CURRENT TRENDS OF THE REGIONAL DEVELOPMENT POLICY IN THE EUROPEAN UNION. THE DEVELOPMENT OF COMPETITIVE ECONOMIC AGGLOMERATIONS OF CLUSTER TYPE

LAURA CISMAŞ, ANDRA MICULESCU, MARIA OŢIL [*]

ABSTRACT: *The study of economic agents' behaviour, whose nowadays tendency is to group themselves in space as clusters, has an important place in the field of localizing industrial activities. This is due to domestic scale economies, known as agglomerations economies. According to Edgar M. Hoover (Hoover, 1948), domestic scale economies are specific to companies; the economies of localizing - to a certain branch, whose companies form clusters in certain geographical arias, and the urbanization economies are specific to cities, where there are clusters of companies from different branches. The specialty literature regarding local economic development, based on the idea of cluster starts from well-known economic theories, such as: agglomeration theory (Alfred Marshall), the theory of spatial localizing of industrial units (Alfred Weber), the theory of interdependence of locations (Harold Hotelling), the diamond theory (Michael Porter), the theory of entrepreneurship (Joseph Schumpeter), the theory of geographical concentration. Basically, the common point which links them are the concepts which occur in these theories, such as: industrial district, industrial agglomeration, spatial interdependence, concepts which lie at the basis of the cluster idea. Clusters represent an important instrument for promoting industrial development, innovation, competitiveness and economic growth. If, at the beginning, the effort to develop clusters belonged to private persons and companies, nowadays, the actors involved in their development are the governments and public institutions of national or regional level.*

The objective established within the Lisbon Strategy (2000), to make the European Union "the most competitive and dynamic knowledge-based economy", is tightly linked to the new approaches of the European economic policy, to competitiveness. One of the policies is focused on developing at the European Union level clusters in the high competitiveness fields. The efforts are concentrated at microeconomic level, by partnerships between universities, the private sector and other institutions, aiming to achieve macroeconomic results through the real growth of companies' productivity. This is also the objective of our paper, to demonstrate the fact that for the European Union, clusters represent the economic model of development, which is suitable for organizing these efforts and, in the same time, for effectively launching initiatives

[*] *Prof., Ph.D., West University of Timisoara, Romania, laura13cismas@yahoo.com*
Assist. Prof., Ph.D., West University of Timisoara, Romania
Assist. Prof., Ph.D., West University of Timisoara, Romania, otil.maria@yahoo.com

with an innovative character. Using statistical data relatively recently by the European Cluster Observatory (2007), our paper aims at revealing the fact that clusters are linked to prosperity and that it exists a necessity to consider them as a central part of each economic strategy for the European Union member states. We shall also present the initiatives of cluster type between the European states, successful clusters, with a possible multiplication effect. The paper will also present Romania's trials to achieve an industrial policy based on competitive economic agglomeration.

1. COMPETITIVE AGGLOMERATIONS. NEW DEVELOPMENTS IN LOCATION THEORY

A special place is occupied by the study of behaviour in the area of locating industrial activities, which demonstrated their tendency to form clusters such as industrial parks, small or large cities, etc.

Explanations are based on recording specific economies of scale, known as agglomeration economies. They are rooted in the existence of specialized suppliers for certain goods, services (which are shared by many other companies in that area), in the existence of a local market labour (which facilitates the transfer of workers from one firm to another as some of them to increase production), of the diffusion of information and innovation.

Agglomeration economies are manifested as internal economies of scale, localization economies and urbanization economies. The main author of the typology is Hoover (Location Theory and the Shoe and Leather Industry - 1937 and The Location of Economic Activity -1948), who believes that internal economies of scale are specific for companies, localization economies for certain branches, sub-branches, whose companies form clusters in certain geographical areas (E.g. whilst using the same provider for an intermediate good for which transport costs are high or because of significant vertical integration (based on subcontracting), while urbanization economies are specific to cities, where clusters of firms appear in various branches (e.g., sharing of business service providers (banking, security, storage, etc.) or utilities (water, electricity, sanitation, etc.).

Other descriptions of industrial clusters are based on: the growth poles model (Perroux, 1950, Boudeville, 1966), product life cycle inspired model (Vernon, 1960), competitive localized advantages' model (Porter, 1980). Alfred Marshall (1842-1924) showed that geographical concentration of a particular industry determines specialty suppliers, attracts the workforce as a set of common skills, ensures economic security for the employees, and creates good market for the suppliers and conditions of improving and specializing the offer.

