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Cluster initiatives and the role of government in developing clusters

Clusters help to increase the association of the innovation, to create new products, new companies and new jobs. Clusters combine the activities of entrepreneurs and local government institutions and research units contribute to the dynamic growth of local economies. Clusters are the chance for many small and medium-sized companies operating locally and not having the possibility of owning output outside their region. Therefore, clusters constitute a good solution for both local companies and for regional economies which drive economic growth. This article aims to present cluster initiatives and the role of central and local authorities and in shaping them. The cluster policy can lead to a cluster, but a necessary condition for its establishment are location factors. The ideal model is a combination of the two initiatives – bottom up and top-down, which will influence the long-term effectiveness of this type of connection of different units.

Inicjatywy klastrowe oraz rola państwa w kształtowaniu klastrów

Klasy przyczyniają się do zwiększenia innowacyjności zrzeszonych jednostek, do tworzenia nowych produktów, nowych firm i nowych miejsc pracy. Grona, łącząc w sobie działania przedsiębiorców i lokalnych instytucji rządowych oraz jednostek naukowych, przyczyniają się do dynamicznego wzrostu lokalnych gospodarek. Są szansą dla wielu małych i średnich firm działających lokalnie i niemających szans na samodzielne wyjście poza granice swojego regionu. Stanowią zatem dobre rozwiązanie zarówno dla firm lokalnych, jak i dla regionalnych gospodarek, w których napędzają rozwój gospodarczy. Celem artykułu jest przybliżenie inicjatyw klastrowych oraz roli władz lokalnych i centralnych w kształtowaniu klastrów. Polityka klastrowa może doprowadzić do powstania klastra, lecz warunkiem niezbędnym do jego utworzenia są także czynniki lokalizacji. Idealnym modelem jest połączenie obu inicjatyw – oddolnej i odgórnej, co wpłynie na długookresową efektywność tego typu połączeń zróżnicowanych jednostek.

Keywords: clusters, cluster-based policy, methods of clustering

Introduction

The first cluster occurred many years ago. Since then, entrepreneurs have perceived more benefits than risks from activities in such a group of companies. Positive aspects of the business associations in the clusters are perceived in almost every section of the company starting from R & D, marketing, sales, production, personnel and supplies. Clusters, in addition to the impact of its affiliated company, also affect the region in which they operate. The resulting clusters, especially among high-tech attracted to the region's skilled workforce and also cause changes in clusters of cooperating with the institutions. Higher education faculties often adapt to the requirements of entrepreneurs gathered in clusters.

Clusters can be compared to a sports team. On the one hand, players are forced to interact and cooperate because only the game fought the whole team can ensure success. At the time of an injury or worse condition of one player, the success of the entire group can be shattered. Cooperation is essential because it is the foundation for a good team performance. On the other hand, each player plays for himself, working for their own name, place in sports history and fights for endorsement deals as a source of income. Individuality of each unit, causing a strong pressure on their own improvement and development which translates into the entire team performance. The cluster is also a combination of individual players who achieve their own profits or their losses but through mutual cooperation with other participants success may be more spectacular.

One of the first definition of clusters was given by M. E. Porter. Porter conducted a series of studies on clusters and networks of links of companies as well as on their competitiveness and usefulness. According to the definition 'Clusters are geographic concentrations of interconnected companies, specialized suppliers and service providers, firms in related industries, and associated institutions (e.g. universities, standard agencies, and trade associations) in particular fields that compete but also cooperate' [Porter, 2001, p. 246].

1. Methods of clustering

Indicating one method for creating a cluster is virtually impossible because each cluster is a combination of many different social, historical, economic, political factors. However, you can indicate who initiated the creation of the cluster. A natural way to the formation of the cluster in Porter's sense is initiative from below (a bottom-up), which comes from the same companies. The creation of such clusters is the most reasonable cost and immediate idea of their existence, which entails building a connection based on the established informal relationships be-

tween firms. This does not mean that clusters created at the initiative from above (called top-down), that is derived from local or national, do not succeed. Models of cluster formation based on the method of bottom-up and top-down are shown in table 1, in which both methods were compared.

