

OECD -LEED Conference
Clusters of Enterprises and Internationalisation of
SMEs

Prospects and challenges for cluster development in the Timisoara region

A perspective from the INCLUD project



24 May 2004, Timisoara



**Interreg III B
CADSES Programme**

***INCLUD
Industrial Cluster Development project***

INTERREG III B CADSES AREA

- Priority 1:
Promoting spatial development approaches and actions for social and economic cohesion
- Measure 1.1:
Supporting joint strategies for spatial development and actions for implementation



EU Project Partners

- Regione Lombardia (IT)- Lead Partner
- Regione Emilia Romagna (IT)
- Comune San Daniele del Friuli (IT)
- Regione Abruzzo (IT)
- Regione Marche (IT)
- Land Niederoesterreich (AT)
- Eco Plus – Niederoesterreich Regional Entwicklungsagentur (AT)

non EU Project Partners

- Marshall's Office Podlaskie Voivodship (PL)
- Central Hungary Regional Development Agency (HU)
- Romanian Centre for Economic Policies (RO)
- Foundation for Entrepreneurship Development (BG)
- Association of Innovative Entrepreneurship (CZ)
(observer partner)

Project duration



Objectives

- Setup a transnational cooperation network of industrial clusters, establishing stable relationships and exchange of information among the target countries and regions
- Enhance innovative policy for industrial sustainable development
- Support SMEs internationalisation process and attitude

Activities

4 Work Packages

1. Preliminary investigation and cluster identification
2. Creation of networks
3. Definition of pilot project
4. Training and dissemination

When can we talk of regional cluster?

- **concentration of firms** in particular sectors and localities;
- several firms in the **dominant industry** or industries;
- firms which form **local production networks** (firms work like a large production unit exploiting external economies);
- organizational **flexibility**;
- in some cases there is a relevant link with **social and cultural conditions**;
- **innovation** is a possible additional characteristic of clusters (Isaksen, 1997)

Cluster identification and description

- In Romania there are natural clusters and public clusters. The public clusters (industrial parks, scientific and technological parks) have been established by law, but only few of them are realistically operative and meeting the features of a functional cluster.
- The natural clusters may be searched by means of statistical analysis and qualitative analysis.
- A set of different specialisation indexes and other indicators useful to cluster identification
- A set of useful tools in order to describe clusters: average size of firms per sector and county and similarity indexes

CANDIDATE CLUSTERS IN ROMANIA: selection and description criteria

CLUSTER SELECTION CRITERIA

- county specialisation index (on total employees, not only industry) > 1,3 , but > 1000 employees
- county industry index > 1,3 * national industry index;
- county industry sector specialisation index > 1,3
- county industry firms density > national industry firms density (number firms / population)

CLUSTER DESCRIPTION CRITERIA

- average size of firms per sector and county
- similarity index by region

CLUSTER SELECTION CRITERIA

■ specialisation index

$$\left(\frac{\text{sector } i \text{ employees}}{\text{total employees}} \right)_{\text{county}} > 1,3 \times \left(\frac{\text{sector } i \text{ employees}}{\text{total employees}} \right)_{\text{nation}}$$

(i = from nace 1 to nace 93)

■ industry index

$$\left(\frac{\text{total industry employees}}{\text{total employees}} \right)_{\text{county}} > 1,3 \times \left(\frac{\text{total industry employees}}{\text{total employees}} \right)_{\text{nation}}$$

(industry = sum nace 15 till to nace 37)

CLUSTER SELECTION CRITERIA

■ industry sector specialisation index

$$\left(\frac{\text{industry sector } j \text{ employees}}{\text{total industry employees}} \right)_{\text{county}} > 1,3 \times \left(\frac{\text{industry sector } j \text{ employees}}{\text{total industry employees}} \right)_{\text{nation}}$$

(j = from nace 15 to nace 37)

■ industry firms density

$$\left(\frac{\text{total industry firms}}{\text{population}} \right)_{\text{county}} > \left(\frac{\text{total industry firms}}{\text{population}} \right)_{\text{nation}}$$

Candidate Clusters in the following Romanian Counties:

- Timis
- Harghita
- Bacau
- Botosani
- Iasi
- Neamt
- Suceava
- Vaslui
- Alba
- Brasov
- Covasna
- Mures
- Sibiu
- Cluj
- Bucuresti

