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Cluster's potential

Key words: cluster, development, benefits

S u m m a r y: The cluster structure in Poland is a new phenomenon. However, international experiences show that clusters are one of the most important factors of economic growth and development. Unlike other regional or national structures, it is characterised by the fastest transfer of knowledge and technologies, achieved owing to geographical closeness of the entities representing both the industry and science (networking and interpersonal contacts).

1. Introduction

The main priority of the European Union, recorded in the Lisbon Strategy, is raising Europe's competitiveness, which consists of: strengthening the potential of science and cooperation of science with economy plus support development of the information society. Adequate resources and programmes serve to achieve these aims but the most important tool is promoting growth of clusters in which the potential for an efficient improvement in economy competitiveness level of particular regions of the EU is being searched out. Clusters are analysed as an isolated economic system which affects the growth dynamics of both entities and the region, country and the world economy. It is the perspective of success built on the competitors' high quality that brings together circles of scientists and entrepreneurs and local governments and motivates to act in the direction of cluster creation. Clusters are supposed to be a factor influencing an achievement of high indexes in the struggle for dynamic and global development of the country's economy.

The purpose of this article is to investigate and demonstrate the development of Tarnów Industrial Cluster. The most important proposition bet is that the func-

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tioning and development of the Cluster have an impact on regional development and businesses located in it. In this particular case the Tarnów Industrial Cluster, located in the region of Tarnów, is being discussed. A manifestation of the development are the benefits for companies operating in the Cluster, as well as a number of positive effects on the immediate environment, i.e. the region in which it is embedded. All of it makes the Cluster become a kind of driving force for regional development.

2. Clusters and methods of formation

In fact, clusters occur in all economic sectors. They exist both in industry, services, in advanced technology sectors and in traditional ones. They are characterised by different levels of innovation and technological advancement and, as it follows, by different development perspectives and strategies.

The classic definition of clusters by Michael E. Porter is a geographic centre of connected enterprises, specialist suppliers, entities providing services, enterprises active in related sectors and connected institutions in particular fields, competing but also cooperating with each other.

In the opinion of the Main Office for Statistics it means location of a network of interrelated enterprises, their suppliers and buyers, research and educational units, special governmental agencies and the so-called bridge institutions providing technical and advisory services as well as financial and insurance institutions in an isolated area (GUS, 2002, p. 154).

Most definitions of clusters include the four basic determinants (Hołub-Iwan, Małachowska, 2008, p. 4):

- Concentration, in a given area, of interdependent business entities, being active in the same sectors of industry or services or in related ones;
- Interactions and functioning of connections between entities and institutions;
- A beyond-sectorial concentration dimension, covering with its range both vertical and horizontal connections and couplings;
- Continuous competition and cooperation.

Features of this kind are needed for the effect of synergy and concentration scale dimension to exist in a given area of interrelated entities, among which there will be healthy and fair competition, cooperation plus vertical and horizontal interrelations.

Definitional confusion connected with the definition of clusters arises out of translating the word cluster into the Polish language (Eng. a cluster, i.e. a group): industrial clusters or local manufacturing systems have one meaning but are used in different economic fields. Therefore, a number of definitions of the term 'cluster' in the economic literature stress the meaning of a concentration of companies of the same field within a given area, interactions among enterprises, simultaneous competition

and cooperation or a common trajectory of entrepreneurial development (Wojnicka, Rot, Tamowicz, Brodzicki, 2001).

The origin of clusters is considered to be an existence of a group of entities, particularly enterprises concerned with production and supply of specific kinds of products, among which relations of cooperation begin to take place. Striving to tighten and foster widely understood cooperation and competitiveness, an improvement of the whole set of these entities becomes an assumption to implement the so-called cluster initiatives. The cluster initiative means taking efforts consciously in order to improve competitiveness by encouraging companies, governmental and local authorities plus universities and D+R institutions to cooperate within a scope connected with manufacture of given products (Hołub-Iwan, Małachowska, 2008, p. 9).

There are various methods of building clusters in economy. Economically speaking, it is justified to build them bottom-up, by groups of companies. Another method, becoming increasingly popular, is building clusters top-down, i.e. by regional authorities, where, defined in the form of regional strategies of innovation, they play the role of a factor causing an improvement of region's competitiveness.

Research executed in Poland allows the statement that the cluster initiatives are most often undertaken by associations, universities, research and technological parks, commercial companies and transformation agencies, development agencies (Table 1).

