THE REGIONAL INNOVATION STRATEGY OF WEST REGION ROMANIA 2009 – 2013

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1. INTRODUCTION

In the context of the policies focusing on European, national, regional, and local competitiveness, the terms "innovation" and "innovation strategy" are increasingly promoted as a solution to the current dynamics of the economic and technological environment. The topic of innovation has been reactivated at European level in the context of the Lisbon Strategy (2000) and its revisions. The goal of the European Union's policy in the field of innovation concerns the fast increase in research & development expenditures up to 3% of EU's GDP in 2010.

The analysis of the trends in the global economy and the development policies reveals that a great regional innovation capacity is needed in order to quickly adapt to the changes and to maintain a competitive position. The regions and member states must be prepared to invest, anticipating and accompanying the structural changes.

In the context of the world dynamics, the main players in the process of innovation analysis are: the USA, Japan, and the EU. The rate and efficiency of spreading the innovation across the economy is critical for achieving productivity and economic growth in the context of developing the initial innovation once it has found itself a practical economic application.

At European level, strategic planning in the field of innovation is not a new thing. In the context of the discussions regarding the knowledge-based economy, over 150 regions have enjoyed projects of the European Commission aiming to develop regional innovation strategy. The positive results of the first RIS exercise in the West Region, as well as the economic changes, have made it necessary to resume the planning and to update RIS 2005-2008 for a new time horizon.

The finalizing and promotion of this project are done in a favourable context, 2009 being designated as the "European Year of Creativity and Innovation"[1] and aim at promoting creativity and innovation capacity as key competencies for everyone.

[1] Art. 1, Decision n° 1350/2008/CE of the European Parliament and Council of December 16, 2008, regarding the European Year of Creativity and Innovation (2009)

1.1. THE EUROPEAN CONTEXT

The major goals undertaken through the Lisbon Strategy prevail in the European context regarding innovation. In its efforts to become the most competitive economy worldwide, the European Union pays special attention to innovation, research, and development.

According to the Research Directorate-General of the European Commission, the main components generating growth at European level are: the education system, the financial system, and human resources[2]. These are defining elements when it comes to increasing competitiveness and creating jobs.

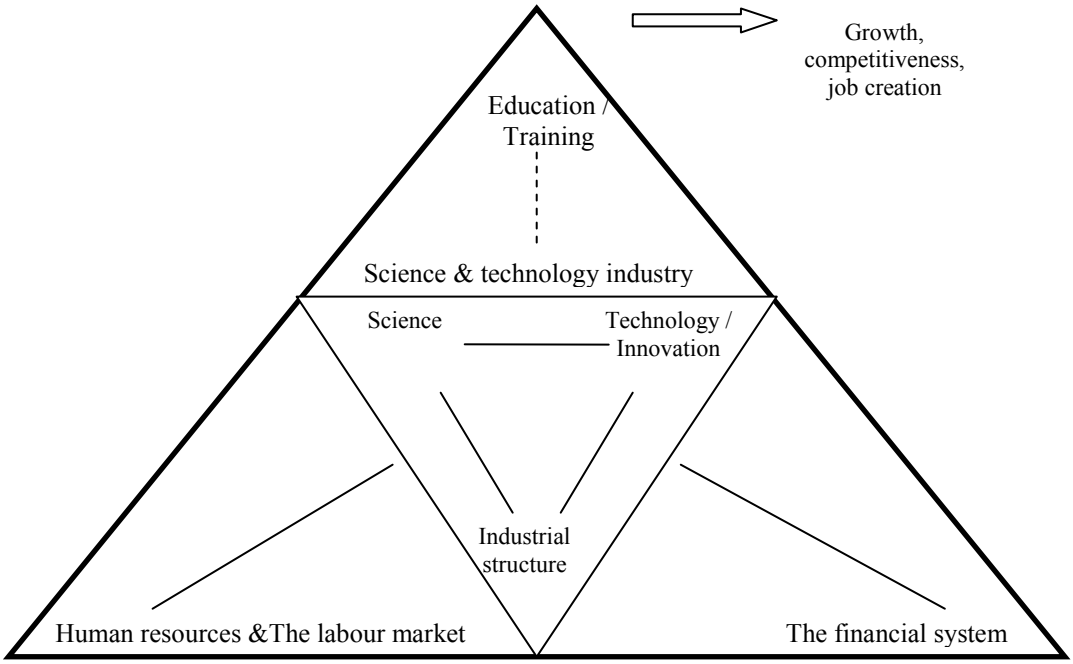


Figure 1. The elements that generate economic growth

The same analysis of the Research Directorate-General has revealed a series of key issues facing the research & development sector, both domestically and globally, in the direct competition with the world's players in this sector (the US and Japan).
The main issues identified by this report are outlined below:

- European investments in the research & development sector are low and stagnating;

[2] The European Commission, the Research Directorate-General (2007), *Towards a European Research Area Science, Technology and Innovation*, p.17

- The weight given to research & development has decreased throughout Europe's advanced economies;
- The distance between the EU and its main competitors is due to the low contribution of the private sector to the funding of research & development;
- The high-tech and IT&C sectors receive lower funding in the EU compared with the USA;
- As regards the labour force, Asia has been a significant supplier, but is currently developing its own infrastructure of higher education and research.
- Europe is under-represented in the publications contributing to technological development;
- The EU excels in the traditional fields, but the number of publications that find a concrete expression in technological development is smaller;
- There are strong disparities within the EU regarding the GDP percentage allocated to research & development.

In order to follow the evolution of these issues and to provide a foundation for the future innovation policies, a range of innovation macro-analysis indicators have been created, at the initiative of PRO INNO Europe, structured into inputs and outputs (the list of input-output indicators is given in **appendix 1**).

The indicators listed above give a very clear picture of the involvement of public policies into innovation, but they fail to describe innovation as part of the organizational dynamics and the internal forces leading to innovation: the products, processes, organizational practices, communication, and spreading as a system. As part of these discussions, company-level innovation plays a central part and concerns to a great extent the changes planned in order to improve general performance. The following diagram shows innovation as a system starting from within the companies, as well as the link with other companies and research institutions[3].

[3] **Oslo Manual (2005),** *Guidelines for collecting and interpreting innovation data*, **OECD and Eurostat, p. 33**

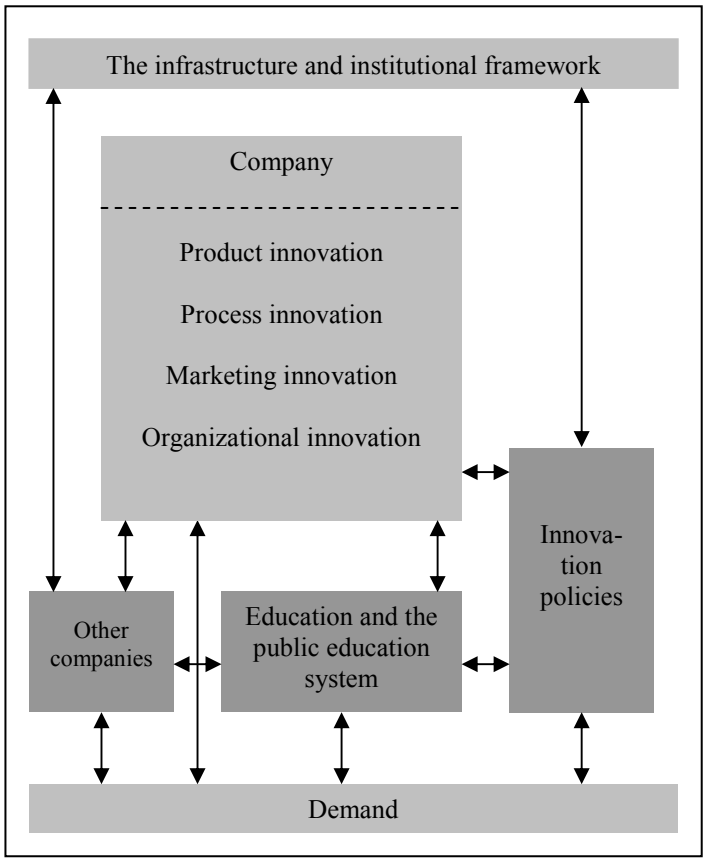


Figure 2. Organizational dynamics of innovation

The innovation phenomenon has different manifestations depending on the companies' profile or the EU region where they are located. Thus, a study carried out by the Economist Intelligence Unit in 2008 revealed the following[4]:

- Innovation is essential for sustainable growth among the averagely developed countries, so that simply emulating other countries' innovations will not do.
- Despite the massive foreign investments implementing technology and know-how, this has not led to a similar development in our national economy;
- During the past five years, innovation has only reached modest levels in Central and Eastern Europe compared with the EU's developed countries, a trend that continues to be seen;
- Some of the local SME's have proven that successful innovation and export are possible even in the absence of brand recognition abroad;
- There are three major business issues sometimes correlated with the "brain drain" phenomenon at regional level: availability of university graduates, availability of researchers and engineers, and the technical skills of the workforce;

[4] Economist Intelligence Unit, (2008), *A time for new ideas Innovation in Central Eastern Europe*, p.2

- ❖ Regarding state institutions, the innovative companies mention hindrances such as the tax legislation (applied to businesses, especially in the start-up phase), profit distribution, the weak connection with universities.

The same analysis performed by the Economist Intelligence Unit made it possible to design an innovative model around two main components: innovative performance and facilitating innovation. The application of the innovative model suggested resulted in a score for each component during 2003-2007, but also during 2008-2013 (as a forecast).

Table 1. Innovative performance and facilitating innovation

	Innovative performance 2003-2007	Innovative performance 2008-2013	Facilitating innovation 2003-2007	Facilitating innovation 2008-2013
Slovenia	7,68	7,86	7,16	7,34
Hungary	7,26	7,64	7,29	7,68
The Czech Republic	6,83	7,04	7,41	7,62
Estonia	6,75	7,09	7,34	7,69
Slovakia	6,26	6,25	6,84	6,82
Latvia	5,89	6,42	5,87	6,41
Bulgaria	5,79	6,06	5,98	6,26
Poland	5,65	6,14	6,21	6,71
Lithuania	5,52	5,77	6,09	6,35
Romania	**5,25**	**5,87**	**5,61**	**6,25**
EU 14[5] average	8,54	8,66	8,53	8,67

Source: Economist Intelligence Unit, A Time for New Ideas. Innovation in Central Eastern Europe

As can be seen, there are significant differences regarding innovative performance and the facilitation of innovation between the average in the 14 old EU member states (excluding Luxembourg) and the group of the 10 new states that joined the EU in 2004 (except Cyprus and Malta). We can also see a range of differences between the average in the 10 states that joined the EU in 2004 and the 2 states that joined the EU in 2007.

This year's activities also include a large spectrum of target groups, including young people, teachers, companies, public players, and citizens, and highlight the factors that can contribute to promoting creativity and innovation capacity[6]:

(a) creating an environment that favours innovation and adaptability in an ever-changing world;

[5] Of the 15 old EU member states, Luxembourg was not included in the analysis

[6] Art. 2, Decision n° 1350/2008/CE of the European Parliament and Council of December 16, 2008, regarding the European Year of Creativity and Innovation (2009)

(b) highlighting openness to cultural diversity as a means of encouraging intercultural communication and promoting a closer connection between the arts, as well as with schools and universities;
(c) stimulating aesthetic sense, emotional development, creative thinking, and intuition in all children, from the youngest age, including in preschool education;
(d) heightening awareness of the importance of creativity, innovation, and the entrepreneurial spirit for personal development, as well as for economic growth and employment, as well as for encouraging an entrepreneurial mentality, especially among young people, through cooperation with the business environment;
(e) promoting education in the fields of mathematics, science and technology, basic and advanced skills that favour technological innovation;
(f) encouraging openness to change, creativity, and solving problems as competencies favourable to innovation, which can be applied to a variety of professional and social contexts;
(g) widening access to a series of creative forms of expression, both through formal education and through non-formal and informal youth activities;
(h) heightening public awareness, both within and outside the labour market, regarding the importance of creativity, knowledge, and flexibility in an age of technological changes, and of fast global integration for a prosperous and satisfying life, as well as offering the means that will enable citizens to improve their job opportunities in all the fields where creativity and innovation capacity plays an important part;
(i) promoting design as a creative activity that significantly contributes to innovation, as well as to acquiring skills for managing innovation and design, including basic knowledge regarding intellectual rights protection;
(j) developing creativity and innovative ability in private and public organizations by training and encouraging them to make better use of the employees' and clients' creative potential.

In the knowledge-based society and especially in the creative economy, strategies and policies dedicated to research, development, and innovation are considered a priority. For this purpose, there are a range of entities operating in the RDI field at European level, the most important ones being the IRE network and Pro Inno Europe.

THE IRE NETWORK (Innovating Regions in Europe)

The IRE Network was created by the European Commission in the mid-90's, starting from the assumption that the regions are on the front line regarding the provision of assistance in the field of enterprise innovation, using as a resource the interaction between companies and the innovation players.
The emergence of the Regional Innovation Strategies took place with the financial help granted by the European Commission through the General Enterprise Directorate to the regions, in order to develop specific instruments that will ensure economic competitiveness in the context of globalization and the free market.

The completion of this action and the subsequent multiplication of the concept at the level of the new Member States have also been possible due to the IRE Network, which undertook to facilitate the exchange of experience and best practices in Europe's regions with the purpose of increasing their ability to support companies' innovation and competitiveness through the implementation of strategic innovation measures.

235 regions are currently affiliated to the regional innovation network, sharing its mission: "Strengthening global competitiveness in Europe's regions by promoting innovation policies and offering a single platform for cooperation and the exchange of best practices".

The West Region, represented by ADR Vest, has been a member of the IRE Network since 2002, when the Regional Innovation Strategy project was implemented for the West Region.

PRO INNO EUROPE

Pro INNO Europe is a new initiative of the General Directorate for Enterprises and Industry, which tends to become the centre for the analysis of the innovation and development policies in Europe. On its technical side, the initiative intends to finalize a common framework for the completion of the main studies currently carried out[7].

Launched in 2008 by the European Commission, the European enterprise network provides assistance and access to information for the European business sector. Although the target

[7] For more information, go to: http://www.proinno-europe.eu

group consists mainly of SME's, the services offered by the network are accessible to all enterprises, research centres, and universities.
The network currently comprises 600 partner enterprises in over 40 countries, thus promoting local competitiveness and innovation in Europe and beyond.

The instruments and services it offers at present are[8]:

- The provision of information and hands-on advice concerning the market opportunities, European legislation, and the relevant policies for the enterprise sector;
- The development of SME's research and innovation capacity by supporting the creation of synergies with other players in the research field;
- Support given to SME's in order to share results, to participate in research programmes, and apply for funding, especially through the FP7 programme;
- The involvement of SME's in the policy making process by giving feedback to the Commission and monitoring the implementation of policies in the field of competitiveness and innovation.

