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CLUSTER INITIATIVES IN ŽILINA REGION (SLOVAK REPUBLIC)

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Abstract

This paper contains a basic data about Žilina Self-Governing Region. More importance has the cluster mapping project description. The first cluster mapping activity in the region was Žilina Innovation Policy – ZIP project. This runs within the 6th Framework Program of the EU and its main goal was: long-lasting activities bringing together R&D environment, business sector and the potential for innovation in Žilina region for continuous development. One of the main project results were the detailed analyses of innovation and cluster potential of the region. Paper author was also a member of the ZIP research team. This ends in defining the main clustering areas.

This paper informs about analysis of cluster potential in regional economy sectors, about the most attractive regional fields of clustering, about the basic cluster identification method and about the functional regional clusters.

Two fully functional clusters in the ICT and tourism industry areas were established from the cluster potential analysis. This was the direct result of the scientifically research activities of the ZIP team.

Keywords: Cluster Žilina Self-Governing Region, Areas of clustering, Žilina Innovation Policy – ZIP project.

Introduction

This paper is considering the cluster activities in Žilina Self-Governing Region (Slovak Republic). Clusters are effective connection between the companies to each other and also with the wider surroundings: universities, banks, self-government, R&D etc. In the cluster concept the cooperation is the most important process. This kind of cooperation must be effective, long term running and serious. Another cluster feature is the repression of mutual competitive relations. The immediate competitors can join together and be strong on foreign or global markets, but they are still competing regionally.

Paper purpose is to inform about clustering activities in Žilina region. These activities were started with the help of ZIP project and University of Žilina research teams. It was a process of socio-economical research which led to important analysis results and also to constitution of two clusters.

Paper object are Žilina region basic data, region clustering potential, main clustering areas, clusters proposals and overview of functional clusters.

Paper main findings are focused on region clustering potential which was discovered by research methods application; proposals of wood industry clusters, automotive suppliers cluster, bearings and roller-bearings cluster; proposals and main areas of functional clusters: ICT cluster and tourism industry cluster.

Paper main methodology: primary research (regional establishments' innovation and cooperation needs, problematic and positive areas); secondary research (in depth document analysis of statistical data); cluster identification method (Location Quotient – LQ) etc. All data were gathered within the ZIP project and authors Ph.D. thesis.

1. Žilina Self-Governing Region (Slovak Republic)

Žilina region has a mountainous landscape. Agricultural land covers only a small part of it. Population is concentrated in valleys, especially in towns. The area of the Žilina region is the place with the highest density of protected territories in Slovakia (55,8%). Wood is one of the most important raw materials thanks to the high density of forests in the region (55,3% of the whole area of the Žilina region). A number of mineral springs and geothermal waters is to be found in the region. Žilina region has 4 territories that have been declared National Parks. There are also 4 protected landscapes, 62 national natural reserves, 39 natural relics and 9 natural protected relics.

Basic data:

- Area: 6 788 km^2
- Population: 693 499
- Population density km^2: 102
- Largest towns: Žilina, Martin, Liptovský Mikuláš, Ružomberok and Čadca.

Fundamental industrial branches:

- Electricity, gas, steam, hot water production

ISSN 1822-6515
ECONOMICS & MANAGEMENT: 2009. 14

- Cellulose, paper and paper products production
- Machine and mechanism production
- Electrical and optic equipment production
- Alimentary production
- Metal production

Main Industrial Parks and direct foreign investments

- Neusiedler SCP a.s. – leading manufacturer of wood-free graphic and office papers and boards in Slovakia and one of the leading manufacturers in Europe,
- KIA Motors Corporation – investment the volume of 1,3 mld € (automotive),
- INA (machinery),
- Volkswagen (automotive),
- Tento (chemical, wood processing and paper industry).

2. Žilina Innovation Policy - ZIP project

Žilina Innovation Policy was the first step to the region potential in-depth-analysis. It's a multidisciplinary team built with members of University of Žilina and partner organizations. Funding mechanism was provided by the EU and also from Self-Governing Region. It's the Regional Innovation Strategy creation process – these activities start in every Slovak region. Project starts in June 2005 within the 6th Framework Program of the EU. ZIP is focused on long-lasting activities bringing together R&D environment, business sector and the potential for innovation in Žilina region for continuous development.