Table 1. Comparison of the clustering process based on the method of bottom-up and top-down

Aspect	EXPLICIT TOP-DOWN	IMPLICIT BOTTOM-UP
Genesis of the initiative	Emergence from wider public interest and policy objectives regarding regional development, focused on cluster idea; better analytical and conceptual base; may be started by just one initiator/key person of the top political level; formal set-up integrated into regional administrative structures	Emergence from perceived real industrial needs of a group of firms to start a targeted initiative, apart from (restricting) theoretical concepts and politics; combines a group of first actors; formal set-up on a private basis independent of administrative structures
Composition of the actor group	Inclusion of a wide range of firms and other organizations right from the beginning according to defined target groups, inviting also previously isolated actors	Selective inclusion of a smaller range of 'useful' actors based on preexisting contacts, creating a group of organizations already linked to each other
Spatial reach, mode of regionalization	Membership may be shaped according to administrative boundaries because of public funding regulations; but also options of flexibility and border-crossing inclusion	Membership can flexibly be shaped according to suitable functional (border-crossing) reach, not bound to administrative regions; logic of inclusion prefers functional aspects to formal location
Sectoral reach	Determination of sector(s) to get included into and be eligible for promotion, incorporated in the brand name; conscious sectoral inclusion strategy, bearing a certain budget in mind	Flexible evolution of sectoral reach and inclusion strategies; membership develops according to common interests and themes attractive to several sectors; no financial constraints to sector inclusion
Model of finance and organization	Public funding requires a well-prepared effort; possible attraction of additional external funds (e.g. EU) creates sizable budgets; stable finance for a thrust period, jeopardized by tightening public budgets; foreseeable transformation of finance from public to private model; organization based on key officials performing 'soft' tasks of integrated support	Private funds develop correlated to membership growth and provide flexible, yet volatile, finance with longer term perspective; lean budget requires efficient operation; organization based on key official(s) performing 'soft' tasks of integrated support

Decision making and control	Centrally coordinated decision making, putting activities in line with public objectives, apart from influences by most member firms; better control by public authorities regarding performance and achievements of funded activities	Strong direct involvement of members in decision making and planning of activities; main initiatives can actually emerge from the group of cluster firms; independence of political control
Motivation and participation of cluster members	High motivation of selected member firms to participate in cluster activities, but difficulties to really activate a majority of members	High motivation and active participation of most member firms in self-financed and conceptualized activities; strong identification with the initiative
Strategic orientation	Strong strategic focus regarding national and/or regional cluster goals; good integration into overall strategies of locality development; good connections to cluster strategies in other sectors of the same region and public initiatives of the same sector in other regions	Main focus on improving regional determinants of success of included firms and sectors rather than the regional economy as such; good connections to same sector industrial initiatives in other regions, but conflicts with same sector public approaches on the spot
Preferred means of cluster support	Broad set of measures enlarging the contact base, creating contacts that potentially entail formal co-operation; enriching the cluster by attracting investors, supporting new firm formation and establishing infrastructure	Preference to effectuate functional, market-, cost- and innovation-oriented collaborations of members, rather than to proactively expand the overall regional cluster potential; support relies on strong cohesion of members
Variability of programs and instruments	Change of program and institutional features requires extensive preparation and coordination; more dependence on preset programmatic trajectories	Great programmatic and institutional flexibility and variability; instruments can be modified and new activities taken up quite independently

Source: M. Fromhold-Eisbith, G. Eisbith, *How to institutionalize innovative clusters? Comparing explicit top-down and implicit bottom-up approaches*, Department of Geography, Geology and Mineralogy, University of Salzburg, Research Policy 34, Salzburg 2005, p. 1258, 1260 and 1261.

The formation of clusters is a lengthy process that requires the interaction of many factors. The bottom-up clustering method is presented in Figure 1, where the stages of the process were marked. The first stage, the cluster formation, can be caused by two situations. The first is the presence of specific natural factors in a particular area such as climate, soil, deposits, forest resources, transportation, access to the sea and conditioning the natural process of cluster formation. The second is the presence in a region called the dominant company (called hero entrepreneur), around which new companies are formed. Sometimes, the hero are regional higher education institutions which remain in the central point of their clusters¹. In addition, there are many essential factors and measures such as

¹ An example is the biotech cluster in San Diego, which exists thanks to the University of California.

the complexity of demand, major businesses and political and institutional factors conducive to innovation and new technologies. Additionally, it is applied to the increasing social capital and many formal and informal links and networks between actors in the region. All these elements begin to interact with each other, forming together the Porter's diamond.