THE REGIONAL INNOVATION STRATEGIES

History

The first initiative to create an innovation strategy was launched in 1994, known as the Regional Innovation and Technological Transfer Strategy (RITTS), followed by two other project waves. This project focused on supporting regions in the development of regional innovation strategies that would improve competitiveness by optimizing the innovation and infrastructure policies. 70 regions (called innovative regions) have benefited from the project, receiving financial and methodological support centred around three elements: the creation of consortiums between the key players in the innovative regions, the analysis of the regional innovative system, and the development of innovative support (at policy and strategy level). The target group generally consisted of SME's.

The second initiative was RIS-NAC (the Regional Innovation Strategy in the Newly Acceded Countries), a project that focused on providing support for the creation of strategies that would increase the innovation and competitiveness level through specific policies and infrastructure. It led to the creation of 16 strategies in 2001-2002, in a partnership framework with the regions that already had the experience of a previously created RIS. The 25 RIS+

[8] For more information, go to: http://www.enterprise-europe-network.ec.europa.eu

project meant support in the implementation of some specific measures and projects derived from previous RITTS/RIS projects. As part of these RIS project waves, the RIS document for the West Region, Romania was written, having 2005-2008 as its time horizon.

The latest generation of RIS projects

In the context of the innovation development policy, eight pilot projects were initiated with the purpose of developing specific methodologies and instruments for the analysis of innovation from the points of view of: diagnosis, dynamics, impact, and functionality of the measures implemented. Each project was completed by providing a web page that enables users to access the instruments proposed and the specific analysis software of the innovation sector. Following is a brief outline of the 8 pilot projects.

The ARISE Project (Accelerating Regional Innovation Strategy Exchanges) analyses the regional profile (descriptive indicators) as well as the specific innovation actions (indicators regarding the policies), based on a wide range of indicators. The approach focuses on the innovative support given to the regions so as to identify the weaknesses, as well as the successes, based on the analysis of efficiency and effectiveness. The methodology uses an Xcel IT infrastructure[9].

The EMERIPA Project (the European Methodology for Regional Innovation and Benchmarking Policy Impact) uses as an instrument an analysis matrix of the innovation policies in order to carry out ex ante and ex post studies aiming to understand the impact of innovation support by analysing regional priorities and translating them into actions (input) and time-based performance (output). Five fields are generally synthesized for analysis: financial, physical, infrastructure, institutional, occupational, and social-economic[10].

The EURO-COOP Project (Assessment of the Impact of Regional Innovation Policies and Benchmarking Processes: Cooperation for Sustainable Regional Innovation) launches the initiative by developing a logical framework for the regional innovation policies, programmes, and projects. Complementary methods are also used for network analysis, as well as the path analysis[11].

[9] For more information, go to: http://www.arise-project.com
[10] For more information, go to: http://www.emeripa.net
[11] For more information, go to http://www.iccr-international.org/eurocop

The IASMINE Project (Impact Assessment Systems and Methodologies for Innovation Excellence) has a methodology that incorporates elements of budget efficiency and innovation indicators, later systematized into a matrix with composite indicators, allowing greater accessibility and even a comparison between regions[12].

The IMPACTSCAN Project (Impact Assessment and Benchmarking for Regional Innovation Policies) focuses on the impact of the innovation services offered by intermediaries to companies at regional level. It also uses regional indicators regarding the budget allocated to innovation and the benchmarking activity[13].

The INNOWATCH Project (Application of Technology Watch Methodology for the Assessment of Regional Innovation Policy Impact on SME's) is based on the *"economic intelligence"* approach to defining innovation indicators. The project has developed a database for the introduction of some indicators, allowing the analysis of evolution at regional level, but also between regions[14].

The MERIPA Project (Methodology for European Regional Innovation Policy Assessment) has a methodology that incorporates different elements to aid the policy making process, including cluster and network analysis. The network analysis looks at the links and dynamics within the cluster. The project makes it possible to analyse innovation policies regardless of the level of development, thus being generally applicable[15].

The OMEN Project (Optimal Practices, Development Policies, and Predictive Models for European Regions) uses 22 indicators regarding inputs, processes, results, in order to understand the impact of innovation policies. The focus is thus on the efficiency and effectiveness of innovation support programmes.[16].

[12] For more information, go to http://www.iasmine.net
[13] For more information, go to http://www.impactscan.net
[14] For more information, go to http://www.idetra.com/innowatch
[15] For more information, go to http://www.meripa.org
[16] For more information, go to: http://www.omen-project.org

1.2. THE NATIONAL CONTEXT

As seen above, research, development, and innovation (RDI) are very important sectors at European level. But Romania has only created a national brand for outsourcing, which points to average intelligence, good command of foreign languages, and low labour costs. There are still major difficulties when it comes to persuading foreign investors to set up research and innovation centres, and the existing centres are faced with a range of structural issues.

From the strategic point of view[17], there is a *National strategy in the field of research and development*, which defines the state policy aiming to meet the national interest objectives. The role of the government is to support and stimulate the research-development activity using the following instruments[18]:

a) adopting national-level stimulating and coordinating policies for the research, development, and innovation activity;

b) providing funding sources and setting up the proper organizational structures needed to manage those funds, according to the provisions of the present ordinance;

c) drafting policies and issuing regulations for the creation of a favourable environment in the economy, the protection of the national scientific heritage, the broadcasting, absorption, and utilization of the results of the R&D activity for sustainable economic development, increased welfare and quality of life, enriched national and international knowledge heritage.

Also at the level of strategic documents, we should mention the existence of the National Research, Development, and Innovation Plan – the instrument used by the central administration for defining the general policy in the field of research, development, and innovation and for correlating these[19].

As concerns the results regarding innovation in industry and services in Romania, the National Statistics Institute carried out a nationwide statistical survey in 2004-2006, among companies operating in industry and services, based on the CIS methodology (Community

[17] The full text of the strategic documents can be found on www.strategie-cdi.ro, www.ancs.ro, www.mct.ro
[18] Government Ordinance 57 of August 16, 2002, regarding scientific research and technological development, art. 3, paragraph 3
[19] Idem, Appendix 1,

Innovation Survey)[20]. 12,232 enterprises were included in the sample, the response rate being 82.9%.

The concept of innovation at enterprise level was operationalized in the form of the following activities:

- the introduction of new or significantly improved products;
- engagement in unfinished or abandoned innovation projects;
- expenses incurred by enterprises for research and development activities, equipment and software acquisition, the acquisition of patents and unpatented inventions, know-how, staff training or activities for bringing new products or processes onto the market;
- the implementation of some changes to the enterprise structure or to the management methods or product sale methods.

Of the conclusions of this study with a direct impact on the current research, we have chosen the following aspects:

- the proportion of innovators is higher in large enterprises;
- the economic impact of innovation accounted for 18.6% of the total turnover in 2006, of which 13.7% were new products for the company and 4.9% were new products for the market – this indicating a greater orientation towards diversifying one's portfolio than towards monopolizing a market niche;
- from the point of view of the outlet, most innovative enterprises (60.6%) sell their products on the local and regional market and 33% on the EU, EFTA or EU candidate countries' markets, which raises the issue of the international promotion of innovative products/services;
- the expenditures allocated for innovation totalled 6421.7 million lei in 2006, most of this being spent on the purchasing of machines, equipment, and software;
- from a comparative perspective, the service sector spent more money on innovation than the industrial sector, which can indicate a certain dynamism;
- from the point of view of cooperation for research & development, only 17.3% of the innovative enterprises carried out joint projects with other enterprises or institutions in the country or abroad, which points to the lack of an efficient dialogue that could exploit the associative resources in this sector;

[20] INS, (2008), Innovation in industry and services, p. 27

- the main factor that blocked innovation was the lack of funds from within or outside the enterprise, as well as the high costs of innovation.

As concerns the institutional part of the research, development, and innovation activity, it is made up of *public and private law institutions*.

The National Scientific Research Authority (*ANCS*) is the specialized body of the central public administration, reporting to the Ministry of Education, Research, and Innovation, through which the latter exercises its duties in the field of research[21].

RO INNO Romania[22] is a recent initiative of the National Scientific Research Authority (ANCS) aiming to support the strengthening and development of innovation and technological transfer at national level.

1.3. THE REGIONAL CONTEXT

The regional dimension of innovation is extremely important, a fact also pointed out by the efforts spent on creating regional-level innovation strategies. The whole strategic planning action in the field of innovation at the level of the West Region is centred around the process of developing a Regional Innovation Strategy.

The analysis of the regional context is based on the strategic planning experience accumulated at regional level by major institutional players in the innovation sector throughout the project ***Regional Innovation Strategy – The West Region, 2005-2008***. This project was suggested by the West Regional Development Agency as part of the Framework Programme 5 – the Measure of "Regional Innovation Strategies in the Associated Countries".

[21] The mission of the ANCS is to ensure the creation, application, monitoring, and evaluation of the policies in the field of research, development, and innovation, in agreement with the strategy and the governing programme, with the purpose of ensuring, based on this, the enlargement of the national and international technological and innovation heritage, sustainable economic development, the access to the domestic, European, and global markets, the creation of the knowledge-based information society, the satisfaction of the citizens' needs, and the improvement of their life.
[22] For more information, go to www.irecson.ro

The project was funded by the European Union with a budget of 445,000 euros and was the first of its kind in Romania. The wide regional partnership built around this action included representatives of the West Region public administration, chambers of commerce, education and research institutions, companies active in the field of innovation, SME's, but also foreign partners – the Aragon (Spain) region, the regions of Lazio/Puglia (Italy), and the region of South-Eastern Hungary.

The organizational structure created at the level of the project included the following components:

- *The Management Unit* – responsible for general project coordination, the relationship with the European Commission, providing administrative support to the Initiative Committee and the Consultative Committee.
- *The Initiative Committee* – with decision-making positions, it reflects the options of the social-economic players involved in the innovation process in the West Region and is responsible for the validation of the most important solutions and decisions throughout the implementation of the project.
- *The Consultative Group* – with the role of mediating the relationship between the Management Unit and the Initiative Committee, it was made up of 10 people, representatives of different institutions from the Initiative Committee who were very active in the economic life of the West Region.

The project lasted 32 months and was divided into **three consecutive stages**:
- **Stage 0**, focused mainly on the setting up of the management structure, with a wide regional participation. The estimated duration of this stage was 12 months.
- **Stage 1**, which laid particular stress on analysing the needs of the enterprises in the region, mapping them on the regional technology, and forecasting the innovation transfer. The estimated duration was 12 months.
- **Stage 2**, with the purpose of developing and implementing a Regional Action Plan that would approach the weaknesses identified. The estimated duration was 8 months.

From a methodological perspective, the carrying out of the strategy-creation project involved a series of activities systematized into the following components:

- *Collecting and analysing the existing data, documents, and information, based on the methodologies used in the RIS/RITTS projects.*
- *Collecting and systematizing the existing documents and data regarding the regional economic-social situation and data regarding the innovation system.*
- *Preparing the detailed work schedule and the methodology.*

The main aims of the Regional Innovation Strategy in the West Region as defined in the project are the following:

- ✓ Raising awareness, at regional level, concerning the importance of introducing innovation and technological transfer concepts as a permanent framework of the economic development of the West Region;
- ✓ Developing a regional agreement regarding the investment priorities in the field of research, technological development, and innovation;
- ✓ Increasing the innovation level in the West Region by way of consolidating the SME target sectors;
- ✓ Increasing the innovative potential in terms of human resources, especially by innovating managerial techniques;
- ✓ Developing the organizational structure and the innovation coordination, mediation, and promotion framework in the West Region.

The analysis of the innovation demand and supply resulted in a range of conclusions, systematized into a SWOT analysis itemized on types of enterprises, research units, and university departments. The strategy was subsequently developed into a structure organized by domains, priorities, measures, beneficiaries, expected results, and impact, according to the following schema:

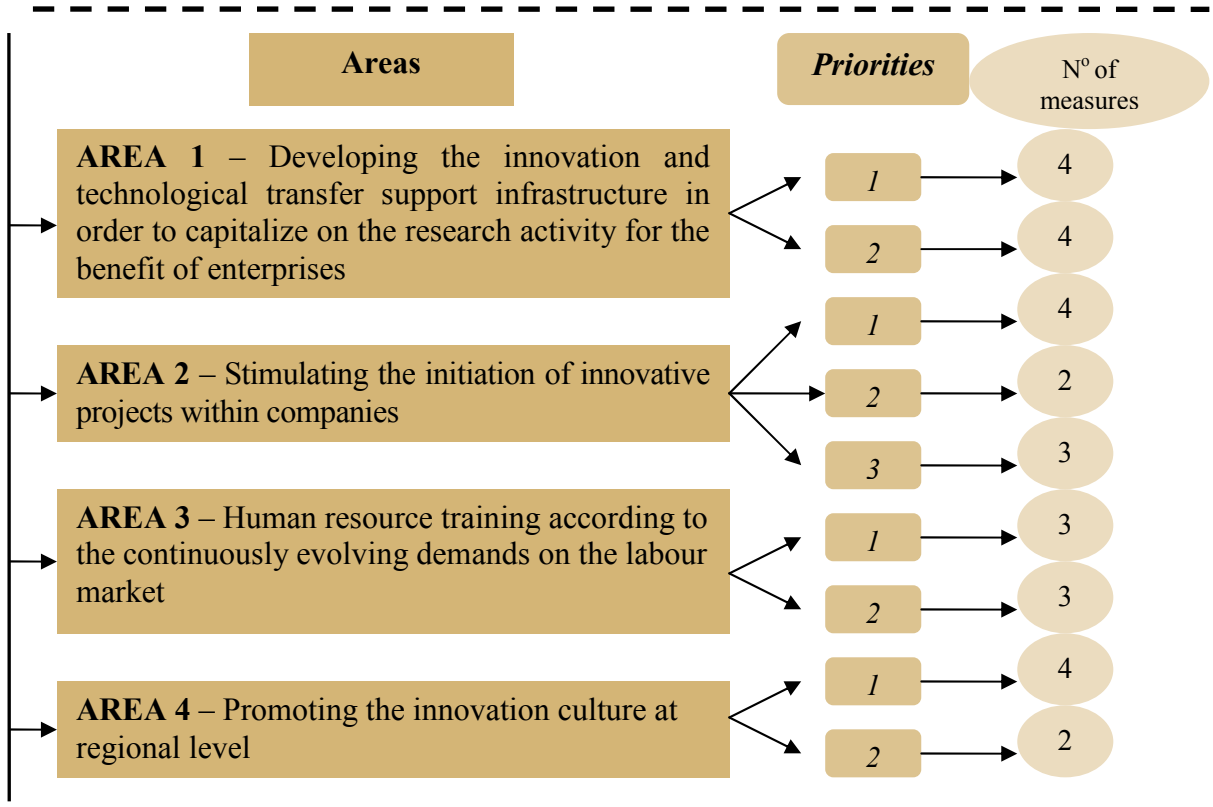


Figure 3. West Region RIS Strategy Synthesis 2004-2008

RIS 2005-2008 MAIN RESULTS

Of the actions initiated and developed by ADR Vest based on the RIS worked out, the most important ones were focused on Measure 1.1 and Measure 1.2.

