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Therefore, cluster-based policy gains an exceptional meaning. Selecting that model of policy, the problem of public aid and support instruments' appliance are crucial issues.

Beside the aspects that were mentioned above, the author also discusses barriers and limitations which are connected with cluster-based policy.

The conclusions and implications that are presented are for the most part the aftermath of the author's own research on cluster development issues.

Keywords: clusters, cluster-based policy, cluster support models, cluster development barriers.

INTRODUCTION

Clusters are currently the phenomenon of every economy. They come into being and develop in every kind of region and craft, both technological and conventional. In recent years Poland has experienced a dynamic growth of cluster interest. There arises a range of initiatives, which aim is to develop strong and rival economic specialties and can become the catalyst for market development in given region as a result.

A major increase of interest in clusters concerns both international organizations (as UE or OECD) and individual countries' governments. As a result, there has originated a **cluster-based policy** (CBP) concept.

A large number of countries and self-governments has already formulated and implemented that new kind of policy. It turned out to be applicative in many of them and is perceived as a durable competitiveness improvement instrument in areas of local, regional and nationwide marketplace.

The support of cluster development is also a prominent EU policy feature which is meant to execute The Lisbon Strategy guidelines – in aspect of economy competitiveness upswing.

In the context of aims of that policy, clusters have to be treated not so much a way of single companies development as a whole regions activation mechanism. They enable to create cooperation networks and economic connections which strength of influence goes far beyond local boundaries. In other words, clusters can be the foundations of regional development. That is the reason why clusters have become the object of special interest among public authorities on different levels. They become now a peculiar paradigm of regional advancement contemporary policy.

The vital issue here is to **choose the suitable model of regional development policy**, which can be executed in a given country. It is strictly connected with a form of public aid applied as a support in cluster evolvement.

The present article has arisen on the basis of a longstanding literature research, as well as on the author's empirical scrutiny, that was realized in years 2007-2010. They concerned the issues of cluster development in the region of Lodz, treated as a case study. The number of conclusions drawn from the studies, though, can be related – on a similarity of developments basis – also to other regions of the country.

1. THE IDEA OF CLUSTER CREATION

The conception of clusters was developed by M. E. Porter [1], who defined them as geographic aggregations of mutually connected and cooperating companies, specialized deliverers, service providing units, competitors that operate in CONTIGUOUS sectors and institutions functioning in given area of economic activity connected with those companies. That is the most frequently quoted definition in economical and social researches.[2]

Beside geographical nearness, it emphasizes three vital aspects of cluster functioning.

Firstly, clusters can include not only enterprises, but also e.g. National institutions, nongovernmental organizations, universities and development centres. The emerge of that kind of organizations of different profiles, not only business ones, is accounted as an important cluster development factor.[3]

Secondly, a cluster embraces only those companies and institutions, which function in the same area of economic activity, what gives them an opportunity to adhere to the same or similar technologies and implement mutual undertakings.

Thirdly, the definition emphasizes the role of cooperation connections, that can be based on goods and services exchange, transfers or know-how diffusions and other forms of synergy. That kinds of relatives as a general rule require much mutual trust in running a business. THE nature of those connections is determined by an economic sector and a regional range of clusters. [4]

There is another important factor that deserves to be stressed within the confines of the cluster conception, which is settling the economic action in lasting social relations that have network nature. The research conducted in USA by M. E. Porter confirms, that economic outcomes of a region depend on the strength of clusters located in and their capability of innovations.

The characteristic of industrial clusters is – as mentioned before – that companies gathered in at the same time compete with each other and cooperate in those areas, where the release of the synergy effect of mutual actions (e.g. joint research and development) can be possible. It seems that simultaneous occurrence of competition and cooperation between the same entities is logically

unfeasible. Meanwhile, the competition does not preclude the contingency of the synergy among sellers of the same products on the same markets. It should be kept in mind, that the relations between the same entities can take various form depending on the competition extent. In some areas given entities can compete, in other remain neutral or even mutually support. That way they form a joint block against other entities, which they compete with. Thus, cooperation should not be perceived as the contradiction of rivalry.

