

THE IMPORTANCE OF INNOVATIVE CLUSTERS' PROLIFERATION FOR SUSTAINABLE ECONOMIC GROWTH OF ROMANIA

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ABSTRACT

In capacity of European Union member, sustainable development is the only reasonable solution for Romania's national becoming, having as a result the establishment of a new development paradigm through junction of economic, social and surroundings factors.

Regional development represents the increase of economic competitiveness of a local area, in means of improving the area's economic future. The paper underlines the fact that innovation, as a crucial factor of regional development, in the new social and economic context, is and can be sustained through the creation of innovative clusters, and by their proliferation. Romanian clusters are presented and analyzed, and also the courses of action in order to increase their competitiveness.

KEYWORDS: *Four Clover Model, Innovative Cluster, Quintuple Model, Regional Development, Triple Helix Model.*

JEL CLASSIFICATION: *010, H70, M13*

1. INTRODUCTION

In the year 1992, through the Maastricht Treaty, sub national unities were equipped with the stated constitutional powers, and models of regionalization were introduced in the circuit of European administration: cultural regionalization, which is based on distinct regional identity; regionalization from an economic perspective, having as an objective the efficiency of public administration in terms of the citizen; fiscal regionalization (regional authorities have the jurisdiction to establish taxes and local spending, in order to allow regions to support only the costs of those services that they benefit from).

Romania's regional development policy, as defined by Law no. 315/28 June 2004, is represented by a set of government policies developed by central government bodies, local government authorities and specialized regional bodies, in consultation with the socio-economic partners involved, to ensure economic growth, and the social and sustainable development of the demarcated developmental regions, and to reduce economic and social disparities between Romania and other EU Member States. Thus, the regional development policy is a set of measures planned and promoted by local and central government, in partnership with different actors (private, public, volunteer) to ensure dynamic and sustainable economic growth, by harnessing the regional and local potential, to improve the living conditions.

The main areas that can be covered by the regional policies are: enterprise development, labor market, attracting investments, technology transfer, development of SMEs, improving infrastructure, environmental quality, rural development, health, education, teaching and culture.

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Rural development occupies a distinct place in the regional policy and covers issues related to the removal / reduction of poverty in rural areas, balancing economic opportunities and social conditions between urban and rural areas to stimulate local initiatives, maintaining spiritual and cultural heritage.

The main objectives of Romania's regional development policy are:

- „Diminishment of existing regional imbalances, especially by stimulating a balanced development and the revitalization of disadvantaged areas and preventing the emergence of new imbalances;
- Correlation of sectoral governmental policies at regional level ;
- Stimulation of interregional, national and international cooperation, including in Euro regions.

The principles behind the development and implementation of regional development policies are:

- Decentralization of decision-making processes, from the central/governmental level to the regional communities;
- Partnership between all the actors involved in regional development;
- Resource planning (through programs and projects) to achieve the established objectives;
- Co-financing – financial contribution of the various actors involved in the implementation of programs and projects of regional development” (Ministry of Regional Development and Public Administration, Regional Development Policy, www.mdrt.ro/dezvoltare-regionala/politica-de-dezvoltare-regionala).

The eight development regions of Romania, as well as the regional bodies involved are the prerequisites to estimate financial allocation for Romania, in a focused system of objectives and geographical areas, and as an indicator for assessment of EU funds absorption capacity, and benchmarks for assessing results and socio-economic impact throughout Romania.

Regionalization in Romania takes the form of cooperation between local districts and local authorities. Thus, regions, counties and / or municipalities from counties, being part of different regions, may associate in order to achieve objectives of common interest, interregional and / or inter-counties.

Regional development in the current context of change, and economic and administrative restructuring should be seen as a process dependent on innovation and entrepreneurship, supported by social mechanisms and flexible institutional structures, with a high degree of cooperation and local and central interaction. Doing this process requires competence, tools and, not least, the confidence of those involved that they will be able to successfully accomplish what they started. They rely, in their approach, on the experience of the European Union regarding regional and local development policies, local autonomy, legislative and institutional system, and also the effective help, from these states.