"Key objective of ZIP is to set up basis for regional institutional structures for innovation support, based on collaborative networks between existing institutions and organizations, and to implement a strategic innovation framework that will enable existing firms to introduce more innovation at all levels and create a positive culture for new entrepreneurs"(http://www.zip.utc.sk/).

Project partner organizations: University of Žilina, Žilina Self-Governing Region, Lower Austria Region, Region Södermanland, Sweden, BIC Group, Bratislava.

Partnership and cooperation bring the ZIP project much further. Partners' skills and experience was significant help for project activities. Žilina Self-Governing Region adopted the project results as a strategy for development in the field of innovations and clustering.

Main regional problematic areas:

- Lack of access to qualified workforce
- Underdeveloped infrastructure (services, roads, railways etc.)
- Small amount of making use of the EU funds
- Lack of cooperative activities

Main regional positive areas

- High credit of University of Žilina
- Demand for cooperation
- High credit of R&D facilities
- Development in sectors of ICT, automotive industry, finance sector and tourism industry
- Clustering potential

3. Clustering in Žilina region

A business cluster (clusters, industry cluster, competitive cluster, Porterian cluster etc.) is a geographic concentration of interconnected businesses, suppliers and associated institutions in a particular field. Clusters are considered to increase the productivity with which companies can compete nationally and globally.

There is a lot of different cluster **identification methods**. One of the most popular is based on a pattern created by Professor Michael Porter. It's a quite simple, very useful and flexible pattern called Location Quotient – LQ (1).

$$LQ_i = \frac{e_i / e}{E_i / E} \qquad (1)$$

LQ_i = location quotient for sector „*i*"
e_i = regional employment in sector „*i*"
e = general regional employment

ISSN 1822-6515
ECONOMICS & MANAGEMENT: 2009. 14

E_i = state employment in sector „*i*“
E = general state employment

Values inside and mainly above the area of 0,85 – 1,15 are considered as significant for cluster creation. In this pattern there is possible to change the values for example for profit or high-added value etc.

Quantitative data are quite necessary, but they must be based on the depth-knowledge about selected region. Following list is just a short version of a complex approach – which must be periodical and permanent. It's absolutely necessary to have actual data and expertise them on actual level of knowledge. Regional cluster identification methods consist of:

- In-depth knowledge about selected region
- Empirical research – primary
- Secondary research – regional and state data
- Identification of regional **supply** and **demand**
- Data analysis and expertise

Following chart (Table 1) represents the use of LQ pattern in Žilina region. The input data are from Slovak statistical office (Slovstat). They rank the single industries to different sectors – Classification of economical sectors. In the chart there are only sectors with the biggest cluster potential.

Table 1. Location quotient of economy sectors in Žilina region

Economy sector		Number of employees	LQ
Textile, clothing, leather products, shoes	Textile production	2710	1,50
	Clothing production	2402	0,81
	Leather and shoes production	2174	1,20
	Total	7286	
Wood, cellulose, paper, furniture	Wood processing, wood products	2515	2,03
	Cellulose and paper production and products	2696	2,79
	Furniture production	3400	1,85
	Total	8611	
Machinery and metallic products	Machine production	9511	1,87
	Production of metallic constructions and products	3658	1,00
	Total	13169	
Radio, television and communication products	Production of radio, television and communication devices	3708	2,81
Motor vehicles, transportation devices	Production of motor vehicles	1842	0,65
	Production of other transportation devices	1231	1,26
	Total	3073	

Based on the ZIP project results with the use of the LQ was region cluster potential defined. ZIP team activities led to the establishment of two clusters. Following chart (Table 2.) represents the recent region clustering stage. First group represents existing clusters, second group are clusters initiatives in process of building, third group are sectors with uncertain cluster potential – third group facilities are mostly the property of state, self-governing region or municipalities.