Measure 1.1 – Creating the TehImpuls Centre

Tehimpuls – The Regional Centre for Innovation and Technological Transfer – is currently a nongovernmental, non-profit legal entity, aiming to promote innovation and the facilitation of technological transfer in the West Region.

The founding members of the Tehimpuls Association are: The West Regional Development Agency, the Western Association for Multidisciplinary Research, the General Romanian Engineers' Association - Timiş Branch, the "Aurel Vlaicu" University of Arad, the Politehnica University of Timişoara, the West University of Timişoara, the Banat University of Agricultural Science and Veterinary Medicine.

Acting as a **regional interface**, Tehimpuls proposes strategic connections with important regional partners, while also offering the following service pack:

- assistance for the development of innovative projects and marketing of the results,
- assistance in the development of cooperative projects among enterprises and RDI,
- increasing awareness of innovation and technological development in the West Region,
- promoting a dynamic market based on knowledge: the regional innovation system, innovative enterprise clusters, participation in international innovation-promoting networks.

The services offered address a wide variety of sectors, from the creative industry to research, engineering or environment. The recent Tehimpuls projects comprise support activities for the ICT (information and communications technology) industry, the agricultural and food industry, and the automotive industry, but the Tehimpuls services are also available for difficult innovation sectors belonging to other sectors.

The potential beneficiaries of this centre are: SME's, large enterprises, universities, RDI units, foreign investors.

Measure 1.2 – Encouraging the association of enterprises within a sector and the formation of sector clusters

The current aim of the AutomotiVEST Association is to create an economic environment supporting cluster-type initiatives in the automotive industry by developing a central service platform for the companies (suppliers/buyers) operating in this field in the West Region.

The members of the Automotivest Association are: The West Regional Development Agency, the Aurel Vlaicu University of Arad, the Politehnica University of Timişoara, the City of Timişoara, the City of Arad, the Arad Chamber of Commerce, Industry, and Agriculture, the Timiş Chamber of Commerce, Industry, and Agriculture, SC Interpart Production SRL, SC Inteliform SRL, and SC Neferprod SRL

The service pack proposed:

- Information and communication (e.g.: online communication systems, organizing conferences, workshops, "factory floor" discussions, etc.);

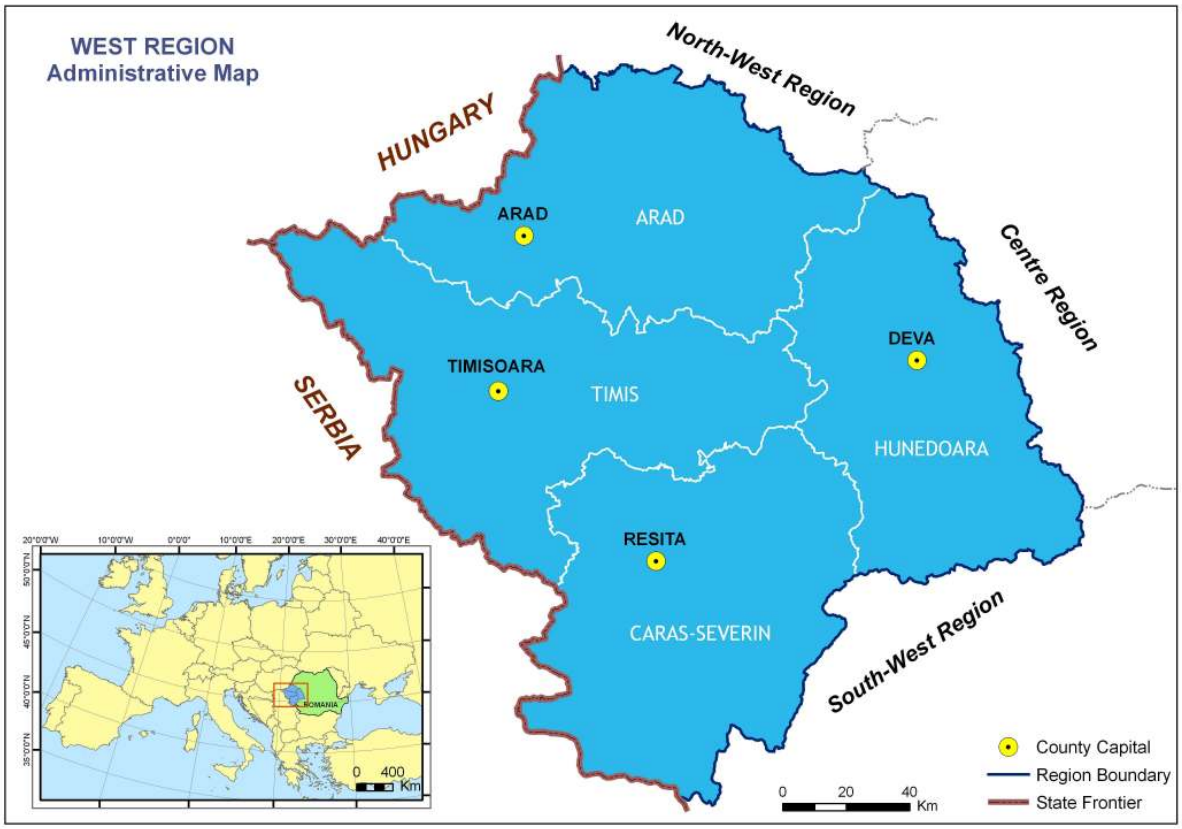
- Support for cooperation projects within the network and with external partners;
- Support for technological transfer and research activities;
- Public relations and marketing;
- Benchmarking analyses on groups of companies;
- Market analyses and the development of the supplier chain, both domestically and internationally

The association's potential beneficiaries are: SME's, large enterprises, consulting enterprises, universities, foreign investors, research-development-innovation institutes, entrepreneurs' associations.

2. RDI IN WEST REGION ROMANIA

2.1. THE WEST REGION – BRIEF DESCRIPTION

The West Region lies at the Romanian border with Hungary and Serbia, consisting of four counties from an administrative-territorial point of view: Arad, Caraş-Severin, Hunedoara, and Timiş. The West Region has an area of 32,034 km^2, accounting for 13.4% of Romania's area.



Map 1. Administrative map of the West Region

The West Region population

On July 1, 2007, the *West Region had a population of **1,924,442 people***, accounting for 8.93% of Romania's population. The West Region has the smallest population of all the country's region, while also being the only region with less than 2 million inhabitants. Compared with 2000, under the combined influence of the varying birth rate, the inward migratory fluxes and the intensity of the outward migration, the region's population has dropped by 116,687 inhabitants.

The largest number of people in the West Region lives in Timiş County, followed by the counties of Hunedoara, Arad, and Caraş-Severin. All the counties in the West Region have witnessed a decrease of the population as compared with the year 2003.

Table II. The population of the West Region between 2003-2007

Population on July 1	**2003**	**2004**	**2005**	**2006**	**2007**
Total in Romania	***21.733.556***	***21.673.328***	***21.623.849***	***21.584.365***	***21.537.563***
West Region	**1.946.647**	**1.939.514**	**1.930.458**	**1.927.229**	**1.924.442**
Arad	461.744	460.466	459.286	458.487	457.713
Caraş-Severin	333.860	332.688	331.876	330.517	327.579
Hunedoara	489.872	484.767	480.459	477.259	472.284
Timiş	661.171	661.593	658.837	660.966	666.866

Source: Territorial Statistics 2007, INS, 2008
The evolution of the main demographic phenomena in 2007, INS, 2008

In 2006, the population of the county seats in the region was: 167,980 inhabitants in Arad, 86,070 inhabitants in Reşiţa, 68,487 inhabitants in Deva, and 303,796 inhabitants in Timişoara. The cities of Arad and Timişoara are the most developed cities in the region from the economic point of view, true pillars of growth, which is also reflected on the population. The population of the four county seats taken together is almost one third of the total population in the West Region – 29.01%.

Administrative-territorial features

From an administrative-territorial point of view, there are **322 administrative-territorial units in the West Region, which may be divided as follows: 42 cities and towns and 280 communes.**

As regards the urban network in the West Region, it falls within the national characteristics. There are 42 urban administrative-territorial units in the West Region – 12 cities and 30 towns, spread rather evenly in the region's four counties.

With few exceptions, the urban places in the West Region are relatively old towns/cities that have known a steady development. Unfortunately, the period of the planned industrialization and economy of the 1970's and the 1980's has left its mark on the towns and cities in the region, so that there are mono-industry places that have faced serious adaptation problems.

Table III. The urban population of the West Region between 2002-2007

Population on July 1	2002	2003	2004	2005	2006	2007
Total in Romania	***11.608.735***	***11.600.157***	***11.895.598***	***11.879.897***	***11.913.938***	***11.877.659***
West Region	**1.206.429**	**1.200.547**	**1.235.006**	**1.227.493**	**1.223.730**	**1.219.403**
Arad	234.173	233.341	256.117	255.083	254.425	253.437
Caraş-Severin	189.923	188.800	187.253	187.559	186.943	184.693
Hunedoara	379.962	377.365	372.680	369.550	367.106	362.732
Timiş	402.371	401.041	418.956	415.301	415.256	418.541

Source: Territorial Statistics 2007, INS, 2008
The evolution of the main demographic phenomena in 2007, INS, 2008

The economic potential of the West Region

The West Region is considered to be a upwardly moving region, with economic results above the national average, often second only to the Bucharest-Ilfov Region. The clear indicator for determining the level of economic development is the per capita GDP.

The economic indicators have had a significant evolution in the West Region: both the total GDP and the per capita GDP have risen every year, in agreement with the national tendency, but at a faster rate.

Table IV. The GDP at national and regional level, 2000-2006
- current prices in thousands of lei (RON) -

Year/Region	2001	2002	2003	2004	2005	2006
Romania	116 768,7	151 475,1	197 564,8	246 468,8	288 176,1	**344650,6**
North-East	14 339,7	18 607,4	24 619,1	29 418,2	34 037,4	**38429,9**
South-East	13 165,2	17 112,3	22 263,8	29 413,1	33 096,7	**38508,7**
South Walachia	14 312,3	18 773,6	24 776,0	31 709,5	36 322,1	**44301,4**
South-West Oltenia	10 485,1	13 000,1	17 931,4	21 962,5	24 126,3	**28589,2**
West	11 223,6	14 714,0	19 982,7	25 296,9	28 880,5	**35788,9**
Arad	2668,7	3301,1	4501,5	6184,8	7044,4	8406,7
Caraş-Severin	1573,9	2047,3	2839,9	3433,0	3855,3	4445,2
Hunedoara	2468,5	3345,3	4237,2	5264,9	5851,7	6867,1
Timiş	4512,5	6020,3	8404,1	10418,4	12129,1	16069,9
North-West	13 667,3	18 018,7	24 110,8	30 269,8	34 620,4	**40806,2**
Centre	14 421,2	19 113,5	24 810,8	30 096,4	34 286,1	**40291,2**
Bucharest-Ilfov	25 071,9	31 976,9	38 920,0	48 077,6	62 553,6	**77710,5**
Extra-regions	82,4	158,6	150,2	224,8	253,0	**224,6**

Source: Regional National Accounts, 2001-2006, INS, 2008

The GDP increase is visible both overall in the West Region and for each of the region's four counties, but with great differences among them, pointing out to the intraregional developmental disparities.

Table V. The GDP per capita 2000-2006 in lei (RON), current prices

Year/ Region	2001	2002	2003	2004	2005	2006
Romania	5.210,94	6.950,06	9.090,30	11.372,00	13.326,8	**15967,6**
West	5.521,16	7.527,41	10.265,19	13.042,91	14.960,4	**18570,1**

Source: Regional National Accounts, 2001-2005, INS, 2008

As concerns the disparity index for the per capita GDP in the West Region compared with the national average (the disparity index is the ratio between the per capita GDP in the West Region and the per capita GDP at national level), we should notice that the West Region has values above the national average. The higher values can also be seen at the level of two of its four counties: Timiş and Arad.

Table VI. Per capita GDP – disparity indices – 2000-2005 *%*

Year/ Region	2001	2002	2003	2004	2005
Romania	100	100	100	100	100
West Region	100,9	115,5	102,6	106,0	112,3
Arad	110,1	128,3	107,8	107,7	115,1
Caraş-Severin	86,0	87,5	84,6	86,2	87,2
Hunedoara	77,6	92,2	90,9	91,3	91,4
Timiş	120,5	139,0	118,1	125,8	138,1

Source: Regional National Accounts, 2001-2005, INS, 2008

The analysis of the regional GDP by resource category shows that the main contribution to the VABR comes from the following sectors: industry, real estate transactions, rentals, and services rendered mainly to enterprises, transport, warehousing, and communication.

Table VII. Regional GDP by resource category – current prices in millions of lei (RON)

Year/Category	2000	2001	2002	2003	2004	2005
Agriculture, hunting, and silviculture	906,5	1846,0	1987,7	2703,2	3558,7	2653,3
Fishing and pisciculture	0,2	0,2	0,3	0,4	1,5	1,5
Industry	2073,8	3033,1	3939,4	4909,2	6420,3	7562,9
Constructions	396,1	636,7	926,4	1060,4	1332,6	1619,3
Trade	677,8	921,5	1172,8	1629,3	2054,0	2700,5
Hotels and restaurants	169,5	197,3	328,8	355,6	361,0	487,0
Transport, warehousing, and communication	825,7	1258,5	1583,2	2087,4	2509,8	2935,3

Financial mediation	83,4	147,2	246,5	244,0	352,8	361,4
Real estate transactions, rentals, and services rendered mainly to enterprises	950,3	1365,8	1991,5	2621,7	3386,8	4124,4
Public administration and defence	307,9	372,1	510,9	1132,7	1166,2	1402,8
Education	216,4	281,4	382,1	560,6	799,5	895,7
Healthcare and social assistance	153,2	191,1	314,9	479,3	655,0	781,3

Source: Territorial Statistics 2007, INS, 2008

Enterprise activity in the West Region

There were **48,460** enterprises operating in the West Region in 2007, with those in industry, constructions, and services accounting for 9.5% of the total number of enterprises in Romania, continuing the upward trend from the previous period.

As regards the distribution of the enterprises by size class, just like everywhere else in the country, microenterprises prevail in the West Region, making up over 86% of the total enterprises in the West Region.