Table 1
Type of the institution managing the cluster initiative in Poland in 2008

Type of the institution managing the cluster initiative	Number (in %)
Associations	47.1
University	23.5
Research and technological park	17.6
Commercial company	11.8
Agency	5.9

Source: a study based on: Hołub-Iwan, Małachowska, 2008, p. 17.

For the sake of success achievement a cluster analysis should obtain simultaneously a few objectives being of equivalent character, though executed on different levels depending on capabilities and needs. The objectives include:

- building cooperation;
- innovations and technologies;
- education and training;
- commercial cooperation;
- policy based on clusters.

3. Benefits for regional and entrepreneurial development

The fundamental argument in favour of cluster support are potential benefits arising out of their functioning. Participation in a cluster allows obtaining benefits in the regional economy. An efficiently functioning cluster leads to an increase in output of local enterprises due to access to relatively cheap, specialist production factors and various outlays used in the production operations. Spatial closeness of business entities supports their innovation. Moreover, a developing cluster is characterised by dynamic creation of new enterprises and translates into forming new jobs (Bojar, Bojar, Żminda 2007, pp. 3–12).

Table 2 presents potential benefits which an efficiently functioning cluster can give to enterprises located therein, divided into the ‘hard’ benefits—providing relatively fast and measurable effects and benefits plus the ‘soft’ benefits—more difficult to measure and revealed over a longer time horizon.

Table 2

Benefits for enterprises functioning in a cluster

‘Hard’ benefits from a cluster	
Resource (factor)	Benefit
Local supply chain	Boosting efficiency—faster access, lower transport cost
Specialist workforce	Higher output
Specialist services	Faster and easier access
Delivery choice option	Lower cost, higher quality
A big number of companies	Possibility of joint ventures, work in networks
‘Soft’ benefits from a cluster	
Resource (factor)	Benefit
Associations	Shared vision, planning
Trust	Cooperation among companies, networks
Learning	Transfer of technologies and innovations
Learning	Tacit knowledge and know-how
Informal labour market	Efficiency, career opportunities

Source: *A governor’s guide to cluster-based economic development*, 2002.

Benefits from an efficiently functioning cluster are not limited exclusively to its participants. Clusters also generate a number of positive effects for its immediate environment, i.e. the region in which they are settled; in this way they can become a peculiar driving force of regional development (Szultka, 2004, p. 7). In a local cluster economy it is not the cluster concept as such that influences the internal and external development, but the dynamics of the interrelated objectives, people cooperating with each other and competition. The cluster concept becomes an instrument supporting development of individual groups of enterprises, production and service groups, translating into development of local economies and better life quality of the inhabitants in the long run (Bojar, 2006, pp. 90–93). An efficiently functioning cluster

leads, among others, to a growth in accessibility of specialist services accompanying business, infrastructural institutions, an increase in the population's income, a rise in export and profit, and as a result—to a faster economic growth (Bojar, Bojar, Žminda, 2007, pp. 3–12). Social effects of cluster functioning are smaller unemployment and a revival of local democracy. Consequently, a well functioning cluster should contribute to accelerating the rate of employment growth and creation of new jobs and, as it follows, an improvement in the situation of local (regional) labour markets and a rise in specialisation degree.

As it arises out of the latest report prepared by Innobarometr that is focused on the role of clusters in supporting innovations in Europe, one out of four companies in the EU operates in an environment of cluster character (Bojar, Bojar, Žminda, 2007, pp. 3–12). Actually, clusters appear in all economic sectors, both in industry, services, in high advancement sectors and others.

A great emphasis on cluster development is put by Finland which has appointed the non-governmental organisation Tekes focusing its operations on combining intangible and tangible resources in enterprises plus forming interrelations among them in the form of clusters (Buszko, Wierzbicka, 2008, p. 114). Owing to cluster creation Finnish enterprises have achieved their competitive advantage in different areas of economy (Figure 1). An example is an IT cluster, owing to which Finland is the leader in the field.