Table 2. Clustering groups in Žilina region

Group	Cluster status	Economy sector
1	Existing clusters	ICT sector
		Tourist industry (spas, hiking, winter sports, historical and cultural heritage etc.)
2	Clustering in process	Wood industry and furniture production
		Automotive supplier chains (Production of transportation devices)
		Production of bearings and roller-bearings
3	Uncertain cluster potential	Education
		Health care

ISSN 1822-6515
ECONOMICS & MANAGEMENT: 2009. 14

3.1. Existing clusters in Žilina region

ICT cluster Z@ict

This cluster connects regions IT establishments. Their primary goal is oriented on workforce quality. There exists a strong connection between the IT sector and University of Žilina: majority of programmers, employees and experts graduated on the university, or they are in some connection. In regional IT sector there is a constant need for qualified programmers, system builders and IT developers. The close cooperation with corporations and university can satisfy this need.

IT cluster main goal: Focusing on employment quality and employment development in ICT sector.

Cluster main activities:
- Cooperation with the University of Žilina (new courses, cooperation in defining the structure of the field of study)
- Shearing of workforce – shearing of employees skills
- Further education of employees and increasing their qualification (courses, study trips etc.)

Cluster members – constituents:
- Žilina self-governing region
- University of Žilina
- The Slovak National Library
- Institute of Next Generation Networks (innovation and cooperation consulting association)
- Scientific-technical park Žilina (S&M's support association)
- Scheidt & Bachmann, Ltd.
- Emtest, Inc.
- GiTy – Slovensko, Inc.
- Ipesoft, Ltd.
- K + K, Inc.
- Siemens Program and System Engineering, Ltd.
- Tesla Liptovský Hrádok, Inc.

Tourist industry cluster

Žilina region offers a lot of possibilities for tourist industry (winter sports, hiking, spas, historical places and entertainment – galleries, festivals, concerts, exhibitions etc.). Following the analysis results there is a potential for more than two clusters here. Clusters can have different orientation: wellness, spas, winter sports, hiking, accommodation etc. Tourist industry existing cluster is built across the most profitable tourist attractions in Liptov: wellness, aquapark and winter sports.

Tourist industry cluster full name is: Cluster Liptov – Association of tourist industry. Cluster founders are the four biggest tourist centers in Liptov: Aquapark Tatralandia, Thermal Park Bešeňová, Jasná Nízke Tatry and Skipark Ružomberok and also the three cities in Liptov: Liptovský Mikuláš, Ružomberok and Liptovský Hrádok.

Cluster main strategic goals:
- Redoubling the region's visit rate for the years 2007 till 2013
- Long-term orientation on higher added value tourist products focused on the upper middle class customer segment.

Cluster main goals are oriented mainly on customers' satisfaction and marketing activities. They want to have a bigger amount of wealthy customers – who can afford more services with higher added value (in all areas).

Cluster common activities:
- Raising quality of services
- Marketing abroad
- Solving tourist-related problems in Liptov
- Higher added value products
- Unified marketing of Liptov region

ISSN 1822-6515

- Cooperative management for information centers
- Common quality management
- Education of travel business personnel
- Information about cluster activities and tourism for local inhabitants
- Information portal: information gathering and distribution – common cluster information platform
- Regional electronic pass/card (tickets, discounts, benefits, accommodation …)
- Loyalty bonus system
- Regional information call centre

3.2. Potential clusters in Žilina region

Potential for wood industry clusters

Wood industry is a traditional and natural sector in Žilina region. There exist a large number of enterprises in sector:

- Saw mill enterprises approx. 2 519
- Wood board production approx. 40
- Chemical wood processing approx. 84
- Wood furniture production approx. 234
- Wood carpentry and construction approx. 1 203
- Wood constructions approx. 11
- Other wood processing approx. 595

Following the analysis results in the regional wood industry there is a potential for two sub-clusters:

Cluster of cellulose processing and paper production

Cluster could be built around the two biggest cellulose processing factories. Their production goes from more than 50% for export.

- Two large multinational companies (TENTO, Inc., Mondi Business Paper SCP, Inc.)
  - High technology standards
  - Connected to the region's wood industry supply chains
- Approx. 83 potential members
- High production output

Cluster of wood construction

Wood construction is an industry with big tradition in the region. They have lot of know-how about projecting, creating and using of wood construction in quite every part of architecture (big sports halls, churches, houses, bridges etc.) either as complements to another materials or as a lead material.