Global financial and economic crisis that has affected the all the world economies is an additional factor determining which determined the different actors to work together, in order to ensure coherence and synergies between their specific roles in the restructuring and recovery after the crisis.

The enormous financial and economic changes in Europe in the recent years had a considerable impact on the business environment of companies, especially SMEs. Now, to address these changes and stay competitive, companies must constantly adapt and learn to innovate. Grigore and Radu (2010) argue that reengineering is becoming fundamental for all SMEs, as they need to enhance individual creativity and to use employees' knowledge as a way to increase firms' profitability. Traditionally, the restructuring processes are generally considered to cause job losses. However, in recent years, as a result of the need to create more and better jobs in the EU, under the EU 2020 strategy initiative, especially of the three flagship initiatives: "An industrial policy in the era of globalization", "A new agenda for work places" and "New skills for new jobs", gave more attention to creating a new business, that follows the restructuring and the importance of restructuring in a socially responsible way.

2. REGIONAL INNOVATIVE CLUSTER

Innovation, crucial element of regional development in the new social-economic context, is and can be supported through the creation of clusters, and namely their proliferation.

"Clustering" has become an important element of the innovation policy in the EU Member States, supporting an approach based on regional innovative clusters, not only in developed urban centers, but also in poorer or rural regions. Thus, starting with 2008, amid financial crisis, EU policy to promote innovative clusters intensified. Their proliferation in EU countries was performed mainly from 2010.

In Romania, most clusters were based on already established associations, in the areas of development and / or business incubators. Lines of funding were opened at European level for regional development through clusters that attract SMEs in clusters. Also, a line of funding to support cluster activities, forming poles of competitiveness, was recently opened. This comprehensive approach is aimed at sustainable regional development and thereby the reinvigoration of the EU countries economies, after the global crisis.

Successful businesses are conditioned by the quick and easy access to knowledge, better qualified workforce, technical and social specialized assistance, as well as by swift identification of suppliers, customers and innovative solutions. These requirements can be most easily achieved through clustering.

The term business cluster, also known as year industry cluster, competitive cluster, or Porterian cluster, was introduced and popularized by Michael Porter in "The Competitive Advantage of Nations" (Porter, 1990). Michael Porter claims that "clusters have the potential to affect competition in three ways: by increasing the productivity of the companies in the cluster, by driving innovation in the field, and by stimulating new businesses in the field". According to Porter, "in the modern global economy comparative advantage, how certain locations have special endowments (i.e., harbor, cheap labor) to overcome heavy input costs, is less relevant. Now, competitive advantage, how companies make productive use of inputs, requiring continual innovation, is more important "(Porter, 1998).

In the view of Porter cluster is "a group of companies and associated institutions (universities, research institutes, testing laboratories, training providers, professional associations, local authorities etc.) from a specific area, geographically contiguous and interconnected by common and complementary concerns (porterian diamond: resources, information, strategies, pressure to innovate and to invest)".

The European Commission defined the cluster as "a group of companies, entities and institutions economically interconnected; located in the same geographical area and that have reached a level which enables them to develop specialized expertise, services, resources, chains of suppliers and skills".

The Community Framework for State Aid, Research, Development and Innovation defines a cluster as "groups of independent companies (innovative startups, SMEs) and research organizations, which work in a field from a given region, to stimulate innovative activity by promoting intensive interactions, access to shared facilities, exchanges of experience and knowledge and contributing to technology transfer, networking and dissemination of information".

Most successful clusters have been created spontaneously, as a result of natural competitive advantages, market forces or simply to chance. In the U.S., where a model cluster was generated, more than half of the companies work after the following principle: companies within the cluster are in a region and fully utilize the resources.

Since 2006, the European Commission has identified the development of innovative clusters as one of the strategic priorities for successfully promoting innovation. In this context, the Centre for Innovation and Technology of North Rhine-Westphalia - ZENIT (Germany) has developed the model of "the new diamond of innovation" (Fig. 1).