Table VIII. The distribution of enterprises operating in industry, constructions, and services in the West Region between 2001-2007

		Enterprise type				
Year	**West Region**	**Micro**	**Small**	**Medium**	**Large**	**Total in Romania**
2001	**27 962**	**23 527**	**3 307**	**882**	**246**	**317 555**
2002	**28 816**	**24 256**	**3 346**	**975**	**239**	**322 188**
2003	**32 833**	**27 702**	**3 838**	**1 055**	**238**	**359 399**
2004	**37 623**	**32 361**	**4 001**	**1 030**	**231**	**404 339**
2005	**41 818**	**36 223**	**4 294**	**1 077**	**224**	**442 868**
2006	**45 218**	**39 256**	**4 635**	**1 115**	**212**	**471 952**
2007	**48 460**	**42 306**	**4 839**	**1 105**	**210**	**510 140**

Source: Romanian Statistical Yearbook, 2008, INS, 2009

The West Region workforce

The transition to the market economy left its mark on the features of the labour market, causing significant volume and structural changes of the main workforce indicators (activity rate, employment rate, unemployment rate, etc.).

According to statistics, the active population in the West Region consisted of 885,000 people in 2007. **The employed population was 835,000 people that year, and the unemployed population was 50,000 people, according to the International Labour Office.** The employed population has maintained a downward trend in the West Region.

Table IX. The population according to people's participation in the economic activity, ***by region, in 2007***

thousand people

Development region/County	Active population	Employed population	BIM unemployed
West Region	**885**	**835**	**50**

Source: Romanian Statistical Yearbook, 2008, INS, 2009

The average number of employed people in the West Region has risen by 56,000 between 2001-2007, although there were some fluctuations along this period.

Inter-regional disparities at county-level can also be seen for this indicator. Thus, the average number of employed people rose by 12,000 in Arad, while dropping by 5,000 in Caraş-Severin and by 7,000 in Hunedoara; in Timiş, it rose by 42,000.

Table X. Average number of employed people in the West Region during 2000-2006 – thousand people

Year/ Region	2001	2002	2003	2004	2005	2006	2007
Romania	4619	4568	4591	4469	4559	4667	**4885**
West Region	466	474	479	472	484	502	**522**
Arad	108	109	112	113	116	120	120
Caraş-Severin	68	61	63	59	60	59	63
Hunedoara	122	125	123	119	118	123	129
Timiş	168	179	181	181	190	200	210

Source: Romanian Statistical Yearbook, 2008, INS, 2009

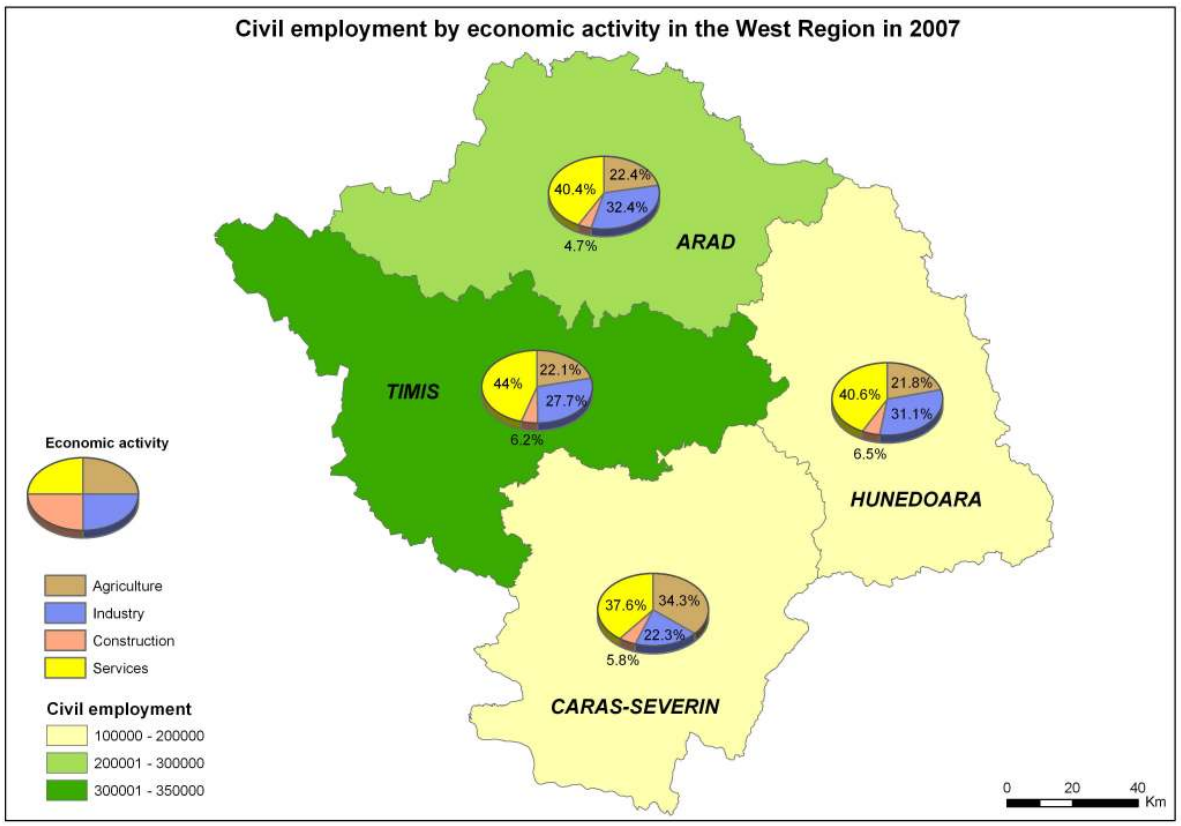
41.7% of the civil active population worked in the tertiary sector in 2007, 28.9% in industry, 23.7% in agriculture, and 5.9% in the field of constructions.

A high proportion of the population in the West Region counties was employed in the service sector in 2007: 44% of the employed population in Timiş County, 40.6% in Hunedoara County, 40.4% in Arad County, and 37.6% in Caraş-Severin County. Most of the employed population in all the region's counties worked in the service sector, which is expected to develop greatly in the future as well.

Table XI. The structure and evolution of the civil employed population of the West Region by activity sector – thousand people

	Agriculture		Industry		Constructions		Services		
	Total	**%**	**Total**	**%**	**Total**	**%**	**Total**	**%**	**Total**
Arad	*47,5*	*22,4*	*68,6*	*32,4*	*10,0*	*4,7*	*85,5*	*40,4*	*211,6*
Caraş-Severin	*42,0*	*34,3*	*27,4*	*22,3*	*7,1*	*5,8*	*46,1*	*37,6*	*122,6*
Hunedoara	*43,5*	*21,8*	*62,0*	*31,1*	*13,0*	*6,5*	*81,0*	*40,6*	*199,5*
Timiş	*74,1*	*22,1*	*92,8*	*27,7*	*20,9*	*6,2*	*147,7*	*44,0*	*335,5*
West Region	***205,9***	*23,7*	***250,8***	*28,9*	***51,0***	*5,9*	***362,3***	*41,7*	***869,2***

Source: Romanian Statistical Yearbook, 2008, INS, 2009



Map 2. Civil employed population by sector of economic activity in the West Region in 2007

The education system in the West Region

The permanent changes that took place in the process of restructuring the Romanian education system, accompanied by the new regulations in the field of education, have led to a reorganization of the network of schooling units.

Due to the multi-ethnicity of the population in the region, one of the features of education in the West Region is the existence of many primary and lower secondary schools, and even higher secondary schools where students are taught in a minority language or an international language. The number of education institutions in the West Region during the academic year 2006/2007 is shown in the table below.

Table XII. ***The educational unit network by county and region, in the academic year 2007/2008***

Development region/County	Kindergartens	Schools	High schools	Vocational schools	Post-secondary schools	Universities
Romania	**1.731**	**4.737**	**1.426**	**147**	**83**	**106**
West Region	**165**	**435**	**160**	**7**	**4**	**13**
Arad	31	109	39	1	1	2
Caraş-Severin	27	89	27	2	-	1
Hunedoara	40	97	36	1	1	1
Timiş	67	140	58	3	2	9

Source: Romanian Statistical Yearbook, 2008, INS, 2009

As a consequence of the demographic changes seen in recent years, namely the decreasing population and increasing outward migration, the school population displays a continuous downward trend at all educational levels. Thus, in the West Region, the analysis shows a decrease in the number of students enrolled in education institutions during 2001-2007, down 22,497 students, namely from 417,371 in the academic year 2001/2002 to 394,874 in the academic year 2007/2008.

Table XIII. ***The school population in the West Region, 2001/2002 – 2007/2008***

Year/ Region	2001 / 2002	2002 / 2003	2003 / 2004	2004 / 2005	2005 / 2006	2006 / 2007	2007 / 2008
Romania	4.554.466	4.496.786	4.472.493	4.403.880	4.360.831	4.345.581	**4.404.581**
West Region	**417.371**	**415.513**	**411.294**	**404.191**	**398.103**	**396.386**	**394.874**
Arad	86.821	91.538	91.686	92.042	91.550	94.812	**95.055**
Caraş-Severin	65.611	63.718	61.990	59.998	58.536	57.321	**56.539**
Hunedoara	99.578	97.529	95.661	91.754	89.659	85.415	**83.760**
Timiş	164.361	162.728	161.957	160.397	158.358	158.838	**159.520**

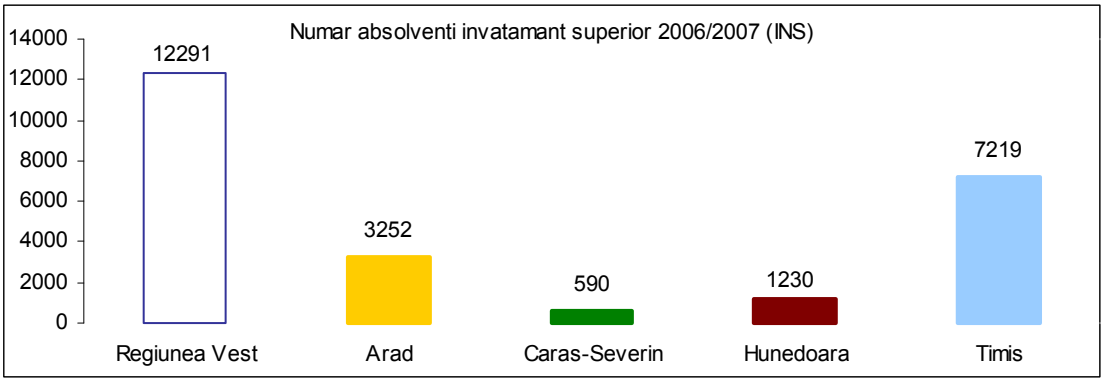
Source: Territorial Statistics 2007, INS, 2008

2.2. THE SUPPORTING INFRASTRUCTURE FOR INNOVATION

The university infrastructure

University education has been attracting a large number of people in the 19-25 age group in recent years. Young people's interest in this level of education has risen constantly. This phenomenon can be explained by the attractiveness of the Timişoara university centre for secondary school graduates not only in the region, but also in the neighbouring areas. Thus, we can see a rise in the number of students enrolled at universities in the West Region, from 37,032 in the academic year 1995/1996 to 81,206 in the academic year 2006/2007 – a 119.2% increase. The number of students has basically doubled during the course of one decade.

The dynamics of university education is also given by the number of graduates, totalling 12,291 in 2006, more than half graduating in the Timişoara university centre.

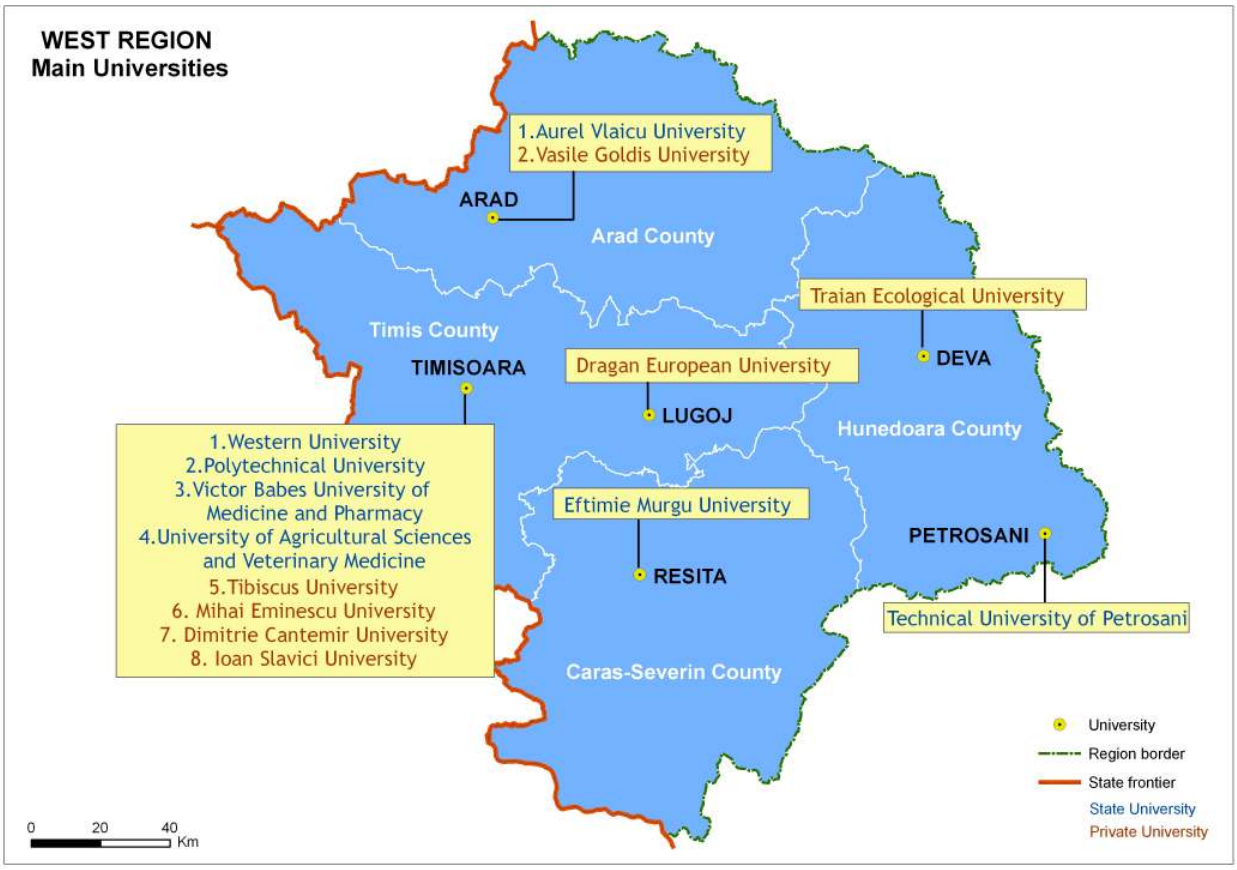


The university education is highly developed in the capital city and very little developed in the south of the country. The West Region ranks third in Romania, next to the North-East Region, as regards the number of university institutions (14 units). The Bucharest-Ilfov Region is n^{o} 1, with 34 such institutions, followed by the North-West Region with 16 university institutions. There are 94 faculties operating as part of the universities in the West Region.