Weber's field of interest was the choice of industrial location, being concerned with general factors of location analysis. Assumptions underlying Weber's model are constant scale technological efficiency, unlimited offer of inputs, factor's fixed prices regardless of location, it is considered that location depends on the placement of stocks and markets, the transportation costs for each merchandise being directly proportional to its weight and transportation distance.

The solution of the problem is the one that minimizes total transportation costs, in a graphical approach being determined by circles (curves) centred on the sources (supply costs) and markets (shipping), which are composed of points representing the same level of costs. Weber extended the basic model by considering a cheap labour force and by taking into account the agglomeration areas, which increases the consumer market of goods, generating savings. Industrial location problem is becoming more relevant for today's global markets and international corporations. Focusing on mechanisms of Weber's model could justify larger transport distances compared with cheaper labour, and untapped raw material. Once resources are exhausted and the work force revolts, industries relocate themselves.

The essential contribution of Hotelling's theory consists in the fact that relaxes Weber's assumption that any given producer believes that competitor's locations are already taken or that producer has a monopoly on the market, taking into account the theory of oligopolies' space implications without understanding among participants.

This theory was subsequently extended by Smithies, Lerner and Singer, Greenham. Based on the analysis of a duopoly, Hotelling (Hotelling, 1929) considers that problems of localization in this case tend to result in a concentrated location in the center of the market, provided that the market demand is completely inelastic. Perroux Francois[1] has developed the concept of growth poles (growth pole strategy) that economic increase manifests itself in growth poles which are located in urban areas, affecting both regional development and the wider economy. He said that "growth is not everywhere, it manifest itself in points or poles of growth, with variable intensity; economic increase runs through various channels to different terminals for the entire economy" (Jula, et al., 1999). According to Perroux, growth pole is a set of businesses capable of generating economic growth of an industry (sector) and / or economic development of areas or regions.

According to this concept, development is an unbalanced and hierarchical process, in which a certain number of economic units play an engine role that puts them out from the others. These separate units are called growth poles and they can be large companies, industrial sites, important elements of infrastructure (port, airport, motorway) that by their mere presence attract a lot of other activities or even an urban pole with its own activity. These poles are highly entrepreneurship and have a profitable business environment. In developed economies, they communicate, creating genuine network development. A region develops around such a pole of growth, because of its spread effects.

---

[1] *the growth pole theory explains the emergence of regional inequalities by growth effects, which does not spread equally in all economic sectors, but first to those sectors give the initial impulse (locomotive development)*

After developing the theory of polarized development, most of the concepts supporting the spontaneous reduction of disparities in regional economic development as the generalization of the process, find theoretical support in various formulations of this theory. It is assumed that after the initial phase in which the predominant forces are centralized, centralization poles will lead behind them, the rest of the region or even the entire economy. J. Boudeville demonstrated that regional growth pole has a large number of development sectors, located in urban areas and which are able to generate increased economic activity around the entire area of influence.

Product life cycle theory is developed by Raymond Vernon (1966), which started its work on links between the expenses incurred by the firm for long-term research and development and its possibilities of winning according to phases or steps that can browse a product from its launch on the market, until the end of its production. This theory is based on a simple observation: a product is born, grows, lives, fall into decline and dies like a living system.

Porter shows the influence of competitive relations between national industries and economic development, by the model of national industries' competitive advantages. He argues the need for stronger industrial ties between the competitive sectors, so that the participation in international competition to lead to growth effects for the national prosperity. Cluster theory, launched by Michael E. Porter, referring to ways and contributing factors „to a more developed competitiveness on a local, national, regional and global level" and it is a way in which a country can cope with the fierce competition of the capitalist economy.

Location theory justifies its importance: its very basic factors of development, referring to the climate and natural conditions, to the fertile soil at the proximity of geographic location, to the basic inputs in the technological process, to the health and environmental conditions or to the employment classification and structure.

2. CLUSTER - DEFINITION

Throughout history the concept of „clusters" has been assigned different names: the pole of competitiveness, industrial district, industrial agglomeration, the terms that were imposed being pole of competitiveness clusters in France and Belgium (as the term widely used). The English cluster means bunch, bouquet, group. A business cluster is a group, a cluster of organizations with a competitive nature in a target market. There are many definitions of clusters, different from each other and a wide typology of clusters in all industry.