The next step is to include a cluster of universities and political institutions at the local or national level and created by regional policies and support programs in innovation, science, business, or clustering. The last decisive phase is the link between a cluster of national and international market, both in the purchase of factors of production and sales of final goods. The dynamic cluster cannot be isolated from the market. The cluster has to be attractive in the eyes of potential staff and businesses. Essential for development of the cluster are all kinds of inflows in the form of specialized labor, foreign direct investment, imports of raw materials, technology, capital and outflows of international markets such as export [Sölvell, 2009, p. 61].

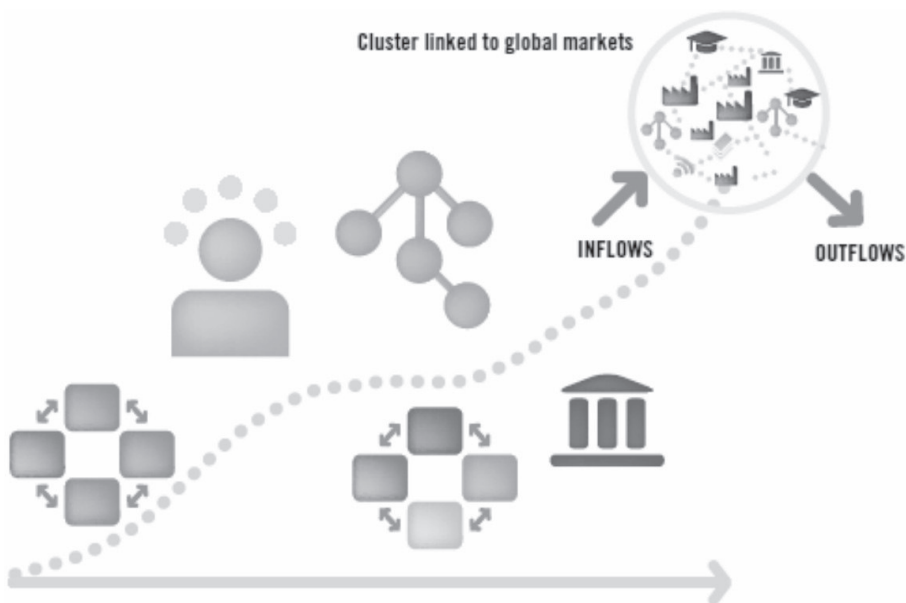


Figure 1. The development and integration of cluster into the global market

Source: Ö. Sölvell, *Clusters – Balancing Evolutionary and Constructive Forces*, second edition, Ivory Tower Publishers, Ödeshög, January 2009, p. 61.

According to the Clusers Navigators Ltd., an organization for the study of clusters in the world can be divided into five stages and twelve steps in the development of clusters to be assigned to a top-down method (Figure 2). At the first stage towards the beginning of clustering, the emphasis is to present the impor-

tance of the existence of a cluster for the potential of the founder, which may be a specialized unit of the national authorities. It is important to emphasize the role of clusters in the local economic development and to set priorities for the cluster. It should be noted that the clustering process is a lengthy process, requiring long-term funding and extremely important is the effective cluster coordinator.