The public university institutions are very well represented in the West Region through the following universities:

- The West University of Timişoara
- The Politehnica University of Timişoara
- The Timişoara University of Medicine and Pharmacy

- The Banat University of Agricultural Science and Veterinary Medicine in Timişoara
- The "Aurel Vlaicu" University of Arad
- The "Eftimie Murgu" University in Reşiţa
- The University of Petroşani



Map 3. The universities in the West Region in 2008.

In addition to the public institutions, private education has also developed at all levels, especially universities. The major ones are:

- The Vasile Goldiş West University of Arad
- The Tibiscus University of Timişoara
- The Mihai Eminescu University in Timişoara
- The Ioan Slavici University of Timişoara
- The Dimitrie Cantemir University of Timişoara
- The Drăgan European University of Lugoj
- The Traian Ecological University of Deva

The infrastructure in the field of research

The main research units operating in the West Region are affiliated with the Association for Multidisciplinary Research in Romania's West Region, headquartered in Timişoara (ACM-V).

The association is a non-governmental scientific organization bringing together the legal persons, the research teams from different units, the natural persons involved in the research activity, as well as the legal and natural persons from abroad carrying out a research activity in the four counties of the West Region – Arad, Caraş-Severin, Hunedoara, and Timiş. **Consequently, the ACM-V consists of:**

- scientific researchers (natural persons);
- scientific research institutes;
- universities;
- research centres;
- university departments
- research stations.

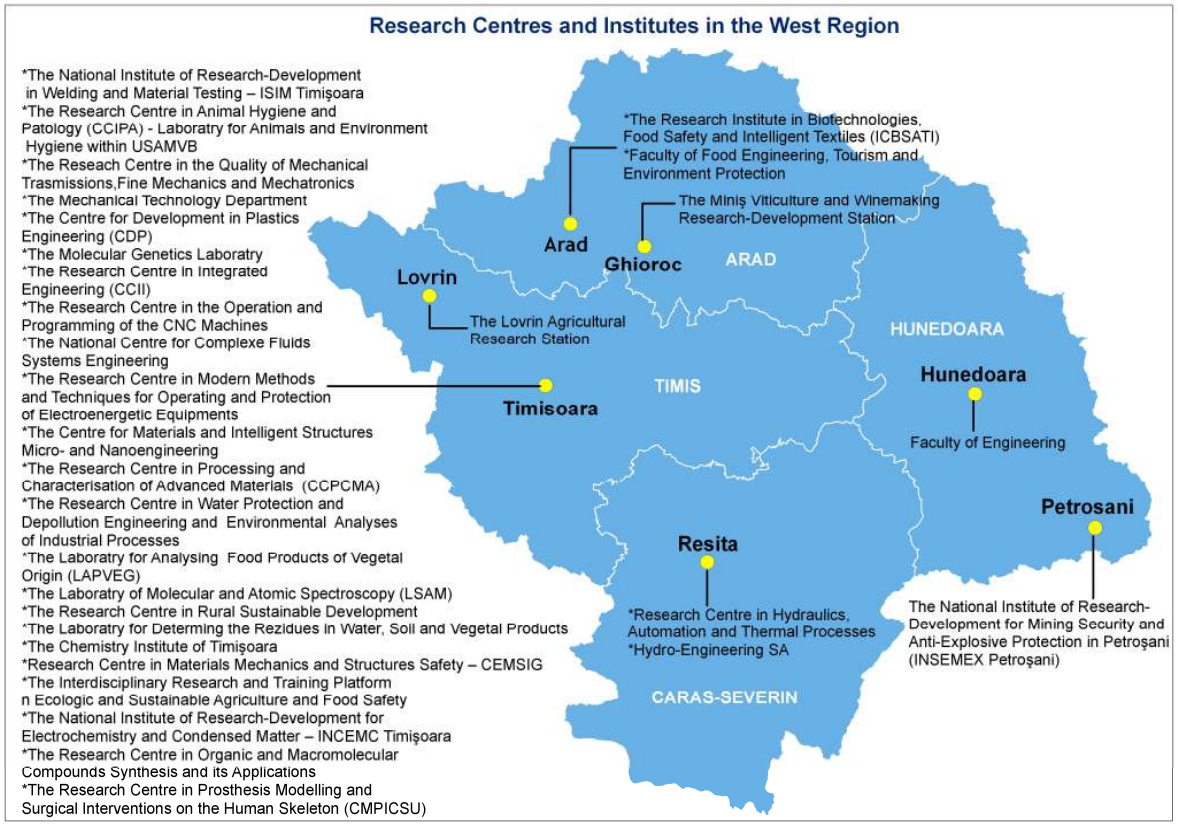
Within the university, it is possible to create research centres accredited by CNCSIS (The National Council for Scientific Research in the University Education), which nonetheless do not have a legal personality. Research activities at the level of the universities in the region can also be performed within the departments.

The main units carrying out research activities in the West Region are listed in the table below.

Table XIV. The research units in the West Region

Type of institution	Name
National institutes	• The National Institute of Research-Development in Welding and Material Testing – ISIM Timişoara • The National Institute of Research-Development for Electrochemistry and Condensed Matter – INCEMC Timişoara • The National Institute of Research-Development in Constructions and Building Economics, Timişoara Branch (INCERC Timişoara) • The National Institute of Research-Development for Industrial Ecology – INCOECOIN, Timişoara Branch • The National Institute of Research-Development for Mining Security and Anti-Explosive Protection in Petroşani (INSEMEX Petroşani)
Other research institutes and units	• The Chemistry Institute of Timişoara • The Timiş Forensic Medicine Institute • The Timişoara Cardiovascular Disease Institute • The "Prof. Leonida Georgescu" Institute of Public Health, Timişoara

	• The "Titu Maiorescu" Social-Human Research Institute in Timişoara • The Lovrin Agricultural Research Station • The Miniş Viticulture and Winemaking Research-Development Station • The Arad Cattle Breeding Research and Production Station • The Timişoara Lawn Cultivation Research and Production Station • The Arad Sugar Beet Cultivation Research and Production Station • The Caransebeş Orcharding Research and Production Station • The Caransebeş Sheep Breeding Research and Production Station • Collective research, Testing and adaptation of the forest design technologies according to the conditions in the area • The Simeria Silvical Research Station – a subunit of ICAS Bucharest
Non-government organizations in the field of research	• The Association for Multidisciplinary Research in the West of Romania – ACMV Timişoara • The Romanian Welding Association – ASR Timişoara • The Romanian Robotics Association
Universities	• The Banat University of Agricultural Science and Veterinary Medicine – USABMVB Timişoara (**Interdisciplinary research and training platform**, 20 research directions among the departments) • The West University of Timişoara (an interdisciplinary platform, an interdisciplinary centre, the Romanian Institute of Adult Education in Timişoara, a pole of excellence, a research institute, 13 research centres, a laboratory). • The Politehnica University in Timişoara (an excellence centre, 20 research centres) • The "Aurel Vlaicu" University of Arad (Chemical and Technological Research Centre) • The "Vasile Goldiş" University of Arad (the "Vasile Goldiş" Institute of Study and Research in Arad, with 14 centres of study and research) • The "Eftimie Murgu" University of Reşiţa (3 research centres and a lab) • The University of Petroşani (4 research centres, 13 research labs) • The "Victor Babeş" University of Medicine and Pharmacy, Timişoara (10 research centres) • The Faculty of Engineering, Hunedoara (part of the Politehnica University of Timişoara)
Companies	• INTELCERC, Timişoara • The welding equipment research and design institute - TES - S.A. - Timişoara • The welding material research and design institute - TIMASUD - S.A. - Timişoara • UCM Reşiţa – The hydraulic equipment research-development centre • CEPROMIN S.A. Deva – The mining research, technological engineering, and design institute • INFOMIN S.A. Deva – Research in the field of automation and the leading of technological processes in the mining industry • SC HIDROTIM SA, Timiş – The energy equipment research and design institute • ICPM S.A. Petroşani – The mining research and design institute • The IT service company INFOTIM, Timişoara • The railway carriage institute of Arad (ASTRA Passenger Coach Research and Design Centre) • PROMPT S.A., Timiş – The institute of research and design for mining and hoisting machinery and industrial constructions



Map 4. The research institutes and centres in the West Region

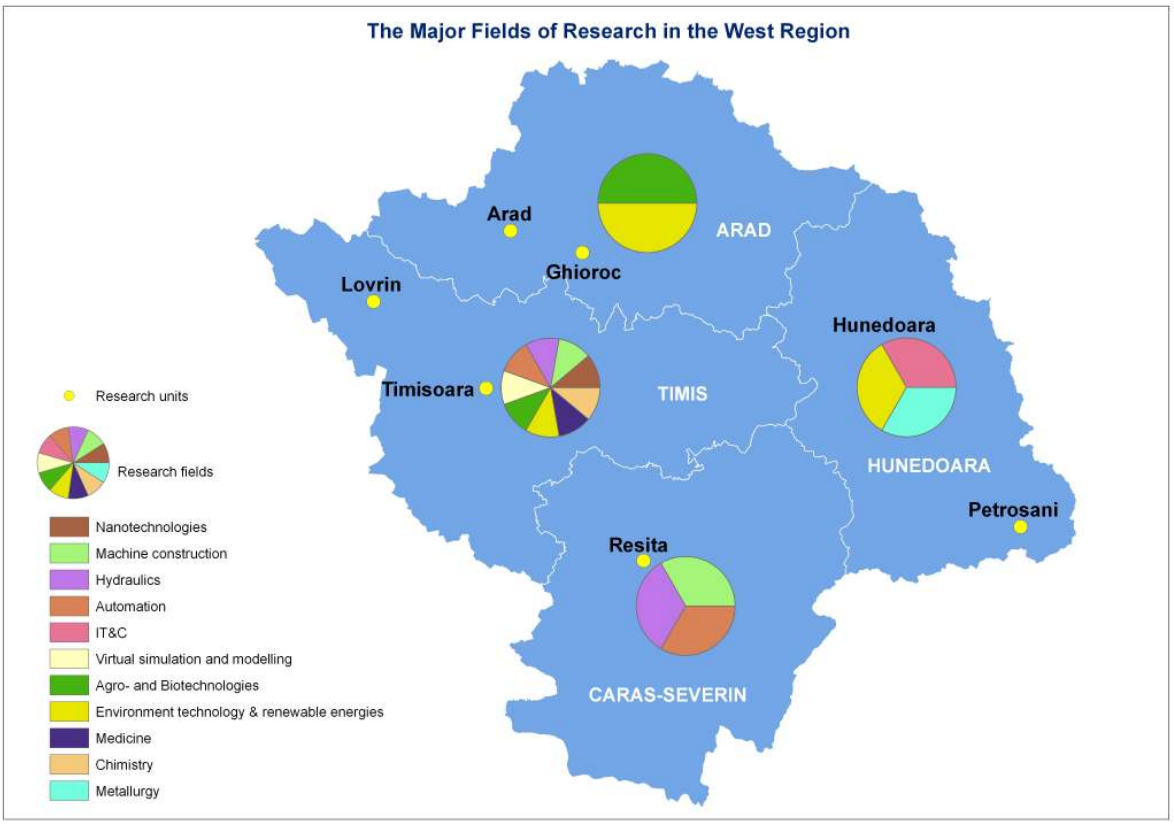
The research institutes in the region cover a wide variety of scientific fields:

a) In **Arad** County, most of the research institutes operate in fields such as: rolling stock constructions (railway carriages), viticulture, and livestock breeding;

b) In **Caraş-Severin** County, the fields in focus are: machine construction, silviculture, pomiculture, and sheep breeding;

c) In **Hunedoara** County, the research institutes pursue fields such as: (iron) metallurgy, silviculture, mining, and mining safety;

d) Most of the research units are concentrated in **Timiş** County, so the fields in focus are among the most diverse: welding and material testing, chemistry and electrochemistry, physics, silviculture, ecology, constructions, public health, hydraulic machines, agriculture, medicine, social science, etc.



Map 5. The research fields identified in the West Region

As can be seen on the map below, a series of innovation offers coming from RDI units can be documented in the West Region. The offers cover a very wide range of fields, namely:

- nanotechnologies;
- machine construction;
- hydraulics;
- automation;
- virtual simulation and modelling
- agricultural and biotechnologies;
- environment technology / renewable energies;
- medicine;
- IT&C;
- chemistry;
- metallurgy.

The full list of the sub-fields identified within each area of interest can be found in **appendix 3**.

The interest in excellence and performance was materialized in the creation of some excellence centres in the region:

a) The ultrasound welding excellence centre at ISIM Timişoara;

b) The history and archaeology study centre, Timişoara (CSIATim), at the West University of Timişoara;

c) The Francophone Study Centre at the West University of Timişoara;

d) The textile excellence centre at the "Aurel Vlaicu" University of Arad;

e) The excellence centre in the field of medicine-biology at the "Vasile Goldiş" University of Arad.

The CNCSIS accredited research centres functioning within the universities can evolve, in time, into excellence centres, provided they complete the journey towards performance. These centres represent, especially for students, hands-on training workshops with a beneficial effect on their desire to be involved in the research activity in the future as well.

The problems facing the research-development system in the West Region are due to some internal and external factors:

1) <u>Internal factors</u>

- The issue of insufficient public funding The financial effort made by the state to support the research sector is only €4 per capita in Romania, 80 times lower than in western countries.

- The issue of the outdated infrastructure The equipment in the research units are largely outdated and physically worn, with no spare parts available. The chronic lack of investment funds is the main cause of the outdated equipment. The participation of the research units to various government programmes has only made it possible to purchase minor equipment that cannot substitute for the modern devices needed for the participation in European projects or projects within the national plan.

- The issue of human resources The research staff has been dwindling, which would not be a negative issue if it would lead to higher efficiency without affecting the institutes' effectiveness. The aging of the research staff throughout the country is seen at regional level as well. Some of the young graduates join institutes every year, but most of them leave these

jobs after 1-3 jobs, heading for more lucrative activities. The PhD studies towards some young people are guided are a form of keeping them with the institutes.

2) <u>External factors</u>

- Companies' low capacity of absorbing research results Not all institutes in the region have adapted easily to the context of the market economy. Some institutions, probably also due to their specific profile, have remained dependent on government financing, unable to find economic partners interested in the results of their research. These institutions are currently experiencing great difficulties and probably also suffer from bad management. On the other hand, other institutes have tried to adapt to the market conditions, by initiating innovative activities.