The competition does not exclude mutual, beneficial interactions with other companies and can become a catalyst for their development. That situation is defined as *coopetition* (from *cooperation* and *competition*). It is possible, when the concentration of specific resources and competences in given area reaches critical mass where the cluster becomes an attractive centre and appeals further resources.

Enterprises focused in a cluster take advantage of the fact, that it is of benefit for them to act together instead of operating on their own; joint venture allows them to achieve greater competitiveness that isolation and individual action.

In general, the idea of effective cluster creation is to organize a network of connections in such way, that the system – through internal cooperation – is capable of functioning and development on the level of interregional, national or global competition.[5]

2. THE ESSENCE AND FEATURES OF THE POLICY OF DEVELOPMENT BASED ON CLUSTERS

The policy of region development on the basis of clusters relies on the coordinating of actions in varied fields of economic, political and scientific world. By dint of that, a coherent system and a peculiar mechanism of connected units comes into being. Science encourages technological production, education is responsible for an actual demand on job market, supporting competition among local companies helps to attract foreign investments, etc.

The principal difference between the depicted conception and the classic model of regional development relies on leaving the traditional and

direct, or – to say outright – manual way regional organs control local economy in aid of indirect and stimulating action.

Thus, clusters become an instrument of support and activation here, they help release the natural entrepreneurship. That is one of the main assets of CBP usage – the benefits are noticeable not only by the subjects engaged in the project but by the whole region. In order to define cluster-based policy by its constitutive features, it can be mentioned, that this policy:

- is based on cooperation and mutual actions
- market is its catalyst
- integrates diverse actors in co-called triple helix configuration (usually it combines business, science and local administration)
- is of strategic nature; that way it supports the creation of a general strategy/vision of a given region development
- creates new values.

The properly comprehended and realized policy of cluster based development policy should prove above named features. Though, it is important to know, that there is no uniform and universal CBP model. Individual countries and regions have to make their choice of the best suitable strategy, instruments and solutions, taking into consideration their local specification, predispositions and particular circumstances.

That is why European Union, by clustering idea promotion and cooperation network based development, does not impose any model of the concept realization at the same time. By contrast, it encourages to search for unconventional solutions, that could pose an answer to local economies problems. Nevertheless, leaving that kinds of distinctness, the final CBP goal should always be to step up the competitiveness level of an economic system, although there is a wide understanding of such predominance.

On the basis of previous experiences of existing clusters and as a result of detailed researches or analysis, there can be described four fundamental cluster-based policy areas:

- the policy that is oriented on competitive superiority creation to the extent of key economy sectors

- the policy that is oriented on the growth of competitiveness of the small and medium enterprises sector
- the policy of regional development which aim is to stimulate individual regions and to increase their competitiveness and attractiveness
- the policy focused on the intensification of collaboration between industry and the realms of innovation creation research.

3. CLUSTER-BASED POLICY MODELS

Cluster-based policy can be realized on two levels – central (national policy) and local (local government policy). The possible and often the most efficient is a mixed one. It consists in the creation of the national realms for a regional policy realization. The role of public authorities in cluster structure is to mark out the boundaries for action and to create general regulations. However, in places where the commitment of authorities is too big, they often function as a cluster connection leader. It seems, though, that putting the role of the main animator on entrepreneurs and creating the best possible conditions for bottom-up initiatives renders the idea of clustering more properly.

In EU there can be found examples of CBP realization in every model that was mentioned before.

France and Luxemburg prefer the central model where national organs dominate being cluster originators, leaders, innovation animators and finders of new solutions.

Belgium and Spain realize the regional model where local government and entrepreneurs play major role.

The mixed alias intermediate model has been adopted by such countries as Austria, Germany, Italy, Sweden, Great Britain.

Many EU countries therein Poland still search for their own manner and are in a stage of developing the most adequate cluster model to their conditions.[6]

Also, every country ascribes various functions, tasks and strategic goals to clusters in a different way. In Germany and Finland the major effort is put into the stimulating of system interactions in triple helix (enterprises – public authorities –

science and development centres). Other countries, e.g. France, Belgium and the Netherlands, focus on R&D (Research and Development) sector support and combining it with business. As a result, an advantage can be taken of scientific achievements which are used in economic practice (*vide* the commercialisation of innovations).