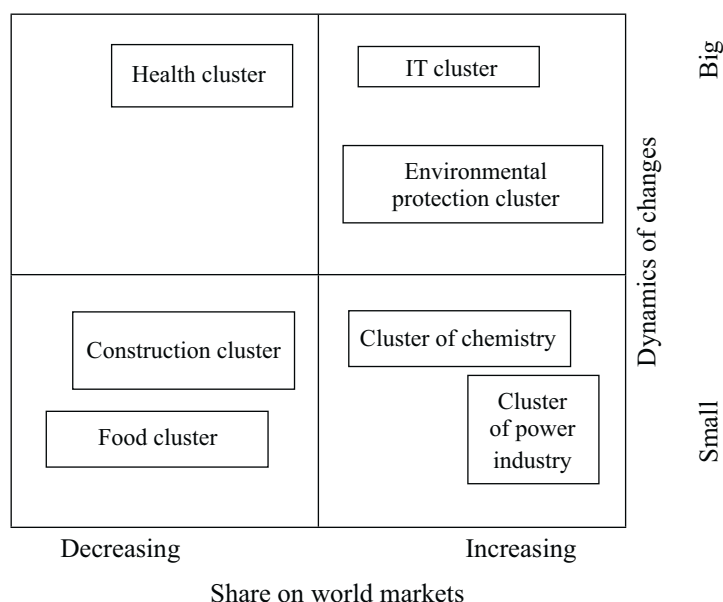


Figure 1. Clusters in the Finnish economy reaching an international competitive advantage

Source: www.tekes.fi/eng/publications/index.htm; accessed: 2007-12-04.

4. Operations of the Tarnów Industrial Cluster

Tarnów Industrial Cluster (Tarnowski Klaster Przemysłowy, TKP) SA was established in 1999 according to the idea based on the classic definition of an industrial cluster. It was modelled on the several decades French industrial 'Plastic Vallee', in the region of the Rhône-Alpes. The project was initiated by a covering letter signed on 2nd June 1998 by the Tarnów voivode and the city of Tarnów, the Nitrogen Plant in Tarnów Mościce SA and the Mechanical Plant 'Tarnów' SA. In May 1999 an authenticated deed was signed, setting up the Joint-Stock Company Tarnów Industrial Cluster (Tarnowski Klaster Przemysłowy) 'Plastic Valley' (Plastikowa Dolina). Among 34 shareholders there were: the Municipality of the City of Tarnów (as the major shareholder), municipalities of the former Tarnów voivodeship, the Nitrogen Plant in Tarnów Mościce SA, the Mechanical Plant 'Tarnów' SA, the Chamber of Industry and Commerce in Tarnów plus the Chamber of Craft and the Chamber of Small and Medium Entrepreneurship.

The company was established in order to create conditions which would encourage enterprises from the area of plastics to locate production ventures in Tarnów, which would allow them to develop dynamically through using the strengths of the local economy and the system of local tax services as well as closeness of the Nitrogen Plant in Tarnów Mościce. The changing market situation forced a departure from the idea focusing exclusively on the chemical area—the offer was extended to all enterprises based on modernity and innovation. In the first two years of its functioning the company concentrated mainly on promoting the project and activities aimed at obtaining undeveloped areas, to be transformed into attractive industrial areas with regard to investments. They were supposed to constitute the location of new production ventures. In 2001 the company's initial capital was raised. All the new shares were taken over by the Municipality of the City of Tarnów which contributed then an undeveloped property with the area of 21 ha (Industrial Park 'Czysta I'). In August 2001 the area was awarded the status of the Special Economic Zone (as a Sub-Zone of the Special Economic Zone in Cracow). A year later the procedure of land exclusion from agricultural production introduction of changes in the local general plan of spatial development was executed. The area was made fully developed (an activity co-financed by the Voivodeship Contract for the Little Poland Voivodeship for the years 2001–2002 and by local media providers). In the same year the initial capital of the company was raised again.

In 2003 the company made use of an additional collection of application of the Agreement for the Little Poland Voivodeship for the years 2001–2003 under the Voivodeship auspices and was granted subsidies for the activity: construction of access roads within the area of the industrial park in Czysza and Kardynała Wyszyńskiego Streets. Its completion allowed access to the industrial lots located within the area of the Industrial Park 'Czysta I'. The first agreements of lot ownership transfer were signed simultaneously and the first permits for running business activities in the Special Economic Zone were issued.

