises located within nearby locations and producing the same or complementary products or services.<sup>1</sup> That simple approach is very

<sup>\*</sup> This paper is a part of in-process research conducted as a part of research grant "Clusters as an innovation carrier of enterprises and regions. Verification and implementation of Asian models in terms of the Polish economy", funded by National Science Centre, Poland (research project no. 2011/01/B/HS4/00639). Unless mentioned otherwise the content of this paper is a result of interviews with academics, officials and entrepreneurs from Bangalore, made by the author and co-workers during research stay in India in March 2013.

<sup>&</sup>lt;sup>1</sup> *Modified Guidelines of MSE-CDP*, Development Commissioner, Ministry of Micro, Small and Medium Enterprises (MSME), Government of India.

useful in Indian conditions because nowadays their cluster policy is strongly connected with development of rural areas and smaller cities.<sup>2</sup>

The goal of this paper is to show the sources, rules and effects of Indian "Micro and Small Enterprises – Cluster Development Programme" as an interesting way to combine innovation, cluster and development policies.

#### 2. Bangalore, the most popular cluster city in India

South Indian city Bangalore is one of the most famous high-tech clusters in the world. It is also frequently investigated in the topic literature. Due to the large number of information technology companies located around the city, Bangalore is often called "Silicon Valley of India." However, diversity of companies located in the capital of Karnataka state is quite considerable. Their activities cover manufacturing of machine tools, telecom equipment, electronics products and car components. The city has also become a premier bio-tech cluster in India.

One of the important factors supporting Bangalore's growth was heavy central government investment in strategically sensitive industries in 1950s and 1960s, partially because it is geographically out-of-reach from India's rivals Pakistan and China. The choice of Bangalore was also connected with the availability of educated workforce and cheap electric power.<sup>3</sup>

The formation of IT clusters<sup>4</sup> in Bangalore started in 1978, when The Electronics City was established. It was a concept of R.K. Baliga, the first Chairman and Managing Director of Karnataka State Electronics Development Corporation (KEONICS)<sup>5</sup>, a government-owned agency supporting growth of electronics industry in the state of Karnataka. The agency purchased around 330 acres (1.3 km<sup>2</sup>) of land in the southern outskirts of Bangalore to establish an industrial park. Notwithstanding complaints by the industrial park's tenants on the condition of the roads, power and water availability, KEONICS started to use the title of Silicon Valley of India referring to Electronics City campus. Today, among many international companies (e.g. 3M, Hewlett Packard and Siemens are some of them), headquarters of Infosys and Wipro, India's second and third largest software companies, are located here.

The second IT hub in Bangalore is Whitefield. It is a home to the International Tech Park Bangalore<sup>6</sup> which was created as a result of a joint venture between India

<sup>&</sup>lt;sup>2</sup> "Smaller" in that context means not as big as Indian states' capitals for example. The term "small city" may be misleading for Western people analysing Indian economy. Indian cities are overpopulated, so a small city there may be bigger (in terms of population) than a big city in Europe.

<sup>&</sup>lt;sup>3</sup> R. Basant, *Bangalore Cluster: Evolution, Growth and Challenges*, Indian Institute of Management Working Papers No. 2006-05-02, Indian Institute of Management, Ahmedabad 2006.

<sup>&</sup>lt;sup>4</sup> Compiled timeline of IT cluster formation in M.J. Manimala, *Evolution of the Bangalore ICT Cluster: A Stage Theory Based on Crystal Growth Model*, Paper for presentation at the International Entrepreneurship Forum 2006 (IEF) 6<sup>th</sup> International Conference on "New Venture Creation and the Creative Trajectory: Entrepreneurship, Innovation and Creativity in Business", Riga, Latvia, 31.08–2.09.2006.

<sup>&</sup>lt;sup>5</sup> http://www.keonics.com/.