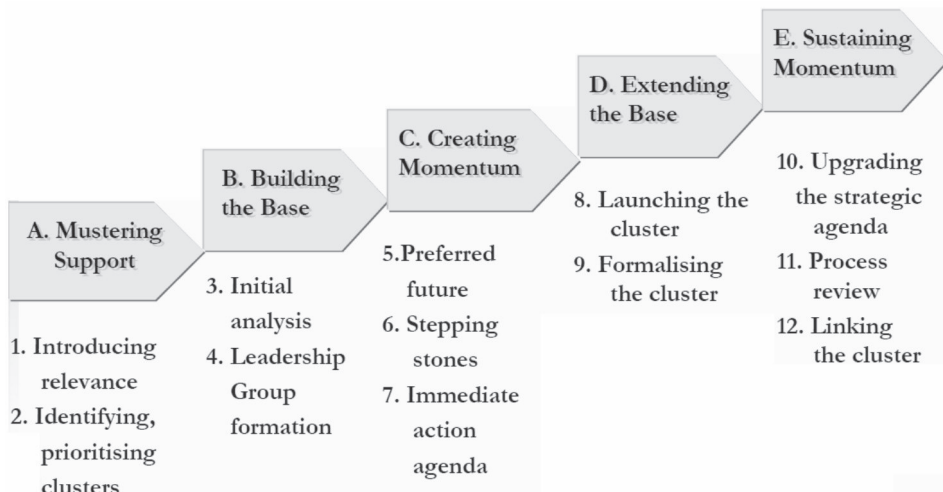


Figure 2. Five Phases, Twelve Steps

Source: I. Ffowcs-Williams, *Cluster Development: The How, Five Phases, Twelve Steps*, TCI Annual Conference, Hong Kong 2005.

At the second stage, which is building a database cluster, we analyze the current situation in the region and prepare a platform for further action. We should also recognize the potential group forming a cluster and choose its leaders who will consolidate all entities in one entity. It is important that the coordinator recognizes the importance of his task and is characterized by the group to have management skills, because he must unite the entities and create favorable conditions to attract new members.

The third stage is primarily to create a common vision for the entire cluster the adoption of short-term plans for cluster development, which will differ from existing activities. The fourth stage is to run the cluster and all its administrative part. The last stage is the cluster that is maintaining a continuous focus primarily on development, learning from the experiences of other structures, and their own mistakes, creating long-term plans for the future. It is also important to develop inter-linkages on both a regional and national, international scale [Ffowcs-Williams, 2005].

2. Cluster initiatives and the state's role in the formation of clusters

The creation of a cluster may be a consequence of the existence of the so-called cluster initiative, which is the initial step in the formation of specific connections between entities such as clusters. Cluster initiatives are organized efforts to intensify the growth and competitiveness of clusters in the region, involving cluster companies, government and / or the research [Sölvell, Lindqvist, Ketels, 2003, p. 9]. The initiatives have become a key factor in improving growth and competitiveness of a cluster of individuals as well as regional and country in which they arise. The creators of the cluster initiative may be different entities. These are often the same companies that see the benefits of collaboration. Currently more and more clusters are created top-down, which is initiated by a municipality or the central government. The cluster initiative may come from those with the lowest level, that is local, but also from the units at the regional and national level. Figure 3 shows the possible authors of cluster initiatives.

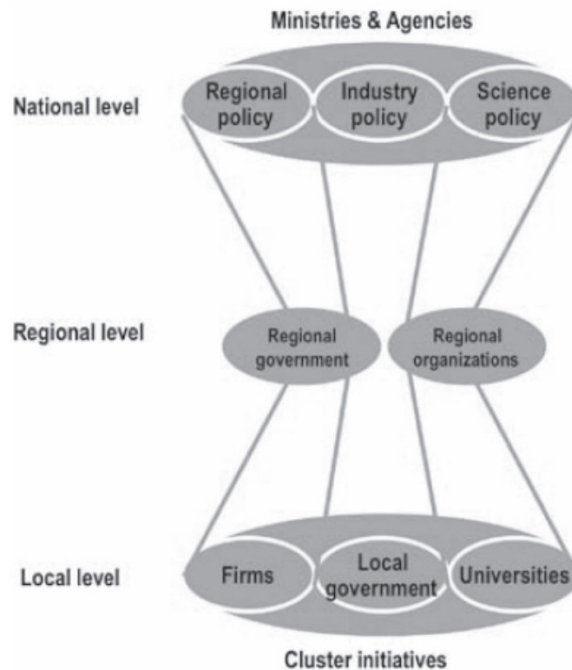


Figure 3. Actors involved in the creation of cluster initiatives at the national, regional and local level

Source: Ö. Sölvell, *Clusters – Balancing Evolutionary and Constructive Forces*, second edition, Ivory Tower Publishers, Ödeshög, January 2009, p. 47.