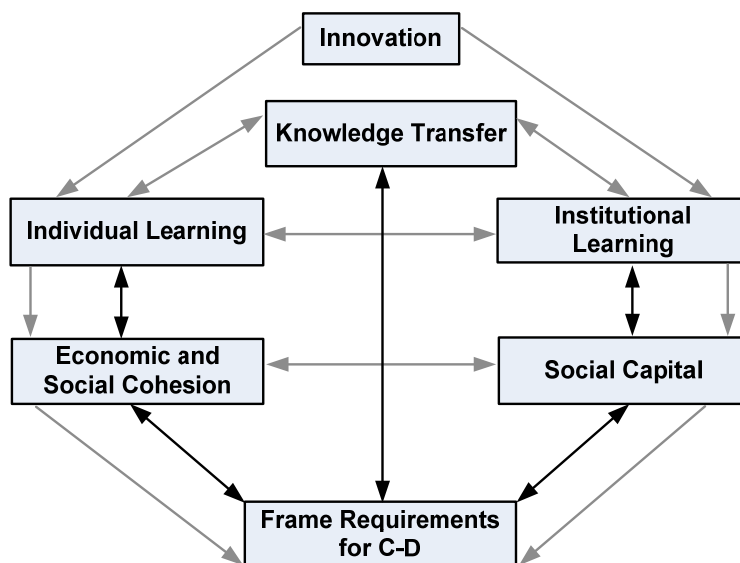


Figure 1. The new diamond of innovation

Source: Ministerul Economiei, Comerțului și Mediului de Afaceri - *Ghid de implementare în România a conceptului de cluster inovativ*, București, 2009 available online at <http://www.fabricadebani.ro/news.aspx?iid=21932&sid=170>

„The considerations which led to the development of the model „New diamond of innovation” are the following:

- innovation is based on extensive scientific knowledge supported by a modern infrastructure;
- innovation is built on individual and institutional learning;
- individual and institutional learning can take place if a set of common norms, rules and visions is established;
- economic and social cohesion is the requirement in order to implement the processes of technologic transfer and innovation.

An application of the systematic theory of innovation, combined with the concepts of individual and institutional learning, is found in the paradigm "triple helix" of technology transfer and innovation, applied to the concept of "innovative cluster". Thus, to achieve technology transfer and innovation, the participation of the following categories of actors is necessary:

- Universities, research institutes, training centers;
- Industry, especially SMEs (including start-ups and spin-offs);
- Authorities (central and local) with competence to facilitate innovative processes"

(Ministry of Economy, <http://www.fabricadebani.ro/news.aspx?iid=21932&sid=170>)

Given the fact that in Romania experience has shown that the three natural partners of the "Triple Helix" model do not cooperate, in most cases they do not know and do not get to talk to each other, it was considered necessary to adapt the model, namely its transformation into a "four clover" model ("four-leaf clover"). In this model, the fourth actor is represented by catalyst organizations, entities that are specialized in technology transfer and innovation, consulting firms.

To strengthen the innovative capacity of clusters, mainly their competitiveness for sustainable regional development, the recent EU policy towards the establishment and development of clusters is to follow the model quintuple (Quintuple Model). In this model, the fifth actor is represented by the banks. In Romania the implementation of this recent model is to succeed, currently the majority operating in the form of Romanian "Four clover" clusters.

In 2010, the year of reference in the creation of innovative clusters in the EU, the European Cluster Observatory identified approximately 2000 clusters that are formed from the bottom up or top to bottom, being supported by policies, concrete projects and national and European funding. From

early 2011, so far, there has been an increase in the number of clusters in the EU.

In Europe there are many clusters, but market fragmentation, weak links between research and industry, and insufficient cooperation within the EU led to the impossibility of establishing a necessary critical mass in European clusters and an innovation capacity to cope with global competition to lead to higher clusters (Top level clusters).

3. CLUSTERS IN ROMANIA

In Romania, clusters are in an early stage compared to other EU countries.

The Ministry of Economy, Trade and Business has been actively involved in implementing the cluster concept in Romania. Thus, numerous seminars were organized in all developing regions of the country, some with support from GTZ Germany (Gesellschaft für Technische Zusammenarbeit), to popularize and implement the concept of innovative clusters, identifying existing and emerging clusters and initiating and developing a Romanian Cluster Mapping.

Thus, the policy regarding clusters is coordinated by the Ministry of Economy through the POLUS Agency, who has a role in monitoring and accreditations of clusters.