<sup>&</sup>lt;sup>6</sup> http://www.itpbangalore.com.

and Singapore in January 1994. It is a large facility providing business space for SAP, iGATE, Dell, Unisys, Delphi, Huawei, Oracle, Tesco, Shell, Aviva, GM, Schneider Electric, GE, Goodrich DaimlerChrysler and many other companies.

Besides those two main locations new high-tech parks have emerged in Bangalore in the last few years. The Bellandur Outer Ring Road cluster houses Deloitte, Accenture, Intel, Aricent, Symbol, Cadence, Cisco, EMC Corporation, Nokia, National Instruments, Honeywell, ARM, Cummins, JP MorganChase, Oracle, Logica CMG, Business Objects, Freescale Semiconductors, Capgemini, Sony and i2 Technologies. The Inner Ring Road cluster near the Bangalore International Airport in Challaghatta includes Dell, Microsoft, IBM, Yahoo, NetApp, McAfee, Bearing Point, Fidelity, ANZ, LG, PSI Data, Target, Misys, Dendrite, Sasken, BPL Sanyo, OpenSilicon, Xora and Lenovo. Bagmane Tech Park located at C. V. Raman Nagar in Bangalore, houses Oracle Corporation, Motorola, Texas Instruments, Samsung, Dell, SanDisk, Cognizant and Volvo, among other companies. Major companies in Manyata Technology Park in Nagawara are IBM, Philips, NXP, Alcatel-Lucent, Nokia Siemens, Cognizant Technology Solutions, Samsung.

This overwhelming list of brands located in Bangalore is a reason why the capital of Karnataka is acknowledged for encouraging foreign investments. But in the last years this high-tech boom has turned into the source of problems. The influx of workforce, which has helped increase Bangalore's population by a third since 1995, to 6.5 million, has resulted in choked roads, power outages, an erratic water supply and poor sanitation.

The deficiencies in civic infrastructure and the lack of coordination between six core agencies responsible for urban development in Bangalore have created a sense of disappointment among the modern service industries.<sup>7</sup> In October 2004 15 top tech companies, members of Bangalore Forum for Information Technology (BFIT), led by Philips and Hewlett-Packard, announced the boycott of state-led events such as the prestigious BangaloreIT.com tech conference (proclaimed Asia's largest IT event).<sup>8</sup> The same situation happened one year later when BFIT and the Bangalore Chamber of Industry and Commerce (BCIC) decided to boycott showcasing event BangaloreIT.in.<sup>9</sup> In both cases the aim was to draw government's attention to infrastructure problems. The proposed boycott was designed to indicate the displeasure of local and international technology companies with the city's lack of progress on the infrastructural front.

But the problem is even broader. After a few decades of strong growth Bangalore loses its main advantages: land and labour costs are now high. Even Indian companies

<sup>&</sup>lt;sup>7</sup> C. Dittrich, Bangalore: Globalisation and fragmentation in India's hightech-capital, *Asien* 2007, vol. 103 (April), pp. 45–58.

<sup>&</sup>lt;sup>8</sup> Bangalore: Tech eden no more?, *Bloomberg BusinessWeek Magazine*, 31.10.2004, http://www. businessweek.com/stories/2004-10-31/commentary-bangalore-tech-eden-no-more. Firms to boycott IT.com, *Deccan Herald*, 9.10.2004, http://archive.deccanherald.com/Deccanherald/oct092004/i6.asp.

<sup>&</sup>lt;sup>9</sup> IT sector drops boycott plan of Bangalore fair, *The Hindu Businessline*, 23.09.2005, http://www. thehindubusinessline.in/2005/09/23/stories/2005092302100900.htm.

realized that they "will grow at a faster rate outside Bangalore."<sup>10</sup> Those circumstances forced Karnataka state officials to look for a new approach to manage and support investments.

In 2008 the Government of Karnataka has announced that Information Technology Parks would be taken up at Hubli-Dharwar, Belgaum, Gulbarga, Shimoga, Mangalore and Mysore, so called Tier-2 and Tier-3 cities of Karnataka. KEONICS, previously connected only with Electronics City, was appointed to establish IT Parks in those locations.