There are also countries where CPB priorities are widely specified, assuming that cluster based policy is chiefly designed for the creation of universal connections between companies and economic system participants: public institutions, business environment, research units, etc. (e.g. Italy, Great Britain).

What should be observed is the fact that the creation of scientific and technological peers, enterprise incubators or even special economic areas are regarded as cluster-based policy elements. It is confirmed by the last Economy Department idea – of converting Polish special economy areas – into clusters.

Forming the legislative norms for cluster-based policy realisation poses the essential recommendation for that policy. The unambiguous and precisely formulated legislative regulations make the creation of economic connections of cluster character comfortable. The entities which want to engage in those projects are given the sense of stabilization and safety; are shown that the country takes cluster initiatives seriously and is conducive to the realization of them.

In some countries, e.g. Italy and Hungary, there have been imposed enactments which standardise functioning of cluster. The form of some legacies happens to be a contentious question (e.g. according to some part of cluster experts the Italian regulations are too restrictive), nevertheless the existence of principles which would organise the cluster market in mindful way seems to be a desirable and beneficial state.[7]

The important specificity of cluster support policy is that **there is not just the one model of that kind of policy**. For example, the rapport compiled for the Dutch Department of Economy distinguishes four models of cluster support policies. They are oriented on:

- the creation of competitive advantage in so far as key economy sectors,
- the stimulation of region development,
- the growth of SME sector competitiveness,

- the intensifying of the cooperation between industry and research and development sector.[8]

In economic practice the so-called *policy mix* model is the most often initiated one. As a general rule it includes at the same time all areas mentioned above. What is more, in various countries and locations it is indispensable to apply different, suitably adjusted instruments. It is connected with the fact that we deal with distinct cluster types – situated in different development stages (embryo, upward, mature, terminal).

It is an essential observation for cluster-based policy shaping, as it extracts the process attitude that heads towards determining the optimum model and instruments of support.

When finding an optimal model of cluster-based development policy, the character and intensity of relations between individual actors of economic connections should be settled. In particular, between a private sector represented by enterprises and a public one, represented by the self-government level officials and politicians.

In an international model, the participation of authorities in cluster initiatives is apparent and certain natural (a so-called top-down model). Nevertheless, in other CBP models – regional and mixed – at least a symbolic presence of public sector is also advisable. In fact, engaging local and regional administration in those initiatives on the one side increases prestige of them – which is of great importance especially while taking promotion and marketing action – on the other, though, it might translate into increase of a cluster efficiency. It amplifies its influence, which makes it a significant element of economic environment in its region, country, or, in most optimistic case, even in a macro region and/or the whole continent.

These are not the only benefits derived from a close cooperation of a private and a public sector in a cluster. According to A. Grycuk, “(...) a big part of actions made by clusters, agrees with a widely conceived program of creating the best possible conditions for entrepreneurship development, such as elimination of constraints in companies progress or development of required infrastructure.”[9]

Self-governments, that remain in dense contact with local entrepreneurs, also support adaption of

education programs of different levels for present and future qualifications needed in a cluster. For example, technically qualified employees are crucial to production sector companies. That big professional group is characterized by low mobility. That is why those workers have to be educated on the spot.

The issue that remains arguable is a proportion of commitment level and a participation of individual actors in cluster life. When basing on self research and personal expertise, the author makes an allegation that structures in which entrepreneurs themselves play the role of a leader are more effective; that participants are the most concerned with success of the whole undertaking. Thus, a process of generating a cluster initiative by a group of entities first, and then engaging public authorities in is the most optimal way.

4. A PROBLEM OF PUBLIC AID AND CLUSTER SUPPORT INSTRUMENTS

The usefulness of engagement of local and regional administration into cluster initiatives development indicated above is unquestionable. Simultaneously it should be spotted that a problem of cluster structures support in Poland remains a relatively new area of public intervention.[10]

When discussing a role of local and regional authorities, it should be distinctly mentioned that it has to consist in stimulating business environments to take up various cooperation forms. However, they are not supposed to be created from behind the desk – initiated irrespective of economic realities. Cluster participants themselves, especially entrepreneurs, should play central role here. A properly pursued economic, innovation, scientific and technological and educational policy can accelerate processes of cluster formation and development.