Year 2004 brought another change to the borders of the Special Economic Zone in Cracow Sub-Zone in Tarnów. It was extended to the areas located in Tarnów-Chyszowo, with the local area of approximately 19.5 ha. They formed the Industrial Park 'Czysta II' which, a year later, was contributed by the Municipality of the City of Tarnów to Tarnów Industrial Park SA. In June 2004, by the initiative of the management board of the Company, Nitrogen Plant in Tarnów-Mościce SA and the president of Tarnów an agreement of creating the Tarnów Regional Industrial Park was signed (a signatory of the agreement was also Tarnów Group Sewage Treatment Plant sp. z o.o.). The Tarnów Industrial Cluster was indicated as the entity managing the project. Three months on initialling the agreement TKP submitted an application for subsidising the feasibility study of the Tarnów Regional and Industrial Park by the Sectorial Operating Programme: Growth in Competitiveness of Enterprises for the years 2004–2006. The Agency for the Industrial Development Agency SA, which was implementing the programme, accepted it. In 2005 the capital of the Tarnów Industrial Cluster was once again raised. The municipality of the city of Tarnów contributed to the Company the above-mentioned Park 'Czysta II' and the area taken over from the Mechanical Plant 'Tarnów' SA. Within this area the ten-hectare Industrial Park 'Mechaniczne' was established and was incorporated into the Special Economic Zone three years later.

In March 2009 the areas offered by the Tarnów Industrial Cluster SA were extended by over 21 hectares (equivalent of more than PLN 10.5 mln), contributed by the Municipality of the City of Tarnów. It allowed expanding the Industrial Park 'Mechaniczne' and creating the Industrial Park 'Kryształowy' with the area of 11.5 ha (a part of which has the status of the Special Economic Zone). Crucial information concerning TKP SA in 2010 is presented in Table 3.

Table 3

The structure of the Tarnów Industrial Cluster SA in 2010

Specification	Data
Number of investors	29
Share capital	PLN 27.858.500
Number of shareholders	34
Main shareholders	Municipality of the City of Tarnów

Source: author's own study based on the information obtained from TKP SA.

The main objective performed by the Tarnów Industrial Cluster SA is to create conditions for comprehensive economic development of the region and create new jobs, in particular through implementation and execution of the project the Tarnów Regional and Industrial Park, aimed at forming an attractive area of running business operations and making investments, being in line with the standards of the European Union. One of the tools leading to mission completion is administration consolidation of all the investment areas in the city and the Tarnów sub-region. Simultaneously, the company supports small and medium-sized enterprises, providing free-

of-charge technical and legal consultancy plus searching for cooperation partners, including orders from bigger domestic and foreign companies. The Cluster also promotes small entrepreneurship—informing potential partners about the companies. In 2010 the total area of the Cluster consists of 61 ha of surface, gathered in four industrial parts. Out of these 44 ha are included within the borders of the Special Economic Zone in Cracow—Sub-Zone in Tarnów (TKP SA administers them by virtue of an agreement with the Cracow Technological Park sp. z o.o.). The company has also an area of approximately 30 ha to offer. There are continuous works aimed at obtaining and preparing subsequent areas for investments.

Apart from the areas the Tarnów Industrial Cluster SA has at its disposal cubic capacity facilities with the total area exceeding 33 thousand m².

Summarising the information being presented, one can state that the offer of TKP SA covers:

- Industrial Parks ‘Czysta I and ‘Czysta II’;
- Industrial Park ‘Mechaniczne’;
- Industrial Park ‘Kryształowy’;
- Industrial Park ‘Krzyż–Traktorowa’.

The Park ‘Czysta’ functions as a sub-zone of the Special Economic Zone in Cracow, it covers the area of 29.7 ha and has at its disposal 1 ha of area to be developed. In the Park there are 14 entities from the fields: paint and varnish production, plastic processing, manufacture of foamed polystyrene products, production of precise mechanics elements, construction industry, logistics. Table 4 presents the investors operating in the Park ‘Czysta’.

Table 4

Investors operating in the Park ‘Czysta’
(data as of 30th April 2010)

Name of enterprise	Field
ABM Solid SA	Construction industry
Foamed Polystyrene Plant ARBET	Production of foamed polystyrene products
Berendsen Textile Service	Service of textiles and sanitary equipment
BECKER Farby Proszkowe sp. z o.o.	Production of paints and varnishes
CESTOR sp. z o.o.	Production of construction elements
PUH Elmark Tarnów	Processing of plastics
PPHU Ergobud sp. z o.o.	Production of coronary moulders
KON-INS-BUD Montaż sp. z o.o.	Construction and assembly field
PPH Moskito	Production of elements for mosquito nets
TIK Invest sp. z o.o. – DHL	Courier company
Summit Packaging Polska sp. z o.o.	Production of valves for aerosols
UNIPRESS Poligrafia	Bookbinding
Zakład Elementów Konstrukcyjnych (Plant of Construction Elements) sp. z o.o.	Production of coronary moulders
ZEGAR company	Production of precise mechanics elements

S o u r c e: author’s own study based on the information obtained from TKP SA.