Accreditation of clusters is voluntary and is based on assessment of five qualitative and quantitative indicators. Their share has been mutually agreed upon between management staff of existing clusters in the year 2009. These indicators, the scores given to each indicator separately and objectives of the evaluation are presented in Table 1.

Table 1. Indicators for cluster accreditation

Indicators	Scores/Indicator	The objectives of evaluation of the indicators
Cooperation within the cluster	10	Evaluation of the forms and content of cooperation within the cluster
Cluster members	2	Analysis of the type and number of members of the cluster
Economic performance of the SMEs in the cluster	5	Examination of market success, with emphasis on exports and high added value products
R & D performance	4	Analysis of R & D activities in the cluster
Strategic and operational plan	14	- Analysis of the vision and strategy of the cluster; - Filtering of collaborations without a relevant content

Source: Ministerul Economiei, Comerțului și Mediului de Afaceri - *Ghid de implementare în România a conceptului de cluster inovativ*, București, 2009, online available at http://www.fabricadebani.ro/userfiles/InovCluster_final.pdf

"The Cluster must have a required legal form, but is considered established by the partnership agreement of members. Cluster management is ensured either by the "driver" organization of the cluster, or by a newly established structure, leaving it to members to choose the legal form. The legal form of most clusters in Romania is the association". (The Ministry of Economy, Trade and Business, http://www.fabricadebani.ro/userfiles/InovCluster_final.pdf)

The national program "Development of the infrastructure for innovation and technology transfer -

INFRATECH", approved by GD. nr.128/2004 is an initiative of the specialized department of the Ministry of Education and Research - National Authority for Scientific Research, and was conducted during 2004-2007. INFRATECH was a tool to support the establishment and development of entities from the innovation and technology transfer infrastructure (scientific and technological parks, business and technology incubators, technology transfer centers, technological information centers and industry liaison offices).

So, according to National Authority for Scientific Research, creation of an innovation and technology transfer infrastructure should pursue both a territorial distribution which covered all the redevelopment regions, taking into account their specific potential and the different types of entities that can serve all type of economic agents, with particular emphasis on SMEs.

In Romania the following clusters are formed (table 2):

Table 2. Innovative Clusters in Romania

	Cluster	Field of activity	City	Development Region
1.	AUTOMOTIVEST Regional Cluster	Automotive	Timișoara	West
2.	ICT Regional Cluster	ICT	Timișoara	West
3.	Dacia Renault Competitiveness Pole	Automotive	Pitești	South
4.	PRO WOOD Competitiveness Pole	Forestry and Wood industry	Sfântu-Gheorghe	Center
5.	Green energy biomass cluster	Renewable energies	Sfântu-Gheorghe	Center
6.	TURINN Cluster	Sustainable and innovative tourism	Drobeta Turnu Severin	South-West
7.	Agro-Food Regional Cluster	Agro-food	Arad	West
8.	ELECTROPRECIZIA Electro-technical Cluster ETREC	Automotive Mecatronics Electro-technical	Săcele-Brașov	Center
9.	ASTRICO Textiles Cluster	Textiles	Săvinești	North-East
10.	Transylvania Furniture Cluster	Furniture	Tg. Mureș	Center
11.	Transylvania Aerospace Cluster	Aviation	Brașov	Center
12.	Carpathian Tourism Cluster	Tourism	Sărata Monteoru Buzău	South-East
13.	ELINCLUS Innovative Cluster	Electronics	Bucharest	Bucharest-Ilfov
14.	REN ERG Cluster	Renewable energies	Alba Iulia	Center
15.	ICT-Regional Competitiveness Pole Oltenia Cluster	ICT	Craiova	South-West
16.	Romanian Water Cluster	Water energy	Cluj Napoca	North +West
17.	Cluster Traditions Manufacture Future TMV Sud Est	Textiles	Focșani	South-East