Clusters initiative research conducted by Ö. Solvell, G. Lindqvist and Ch. Ketels, presented in The Cluster Initiative Greenbook, lead to the following conclusions:

- each cluster initiative is unique, and its character varies depending on the degree of development of the country in which it arises;
- cluster initiatives are most common in developed economies;
- formed mainly in areas with high technological development in fields such as medical devices, production technology, the IT sector, biotechnology and bio pharmaceuticals and the automotive industry;
- 72% of cluster initiatives were established after 1999;
- most of the initiatives created in the countries that emphasize the promotion of science and innovation and R & D;
- the objectives of the initiatives which have been identified around 25, may be different and are not always carried out by all the initiatives;
- initiatives are usually complex and involve making most of their objectives, although the older initiatives are more specialized;
- for the formation of cluster initiatives in 32% the government is responsible, industry in 27% or 35% for both groups;
- funding of 54% lies with the government, which is 18% for industry and 25% for both groups;
- the greatest influence over the management of cluster initiatives exerts a company, and only in some cases, members are elected by the initiative of the government;
- initiatives are rather limited in term of geographic coverage (half of the entities established in the distance up to an hour away);
- initiatives should usually have many members, including foreign-owned companies, competitors and companies in the SME sector [Sölvell, Lindqvist, Ketels, 2003, p. 9].

Currently, the cluster policy, or the policy based on clusters (called cluster-based policy) is the central point of the regional and local policy for many governments around the world, because many governments noticed the share of innovative clusters in the creation of national economic development and were clustered as drive motors of the economy. Conformity with the definition of the policy based on a cluster is a collection of instruments and measures used by the authorities at various levels to enhance competitiveness by developing new or stimulating the development of existing clusters, mainly at the regional level. Politics is based on the assumption that a driving force is the market. Based on cooperation and interaction of different actors it is strategic in nature and serves to create new value.

The policy based on a cluster can take one of the four aspects of the model solutions. The first policy is focused on creating competitive advantage in key sectors of the economy. The second policy focuses on increasing the competitiveness of small and medium enterprises. The third model of the policy is aimed at im-

proving the competitiveness of entire regions, especially in the eyes of investors. Finally, the fourth model relates to innovation and policy task and is to approximate the area of science, research and industry [Brodzicki, Szultka, Tamowicz, 2004, p. 16–17]. The cluster policy has many tools that can support cluster development (Table 2). Elements of the policy are to organize services in a cluster environment, for example by gathering and sorting information and economic data for the clusters, which will be useful for those affiliated and create an information system for companies with potential, additional means of financing activities. The policy objective is also to create incentives for investment by building a cluster brand, investing in new technologies and supporting for the IT centers in the cluster. Another aspect of the operation of the cluster policy is to build and strengthen networks in clusters and investing in human capital.

Table 2. Tools of cluster policy

Category	Tools of cluster policy
Policies to more efficiently organize and deliver services	Government services typically are organized by function. Small business services, training, technology extension, marketing, and recruiting are separate programs staffed by specialists in a particular discipline, not industry. Clusters provide a better organizational framework for delivering services that are more tailored to industry demand because they are problem-oriented, not program-oriented; address needs interdependently, not independently; and work with customers collectively, not individually
Policies that target investments to clusters	States already make investments to strengthen their key industries or gain a foothold in emerging industries. They support university-based research and development (R&D) and its commercialization and build industrial sites. Some regions have tried, with mixed success, to buy clusters with incentives and investments. However, states have been less sensitive to their mature clusters when investing in innovation and entrepreneurship. Investment strategies will help less research-oriented cluster members absorb new technologies and become more innovative
Policies to increase clusters' networking and learning	Government agencies that recognize cluster – sand, where appropriate, help clusters organize – become more effective partners and negotiators. They are better able to learn about and react to industry needs, monitor clusters' progress, and help clusters adjust to environmental changes. Strengthening clusters in this way also helps regions develop unique expertise and "brands" that can supplement regions' general competitive advantages
Policies that improve the clusters' workforce	The single most important resource of any cluster in today's economy is its human capital. Access to a labor pool that knows how to apply its knowledge to the business of the cluster is a key to success. The challenge for states is to effectively interject the right level of the cluster context into postsecondary education and the appropriate degree of specialization into higher institutions to meet the needs of clusters that operate in diversified regional economies.