The new Karnataka state policy<sup>11</sup> relates not only to IT sector. The state government is trying to get the pressure off Bangalore by developing towns on the city's periphery and connecting them via expressways. The Karnataka Urban Infrastructure Development Finance Corporation (KIUDFC) has proposed to develop about 8005 km<sup>2</sup> area coming under the jurisdiction of Bangalore Metropolitan Region Development Authority (BMRDA) as a "city cluster development project." In 2006 the state government had approved a BMRDA proposal to set up five satellite townships and develop them as self-sustainable cities.<sup>12</sup>

Under the city cluster development project, Bidadi (in Ramanagara taluk) will be developed as Knowledge City. Ramanagara will be developed as Healthcare city, Sathanur in Kanakapura taluk will be developed as Textile/Apparel city, Solur in Magadi taluk will be a Manufacturing city and Nandagudi in Hoskote will come up as Hardware/Manufacturing city.

#### 3. Micro and small enterprises - cluster development programme

The shift towards small cities and rural areas is visible not only in Karnataka state but also in other parts of India. The Ministry of Micro, Small and Medium Enterprises (MSME) in Government of India (GoI) has adopted the cluster development approach as a key strategy for enhancing the productivity and competitiveness as well as capacity building of Micro and Small Enterprises (MSEs) and their collectives in the country. 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 shall be included in MSE-CDP for providing developed sites for new enterprises and upgradation of existing industrial infrastructure. A comprehensive MSE-CDP is being administered by the office of Development Commissioner in the Ministry of MSME (DC MSME).

<sup>&</sup>lt;sup>10</sup> Wipro Chairman Azim H. Premji to the press on Oct. 15, 2004. Bangalore: Tech eden...

<sup>&</sup>lt;sup>11</sup> Karnataka Industrial Policy 2009–2014, Department of Industries and Commerce, Government of Karnataka.

<sup>&</sup>lt;sup>12</sup> 5 cluster towns to decongest Bangalore, *The Times of India*, 13.09.2012.

According to the official documents, objectives of the scheme are:<sup>13</sup>

- to support the sustainability and growth of MSEs by addressing common issues such as improvement of technology, skills and quality, market access, access to capital, etc.,
- for enhancing competitiveness of the MSE units to ensure self-sustainability, growth & employment generation,
- to build capacity of MSEs for common supportive action through formation of self-help groups, consortia, upgradation of associations, etc.,
- to create/upgrade infrastructural facilities in the new/existing industrial areas/ clusters of MSEs,
- to set up common facility centres (for testing, training centre, raw material depot, effluent treatment, complementing production processes, etc.).

Given the diverse nature of the MSEs in terms of both geographical location and sectoral composition, the MSE-CDP scheme aims at addressing the needs of the industries in specific branches and geographical areas. This should enable achieving the economies of scale in terms of deployment of resources as well as focusing on the specific needs of similar industries. The idea behind the scheme it to leverage MSEs resources and also to ensure their access to public resources, linkages to credit and enhance their marketing competitiveness. Building of associations, setting up of special purpose vehicles (SPVs), consortia, etc., called clusters is an integral part of the scheme.

In the context of that MSEs policy a cluster is a group of enterprises located within nearby locations and producing the same or similar products or services. The essential characteristics of enterprises in a cluster are:

- similarity or complementarity in the methods of production, quality control and testing, energy consumption, pollution control, etc.,
- similar level of technology and marketing strategies/practices,
- common channels for communication among the members of the cluster,
- common challenges and opportunities.