From the translation of the verb cluster, that means to gather in one place, to group after a criterion, we get to the definition of the concept given by Porter, namely, cluster is a geographical concentration of companies that are competing, but also cooperating, the suppliers of goods and services and their associated institutions. He offered a definition of competitive agglomeration (clusters), taken as a standard option by most of the literature on this topic: "Clusters are geographic concentrations of interconnected companies and institutions, in a given field. Clusters comprise a group of closely related industries and other entities important in terms of competition. These include, for example, suppliers of specialized inputs such as components, machinery and

services or providers of specialized infrastructure. Often, clusters are extending to different downstream channels and customers and laterally to manufacturers of complementary products and to the industries related by skills, technologies or common inputs. Finally, some clusters include governmental and other institutions - such as universities, standards agencies, think tanks, vocational training providers and employers - to provide specialized training, education, information, research and technical support (Porter, 1998a) (Porter, 1998b).

Looking in particular the sustainable development of industrial structures, Porter demonstrated the influence of competitive relations between national industries and economic development, by the model of competitive advantages of national industries. He argues the need for stronger industrial ties between the competitive sectors, so that participation in international competition to lead to growth effects of national prosperity".

The level of economic development research and the systematic study of business in 10 countries with a significant competitive position, and in over 100 industries, Professor Michael Porter brought the debate on how companies manage to compete and contribute in raising living standards in the countries where they are located.

According to the Official Journal of the European Union cluster is "a geographical concentration of specialized firms in a sector, in connection with specific suppliers and other companies in related sectors, which are in competition, while collaborating" (Official Journal of the European Union, 2008). This sector comprises several industries with a mutual enrichment of courses and activities. Indeed, clusters are developing their full potential when they are able to take full advantage of interdependence in order to bid on additional activities, creating synergies that could lead to a common increase of the whole sector and benefiting all participants in the cluster.

Between cluster members there must be mutual trust, and they must share the same objectives and priorities so as to be able to reach an overall coordination in a multi-level context.

3. THE BENEFITS OF CLUSTERS

The competition generated by the companies included in a cluster forces firms to innovate and develop, stimulates research and introduce new forms of economic development.

Clusters affect competitive advantage on three major directions:
- constituent companies improving productivity;
- promoting innovative capacity;
- stimulating new business boost inside the cluster.

The main elements that determine these effects are access to specialized factors (access to them - highly skilled labour force, professional specific services, machinery components - is often more effective than when we're talking about vertical integration), access to information (within the cluster much useful information is accumulated-marketing, technical specifications - which run relatively quickly by consultants, staff

migration, etc.) complementarities (the performance of a sector positively influences the performance of other related sectors), access to institutions and public goods (as the importance of the cluster, public investments are significant and produce beneficial effects on its component companies, such as subsidized training programs).

However, innovation is stimulated by facilitating market testing or by new products marketing. Government policies should be oriented towards supporting the development of existing clusters or in training, rather than towards the creation of new clusters. Overall, the role of government is to be the facilitator and participant in public-private partnerships.

The specific actions that can be undertaken by the government:

- Factors of production: support for research efforts of local universities in areas relevant to the cluster, improving local infrastructure necessary to the cluster; collecting statistics for the analysis of cluster activity, creating and supporting specialized training programs and education.
- Domestic demand: reducing uncertainty related to the market regulator that operates the cluster, supporting the development of independent testing and certification entities, implementation of a procurement program that stimulates sophistication in the production process of the cluster.
- Related or complementary industries: organizing events that bring together members of the cluster, creating free zones, industrial parks based on the adjusted rules of the cluster's development needs.
- Context for firm strategy and competition: attracting foreign direct investment, promoting competition, promoting exports through methods adapted to the cluster in question.

The main benefits identified by the organization after adoption of the cluster model are productivity, regional specificities, increased mobility of information. Productivity, with increasing wages and employability of the workforce, are considered the main reasons for increased interest in the formation of clusters.

Creating and developing a regional specific, through the formation of clusters, helps regions in creating a productive business environment, leading to attract as many specialized companies on their territory.