- Main sectors:
  - Construction of wood houses
  - Production of wood architectural elements and constructions
- Support activities:
  - Carpentry
  - Saw mills
- Approx. 3 733 potential members

Clusters main goals:

- Cooperation, support and investments in the areas of new technologies and innovations
- Competitiveness in global market
- Cooperation taking into account large order processing
- Cooperation on common projects
- Better position by requesting Euro funds support
- Better position by purchasing of input raw materials
- Marketing and promotion

Potential for automotive suppliers cluster

After the investments of KIA in Žilina and Hyunday in Ostrava (Czech Republic) the border area between Czech Republic, Poland and Slovakia become a geographic cluster. In this area there are situated

ISSN 1822-6515
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many machinery, electronics producers and also producers of single parts for automotive industry. The car producers take a lot of benefits from this localization effect. The suppliers need also a better position and more effective ways to cooperate to each other and also with KIA and Hyundai.

Cluster leaders: KIA Motors Slovakia, Hyundai Mobis with 500 potential suppliers for automotive industry in the Žilina Region.

Cluster main goals:

- School of praxis: joint capital of suppliers and car producers can be used to build a run a school that ensures the qualified workforce.
- Certification centre: quality certification is a need for cooperation with KIA and Hyundai – joint capital can be used to build such a centre.
- Centre for optimization of logistic systems: supplying big car facility is a very complex process – the logistic optimization can be in this case very helpful.
- High technology centre: cooperation with R&D, universities and automotive suppliers in region.

Cluster support activities:

- Information and communication platform: detailed database of cluster members
- Education of cluster members' employees
- Marketing and PR on cluster activities
- Cooperation with R&D
- R&D in automotive industry
- International cooperation

Potential cluster members:

- Motor vehicle producers
- Suppliers of modules and systems (1. category suppliers)
- Suppliers of parts and components (2. category suppliers)
- Suppliers of single parts (S&M's)
- Technological university (The University of Žilina)
- Secondary schools (high schools) with technical orientation
- R&D: VURAL, Transport Research Institute, Vývoj Martin etc.
- Žilina Self-governing Region
- Associations: ZIP, Slovak Productivity Center, Slovak Chamber of Commerce and Industry, Automotive Industry Association of the Slovak Republic
- Support sectors: logistic, ICT

Potential for bearings and roller-bearings cluster

Žilina region was in the communist era highly oriented on bearings production. After the fall of the communist regime the technology showed as not competitive enough. The recovery of this sector was built on foreign investments.

Cluster main strategic goals:

- International competitiveness of regional bearing producers
- Innovations – technological, operational etc.
- Technological cooperation

Cluster support activities:

- Common marketing activities (presentations, expositions, web presentations, common purchasing etc.)
- Common information and communication platform (internal – between members, external – between cluster and customers)
- International cooperation
- R&D in the area of bearings (bearing construction technologies, new bearing materials, bearing treatment, projecting of bearing production, intelligent bearings, measurement technology and processes, automatization of bearing production, production innovation etc.)
- Raising of employee qualification

Potential cluster members:

ISSN 1822-6515
ECONOMICS & MANAGEMENT: 2009. 14

- Bearing producers**:** INA Kysuce, Ltd. (Kysucké Nové Mesto), PSL, Inc. (Považská Bytsrica), Kinex-KLF, Inc. (Bytča), DANA, Ltd. (Dolný Kubín), GGB, Ltd. (Martin), INA Skalica, Ltd. OMNIA, Inc. (Žilina), ZVL Prešov, Ltd.
- R&D: Slovak Productivity Center, University of Žilina, Slovak Technical University Bratislava, Technical University Košice.

Conclusions

Fundamental industrial branches in Žilina region are: electricity, gas, steam, hot water production; cellulose, paper and paper products production; machine and mechanism production; electrical and optic equipment production; alimentary production; metal production.

The clustering potential identified by the location quotient is the strongest in areas of ICT, tourism industry, wood industry and furniture production, machine engineering - automotive supplier chains and production of bearings and roller-bearings.

First functional cluster in Žilina region is the ICT cluster Z@ict. Its main orientation is focused on ICT companies' cooperation in the field of employment quality. Second one exists within the regional tourist industry, where is also a significant potential for more than one cluster. Cluster Liptov – Association of tourist industry – main orientation is focused on marketing cooperation activities.

Potential clusters in Žilina region could be established mainly in areas of wood industry (cellulose processing and paper production; wood construction), automotive suppliers, bearings and roller-bearings.

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