Source: *A Governor's Guide to Cluster-Based Economic Development*, National Governors Association, Washington 2002, p. 12.

M. Enright sets out the following tasks for policies to support cluster initiatives and already existing clusters:

- improving the general business environment (e.g., revision of tax policy, analysis of existing provisions, reduction of the cost of services);
- information and data on business and economic trends, markets, customers, competitors;
- providing basic infrastructure, education and specialized training for those cluster;
- promoting business and networking between enterprises;
- providing services (basic research, market research, materials testing, business process consulting, accounting and records);
- building community (action towards a common goal);
- evaluating and improving the policies and programs of government particularly looking at their support for the development of private sector companies [Enright, 2001, p. 16–17].

Politics, despite having a wide range of tools for creating clusters, is not intended to create clusters, but it is only a part of this process. Even the most successful cluster policy will not develop an effective cluster, if it does not impose on the other, the necessary conditions. Its mission is to help in creating, supporting and participating in ongoing activities in the life of the cluster. This is precisely the role seen by Ch. Ketels pointing out three aspects on the policy impact of cluster initiatives – actions that policy should, could and should not – lead to the clusters in their region (Figure 4).

Government should	Government may	Government should not
<ul style="list-style-type: none"> • Support <i>all</i> existing and emerging clusters • Participate • Enable data collection and dissemination at the cluster level • Be ready to implement recommendations 	<ul style="list-style-type: none"> • Initiate/ Convene • Co-Finance 	<ul style="list-style-type: none"> • Pick favored clusters • Pick favored companies • Subsidize or distort competition • Define cluster action priorities

Figure 4. The government's role in cluster initiatives by Ch. Ketels

Source: Ch. H. M. Ketels, *Achieving Competitiveness: What Role can Cluster Initiatives Play?*, Institute for Strategy and Competitiveness Harvard Business School, paper presented at conference Clusters as Drivers of Competitiveness: Strategies and Policy Issues, Fribourg 2011.

In recent years, authorities in most economies in the world have recognized the importance of an effective cluster policy, which may affect the country's economic development. Since then, the implementation of various policies aimed at creating favorable conditions for the creation of cluster initiatives and creation of new clusters and ensure further development of existing clusters. There is no single model of the cluster policy, each country adapts it to their own needs and political environment, economic and social development. Both the U.S. and Europe and even Asia programs are created to support clusters, which shows that cluster policy is a key element in the economic policy focused on the development at the local, regional and national level.

Conclusion

A steadily increasing trend showing an increase in the number of clusters and cluster initiatives can attest to the growing interest in clusters from both the companies themselves and the authorities. Clustering is a process that takes on significance in the economies of both developed and developing countries. Developed countries designed various models of cluster formation and cluster policies. In some countries (eg Japan), the bottom-up process of cluster formation is enhanced by a well-developed cluster policy, which leads to mutual complementarities of the two ways to create clusters. It can be seen there as an interesting relationship between the clusters and cluster policy because they are inextricably linked. Clusters that have arisen from the bottom often require assistance from the national or local which takes an active part in forming their shape and most of all is one of the entities of the cluster. The cluster policy can not exist alone, as described by Enright wishful thinking clusters do not occur in any location. The policy must apply the different factors without which the formation of clusters will be impossible. Is not appropriate (but very common) to state that the cluster policy assumes that the government can create a cluster in any place. Without the formation of the relevant factors in the short term is possible, but in the long term, such clusters can not survive.

The formation of clusters is permanently inscribed in the economic landscape of many economies, even though the process runs with varying intensity. For example, in the UK, 8 out of 10 companies employing over 20 people are associated in some form of a cluster while in Poland, it is only 4 of 100 (a similar situation occurs in the Czech Republic, Greece and Spain) [*Innobarometer*...., 2006, 4]. Particularly in Central – Eastern Europe and South – East Asia, is a major challenge – create the conditions for the formation of target clusters and cluster policy is a major challenge and therefore there should be an information campaign promoting the idea of cluster-based policies.

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