The goal of the policy is not only to support existing group of companies but to assist the formation of new business communities in the first place. The guidelines of the Cluster Development Programme specify all phases expected to happen during the implementation of policy. Those main steps are:

1) selection of cluster(s),

2) selection of cluster development executive(s),

3) trust building,

- 4) diagnostic study,
- 5) preparation of action plan,
- 6) approval of budget and leveraging of funds from various institutions,

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<sup>&</sup>lt;sup>13</sup> *Modified Guidelines of MSE-CDP*, Development Commissioner, Ministry of Micro, Small and Medium Enterprises (MSME), Government of India.

- 7) implementation of the action plan,
- 8) monitoring and evaluation,
- 9) handing over and exit,
- 10) self-management phase.

The first three actions are strongly connected with existing enterprises and their potential. The main assumption is the support should be orientated towards groups of companies in the areas where the signs of clustering are: common (or complementary) products, common problems and the will of cooperation. Choosing the right objective for the support increases the chance of success at the end.

Detailed studies of the features of the clusters with due care and application are essential prerequisites for selection of a cluster of the right type. The criteria may vary to some extent depending on the type of clusters and the goals sought to be achieved through the cluster development initiatives. However, Indian Ministry of Micro, Small and Medium Enterprises pays attention to the following aspects:<sup>14</sup>

- importance of the clusters in terms of number of units, employment, production, exports, etc.,
- existence of critical gaps in technology, product quality, common facilities, skill upgradation, availability of raw material, marketing support, etc.,
- viability of the cluster,
- vibrancy of local industry association and/or interest evinced by other institutions engaged in development financing and SSI promotion in development of the cluster,
- social and environmental considerations like gender inequalities, poverty conditions, need for employment generation, pollution scenario, etc.

Second (core) phase (from diagnostic study to implementation) consists of actions concentrated around project documentation and obtaining the main part of financial support.

The last part of the process should ensure the durability of the effects of the support. Development of region and companies is expected to be real and lasting.

The support under the MSE-CDP scheme is available for groups of minimum 20 individual units. In order to apply for help units need to form so called Special Purpose Vehicle in legal form of registered society, trust, consortium or limited company (public or private). Manufacturing and service activities of those entities are eligible for funding.

Financial support under the MSE-CDP is provided not only for core investments but also for supplementary activities (for example preparation of studies necessary for applying for support). Financing stages are as follow:

1) diagnostic study report,

2) soft intervention,

<sup>&</sup>lt;sup>14</sup> N. Bhawan, *Guidelines of the Small Industries Cluster Development Programme (SICDP)*, Ministry of Small Scale Industries, Government of India, New Delhi 2006.

3) detailed project report,

4) hard intervention in common facility centre and/or infrastructure development.

First and foremost activity in the cluster development process is to prepare a diagnostic study. The objective of conducting diagnostic study in a cluster is to map all the business processes of the cluster units viz. manufacturing processes, technology, marketing, quality control, testing, purchase, outsourcing, etc., to find out its strengths, weaknesses, opportunities and threats (SWOT), problems and impediments, suggestions and an action plan for enhancing competitiveness of the units of the cluster to ensure self-sustainability, growth and employment generation. The Diagnostic Study Report (DSR) is a very important document and the study should be conducted with special attention. The study should focus on enhanced competitiveness, technology improvement, adoption of best manufacturing practices, marketing of products, employment generation, etc. There has to be direct linkages between the problems highlighted in the report and the measures suggested for improvement.

At this stage end users preparing DSR can get financial support up to 2.5 lakhs<sup>15</sup> per cluster. If the report is prepared by the consultants in a governmental agency, the grant maximum amount is 1 lakh per cluster. Time frame for conducting diagnostic study is 3 months.

Next group of activities eligible for financial support is called soft interventions. It consists of activities which lead to creation of general awareness, counselling, motivation and trust building, exposure visits, market development including exports, participation in seminars, workshops and training programmes on technology upgradation, etc. These interventions bring about general attitudinal changes necessary to initiate improvement in the existing style of working of the MSEs in the cluster. It is necessary to prepare a DSR including validated action plan, performance indicators/milestones to evaluate the project, before undertaking soft interventions. Activities are undertaken as per approved action plan included in DSR.