Another park functioning in the Tarnów Cluster is the Park 'Mechaniczne' the total area of which amounts to 21.2 ha (including part covered by the Special Economic Zone—9.9 ha, and outside the Zone 11.3 ha). The park offers investors over 20 thousand m² of halls which can be developed. There are 14 entities therein, mainly from the fields: production of metal elements and cast-iron, production of furniture and small architecture elements, production of photovoltaic panels, construction and repair services, clothes industry, training services. Table 5 presents the investors from the Park 'Mechaniczne'.

Table 5

Investors operating in the Park 'Mechaniczne'
(data as of 30th April 2010)

Name of enterprise	Field
Alien Inspired Technologies „AIT” sp. z o.o.	Production of photovoltaic modules
Foundry ALEX	Repair services
BARIS sp. z o.o.	Clothes industry
BLACHODACH	Production of roof systems
GALECO sp. z o.o.	Production of sheet metal systems, logistic centre
GPL Projekty sp. z o.o.	Furniture industry
GREEN HOUSE sp. z o.o.	Production of small garden architecture
KRESKA sp. z o.o.	Clothes industry
Consultancy and advisory Bureau MARAL	Consultancy and clothing services
Foundry Tarnów	Production of cast iron, electrochemical cast cleaning
Centre of Training Drivers 'KRAMEX'	Training services
Trade and Service Company POINTS	Bookbinding
Service, Repair and Construction Company REMCAT	Construction, road industry
TRIAL sp. z o.o.	Steel structures

S o u r c e: author's own study based on the information received from TKP SA.

The Park 'Kryształowa' has at its disposal the area of 4.66 ha, intended for investments. The area is covered by the Special Economic Zone, developed with the basic media, located in the vicinity of active railways and in the direct neighbourhood of the national route Warsaw–Konieczna and the planned knot of the motorway A4. The Park neighbours with the Green Industrial park 'Kryształowy' with 40 operating companies of the leading fields: production of construction elements, production of steel elements, logistics, electro-mechanics, food industry.

The fourth park is the Park 'Krzyż–Traktorowa' with the area of 6.91 ha, dedicated for investments. The area of the Park is flat, developed with the basic media, designed to be covered by the Special Economic Zone. The Park neighbours directly with the national route Warsaw–Konieczna and the planned knot of the motorway A4. The Park 'Krzyż–Traktorowa' is located in the direct vicinity of the Green Industrial Park 'Kryształowy' with 40 active companies, mainly within the fields: pro-

duction of construction elements, production of steel elements, logistics, electro-mechanics, food industry.

Plans for the near future provide for appointment of the Economic Activeness Zone 'Mechaniczne' with the area of over 40 ha, development of the Industrial Park 'Kryształowy', using its part for investments connected with the so-called 'leisure time industry' and creation of the Industrial Park 'Czysta III'.

5. Conclusion

Foreign experiences show that clusters are an important driving force of economic growth and development as well as building its competitiveness and innovation. Power of a cluster is determined by concentration of different types of entities, intensity of interactions which take place among them and individual entities and sectors' ability to cooperate (those of enterprises, R+D area, administration). It is a case in Tarnów region with Tarnów Industrial Cluster SA. Combining all local resources therein and also cooperating closely with authorities and institutions create the concept of an innovative environment which shapes the competitive advantage in the region.

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Potencjał klastra

S t r e s z c z e n i e: Struktura klastrowa w Polsce jest zjawiskiem nowym, niemniej doświadczenia międzynarodowe wskazują, że klastry to jeden z najważniejszych czynników rozwoju i wzrostu gospodarki. W odróżnieniu od innych struktur regionalnych czy narodowych zachodzi w nich najszybszy transfer wiedzy i technologii, osiągany dzięki geograficznej bliskości podmiotów reprezentujących zarówno przemysł, jak i naukę (sieciowanie i kontakty międzyludzkie).

S ł o w a k l u c z o w e: klaster, rozwój, korzyści