Increased mobility of information that occurred due to interactive system of the clusters is the third main benefit of clusterization. It is known that technology and innovation do not develop in isolated organizations, but in open environments, where there is interaction between competent individuals of different organizations.

Competent individuals of different organizations constructively interact by assimilating existing knowledge and generating ideas, products and new production processes. Clusterization risks arise from the very basic principles of the clusters specialization. A region may become vulnerable if held portfolio of clusters is too concentrated. Moreover, the cluster can often not be the answer to increasing the competitiveness of a region, source may come from elsewhere.

In France, The European Cluster Observatory has so far mentioned the existence of 125 poles of competitiveness, over 70% of enterprises being involved are SMEs. These poles of competitiveness working in 16 economical sectors.

Each pole of competitiveness has its own legal personality, often form an association. Association has a team (permanent staff) which has a role in:

- facilitating "actors" collaboration in the pole of competitiveness for developing and implementing joint projects;
- developing and implementing the general strategy of pole of competitiveness;
- coordination and selection of research offers that require specific public funding for the competitiveness poles;
- providing international communication;
- ensuring communication with other clusters in France or abroad.

In Germany, The European Cluster Observatory mentioned 217 clusters in the following areas of activity: Biotechnologies, transport and mobility, health and medicine, new materials, manufacturing and engineering, aviation and space, energy and environment, ICT, micro-nano-opto.

In Sweden, The European Cluster Observatory has noted the existence of 102 Swedish clusters, already highlighting one of their weaknesses, namely excessive fragmentation. Established priority areas and their quotes are: ICT (30%), biotechnology (20%), production systems and materials (20%), automotive (20%) and science "work" (10%).

In the three countries there are two types of cluster support schemes:

- there are nationwide clusters, with potential to reach the level of international excellence ("top-level"). They have an impact on the competitiveness of the country;
- there are regional clusters, whose importance cannot exceed region borders, which have an impact on economic development and have the potential to be up-graded to the rank of top-level clusters.

4. ROMANIAN EXPERIENCES IN CLUSTERS

In Romania, after 1990, they tried to promote the agglomeration of firms by public policy, by creating industrial parks, science parks and technology. Therefore, it is difficult to identify natural clusters, except traditional industries, where business agglomerations have emerged - such as the textile / clothing, woodworking industry, automotive component industry. Competitive industrial clusters, so-called clusters, are a real alternative for Romania's economic development. In various studies and research projects there were identified several potential clusters in Romania:

- The first study on industrial agglomeration cluster was conducted in 1998 by the Centre for International Entrepreneurial Studies in Bucharest. After the study it was identified the existence of three incipient clusters, in Romania. The survey[2] was based on Porter's competitive diamond theory, focused on competitiveness and business sector in Romania.

---

[2] *The study was done on a large number of enterprises of all sizes (small, but large companies) and focused on data from the eight development regions of Romania (NUTS level II). The study identified the existence of three forms of "early" cluster in software production, the shipping industry and the timber industry.*

- In 1999 Marco Ricardo Ferrari (Assistant - Researcher at the Department of Economics of Bocconi University in Milan) conducted a study on the clusters, a study that emphasized the SMEs.
- The third search was conducted by Valentin Ionescu. The author has agreed that in Romania there are no functional clusters, but he argues the existence of "proto-clusters" or "emerging" clusters. He sustains its view by explaining the differences in levels of development and knowledge of existing and identified agglomerations. Thus, a possible cluster was located in the ceramics industry (in Alba County) and another one in the software production in Bucharest. The study points out that in software industry "there is an enormous potential for a cluster to horizontally appear, based on inter-company cooperation and a sense of social inclusion and citizenship. The existence of an early horizontal cluster is motivated by the companies perception in terms of characteristics of local production system: a network of business based on personal relationships, potential suppliers and customers, local sources of skilled labour force" (Ionescu, 1999).
- Another research project was conducted by the VICLI project, developed within the European project INTERREG II C - CADSES in 1999-2001, which sought to identify and support development of regional clusters in an exchange of know - how. Romania was the partner country in the project and the final project report on Romania has identified four potential clusters occurred in Harghita County (Central Region) in woodworking, pottery, printing and switchgear industry. The emergence of these sectors is clearly linked to the area's natural resources. Also, Harghita is one of the few counties in which the analysis of input / output revealed major industrial inter-connections (between woodworking, pulp and printing.
- The fifth research reference for studying clusters is the project INCLUDE, funded under the INTERREG III CADSES. During 2003-2004 the project aimed to conduct an analysis of existing potential of clusters in the partner countries in Central and Eastern Europe and then to assist these countries in developing the cluster, using the experience and know - how from Italy and Austria. The potential clusters were identified in the textile industry from Timis and Bacau counties, software sector from Timisoara, Cluj and Bucharest, woodworking in Mures, in the chemical industry, metal products, general purpose machinery and engines form Brasov, and the local clusters in different areas such as - leather and footwear, electrical components, telecommunications equipment and radio and TV.
- A national reference for the analysis of clusters potential development is the program CURAS, from the Cooperation Agreement between the Romanian and Belgium - Flemish governments. The program was implemented in 2003-2004 by NASMEC (National Agency for Small and Medium Enterprises and Cooperatives) and CKZ Limburg (training centers set up by the Quality Management Centre Limburg). The result is to produce clusters of local suppliers from a domestic supply chain and from internal and / or international subcontractors.