- Companies' low interest and, consequently, low expenditures regarding the research-development and innovation activities

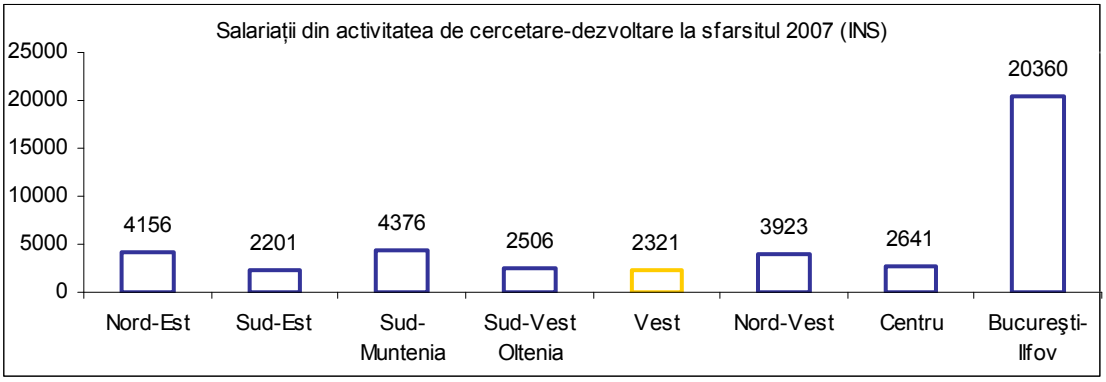
The requests coming from national and regional companies to research units are diverse and include mainly the following:

- the design of new or modernized manufacturing technologies
- the design and construction of some production equipment
- scientific consultancy
- technical assistance in the field of quality management
- analysis, testing, specialized examinations
- process, product, and task certification
- professional training

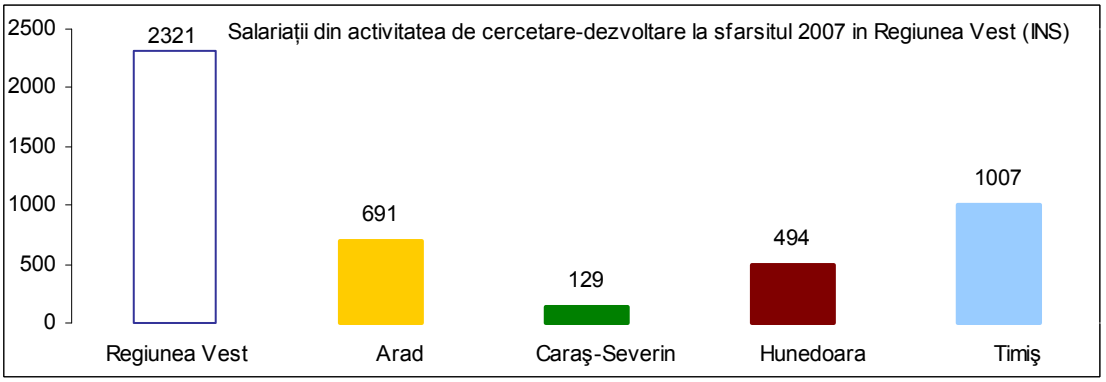
The involvement in European projects is not developed sufficiently. Universities have benefited from TEMPUS projects and lately from SOCRATES projects, which support teacher and student mobility. Institutes have also participated in projects such as INCO-COPERNICUS, PHARE, LEONARDO, etc.

2.3. SYNTHETIC INDICATORS REGARDING INNOVATION

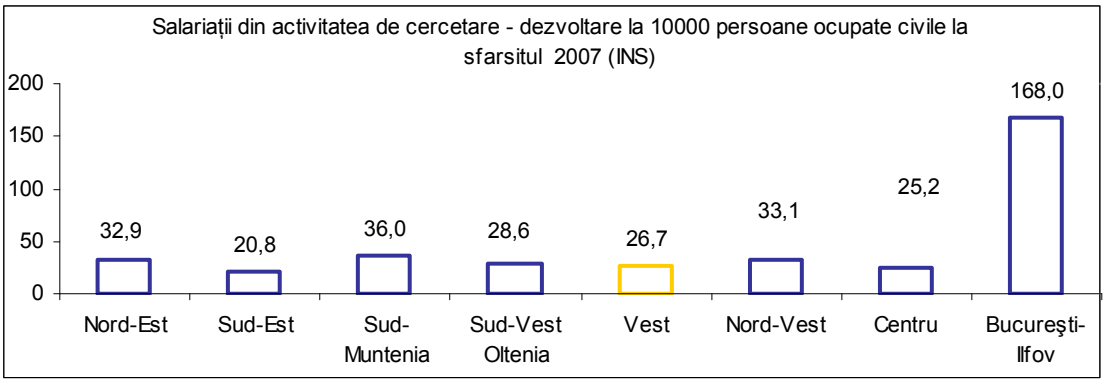
A first indicator analysed refers to the dynamics of the human resources in the sector in the context of a nation-wide decrease in the number of researchers. The number of employees in the West Region at the end of 2007 was 2,321 people, ranking last-but-one from this point of view. The value of this indicator should be correlated with the fact that the West Region has the smallest population of all Romanian regions.



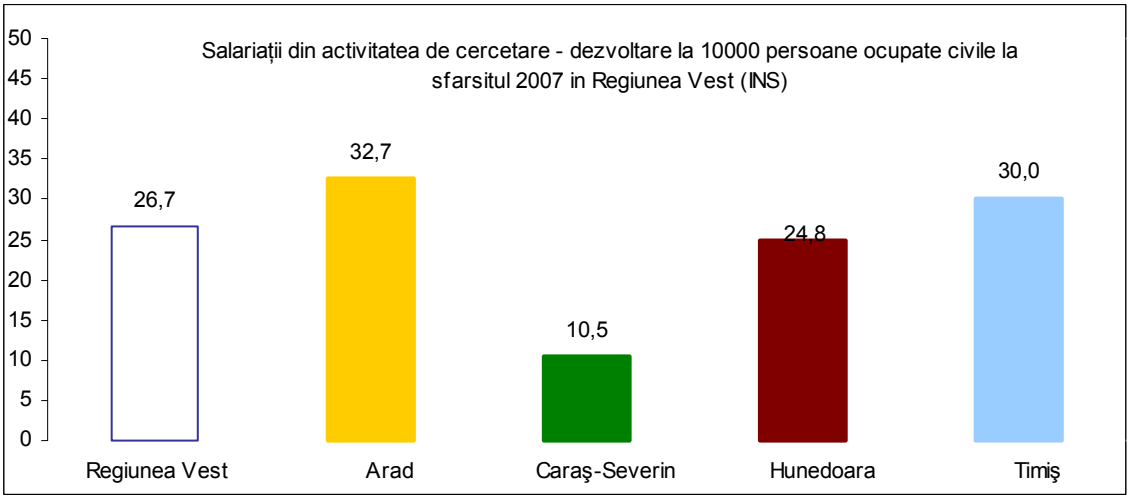
At the level of the counties making up the West Region, we can see a variation in the number of employees involved in research, overlapping with the RDI university centres in Timiş County and with the mining tradition and RDI infrastructure supporting the sector in Hunedoara County.



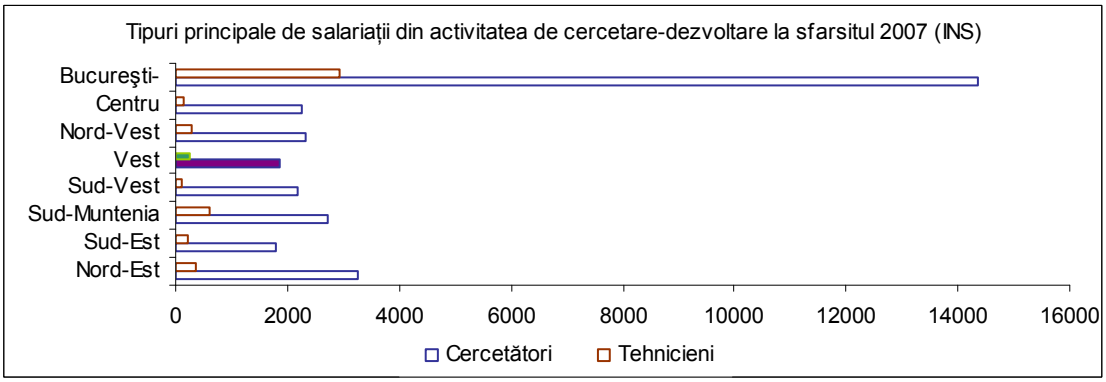
Another indicator concerns the number of employees in the research-development activity out of 10,000 employed people. The small number of researchers and inhabitants keeps the West Region at a value of 26.7.



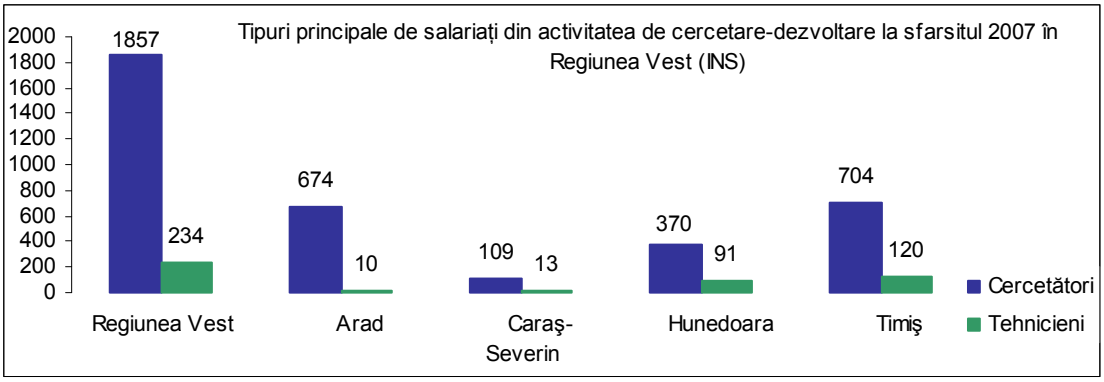
The analysis of this indicator at the level of the counties in the West Region shows the change of the distribution structure (even though the hierarchy is preserved). Thus, the percentage of employees involved in research is approximately the same in the counties of Timiş and Hunedoara, exceeding the regional average.



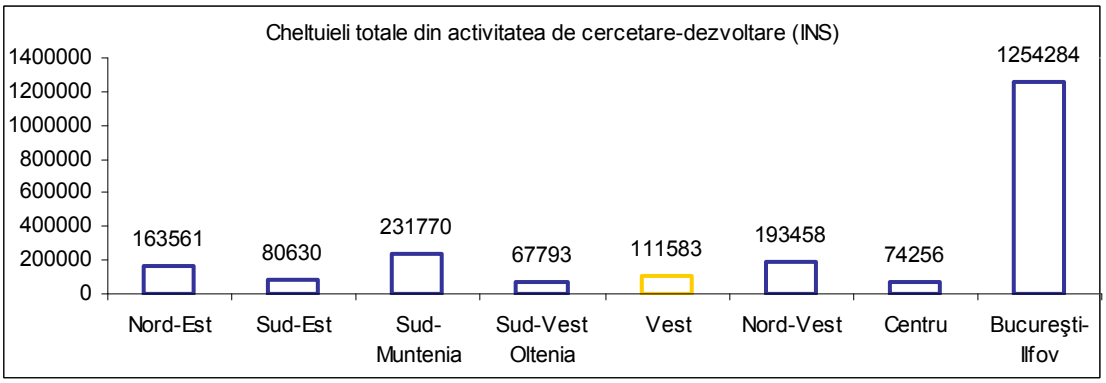
A more detailed analysis of the main categories of employers at the level of the research centres shows 1,957 researchers and 234 technicians, the rest, up to 2,321, fulfilling other positions. Thus, the percentage of researchers of the total number of employees in the research-development sector is 70.3%, the West Region taking 6th place from the point of view of this indicator.



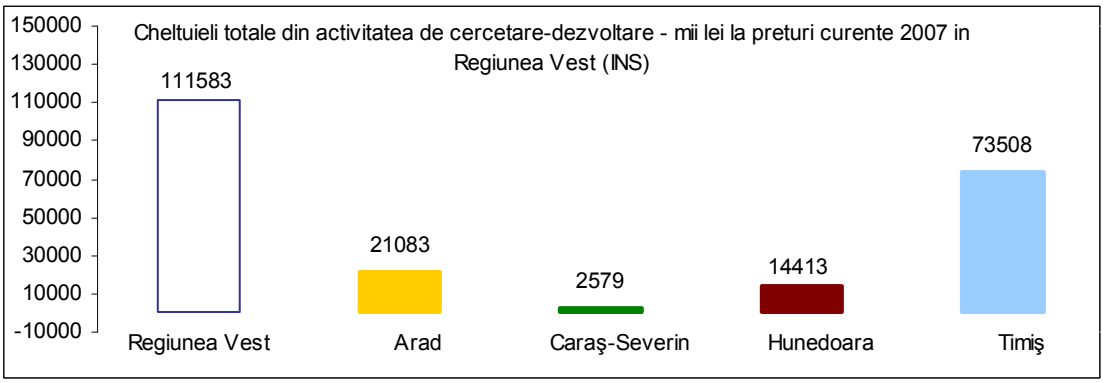
The distribution of the types of employees at the level of the West Region and the percentage of researchers and technicians indicate a preservation of the hierarchy among the counties: Timiş, with the most researchers (701), Arad (674), Hunedoara (370), and Caraş-Severin (109).



The expenditures regarding the RDI activity are a good economic indicator of the investment dynamics in this sector. In this field, the West Region ranks 5th, with expenditures of 111,583 lei calculated by current prices.

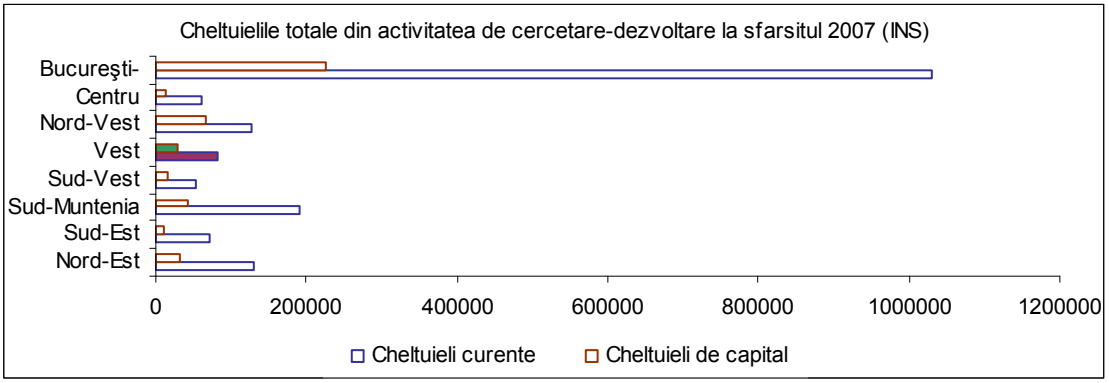


The counties making up the West Region maintain the same hierarchy and proportions, the sector development bringing with it the increase of the expenses allocated.

