

Beata SKOWRON-GRABOWSKA
Częstochowa University of Technology, Częstochowa
beatas@zim.pcz.pl

CRITERIA OF EVALUATING KEY NATIONAL CLUSTERS IN THE VALUE CHAIN AND WITH REFERENCE TO THE LOCAL CONDITIONS

Abstract. The aim of the herein paper is to present the trends of the development of the Key National Clusters. In this paper, analysis has been carried out on the criteria of the selection of the key national clusters. Over the past few years in Poland the rapid development of clusters has been observed. This is possible thanks to the EU and government support. Together with the increase in demand for innovative economic solutions, the number of clusters is also growing, while simultaneously the preparation of criteria for their evaluation is essential. Cluster initiatives are of particular value for local self-governing units and support the development of entire regions.

Keywords: Key National Clusters, value chain, criteria.

1. Introduction

In the past few years, clusters have become the driving force of the Polish economy, by combining the institutions of the business environment with enterprises and scientific units in a natural way, thus creating the possibilities of their cooperation. With relation to the realization of the notion of “smart specialization” advocated by the European Commission and the implementation by Poland of the strategy of Europe 2020 from 2016, the Ministry of the Economy is planning to initiate the program of the Key National Clusters. This program is aimed at the analysis of the current state and the selection of clusters that shall play the leading roles in the future in terms of the sphere of defining the directions of economic development, principles and sources of financing.

The reason for implementing the process of analysing and choosing the Key National Clusters is thus the pursuit of the growing economic specialization of Polish enterprises and directing their development towards strong, innovative entities that shall be capable of

competing freely on a global scale. It is actually in this process that clusters have been acknowledged to be the units that with regard to the scale of their activities and the range of impact are capable of realizing these directions of the policies of development.

2. Economic clusters and key clusters

No singular definition of clusters has been adopted that is common to all types of industrial ties yet. The most frequently quoted notion is attributed to its very creator, M.E. Porter: “Clusters are a geographical concentration of mutually tied firms, specialized suppliers, units rendering services, firms operating in related sectors and the associated institutions in the particular fields, competing with each other, while also cooperating”.¹

Clusters may be defined by means of their network ties. A cluster is presented as an innovative network². In such a case, it is claimed that “the ties located in the same region of the units of the network of interactions of a formal and informal nature facilitates the common undertaking of research and development work, sharing knowledge and information, exchange of modern technological solutions and the intensive diffusion of innovations”.³

However, the Ministry of the Economy defines a cluster as a flexible form of horizontal cooperation between 3 groups of entities, namely enterprises, scientific and research units and public authorities that create an environment facilitates the intensive processes of interaction and cooperation between the particular national actors and regional systems of innovation⁴. Such a structure bears the name triple helix⁵, which is illustrated in Fig. 1.

Cooperation between these three groups of local actors is to be analysed and evaluated during the process of appointing the Key National Clusters. These actors fulfil a defined role in the network and additionally they create an intensively changing network.⁶ A large proportion of clusters concentrate on an enterprise producing final products, or service firms, financial institutions and other similar ones.⁷

¹ Porter M.E.: Porter o konkurencji. PWE, Warszawa 2001, s. 246.

² Bucka M.: Klastry innowacyjne jako zintegrowana forma przedsiębiorstw w regionie, [w:] Kauf S. (red.): Polityka regionalna w okresie transformacji – cele, doświadczenia, perspektywy. Wydawnictwo Uniwersytetu Opolskiego, Opole 2007, s. 197.

³ Żminda T.: Rola klastrów w kształtowaniu innowacyjności przedsiębiorstw na przykładzie województwa lubelskiego, *Kwartalnik naukowy Organizacja i Zarządzanie* 4(16), Wyd. Politechniki Śląskiej, Gliwice 2011, s. 145.

⁴ Ministerstwo Gospodarki "Konceptcja klastra", <http://www.mg.gov.pl/node/11784>

⁵ http://www.mg.gov.pl/files/upload/11783/KLASTRY_PL_press.pdf.

⁶ Knop L.: Zarządzanie klastrem. Konceptcje, strategie, modele. Wyd. Politechniki Śląskiej, Gliwice 2013, s. 66.

⁷ Kazimierski J.: Klastry jako źródło efektów synergicznych i źródło zarządzania lokalnego. „Folia Oeconomica”, nr 251, 2011, s. 30.