In so far as foreign investment attracting, public authorities policy should focus on those investors who would use local economy potential (natural resources, human assets in the shape of qualified workforce, existing infrastructure or science and development background) as well as possible.

An expansion of cluster initiatives, as almost all researchers and cluster practitioners emphasize, is firmly correlated with local environment quality. A conclusion that can be drawn is that **public**

authorities should not organize such initiatives on territories where local entrepreneurship environments are not prepared for them .

The basic rule of that kind of policy should be supporting already existing initiatives on different levels of their organization. It is crucial to assist initiatives development which base on a subsisting potential of self-organizing entrepreneurship environments instead of launching chains from the beginning on so-called idle lands. Efficiency and efficacy of taken actions can act as an argument, although one could also find exceptions to the rule. They derive from the fact that public side which originally can be a cluster coordinator and initiator, should backtrack on active network participation in aid of private sector as the cluster becomes more advanced. Public interest is not always coherent with private entities' interests, though. The thing is to minimise a risk of conflicts, abuse and ineffectiveness. Entrepreneurs should be prepared for independent cluster organising.

It should be believed that cluster development requires expanded **public and private partnership** in which private entity plays a role of a leader, whereas the public side should act as a "development catalyst". Consequently, the role of a public partner in creation and stimulation of cluster development can be significant. It derives from the fact that cluster development in a particular area depends on many factors, such as:[11]

- Supply factors, like availability of primal production factors (fund, properly qualified workforce, suitable technological and communication infrastructure) in given area;
- demand factors, size of a market in the region, possibility of competition on external markets;
- presence of cognate and supporting sectors, which make a cooperation and rivalry network on the area of region;
- an economic strategy for a company, which should correspond with world competition conditions and regional economy structure.

Thus there can be indicated that attitude of local authorities towards cluster development should concentrate on four basic elements.

Firstly, not only supporting single companies, but the whole networks.

Secondly, only previously selected companies should be supported.

Thirdly, that actions should put emphasis on innovative processes strengthening and amplifying processes of learning amongst entities working in a cluster.

Fourthly, as cluster supporting can be realised on every public authority level – from regional (local) to international – actions made by entities that work on regional or local level most often dominate.[12] There are examples which prove that local or regional development strategies can base on a cluster conception (as e.g. strategies realised in Great Britain in recent years as well as in Poland – lately in Lodz region).

The regional policy of European Commission indicates that EU perceives clusters as effective tools of competition level and regional economies innovation support, it also suggests that they are a prominent instrument (priority) of a new industrial policy.

The possibilities of cluster structures being financed from EU and national means pose a particularly important issue. To specify that problem we can see that in a period of years 2007-2013 some new, structural funds based support programs occur. They concern not only clusters, but also cooperation connections in the broad sense. Cluster creation (clustering) is supported directly by European Commission from EU funds through the 6th Research and Technological Development Framework Program. It makes up a part of the “pro inno Europe and innet” projects and can be supported on 7th European Union Framework Program ground.

On a national and voivodship level it is possible to support cluster initiatives that have supraregional, regional or local range. The prerequisite of obtaining aid for cluster projects from structural funds or from a state or a self-government budget is **that companies’ cooperation should contribute to knowledge and technology transfer between cluster participants and to reinforcement of competitiveness and innovativeness of entities operating within an agreement.**

Existing and developing clusters and cooperation networks can obtain support from “Innovative Economy 2007-2013” Operational Programme funds within “A development support

of supraregional importance clusters” Operation 5.1. About 104 million Euros have been earmarked for the realisation of that action. That support is appropriated to develop industrial cooperation that has supraregional value. The elements that can be financed are mutual undertakings of investment character, which contribute to a knowledge transfer becoming easier and to innovations between cooperating entities.

Cluster initiatives of regional range that belong to the Regional Operational Programme (ROP) managed from voivodship level are the ones that can also count on EU financial support. In financial perspective of years 2007-2013 cluster support programmes have been enlisted on both nationwide and regional operational programmes of individual voivodships.