Contribution of central government in soft interventions will not exceed 75% of the project cost but no more than 25 lakhs. Share of cluster beneficiaries should be as high as possible but not less than 10% of the total cost. State Government contribution may be considered as gap funding. Maximum duration of soft interventions is 18 months.

If an SPV wants to set up a common facility centre and/or run an infrastructure development project in industrial estate or area, it has to prepare a technically feasible and financially viable project report. The Detailed Project Report is the basis for approval procedure. It should include financial analysis like internal rate of return, break-even point, debt-service coverage ratio or sensitivity analysis, using basic templates such as projected profit & loss account, projected balance sheet etc. Report

 $<sup>^{15}</sup>$  A lakh is a unit in the South Asian numbering system equal to one hundred thousand. This notation is common in Indian official documents. 2.5 lakhs (of rupees) = 250 000 INR.

should be preferably prepared by the SPV users and other agencies should only facilitate in preparation of reports. In case the DPR is prepared by expert agencies, these reports must be thoroughly discussed within SPV and vetted by the end-users and concerned state government. A GoI grant of maximum 5 lakhs will be provided for the preparation of DPR.

In DPR clusters can apply for:

- hard interventions (setting up Common Facility Centres) creation of tangible "assets" like testing facility, design centre, production centre (for balancing/ correcting/improving production line that cannot be undertaken by individual units), effluent treatment plant, training centre, R&D centre, raw material depot, product display centre, information centre, any other need based facility;
- infrastructure development development of land, provision of water supply, drainage, power distribution network, pollution control facilities, non-conventional sources of energy for common captive use, construction of roads, common facilities such as first aid centre, canteen, other need-based infrastructural facilities in new industrial areas/estates or existing industrial areas/estates.

In hard intervention governmental support can reach 70% of the project which cannot cost more than 15 crores.<sup>16</sup> Costs of land and building (max. 25% of the project cost) are not covered and shall be met by SPV and state government. In Karnataka local government involvement is limited to 15% of the project costs. To meet procedural criteria CFC should function within 2 years from the date of final approval (if not extended).

Industrial infrastructure development scheme applies to a project not surpassing 10 crores of costs. Funding level is 60%. The project should be completed within 2 years from the date of final approval and state government should provide suitable land for the project (no private land development).

SPVs can apply for support in both categories. The maximum project value will be then 35 crores with quite substantial involvement of public funds. To avoid failed investments applying for CFC and/or IID must be preceded by DSR, soft intervention and DPR.

Evaluation of projects is carried out on ministerial level but the scheme is put into action by implementing agencies. Their main role is to propose and implement cluster development projects. Implementing agencies differ in competence. Offices of the Ministry of MSME, Offices of State Governments, national and international institutions engaged in development of the MSE sector and any other institution/ agency approved by the Ministry of MSME can look after projects concerning diagnostic studies, soft interventions and setting up of CFC. Industrial infrastructure development can be run only by state governments through an appropriate state government agency with a good track record in implementing such projects.

<sup>&</sup>lt;sup>16</sup> A crore is a unit in the South Asian numbering system equal to ten million. This notation is common in Indian official documents. 15 crores (of rupees) = 1500 lakhs (of rupees) = 150000000 INR.

The Ministry of MSME is running the 12<sup>th</sup> plan period of MSE-CDP scheme currently. According to the Ministry's data<sup>17</sup> effects of the programme are as follow:

- 398 DSR (301 completed, 96 on-going, 1 not approved),
- 278 soft interventions (199 completed, 77 on-going, 2 not approved),
- 125 CFC projects (21 completed, 42 on-going, 42 in approval, 14 not approved, 6 cancelled),
- 156 infrastructure development projects (109 completed, 40 on-going, 4 in approval, 2 not approved).
  - There are some projects from Karnataka State in this number as well:
- 20 DSRs (9 completed, 11 on-going),
- 7 soft interventions (4 completed, 3 on-going),
- 6 CFC projects (2 completed, 2 on-going, 2 in approval),
- 4 infrastructure development projects (all completed).