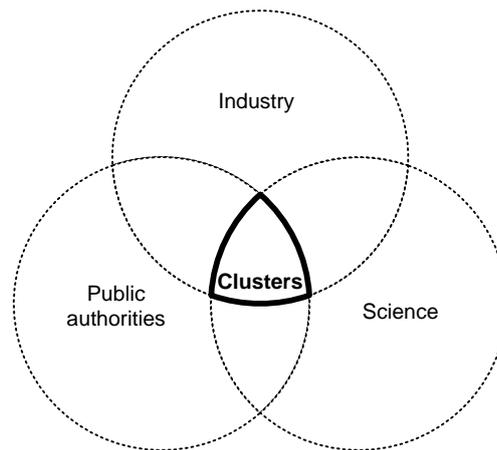


Fig. 1. Clusters and triple helix

Source: Ministry of the Economy "Koncepcja klastra" (Concept of Cluster),
<http://www.mg.gov.pl/node/11784>

A cluster frequently encompasses such participants in the value chain as the suppliers of raw materials, or components. The creation of the value chain emphasizes the effects of connecting and the common learning process. The process of creating facilitates the emphasis of the role of the principal leader that is supported by local institutions.⁸

In 2014, the Ministry of the Economy and the Polish Agency for Enterprise Development worked out a set of criteria as to what cluster ties should fulfil with the aim of receiving the status of a key cluster. Social consultations are constantly in progress, which the proposed criteria have been subject to. The consultations are participated in by representatives of the institutions of the business environment, coordinators of the clusters of all the sectors of the economy, representatives of science and government administration. Simultaneously, analyses and tests are run on the standards of management in the selected clusters around the country.

In Table 1, the basic points were presented, which involve a formal and substantive evaluation by the experts of PARP.

In Table 1 the criteria of selecting the Key National Clusters has been presented, which also functions as a supply chain that is prepared with extraordinary precision and the subject matter of analysis and qualifications shall be all the areas of activities of the given cluster, as well as its closer and more distant environment.

⁸ Knop L.: Kluczowe założenia analizy klastrów. „Organizacja i Zarządzanie”, nr 4(16), 2011, s. 42.

Table 1

Chosen formal criteria and substantive evaluation

Formal criteria	
Period of validity of cluster agreement	KNC must operate in a formalized way. It is assumed that a cluster commences its formal activity from the moment of signing an agreement between the participants. At the moment of submitting the application, the cluster agreement should be binding for at least 3 years.
Number of members of cluster	The status of KNC may only be achieved by clusters of an appropriate critical mass, namely consisting of at least 51 members.
Share of enterprises among members	Key National Cluster should distinguish itself with a strong representation of entrepreneurs. The participation of entrepreneurs in the structure of a cluster should amount to over 70%.
Number of medium and large scale enterprises	The size of enterprises in a cluster has an impact on the innovativeness of the cluster, while innovativeness is one of the main factors of competitiveness in the contemporary economy. The most innovative are medium and large scale enterprises. Hence, medium and large scale enterprises fulfil the role of "flagships" and determine the economic potential, as well as the level of cluster innovativeness.
Scientific units A or A+	Of particular importance is the participation in the cluster by scientific units of a high level of research, namely units in possession of the parametric MNiSW (Ministry of Science and Higher Education) at the level of A and A+.
Geographical concentration	Geographical concentration is one of the fundamental elements in defining a cluster. Territorial proximity allows the entities to achieve additional benefits resulting from the flow of knowledge and greater trust between the entities in cooperation. In the case of KNC, the level of geographical concentration should ensure the possibility of effective cooperation. The optimal distance between the office and the cluster, while its units are at a distance of 150 km. A geographically concentrated cluster should also be acknowledged to be the one in which 70% of members fulfil the aforementioned parameters.
Substantive evaluation	
Certification of management quality	Certificates of management quality indicate the endeavour to ensure the high quality of management on the part of the cluster authorities. The indicator analyses whether the cluster and/or his/her coordinator possesses a valid certificate of quality management (at least ESCA bronze label or equivalent certificate).
Management structure of cluster	One of the important criteria in the sphere of management should be the shaping of the structure of cluster management, namely, having a board, program council and documents regulating cooperation within the framework of a cluster. A cluster has a clearly defined structure of management that encompasses at least the recommendations of the coordinator and the board of the cluster regarding the defined role and the supporting organs (e.g. the Scientific Council).
Number of employed in cluster enterprises	This indicator analyses the size of employment in cluster enterprises (the number of people employed in enterprises as members of a cluster on 31 December of the year preceding the submission of the application). The average employment in micro-scale, small scale and medium-scale enterprises according to data from GUS in 2012 amounted to slightly more than 2 employees per enterprise, by assuming that a cluster should have the appropriate critical mass and concentrate large firms in its structure, a minimum threshold of employment for a cluster was adopted at the level of 1,000 employees.

