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**

24 months

April 2003 to April 2005
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**

\[
\frac{\text{sector. employees}}{\text{total employees}} > 1,3 \times \frac{\text{sector. employees}}{\text{total employees}}
\]

\(i = \text{from nace 1 to nace 93}\)

- **industry index**

\[
\frac{\text{total industry employees}}{\text{total employees}} > 1,3 \times \frac{\text{total industry employees}}{\text{total employees}}
\]

(industry = sum nace 15 till to nace 37)
CLUSTER SELECTION CRITERIA

- **industry sector specialisation index**

\[
\left( \frac{\text{industry sector, employees}}{\text{total industry employees}} \right)_{\text{county}} > 1.3 \times \left( \frac{\text{industry sector, employees}}{\text{total industry employees}} \right)_{\text{national}}
\]

\((j = \text{from nace 15 to nace 37})\)

- **industry firms density**

\[
\left( \frac{\text{total industry firms}}{\text{population}} \right)_{\text{county}} > \left( \frac{\text{total industry firms}}{\text{population}} \right)_{\text{national}}
\]

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

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

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)

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

- 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?

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 $m_{ab} = \max_j m_{aj}$ and $m_{aa} = 0$

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

<table>
<thead>
<tr>
<th>Name of branch</th>
<th>CLUSTERS First stage</th>
<th>CLUSTERS Second stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Vegetable growing</td>
<td>Animal husbandry</td>
<td>Meat production, processing and preservation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manufacture of pesticides and other agrochemicals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manufacture of other food supplies</td>
</tr>
<tr>
<td>Silviculture and hunting economy</td>
<td>Wood working industry (except production of furniture)</td>
<td></td>
</tr>
<tr>
<td>Fishing and pisciculture</td>
<td>Preparation and preservation of fish and fish products</td>
<td></td>
</tr>
<tr>
<td>Coal extraction and processing (including bituminous sands and ashes)</td>
<td>Production, transport and distribution of electric power</td>
<td></td>
</tr>
<tr>
<td>Oil extraction (including auxiliary activities)</td>
<td></td>
<td>Petroleum processing</td>
</tr>
<tr>
<td>Natural gas extraction (including auxiliary activities)</td>
<td>Gas production and distribution (without natural gas and associated by-products)</td>
<td></td>
</tr>
<tr>
<td>Extraction and processing of iron ores</td>
<td>Extraction and preparation of the raw and non-ferrous metals (except radioactive ores)</td>
<td></td>
</tr>
<tr>
<td>Sand and clay getting-off</td>
<td></td>
<td>Manufacture of refractory and non-refractory ceramic products (except the building ones)</td>
</tr>
<tr>
<td>Name of branch</td>
<td>CLUSTERS First stage</td>
<td>CLUSTERS Second stage</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Manufacture of grist products, starch and starch products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textile industry and of textile products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood working industry (except production of furniture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cellulose, paper and cardboard manufacture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing houses, polygraphs and type copying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacture of medicines and pharmaceuticals products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manuf. of equip. for producing and using the mechanical energy (without engines aircraft, vehicles and bikes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production and repair of railway means of railway communication and rolling stock</td>
<td>Railway transport</td>
<td>Industry of steel frame constructions and metal products (except machines, equipment and installations)</td>
</tr>
<tr>
<td>Aircraft buildings and repairs</td>
<td>Air transport</td>
<td></td>
</tr>
<tr>
<td>Constructions</td>
<td></td>
<td>Real estate</td>
</tr>
<tr>
<td>Other activities mainly carried out for enterprises</td>
<td>Constructions</td>
<td></td>
</tr>
</tbody>
</table>

**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 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

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity</td>
<td>Threats</td>
</tr>
</tbody>
</table>

**Strengths**
- 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 too 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 fruncea”.

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