According to Karnataka Council for Technological Upgradation (KCTU)<sup>18</sup> the best working example of the Indian cluster development idea is the Belgaum Foundry Cluster<sup>19</sup> sanctioned by Government of India in 2003. Other examples of MSE clusters projects implemented in the region are:

- Readymade Garments Cluster in Hubli (425 km northwest of Bangalore),
- Food Processing Cluster in Gulbarga (623 km north of Bangalore),
- Gold Ornaments Cluster in Mangalore (350 km west of Bangalore),
- Artistic Stone Carving Cluster in Bellagatti (460 km northwest of Bangalore),
- Auto (Servicing) Cluster in Bidar (700 km north of Bangalore),
- Packaging Industry Cluster in Mysore (140 km southwest of Bangalore),
- Rice Mill Cluster in Mandya (100 km southwest of Bangalore),
- Handloom Silk Weaving Cluster in Y N Hosakote (200 km north of Bangalore).

### 4. Conclusions

Officials from KCTU emphasize that going outside state capital is a must. First of all the high prices of land hinder running development projects with public funds at reasonable costs. Second, Bangalore (and other agglomerations) are overcrowded and have problems with electricity and water supplies. Third, if people are coming to the capital for work, the only way to stop them is to develop a strong local labour market in their home locations.

The main concept behind MSE-CDP scheme is to build small local cooperation networks of MSEs, which will change their surroundings in a positive way. Construction of cluster development programme gives the opportunity (for both

<sup>&</sup>lt;sup>17</sup> As at the end of January 2013, http://www.dcmsme.gov.in/MSE-CDProg.htm.

<sup>18</sup> http://www.kctu.kar.nic.in/.

<sup>19</sup> http://bfcindia.co.in/.

companies and governments) to learn the real infrastructural needs of a region or area. On the other hand it forces to find in local business branches which promise positive effects for the area in the long run. "Do-it-yourself" idea is hidden between the lines of the governmental guidelines.

MSE-CDP scheme is an interesting approach to innovation and clustering policy. It is used to strengthen the development policy of rural areas and to trigger the cooperation and innovation of MSEs outside big agglomerations. As such it is a valuable solution which may be applied in other economies trying to support the development of innovative MSEs.

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#### KLASTRY W INDIACH JAKO INSTRUMENT WSPIERANIA INNOWACYJNOŚCI I KONKURENCYJNOŚCI MAŁYCH I ŚREDNICH PRZEDSIĘBIORSTW

**Streszczenie:** Indyjska polityka względem małych i średnich przedsiębiorstw posługuje się bardzo prostą definicją klastra. Oficjalne dokumenty rządowe uznają za klaster grupę firm z danej lokalizacji wytwarzających (lub świadczących) te same lub komplementarne produkty i usługi. To proste podejście okazuje się bardzo przydatne w indyjskich warunkach, gdzie polityka klastrowa jest silnie powiązana z polityką rozwoju obszarów wiejskich i małych miast. Ministerstwo Mikro, Małych i Średnich Przedsiębiorstw w rządzie centralnym Indii przyjęło program rozwoju klastrów jako kluczową strategię wspierania małych i średnich firm w zakresie rozwoju produktywności i konkurencyjności. Program ten nazywa się "Micro and Small Enterprises – Cluster Development Programme" (MSE-CDP) i zawiera w sobie między innymi elementy rozbudowy infrastruktury przemysłowej. Głównym celem programu jest budowa małych lokalnych sieci kooperujących przedsiębiorstw, które będą pozytywnie zmieniały otoczenie gospodarcze, w którym funkcjonują.

Słowa kluczowe: klastry, mikro i małe przedsiębiorstwa, polityka rozwoju, Indie.