	Cluster	Field of activity	City	Development Region
18.	REGIOFA Cluster	Wood processing Furniture	Odorheiul Secuiesc	Center
19.	Romanian Textile Concept Cluster Bucharest	Textiles Clothing Footwear	Bucharest	Bucharest- Ilfov
20.	Geothermal Cluster	Renewable energies, Services in Tourism	Oradea	North-West
21.	MARITIME CLUSTER	Maritime sector	Constanța	South-East
22.	ROSENC CLUSTER	Green energies	Timișoara	West
23.	AGRO FOOD Regional Cluster	Agro-Food	Sfântu Gheorghe	Center
24.	IND AGRO Pole Bucharest	Agro-Food	Bucharest	Bucharest- Ilfov
25.	Tourism Regional Cluster	Tourism	Suceava	North-East
26.	Romanian Aerospace Cluster Bucharest	Aerospace	Bucharest	Bucharest- Ilfov
27.	Creative Industries Pole Iași	Creative Industries	Iași	North-East
28.	Electrical Engineering Pole	Electrical engineering	Bucharest	Bucharest- Ilfov
29.	Tourism Oltenia Cluster	Tourism	Craiova	South-West
30.	Automotive Sud Vest Oltenia Pole	Automotive	Craiova	South-West
31.	TREC Transnational Renewable Energies Cluster	Renewable energies	Cluj Napoca	North-West
32.	Transylvania Textile&Fashion Cluster	Textiles Clothing Fashion	Sfântu Gheorghe	Center
33.	Innovative Regional Cluster Packaging- Printing- Design	Packaging Printing Design	Sfântu Gheorghe	Center
34.	IT New Media Iași	IT Media	Iași	North-East
35.	Clusterul Ecoturistic	Ecotourism	Sfântu Gheorghe	Center
36.	CLUSTER MOBILIER TRANSILVAN	Furniture	Cluj Napoca	North-West
37.	MedGreen Pole	Waste energy recovery equipment The Electricity and heat from renewable sources	Constanța	South-East

Source: Ministerul Economiei, Comerțului și Mediului de Afaceri, Direcția Generală Politici Industriale și Mediu de Afaceri - *Politica de Cluster*, 2012

Most clusters are in the Central Region (eleven), followed far away from the Bucharest-Ilfov Region (five). In the North-East, North-West, West, South-East, South-West, there are four clusters for each, while in the South region there is only one. Of the eleven clusters of the Central Region, six are located in Sfântu-Gheorghe, Covasna County.

The areas of activity covered by the Clusters of Romania are: renewable energy (seven clusters), tourism (five clusters), cars, furniture & wood industry, textile & clothing (four clusters each), ICT, agro-food (three clusters each), aviation & aerospace, electrical & electronics (two clusters each), shipping, packaging & printing & design, creative industries (each one cluster).

As can be seen, the most clusters are in the field of renewable energy (three in the North-West, two in the Central Region, one in the West and one in the South-East).

Thus, due to the depletion of energy sources, on the one hand, and global warming, on the other hand, the implementation of sustainable development policies is a necessity. In these conditions, promotion of renewable energy is required.

For Romania, the three goals (20-20-20) to be achieved, by 2020 are:

- 20 % reduction of CO₂ emissions, compared to 1990;
- The share of renewable energy sources: 20 % gross final energy consumption (for Romania, target 24 %);
- Increase of energy efficiency with 20 %.

The fact that most clusters created in Romania are those working in the field of renewable energy is justified by the potential of renewable energy sources in Romania. This potential has the following structure (figure. 2):