cont. table 1

Sales value in cluster enterprises	The economic potential of a cluster may be gauged by the combined revenues generated by enterprises concentrated in the cluster. The indicator measures the combined revenues of the enterprises concentrated in the cluster for the last closed fiscal year. The average revenue per employee is 250,000 PLN according to GUS in SMEs (2012). By assuming that the critical mass of a cluster signifies employing at least 1,000 workers in enterprises, the minimum level of revenues was defined as 250,000,000 PLN (data from the last closed fiscal year).
Innovative potential of cluster	Description: By means of this criteria, the innovative potential of a cluster is evaluated, which is perceived to be the possibilities of creating and implementing innovations to the economy by the cluster firms. In this criteria, the way R&D activities are run by cluster firms is analysed, as well as the firms operating in areas of high technologies that exist in a cluster.
Innovativeness and knowledge transfer	Description: This criteria refers to the effects of innovative activities in a cluster. The number of transfers of knowledge completed between entities of a cluster is analysed, as well as patents and other rights to protect intellectual property that is at the disposal of the cluster enterprises, as well as the number of innovative enterprises perceived to be entities of a start-up, spin-off and spin-out nature.
Number of transfers of knowledge and R&D projects	This indicator measures the number of transfers of knowledge within the framework of a cluster and the joint research projects run in the period of the last 3 years. By the term transfer of knowledge, we mean passing on specified technical and organizational knowledge, while also the associated know-how, the results of R&D work, or the rights to intellectual property from the sphere of science to the economy, with the aim of their economic (commercial) use.
Number of enterprises of start-up, spin-off, spin-out types in cluster	This indicator analyses the number of enterprises of a high level of innovativeness in a cluster. The number of firms of a start-up, spin-off and spin-out nature is analysed. A start-up is perceived to be the newly-established enterprises (up to 3 years of existence) which were established on the basis of an innovative product or innovative business model. A spin-off is a new enterprise that was founded by way of an employee becoming independent of the parent enterprise or other organizations (i.e., higher education colleges, research laboratory), by availing of the intellectual resources of the parent organization. These are enterprises that are independent of a parent organization. A spin-out is a new enterprise that was established by an employee of the parent enterprise, or other organizations (i.e. higher education colleges, research laboratory), by availing of the intellectual and tangible resources of the parent organization.
Specialization of cluster fits in with the intelligent national specializations	A key cluster should register the intelligent specializations at the national level. This indicator checks whether at least 50% of enterprises concentrated in a cluster run activities in the sphere of specializations (expert appraisal), while entities in a cluster have technology at their disposal and/or the rights of intellectual property in terms of technologies in the sphere of one of the national intelligent specializations.

Source: Analysis on the basis of the following: http://www.pi.gov.pl/PARP/chapter_86197.aspx

The example of cluster, which can be included the Key National Clusters is an energy one. It is claimed that energy clusters are to become a local sign of energy self-sufficiency and benefits from them the function is to get the recipient, because they will gain controllable

energy source. For manufacturers, the advantage is to be a guarantee of higher resale prices of energy, and for network operators increase the security of energy supply and power parameters.⁹

Some conditions that are indicated as potentially the most highly rated in terms of the development of clusters are difficult to execute. In particular, it is hard to enter this in the national smart specializations.

3. Criteria of KNC evaluation

One of the formal conditions of the evaluation is the requirement for the cluster agreement to be binding for at least 3 years at the moment of submitting the application form. Taking account of the relatively recent history of the cluster ties in our country, this requirement would seem to be impossible to fulfil for a multitude of thriving clusters, while also closing off development for the newly-emerging clusters.

A further formal restriction is the requirement of geographical concentration: The status of KNC may only be attained by clusters of a critical mass, namely concentrating on at least 51 members), as well as in substantive terms with relation to the number of people employed and the sales value (the minimum threshold of employment for a cluster is adopted at the level of 1,000 employed and the minimum level of revenue as the last closed fiscal year at 250,000,000 PLN), whereby the question arises as to whether the Polish economy is sufficiently developed in order to find 150 small and medium-sized enterprises within a proximity of 150 km from the given geographical point that would generate the appropriate level of revenues and employ the appropriate number of employed.