- Through the Phare 2005 CBS Romania borders Ukraine Program it was elaborated the UK- ECON Clus - ROMANIA UKRAINE JOINT ECONOMIC DATA BASE AND CLUSTERS IDENTIFICATION program. The project was approved with the specific objective "a study for the identification of cluster agglomerations in border region of Romania (Maramures) and Ukraine (Transcarpathia County), by analyzing the profile of at least 6,000 companies in the region, through direct interviews of at least 200 of these companies, using specialized tools and methodologies in a common academic teams, specially created for this project and developing a database of member companies considered potential clusters.
- Another reference for the research project in Romania is the WEID (West-East Industrial Districts) project (The relocation of industrial districts, financed by the European Commission by the 5th Framework Programme (FP5). The project's duration was three years, from September 2001 until late 2004. Partners in the project seven countries, three from Western Europe (Germany, Italy and United Kingdom) and four from Central and Eastern Europe (Czech Republic, Poland, Slovenia and Romania) case studies investigating the relationship between clusters. Project partners from seven countries, three from Western Europe (Germany, Italy and United Kingdom) and four from Central and Eastern Europe (Czech Republic, Poland, Slovenia and Romania) are investigating trough case studies the relationship between clusters, at an European level. Of the 15 case studies, two are in Romania, researching the potential existence of clusters in two areas - Banat-Crişana and Arad-Timişoara, in the sports equipment industry and in the shoe industry.

Industrial clusters are not simply agglomerations of companies (studied over time by A. Marshall, Hoover, Perroux, Chimitz and Mills). Industrial or commercial specialization, diversification, innovation and improving quality and interrelationship between companies operating in a region, or their complementary characteristics, are traits that distinguish a pure agglomeration from an industrial cluster. After their way of structuring, industrial clusters are vertically integrated, horizontal and emerging clusters (clusters in training and development), and after the nature of their work, we distinguish between industrial clusters and innovative clusters; the last ones play a key role in obtaining a sustainable competitive advantage at regional or local level through the relationships they have with R&D sector.

Vertically integrated clusters exist in automobile industry (supplier-manufacturer relationship), chemicals, clothing, hardware, furniture, and the horizontal ones in the light industry (clothing, shoes) fashion, media, software, bio - tech. In Romania, The European Cluster Observatory has noted the existence of 10 clusters (table 1).

Emerging clusters were identified in our country in the textile industry in the counties of Bacau, Timisoara, in the wood processing industry and the automotive component industry in the country's central counties, or in software, in Bucharest, Cluj and Timisoara. Creating clusters and cooperation between them can be supported and

enhanced through regional policies, industrial policies, supporting the SMEs, and by attracting direct investment and supporting research, development and innovation.

Table 1. Existing and potential clusters in Romania

Region	Clusters		
	Number	**Existence**	**Potentials**
Nord - East	1	Textile	Wood Petrochemical Metal work
South- East	-	-	Agriculture Renewable Energy
South Muntenia	-	-	Agriculture Automotive Construction Nuclear
South West Oltenia	-	-	Chemical and Petrochemical Agriculture Construction Energy Food Industry
West	3	Automotive Construction Software	Printing/Publishing
Nord West	1	software	Agriculture Water supply Food Industry Environment technologies
Centre	1	Wood and furniture Tourism	Agriculture Food Industry Research and Education Construction Mechanical engineering Environment
Bucharest Ilfov	4	Software Research Marketing by agricultural machinery Grain marketing	

Industrial clusters have emerged in Bucharest, covering the media industry (print, audio-visual) and software. Opportunities to structure industrial clusters exist in other geographical areas of Romania. For example, in Alba County (porcelain industry), Vaslui (clothing), Bucharest-Pipera (furniture), Cluj, Timisoara, Iasi (software), Galati, Constanta (shipping industry) and Bucharest, Brasov (aviation industry).