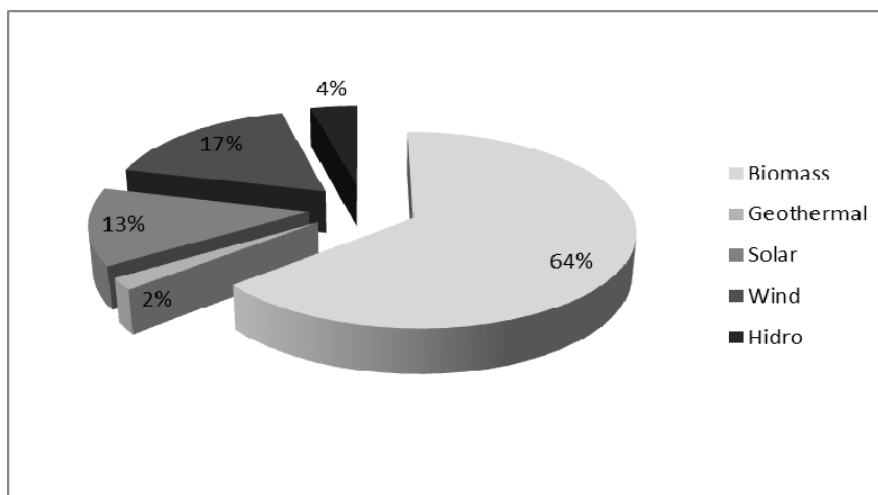


Figure 2. The potential of renewable energy sources in Romania

Source: Ministerul Economiei, Comerțului și Mediului de Afaceri, PNAER (Plan Național de Acțiune în domeniul Surselor Regenerabile), 2010

Biomass from agriculture, for example, is a source of feedstock for the power, thermal, bio fuels and bio liquids sectors, which help reduce fossil fuel consumption, with the corresponding consequences, particularly in reducing greenhouse gas emissions.

Bio fuels are a challenge in terms of combating climate change and a chance for global, regional and local energetic security.

Austria, Germany and Sweden are the European Union countries that produce energy by processing biomass in the largest share.

Romania has a high biomass energy potential, namely about 7.6 million toe / year (tones of oil equivalent/year), meaning 318 PJ.

Given the fact that Romania disposes of balanced geographical and climatic conditions, that allow the cultivation of a good range of agricultural and non-agricultural energetic crops, and that energy can also be obtained from residues from livestock farms, in mines forestry, urban waste and household waste, we think it is possible to constitute other conglomerations of renewable energy in the form of clusters, for example the South region (arable surfaces), the North-East region (forests) and others.

Also, the potential of Romanian to produce electric energy from renewable wind, solar, hydro and geothermal should not be neglected, neither should the possibility of increase in their competitiveness in the case of producing it within the clusters.

As far as clusters working in the tourism field (two in the South-West and one in the South-East, North-East and Central regions), we appreciate that in the North-West would be appropriate to create such a cluster.

The fact that there are four clusters that exist in the areas of automotive, furniture & wood industry, textile & clothing, is the natural result of the performance of these industries throughout the economy, namely I, II and III place in Romania's exports. Moreover, these clusters are among the first established in Romania.

Thus, under the West Regional Development Agency was created an innovative "Tehimpuls" which brings together all the regional actors involved in innovation, creating a cluster in the automotive sector, in addition to Dacia Groupe Renault.

Timisoara Software Business Incubator and Technologic Transfer Center at the Polytechnic University of Timisoara have formed the nucleus of a cluster, sponsored by UPT. The incubator was established in 2004, and the founders, along with UPT are the City Hall and City Council of Timisoara, County Council Timis and GTZ. The most important partner, on regional level is ARIES - TM -Romanian Association for Electronic and Software Industry - Timisoara Branch.

In addition to this cluster, located in the western region, in the automotive field there is one cluster each in the South, Central and Southwest regions.

In the field of furniture & wood industry there are three clusters in the Central development region and one in the North / West. In Covasna County, the Central Development Region, a region with a tradition in wood processing, the first innovative cluster was created in the field of wood processing, effort sustained by the European Union Framework Programme 7, the "PRO WOOD" project. This project ran between 2008-2010, with the participation of eight partners from Germany, France, Finland and Romania. In the Covasna County, the Association of Small and Medium Enterprises Covasna (ASIMCOV) was established in 1996, with the main objective to support entrepreneurs and economic development of the region. ASIMCOV united at its establishment 21 members (their number has now over 500).

The professional groups with legal form of the Association are: Ko-Fa Association (the first regional association of carpenters), Green Energy Association, Association of Waste Management Operators, Association of Merchants of Covasna (COMCOV), Association of Guest Houses Covasna, Association of Artisans and Handicrafts from Covasna (POPARTCOV). The associations and professional groups were the pillars of established clusters, i.e.: cluster in wood processing, cluster in renewable energy, tourism cluster, construction cluster, food industry cluster, waste management cluster, textile-clothing cluster.