These doubts grow after becoming familiarised with the latest results of research, according to which in 2013 the level of entrepreneurship in Poland places Polish entrepreneurs in fourth position in Europe¹⁰. Such results are very good, however the analysis of the Polish system of REGON (National Business Registry Number) indicates that Polish enterprises are primarily micro-sized enterprises. In accordance with the data in the PARP Report on the state of SMEs sector in Poland in 2013: by comparison with the EU average, the SMEs sector in Poland is to a greater degree dominated by micro-sized enterprises, while the participation of small firms is half of that in the EU¹¹. In light of the analysis of the aforementioned criteria, the conclusion may be put forward that in the current stage of development of the Polish economy, the requirements shall be extraordinarily difficult to fulfil in the case of the majority of Polish cluster initiatives.

⁹ Mucha-Kuś K., Sołtysik M., Zamasz K.: Rola kooperacji w klastrach energii. „Zeszyty Naukowe Wydziału Elektrotechniki i Automatyki Politechniki Gdańskiej”, Nr 53, 2017, s. 33.

¹⁰ Report on state of SMEs sector in Poland 2013, PARP, Warsaw 2013, p. 42.

¹¹ op.cit. p. 42.

4. Summary

Of course the creators of the system of evaluation, while operating at the request of the Polish government, are fully aware of the limitations and difficulties that result from the implementation of such a complicated system of evaluation: The lack of adequateness not only relates to the differences between the clusters in Poland and those abroad. The occurrence of significant differences relates to every country, which is the result of the socio-economic circumstances, or cluster policies adopted. It is possible to indicate a certain set of differences between the clusters from Western Europe and those from Central and Eastern Europe. These are among others, the timescale of operations of the clusters, the magnitude and significance of the clusters for the economy, the level of social capital, etc. It would seem that an obvious issue is that of the decision that the choice of areas and criteria, as well as the indicators for the particular criteria should be based on a thorough analysis of the situation of clusters in Poland¹².

Hence, at present a detailed analysis of the comments submitted by the coordinators of the clusters at the stage of social consultation would appear to be key, as in such a way as to strive towards a constant and long-lasting development of the Polish economy it is also necessary to take account of both the theory and the practice of management.

Acknowledgements

The article presents selected results of the research project entitled “The models of knowledge management in networks and clusters of creative industries in Poland and the EU countries”. The project was financed by National Science Centre on the basis of the decision number DEC-2012/07/B/HS4/03016.

Bibliography

1. Bucka M.: Klastry innowacyjne jako zintegrowana forma przedsiębiorstw w regionie, [w:] Kauf S. (red.): Polityka regionalna w okresie transformacji – cele, doświadczenia, perspektywy. Wydawnictwo Uniwersytetu Opolskiego, Opole 2007.
2. Kazimierski J.: Klastry jako źródło efektów synergicznych i źródło zarządzania lokalnego, „Folia Oeconomica”, nr 251, 2011.
3. Knop L.: Kluczowe założenia analizy klastrów. „Organizacja i Zarządzanie”, nr 4(16), 2011.

¹²http://www.pi.gov.pl/PARPFiles/file/news/20141009_KNC/KNC_Raport_Etap_I_i_Zalacznik_16092014_.pdf

4. Knop L.: Zarządzanie klastrem. Koncepcje, strategie, modele. Wyd. Politechniki Śląskiej, Gliwice 2013.
5. Ministerstwo Gospodarki "Koncepcja klastra", <http://www.mg.gov.pl/node/11784>
6. Mucha-Kuś K., Sołtysik M., Zamasz K.: Rola kooperacji w klastrach energii. „Zeszyty Naukowe Wydziału Elektrotechniki i Automatyki Politechniki Gdańskiej”, Nr 53, 2017.
7. Porter M. E.: Porter o konkurencji. PWE, Warszawa 2001.
8. Raport o stanie sektora MSP w Polsce 2013, PARP, Warszawa 2013.
9. Żminda T.: Rola klastrów w kształtowaniu innowacyjności przedsiębiorstw na przykładzie województwa lubelskiego. „Organizacja i Zarządzanie”, nr 4(16).
10. www.mg.gov.pl/files/upload/11783/KLASTRY_PL_press.pdf
11. www.pi.gov.pl/PARP/chapter_86197.asp?soid=7CD388FF62EC4716B8851A803BB2EB11
12. www.pi.gov.pl/PARPFfiles/file/news/20141009_KNC/KNC_Raport_Etap_I_i_Zalacznik_16092014_.pdf