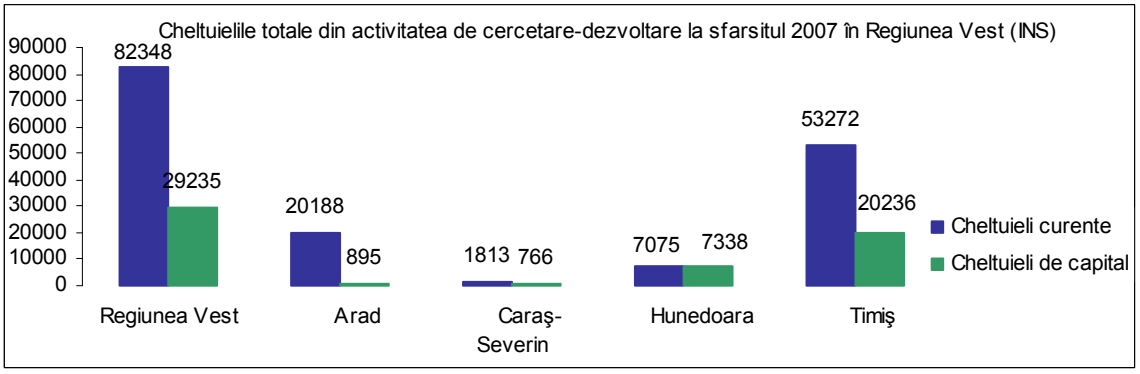


The deeper analysis of the distribution of the expenditures shows that running expenses are the highest, while capital expenses, needed for modernizing the centres, make up for smaller

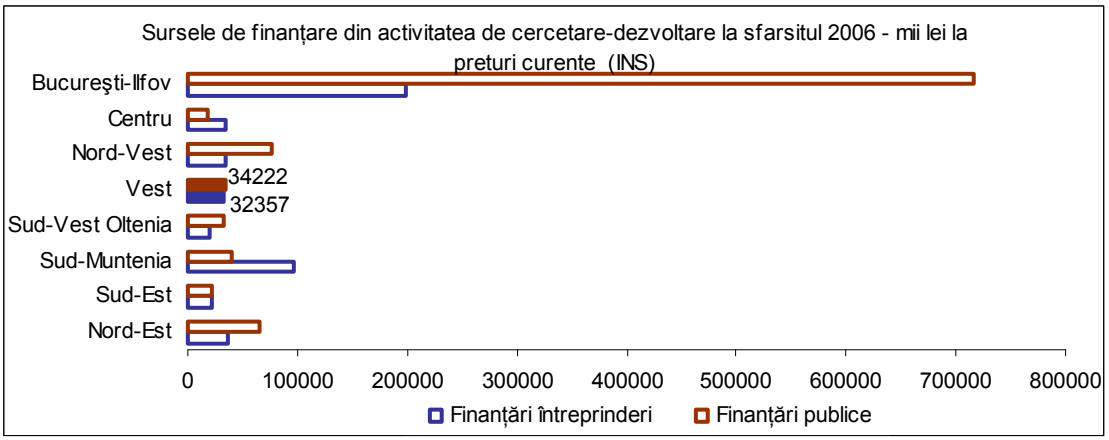
amounts. From this perspective, the West Region allocates 73.3% of the resources for running expenses, the rest being capital expenses.



At county level, the destination of the expenditures reveal that the lowest level of capital expenses was in Caraş-Severin county. From the point of view of the percentage of running expenses, Caraş-Severin County has the lowest allocated amount (57.7%), below the regional average of 73.2%.



The research-development funding sources are very important in the context of dwindling support from the public sector. In the West Region, the funds coming from companies make up 46.6% of the total resources. The orientation towards the creation of marketable products and services forms the main challenge facing research-development units, thus being among the main competitiveness criteria at regional level.



2.4. RDI OFFER ANALYSIS

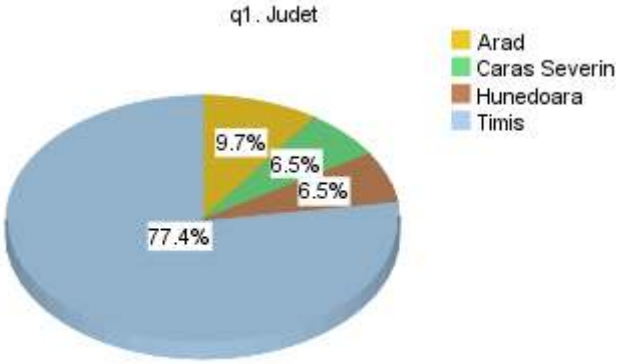
Methodology outline

As part of the support and promotion of innovation carried out by Tehimpuls, information was collected regarding the innovation offer existing in the region, with the following methodological features:

- the instrument on which data collection was based was the semi-structured interview guide, and the fill-in method was self submittal (**appendix 2**);
- the aspects researched focused on elements related to the legal field, human resources, partnerships, research infrastructure, the research offer and the development stage, and information regarding intellectual property;
- the respondents were mainly partners of Tehimpuls and other research centres in the region;
- the data was collected continuously from December 2007 to June 2008;
- 31 interviews were made.

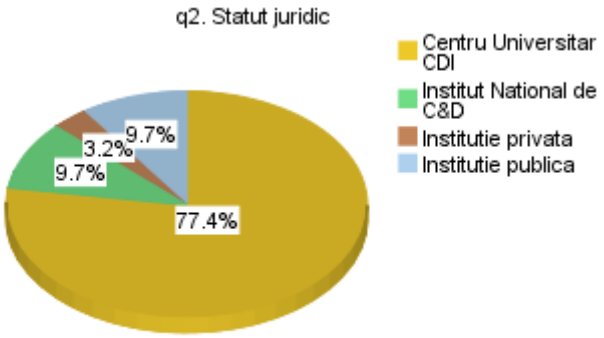
Statistical analysis

Analysing the location of the research centres, most of them turned out to be in Timiş County (77.4%), followed by Arad (9.7%), Hunedoara, and Caraş-Severin (6.5%).



From the point of view of their legal status, most centres do not have an own legal personality, being subsidiary to some university department (77.4%), followed, with equal shares, by the national R&D institutes and public institutions (9.7%). There are few private centres (3.2%), located in Caraş-Severin, operating in the field of machine construction.

The existence of a large number of university research centres provides the necessary competences through the existing teachers, but also a workflow represented by the students. From an organizational point of view, however, the challenge consists in moving the stress from fundamental research towards applied research, or the materialization of the fundamental research results in the form of products and services intended for the market. In this sense, the activity of the centres can go beyond the simple teaching exercise, offering financial support to their staff.



The distribution of the types of centres per county is shown below.

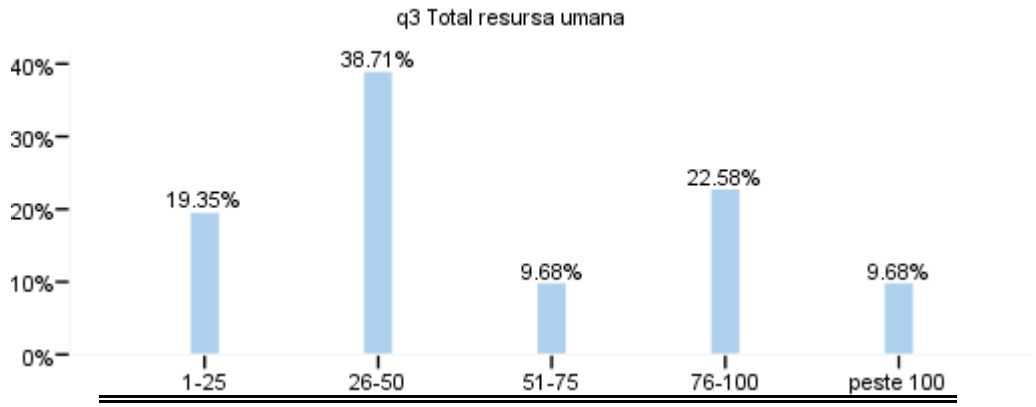
		q1. County				
		Arad	Caraş-Severin	Hunedoara	Timiş	Total
q2. Legal status	University RDI centre	6.5%	3.2%	3.2%	64.5%	77.4%

	National R&D institute	0%	0%	3.2%	6.5%	9.7%
	Private institution	0%	3.2%	0%	0%	3.2%
	Public institution	3.2%	0%	0%	6.5%	9.7%
	Total	9.7%	6.5%	6.5%	77.4%	100.0%

The analysis of the human resource structure revealed the existence of a total of 1,731 people working in research centres, with an average of 55.8 people per centre, the minimum being 10 and the maximum being 185. From this total number, most centres (38.7%) employ between 26 and 50 people, followed by 22.5% of the centres having between 76 and 100 people.

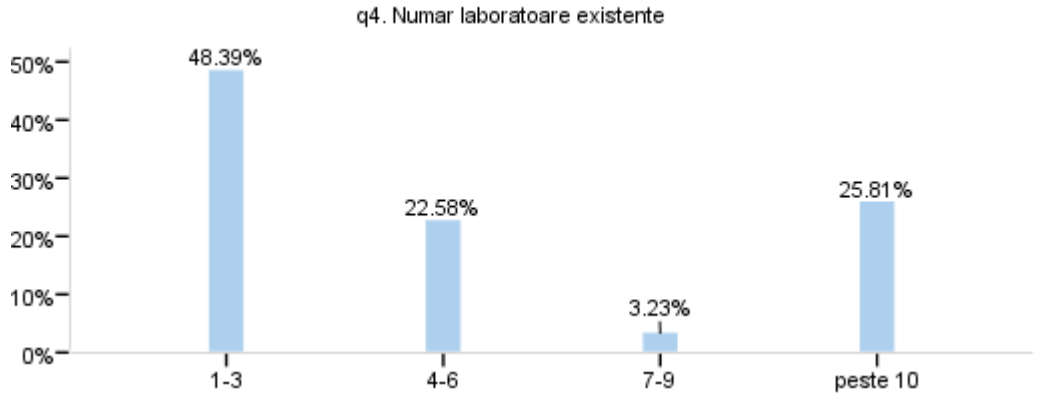
From the point of view of the studied completed by the staff operating in research centres, two main categories emerge:

- the category of researchers/professors, both averaging around the same number (5-6 in a research centre);
- the category of PhD's, students, etc., with similar averages (12-13 in a research centre), these categories being the most numerous. It is worth noting that students can be a real support in terms of workforce, but they are not always sufficiently trained and their number fluctuates from one generation to another.

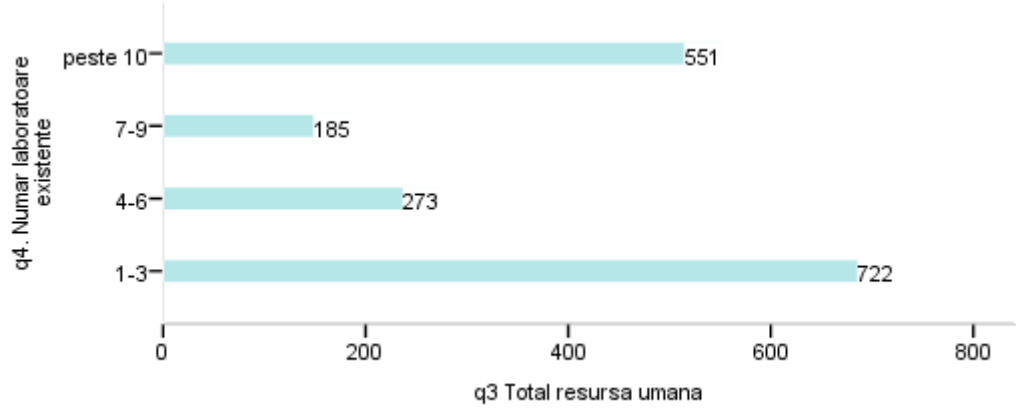


	Minimum	Maximum	Amount	Average	Std. Dev
q3.1 N° CS1/professors	1	18	167	5.76	4.4
q3.2 N° CS2/associate professors	1	25	168	5.79	5.6
q3.3 N° CS3/paper coordinators	1	21	191	6.59	5.4
q3.4 N° CS/ assistants	1	50	179	6.17	9.2
q3.5 N° of PhD's	2	34	377	12.57	9.8
q3.6 N° of students	1	80	285	12.95	20.7
q3.7 N° Other	2	69	364	12.55	13.3
q3 Total human resources	10	185	**1731**	***55.84***	38.5

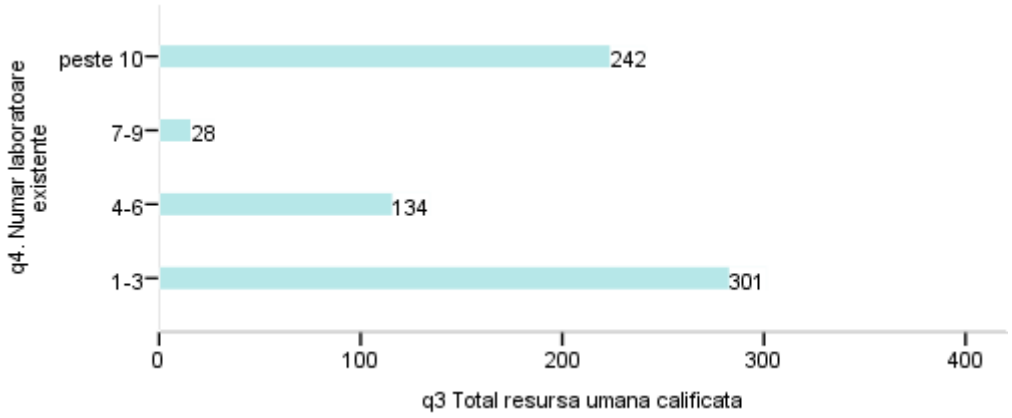
At the level of the research infrastructure, we would like to mention that most centres (48.39%) own between 1 and 3 laboratories, but the average number is nevertheless 5, considering that a centre will have as many as 16 laboratories. At the level of the population investigated, there is a total of 167 laboratories.