Research organizations are represented in ASIMCOV by the Transylvania University of Brasov and the University Politehnica of Bucharest. The only faculty of the wood industry in Romania is within Transylvania University of Brasov which has been facilitating technology transfer to the three clusters in the wood industry, in the Centre Region, and the others, alongside of those within the University Politehnica of Bucharest are designed to stimulate innovation and ensure technologic transfer with other clusters formed in this region. The authorities within the clusters in the Central Region are represented mainly by the Covasna County Council and by Brasov County Council.

It can be said that in the Central Region, ASIMCOV is the benchmark of the generation of innovative clusters, not only by the number of them, by the diversity of business areas addressed, but by the work done in the cluster.

Given that the clothing industry in Romania concentrates the largest number of SMEs in the industry, ranking third in Romania's exports, fourth place in the European Union clothing exports, it is a branch in which conglomerations of cluster type are necessary and beneficial. Thus, in the field of clothing and textiles, there are four clusters, at different forms of development, one in the North-East, one in the South-East, one in the Central Region and one in the Bucharest-Ilfov region. The

first cluster in the textiles and clothing industry in Romania was created in August 2010, ASTRICO Textiles - Săvinești. It is organized around the major producers of yarn and knitting in Piatra Neamt, the Technical University "Gh. Asachi" of Iasi and the authorities represented by the North-East Regional Development Agency, while the coordinating institution was the Ministry of Economy, Trade and Business. The main objectives of this cluster focus on increasing competitiveness in the textile-clothing sector in the North-East through a innovative and sustained effort, training of the human resources in the field, and by creating innovative products with high added value.

The Romanian Textile Cluster Concept, founded in April 2011, brings together companies from the light industry in the Bucharest-Ilfov Region, the Faculty of Textile Leather and Industrial Management Iasi, the University of Art and Design Cluj Napoca, The National Research & Development Institute for Textile and Leather Bucharest, and authorities represented by the City Hall District 6 of Bucharest and the catalyst institutions are the Chamber of Commerce and Industry of Bucharest, the Chamber of Commerce and Industry of Romania, the Chamber of Commerce, Industry and Agriculture Vrancea, the Body of Experts in Accessing Structural and European Cohesion Funds, and so on. "The main objective is the operationalization of the services package of the cluster in four crucial directions: commercialization, promotion, internationalization; innovation, technology; training, education and project management. Thus, in 2011, the association initiated and completed the project "Information and communication technology for public and private sectors, in order to access the structural funds POSCCE-Axis 3", which however was not released due to lack of funds for co-financing" (Turp-Balazs, 2012).

On the other hand, some members of the cluster have collaborated with fashion designers to achieve a 100% RO couture collection, organized by the artistic director of the French Embassy in Bucharest, for the purpose of promoting Romanian cultural heritage. The collection is presented on several occasions to promote the country abroad, contributing to the publicity of the cluster.

We believe that in the textile-clothing industry there is also potential for cluster formation in the North-West, West and South regions.

Also, in the agro-food, ITC, packaging, electrical & electronic, and creative industries areas (in the creative industries, culture has the central role, that of engine for regional and national development), the potential for cluster development in Romania is high.

Based on the results of a study from December 2011, of TREC (Transnational Renewable Energies Cluster) regarding clusters in the renewable energy field (the largest as number of Romanian clusters) - <http://www.nord-vest.ro/SERVICIIPentru-Dezvoltare-Regionala/Proiecte-proprii-in-implementare/TREC--eID1029.html> - and extrapolating the results across all the clusters in Romania, we conducted a SWOT analysis.

Amongst the strengths of clusters in Romania are:

- Cooperation between local government, local agencies and traders;
- The contribution of universities, research institutions to innovation in the regions;
- EU funding lines to attract SMEs in clusters, funding lines for competitiveness poles, regional development projects with neighboring countries, projects financed by the governments of non-EU countries (e.g. Norway – MoU program – Memorandum of Understanding – Ro Norway, 24 million euro to increase competitiveness in green innovation, green entrepreneurship and green economy);
- Accumulated experience of clusters members regarding accessing PHARE and SAPARD funds, beneficial for accessing other funds as well.

Among the weak points are:

- Lack of local and regional sustainable development strategies, based on local capacity and resources;
- Weak interaction between research and the private sector;
- Minimal public and private costs for research and development.