Proto-cluster or *clusters in training on horizontal structures* exist in the software industry Romania (Bucharest, Timisoara, Cluj and Iasi) and porcelain industry

(Alba). There are also incipient clusters vertically integrated in the clothing industry (Focsani). Potential clusters are also training in media (Bucharest), publishing, printing (Bucharest) furniture (Bucharest), vineyards and wine processing (Vrancea, Valley county, Constanta), textile (Mureş, Vaslui, Vrancea), aviation (Bucureşti, Braşov, Bacău).

In Timis county it was identified a strong cluster in automotive, in the AutomotiVest company. Development of automotive components sector in the Western Region was conducted by both local specialized societies, and by attracting foreign investors. In this economic sector there are operating 156 companies that operate exclusively or with a part of production.

5. CONCLUSIONS

The research referred in this study show that there is an intensely crowded space for companies in western and north-western region of the country. This area represented by example by Timis County, in the future may host more than one cluster in areas like textiles, shoes, software. It is worth noting that once the specificity is Timis County is also given by the high level of Italian investment in the area; they brought the principle of the industrial district, the Italian model of cluster. Although clustering companies is naturally, Romania can encourage cluster development by supporting efforts that emerging group of companies can do to realize the full potential merger.

REFERENCES:

[1]. **Constantin, D.L.** (2004) *Elemente fundamentale de economie regională.,* Editura ASE, Bucureşti
[2]. **Hoover, E.M.** (1948) *The Location of Economic Activity*
[3]. **Hotelling, H.** (1929) *Stability in Competition*, Economic Jurnal, pp.41-57
[4]. **Ionescu, V.** (1999) *Supply-Side Strategy for Productivity, Competitiveness and Convergence between the CEECs and (in) the EU - Romania Case Study*
[5]. **Jula, D.; Jula, N.; Alilenei, D.; Gârboveanu, A.** (1999) *Economia dezvoltării. Teoria dezvoltării- probleme naţionale- dimensiuni regionale*, Editura Viitorul Românesc, Bucureşti
[6]. **Popa, H.L.; Iovescu, M.** (2009) *Clustere. Caracterizare, clasificare, modele, Manualul 1,* Conferinţa „Clustere naturale în regiunea transfrontalieră" în cadrul „Programului de Vecinătate România - Serbia 2004- 2006"
[7]. **Porter, M.** (1998) *Clusters and the New Economics of Competitition,* Harvard Business Review, Boston, Nov/Dec;
[8]. **Porter, M.** (1998) *Clusters and Competition: New Agendas for Companies, Governments, and Institutions*", in Porter M., On Competition, Boston: A Harvard Business Review Book, p.197, p.288
[9]. **Pyeke, G.F.; Sengenberger, W. (coord.)** (1990) *Industrial Districts and Inter-Firm Cooperation in Italy,* International Institute for Labour Studies, Geneva
[10]. **European Cluster Observatoty** (2010) *European Cluster Organization Directory*, Q1
[11]. **Grupul de Economie Aplicată**, *Către o politică industrială bazată pe aglomerări economice competitive - clustere (II), Identificarea clusterelor emergente în România*, www.gea.org, [Accesed 03.06.2010]

[12]. **Grupul de Economie Aplicată**, *Manual de evaluare a competitivităţii regionale,* pe www.gea.org; [Accesed 03.06.2010]

[13]. **Jurnalul Oficial al Uniunii Europene** (2008) *Avizul Comitetului Regiunilor privind clusterele şi politica privind clusterele*, C257/p.77, eur-lex.europa.eu [Accesed 08.06.2010]

[14]. *The European Cluster Memorandum,* http://www.clusterobservatory.eu [Accesed 13.06.2010]

[15]. (2009) *Ghid pentru implementarea în România a conceptului de cluster inovativ*, Bucureşti