CANDIDATE CLUSTERS IN SOME ROMANIAN COUNTIES

<i>Region</i>	<i>County</i>	<i>Specialization</i>
North East	Bacau, Botosani, Iasi, Neamt, Suceava, Vaslui	Textile
Central	Alba, Brasov, Covasna, Harghita, Mures, Sibiu	Wood processing, Steel frame construction and metal products
West	Timis	Textile and Software
North West	Cluj	Software
South	Bucuresti	Software

Candidate clusters in Timis (West Region)

- Population: 678,000; Employment in Industry and Services 136,000
- One third of total employees is in light industry
- The county is considered the "italian district" for the presence of many SMEs from North East of Italy
- In Timisoara County clusters can be located in the "Leather and footwear industry", "Industry of electric equipment and machines" and "Industry of TV and radio sets and communication equipments". These sectors register the highest specialisation index;
- Sectors that register the highest specialisation index are: Manufacture of other textile goods; Manufacture of leather; Hoisting and handling equipment; Manufacture of household equipment; Electronic tubes and valves

Candidate clusters in Timis (South West Region)

SECTORS (NACE)	SPEC. INDEX	EMPLOY. (number)	FIRM SIZE	MANUF. S.I
1 Agriculture and Auxiliary service	1.31	5,447	10	-
19 Leather and footwear industry	3.39	12,925	102	2.88
25 Rubber and plastics manufacture	1.96	2,698	38	1.66
31 Industry of electric equipment and machines	5.16	10,898	248	0.26
32 Industry of TV and radio sets and communication equipments	12.28	4,314	227	0.07
72 Software and activities related to it	2.60	1,729	7	-

- county industry index 1.18
- county firms density (overall sectors) 1.16
- county industry firms density (industrial sectors) 1.35

INPUT/OUTPUT APPROACH

FIRST STEP: What kind of information do we need?

Final Branches	Agriculture	Industry	Other activities	Total intermediate	Final resource allocation	Disposable
Original Branches				resource allocation		resources
Agriculture						
Industry						
Other activities						
Tot. intermed. Costs						
Wages						
.....						
.....						
.....						
.....						
Disposable resources						

This is a very general example of INPUT/OUTPUT table.

In order to identify clusters we need a much higher level of disaggregation of each economic sector according to ISIC or NACE classification.

INPUT/OUTPUT APPROACH

How to get a cluster decomposition of I/O

- Forward linkages

Industry groups are clustered according to relatively strong forward trade linkages.

We need to identify the MAIN USER with the elements $m_{ab} = \max_j m_{aj}$ e $m_{aa} = 0$

The MAIN USER of a supplying industry group j is identified by determining the maximum of a row.

IDENTIFIED CLUSTERS from Input Output analysis

Name of branch	CLUSTERS First stage	CLUSTERS Second stage
2	3	4
Vegetable growing	Animal husbandry Meat production, processing and preservation Manufacture of pesticides and other agrochemicals	Manufacture of other food supplies
Silviculture and hunting economy	Wood working industry (except production of furniture)	
Fishing and pisciculture	Preparation and preservation of fish and fish products	
Coal extraction and processing (including bituminous sands and shales)	Production, transport and distribution of electric power	
Oil extraction (including auxiliary activities)		Petroleum processing
Natural gas extraction (including auxiliary activities)	Gas production and distribution (without natural gas and associate boring gas production)	
Extraction and processing of iron ores	Extraction and preparation of the rare and non-ferrous metals (except radioactive ores) Production of precious metals and other non-ferrous metals	
Sand and clay getting-off		<i>Manufacture of refractory and non-refractory ceramic products (except the building ones)</i>

IDENTIFIED CLUSTERS from Input Output analysis

Name of branch	CLUSTERS First stage	CLUSTERS Second stage
Manufacture of grist products, starch and starch products	Manufacture of other food supplies	
Textile industry and of textile products	Industry of textile ready-made clothes	Manufacture of medicines and pharmaceuticals product Health and social security
Wood working industry (except production of furniture)	Furniture production	
Cellulose, paper and cardboard manufacture	Education	Publishing houses, polygraphs and type copying
Publishing houses, polygraphs and type copying		Other activities related to collective, social and personal services
Manufacture of medicines and pharmaceuticals products	Health and social security	
Manuf. of equip. for producing and using the mechanical energy (without engine aircraft, vehicles and bikes)		<i>Industry of steel frame constructions and metal products (except machines, equipment and installations)</i>
Production and repair of railway of means of railway communication and rolling stock	Railway transport	
Aircraft buildings and repairs	Air transports	
Constructions		Real estate
Other activities mainly carried out for enterprises		Constructions

Main results

- Very few links
- Weak links prevail
- Significant concentration of activities around Vegetable growing, silviculture and fishing
- Two cases of clusters around Wood working and Cellulose production
- Only one link in textile sector
- There is anyway a clear validation of main conclusions from specialisation indexes analysis (wood processing and textile)

SIMILARITY APPROACH BETWEEN COUNTIES

Similarity analysis can be used to identify clusters in two different ways: BETWEEN different counties, or WITHIN the same county.