Government manifests its support for cluster actions through various kinds of back up instruments – firstly, on regional level. Newly created clusters in embryo stage demand engagement especially from initiators and animators. Sometimes they are single persons, sometimes institutions that are trustworthy in local communities and are capable of attracting partners to cooperate. Secondly, on central level, inter alia through mentioned above Operational Programme “Innovative Economy”, which directs specific actions and financial support to various kinds of cooperation forms between enterprises (companies’ networks that work in delivery chains therein).

It is worth to emphasize, that OP IE does not refer directly to cluster support of initiatives. Cluster conception has been included in this document as so-called corporation connections and science and industrial consortiums. OP IE defines that science and industrial consortium as a group of organisation units which include at least one science unit and at least one entrepreneur. They take up mutual undertakings e.g. scientific research, developing work or investments on the basis of an agreement.

Within IE OP only **supraregional clusters** are supported which means co-financing only those projects that are realised by final incumbents – working on an area of two or more voivodships. Thus, potential support can be obtained only by the strong and broadly placed clusters. **Regional clusters**, i.e. located in one voivodship, can count

on support from the Regional Operational Programme (ROP), which was discussed before.

Clustering support is also provided by **Operational Programme “Human Capital”**; particularly as an element of Operation 2.1. “Developing management of modern economy”. An overriding goal of that program is to raise companies’ competitiveness through increase of investing in companies’ human resources. In particular, it concerns improving quality and availability of training and advisory service that supports enterprise.

Another form, within cluster support policy, presents **“Development of Eastern Poland” Operational Programme**, which spans five voivodships: podlaskie, warmińsko-mazurskie, świętokrzyskie, Lublin and podkarpackie. Potential opportunities of co-financing projects connected with cluster identification, development and creation of cooperation networks can be gained from the Programme.

In view of the fact that clusters are regional processes, **the main object that supports them is self-government authority**. When analyzing the content of ROP for years 2007-13 in Poland, it can be concluded that the best opportunities for support are provided for those projects which focus on:

- designating clusters,
- creating organisation structure and managing it,
- attracting new participants,
- marketing actions,
- initiating cooperation processes between cluster participants in order to transfer technology
- supporting best practices.

The Analysis of Regional Operational Programmes indicates that individual voivodships of Poland have adopted different attitudes towards cluster based policy.

5. BOUNDARIES AND LIMITATIONS CONNECTED WITH CLUSTER SUPPORT POLICY

When analysing the issue of barriers in cluster development basing on research carried out (according mostly to surveys and questionnaires directed to executive management of enterprises and cluster coordinators) it should be stated that they are that multifarious and that many that they

cannot be “paint with the same brush”. It might entail chaos and impede estimation of the situation.

Thus, some specified division criteria should be assumed to make a more systemised analysis. There can be deduced four principal development barrier types:

1. institutional barriers
2. organisational and system barriers
3. market barriers
4. mental barriers

Institutional barriers boil down to relations between already working and potential cluster participants and self-government, ministerial or business surrounding board. They can be manifested in:

- insufficient development of institutions in business surroundings,
- unreformed R&D sector,
- bureaucracy, which constrains access to public resources,
- malfunction of self-government and central administration.

Organisational and system barriers refer to a real state of Polish economy and its individual segments (especially to R&D and cluster initiatives’ financing system). That obstacles are:

- weak cooperation of companies within R&D,
- weak formal connections between entities of economic field,
- superficial forms of cooperation on economic field,
- poor synergy of entrepreneurs and R&D sector,
- defects in legislative sphere.

The barriers of **market type** account for global economy trends, competitiveness upswing, a risk of recession and crisis, for example:

- Low standard of economy innovativeness
- Limited financial means
- Small number of acquired patents Lack of international innovations
- Dependence on public resources

Finally, **mental barriers** which should be identified with social and cultural factors, with

social distrust and entrenched cooperation rules. The main impediments are:

- Deficiency of social trust
- Domination of a competition paradigm
- Poor fundamentals of civic society
- Weakness of public initiatives
- Misunderstandings of a cluster idea

Cluster development barriers in Poland that are presented above do not exhaust the list; on the contrary, it has an open nature. It is supposed that as cluster ideas are popularized, they can be joined with another difficulties and obstacles. Undoubtedly, some of them are particularly threatening and have a very strong negative influence on shape and level of clustering in Poland. Thus, they require special attention.