Among the opportunities are:

- Development of pilot projects on specific fields of activity;
- Attractive investment climate for foreign and local investors;
- External funding programs (non-EU countries and EU);
- Grant programs through research and technologic transfer centers;
- Providing financial substance by adopting the Quintuple Model.

The threats include:

- Dense legislation;
- Excessive bureaucracy;
- Chronic government under-funding in education, research, innovation and technology;
- Reluctant banking loans for investments, in general;
- Lack of qualified human resources.

4. COURSES OF ACTION TO INCREASE CLUSTER COMPETITIVENESS IN ROMANIA

Given the fact that in Romania clusters are in the early stages of development, compared with others in the EU countries, most of their role is limited to: cooperation between member firms regarding supplying raw materials, selling products, making the presentation materials for the association used in different events, permanent updating of the site of the Association and of the cluster, abroad promotion of the cluster by entering the European collaboration platform (www.clustercollaboration.eu), participation in international fairs with joint stand, under the name of the Association, each company retaining its own identity, trade cooperation through trade intermediation between foreign firms and companies of the Association, the development of online sales of products made by producing companies of the Association, etc.

Also, depending on the industry in which the cluster activates in, the member companies cooperate and share even orders received by one of them. It is the case, for example, of the clusters in the textile & clothing industry. „Thus, given the large reduction in lohn orders, Romanian clothing firms have substantially reduced production capacity to accommodate to smaller orders that are majority placed further in Romania. The ASTRICO North-East cluster, for example, has been created to strengthen cooperation between these producers in order to meet large orders which still exist (about 3-4 months /year), but with delivery times of up to six weeks. Thus, one single manufacturer has not capacity to execute such orders and respecting these terms” (Popescu & Drăghici, 2012).

In relatively few clusters in Romania competitiveness is the result of innovation, technology transfer, or the intensive interaction between universities, research institutes and member companies. Clusters in the Central region, especially renewable energy ones, are those with a better interaction between member companies, research, authorities and catalyst institutions. These clusters are those that will join to form a pole of competitiveness that will be based in Brasov.

Analyzing the innovative clusters established in Romania by the year 2012, we find an unbalanced distribution among the regions, evading one of the main objectives of the regional development policy, namely that of reducing regional imbalances. Of the eight development regions, the South is the most disadvantaged, with only one established cluster. To stimulate a balanced development, we consider appropriate to create new clusters, as follows: renewable energy in South and North-East, tourism in North-West, textile & clothing in the North-West, West and South. In the field of agro-food, ITC, packaging, electrical & electronic and creative industries we believe that Romania has a great potential for development of clusters. Obviously, sustainable regional development strategies must be based on local capacity and resources, as many developed strategies have failed, not implemented due to lack of capacity and skills necessary for their effective implementation.

It is also necessary to: strengthen the partnership between all actors involved in the regional development, a rigorous planning use of resources (through programs and projects) to achieve objectives and co-financing - financial contribution of the various actors involved in implementing the programs and regional development projects.

Strengthening the partnership between firms, research and development will enable innovation and technology transfer, and the adoption of the Quintuple model will provide the necessary financial substance.

5. CONCLUSIONS

In Romania, prior to the year 2012, there were created thirty-seven clusters, in all of the development regions of Romania, mostly in the central region (eleven) and only one in the South. Each region has local conditions that favor or hinder sustainable economic development. These local attributes are the base behind the establishment and development of clusters in different areas of activity, in order to increase competitiveness at a regional level. Thus, the areas of activity covered by these clusters are those in which there is a capacity and local resources. Clusters in Romania are in an early stage of development, compared with those in other EU countries, so that efforts need to be made towards strengthening cooperation between cluster members, and especially between research companies and institutions. Also, The Ministry of Economy, Trade and Business should continue to be actively involved in implementing the innovation cluster concept in Romania, through popularization activities in all the developing regions, but also through mediating the government-cluster and/or associations relation in order to identify funding lines offered by the other states, for innovative clusters.

It is also necessary to establish new clusters, so as to achieve a balanced distribution of clusters, among the development regions and domains of activities.

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