In the similarity approach BETWEEN different counties, probably, we identify clusters when the SAME industry- which is present in two different counties- is characterized by the same structure as it is revealed by our analysis.

It has been applied to some important counties in the country with interesting results for some candidate clusters.

Software, structural metal products, wood processing and textile seem to be the sectors with strong homogeneity in firm size distribution over the entire country.

Conclusions from Similarity approach

- Looking at similarities between counties, the following potential ranking of clusters emerges: wood processing, software, textile
- These sectors involve the highest number of counties in very low indexes.

Prospects and challenges for a cluster in the Timis county

The SWOT Analysis



Strenghts 1

- Comforting demographic trends
- Infrastructures: airport available, tlc not an issue
- Availability of services
- Vocational/professional training institutions available and used

- Reasonable proximity to EU markets and low transportation costs
- Fast growth of the SMEs' sector
- Many firms currently have an export market
- A good potential for additional export exists
- Some firms understand the need for quality product
- Sizeable presence of foreign direct investments
- Firms in the cluster fairly distributed across the "value-chain"

Strenghts 2

- Labor force available and relatively cheap
- Highly skilled labor for value adding operations

- Most upgrading of machinery has been made resorting to
- competitive equipment;

Weaknesses 1

- Poor endowment/state of transport infrastructures
- Power/water/sanitation insufficient

- Lack of information on firms;
- Limited assistance from Business Support Centers;
- Limited influence of cluster's lobby over programming: mainly national level, regional/local have very limited resources
- Limited ability to represent cluster's/industry interest at national level

- Very weak primary sector affects supply of raw materials;
- Lack of understanding of quality standards for target markets;
- Limited access to modern technologies;
- Low productivity threatens comparative advantage
- Very basic corporate management culture (human resources, logistics, information flows, optimization of technological processes, of input utilization, etc.).

Weaknesses 2

- Limited access to financing
- High cost of financing working capital as well as investments;
- Lack of marketing and business development skills.
- Poor cooperation with links down the chain;
- Weak local production networks;

Opportunities 1

- Improving macroeconomic framework
- Improving regulatory and administrative framework
- Improving Competitive Positioning may consolidate sector
- Completion of EU transport corridor will enhance accessibility of region
- EU, IFIs financing will eventually improve infrastructures
- Implementation of EU pre-accession and Structural Funds may enhance impact of regional development programming

Threats

- Cyclical economic downturns may spark negative demographic trends;
- Migration of qualified work force, depleting support sectors;
- Migration of enterprise toward lowest cost countries;
- Loss of comparative cost advantage;
- Negative impact of new EU regulatory environment
- Continued imports of low quality and price products into the domestic market

Perspectives for a functional cluster in the Timis county - 1

- It may be too early to talk about a fully functional cluster in the Timisoara area, however, there is a clear potential for developing clusters in the near future, which is reinforced by its natural formation;
- Support is needed through adequate policies at both local and national levels. Prioritization of public policy can be achieved by advocacy exercises, of both foreign investors (German, Italian) and local entrepreneurs;
- Cooperation among entrepreneurs is vital for the success of a future cluster;
- Vision and determination are key features of the initiatives that should follow;

Perspectives for a functional cluster in the Timis county - 2

- Building a cluster should be a strategic option for local and regional development, based on public-private partnership;
- Establishing a cluster should not be seen as a goal in itself, but rather as a mean to increase competitiveness and develop the Timis region;
- The efforts of developing a cluster are in fact efforts to change the nature of Romania's competitive advantage from factor driven competitiveness to innovation driven competitiveness;
- The Timis county, as part of the historical region of Banat, has both the energy, expertise and wisdom in order to be at the forefront of the economic development of Romania, as always, giving an example to follow for the rest of the country, thus fulfilling once more the saying "Banatu-I frunceea".