To base on the opinions of entrepreneurs themselves, the most significant barrier that gets in the way of building a professional cooperation network are scant financial means and low budget that can be potentially used by clusters. Entrepreneurs generally complain about shortage of means.

Outcomes of research conducted in region of Lodz directly indicate – financial barriers are ranked as most essential in 87,8% of entrepreneurs – cluster participants. That subjective notion of business representatives cannot be disregarded, as conviction of financial limits that are unable to overcome in the very beginning discourages from making cluster initiatives.

However, reality is not as unfavourable as it is seen by entrepreneurs. Belief in financial tenuousness is for the most part a stereotype. Suffice it to say that in only one action within Operational Programme 5.1. “Innovative Economy” - “A development support of supraregional importance clusters” clusters were provided with 104 million Euros. Substantial amounts of money for cluster support are also provided by “Development of Eastern Poland” Operational Programme.

Thus, it seems that the problem does not reside in lack of financial means but their accessibility. In that context the role of public institutions should be to encourage financial environment that it is inevitable to change a stereotype about general lack of funds. It is undoubtedly connected with necessity to overcome another crucial barrier

mentioned in the table – excessive bureaucracy. It especially concerns simplifying procedures and introducing transparent and equal criteria of assessment. It could let entrepreneurs trust public institutions to a larger extent and reach for offered means more efficiently as a consequence.

As experts and coordinators of examined clusters say, financial issues are not as significant as structural and mental ones. Mental barriers include the most crucial problem that is “culture of mistrust” which dominates in Poland and is a result of low political culture and corruption. The problem constituted a main subject of public debate even couple of years ago. Frequent and, in most cases, justifiable distrust creates disadvantageous climate for cluster structures construction which is based just on mutual trust.

It can be spotted that cluster’s success is directly proportional to confidence which both cooperating entities can have in each other. Otherwise, it becomes inconvenient to realise information, experience and knowledge exchange or innovation diffusion.

In Polish economic system the ideology of wrongly understood rivalry or even hostility predominates. To a large degree it results from fear of bankruptcy as many Polish companies (especially small and medium-sized) still have relatively shallow roots. They only just create their position and capture the market. In this situation some reluctance with which they make their know-how accessible to other market partners is in some way justified. In our conditions, however, rivalry and competition are often badly understood. It is vital for business entities to be more open-armed towards each other. Reluctance to cooperate and inability to collaborate undoubtedly make creation and development of cluster structures difficult.

Low innovativeness of Polish economy also poses a significant barrier of structural character in cluster development. Our companies too often plan in short-term perspective and focus on obtaining funds for current actions. They discount prospective investments, technology development and extending their own intellectual capital. The respondents also draw our attention to the lack of procedures concerning technology transfers and commercialisation of scientific projects. Translating it into a market offer – a product or

services – is crucial from the viewpoint of cooperation between science and business.

A difference between styles of action of research and development and classic enterprises is an additional obstacle – R&D zone puts emphasis on a project and innovation, whereas a company concentrates only on profit, package and sale of an idea.

Clusters – by design – perfectly function as structures which provide for compromises and finding the same language. To make that happen, both sides have to find an incentive to start a dialogue. That is the part in which the role of self-government entities is vital. They are hosts of the region which includes clusters and are often responsible for initiatives concerning cluster development policy.

To conclude, it is worth mentioning that barriers in cluster development create a peculiar system of communicating vessels. Mistrust in public sphere in practice impedes establishing communication between business and science. Lack of dialogue puts boundaries on knowledge transfer and innovations' diffusion. That in turns determines low innovativeness of Polish economy. Long persistence of that status quo can entail limitation of European Union resources which should be treated as a serious threat.

Taking into consideration the mechanism of mutually connected cluster development barriers characterised above it can be noticed that **the policy in terms of that has to be complex and coordinated.** It is vital on the one side to educate continuously - through spreading the idea of clustering, on the other to impose appropriate system changes, succeeding support programs, new rules and regulations.

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