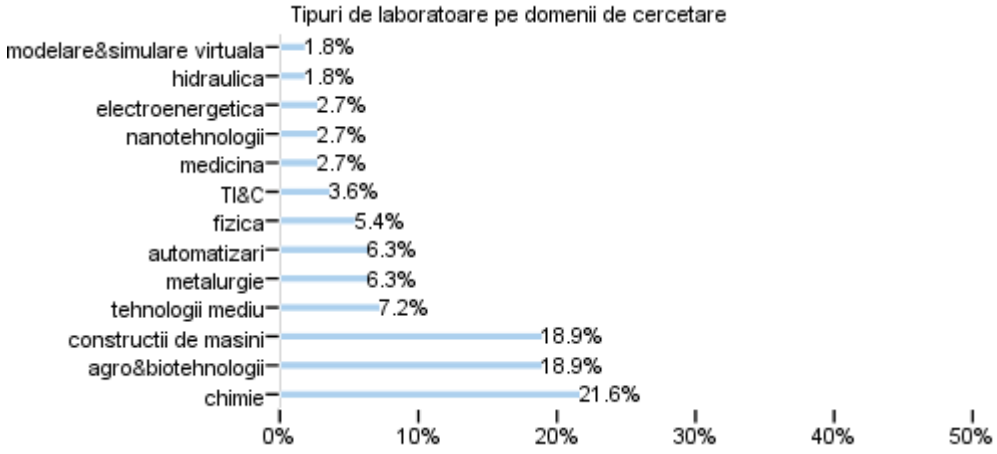
An analysis of the way in which the human resources are distributed within the labs shows that the centres with up to three labs have a total of 722 employees, while centres with over 10 labs have 551 employees.



An analysis of the segment of highly qualified staff (professors, associate professors, paper coordinators, assistants, or scientific researchers) indicates a similar distribution with the previous one, the number being higher in the centres with a maximum of 3 labs (301) than in the centres with over 10 labs (242).

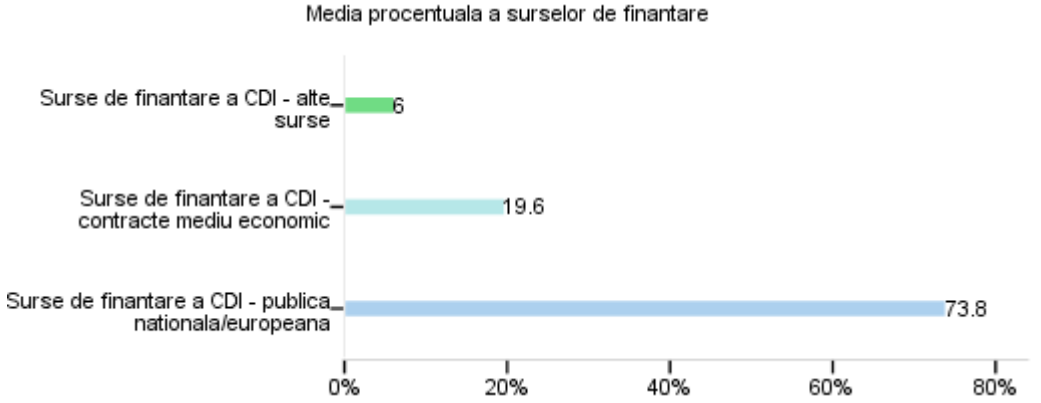


The types of laboratories cover a very wide range of 13 fields, most of them belonging to chemistry (21.6%), followed by agricultural and biotechnologies and machine construction (18.9%).

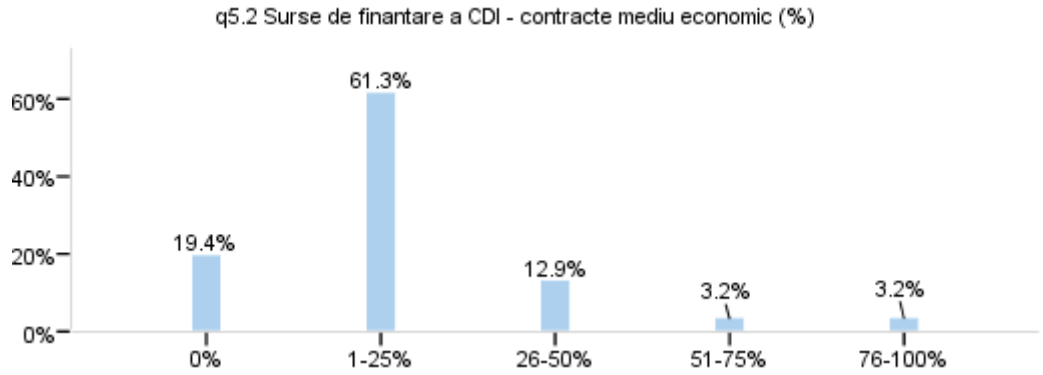


Another factor contributing to the support of the RDI sector is the financial one, the statistical analysis revealing that, on average, 73.84% of the funding comes from national/European sources, 19.65% from contracts with the business world, and 6.03% from other sources.

	Minimum	Maximum	Average
q5.1 RDI funding sources – (%) national/European public sources	5	100	73.84
q5.2 RDI funding sources – (%) business world contracts	0	95	19.65
q5.3 RDI funding sources – (%) other sources	0	60	6.03

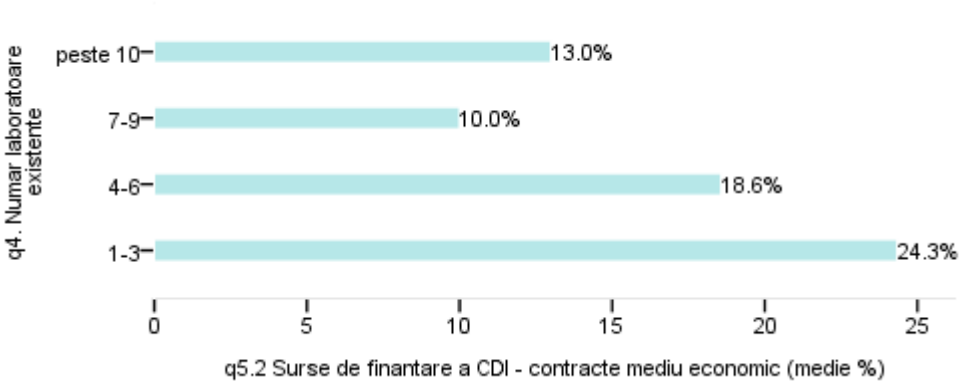


The frequency analysis indicates that, in 61.2% of the cases, the contracts with the business world account for up to 25% of the total number of contracts carried out. Considering that public funding support mainly fundamental research, we believe it necessary to stimulate contracts with the business world in the future, as these are what causes the products and services to appear on the market.



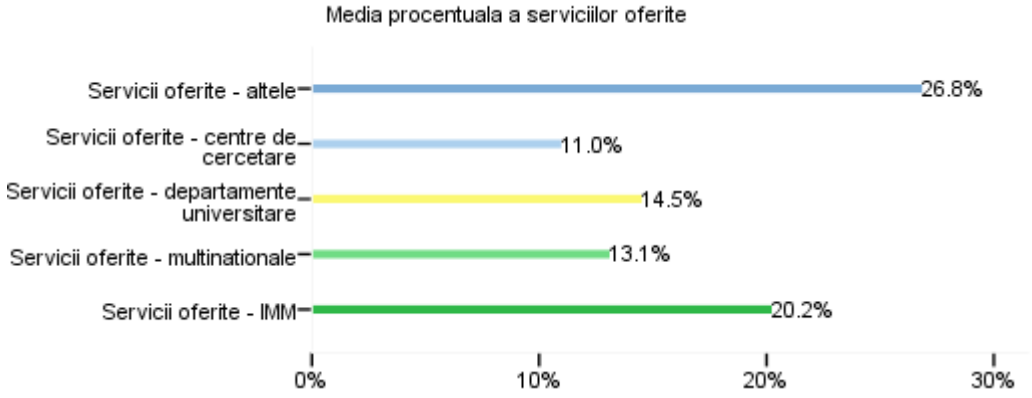
The subsequent analysis showed that the research centres with no more than 3 labs owe, on average, 24.3% of their funding to contracts with the business world; in the case of centres with over 10 labs, the average percentage was only 13%.

This indicator stresses the fact that smaller research centres have a more efficient relationship with the market compared with larger centres, which would have more means of responding to market demands. This can be due to the fact that, on the whole, smaller centres employ a more numerous and better qualified staff.

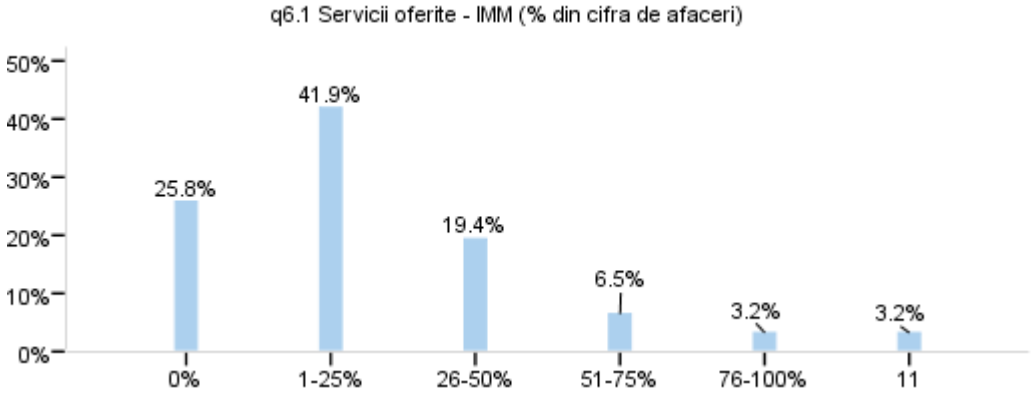


From the point of view of the averages obtained, the services offered to the SME's account for 20.23% of the turnover, while those offered to multinationals, only 13.1%. The sector of multinationals forms an important niche for the innovation providers, as they have the necessary financial resources to buy innovative products, but it is easier for them, from an organizational point of view, to outsource these services to specialized research centres.

	Minimum	Maximum	Average
q6.1 Services offered – SME's (%)	0	80	20.23
q6.2 Services offered – multinationals (%)	0	90	13.10
q6.3 Services offered – university departments (%)	0	80	14.52
q6.4 Services offered – research centres (%)	0	100	10.97
q6.5 Services offered – other (%)	0	100	26.84



The same situation can be seen when analysing the percentage of funding in the turnover. Thus, 25.8% do not provide any services at all to SME's, while 41.9% owe up to 25% of their turnover to the services provided to SME's.



From the point of view of the services needed for RDI promotion and marketing, we find a very wide range, as shown below.

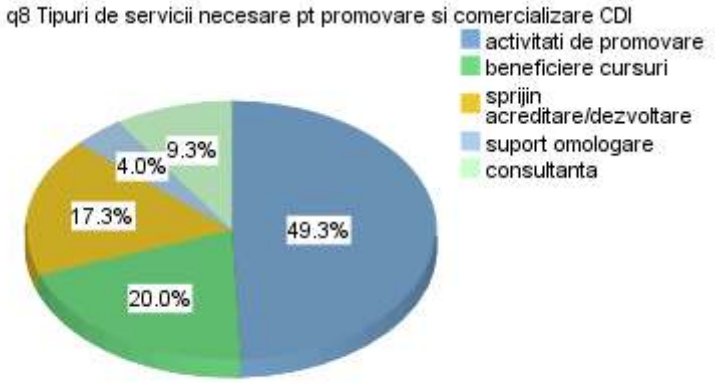
q8 Types of services needed for RDI promotion and marketing

	Frequency	Percent
legal assistance	1	1.3
benchmarking	1	1.3
catalogues	1	1.3
funding project consultancy	2	2.7
competition awareness	3	4.0
public acquisition courses	1	1.3
RDI management courses	1	1.3
environmental management courses	2	2.7
project management courses	4	5.3
intellectual property courses	5	6.7

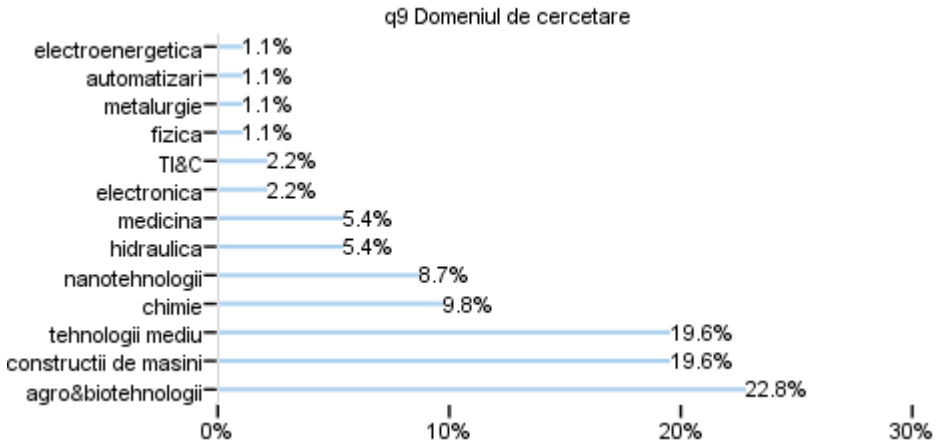
quality systems courses	1	1.3
exhibitions	2	2.6
matchmaking	1	1.3
promoting product/service offers	33	44.0
publications	2	2.7
laboratory accreditation support	6	8.0
development support	1	1.3
product testing support	3	4.0
establishing partnerships	2	2.7
product/service homologation support	3	4.0
Total	75	100.0

The systematization of the services described above has generated the following categories, of which the promotion activities (49.3%) are particularly notable, followed by courses (20%) and support for the accreditation/development activity.

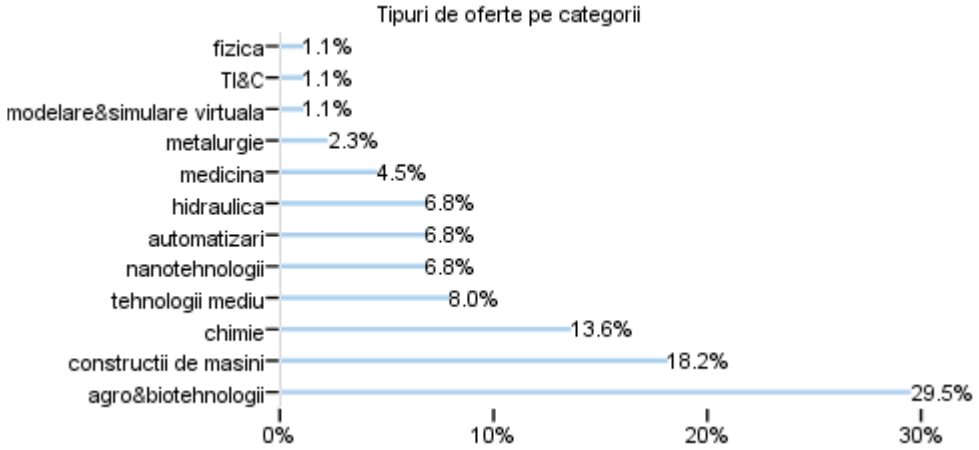
The way the data is distributed shows that the research institutions have also understood the need for identifying some outlets for their products and services, in an environment of competition with other research centres. Moreover, human resource development is desired, with a focus on extremely distinct course categories.
A solution to these needs could be to organize fairs or matchmaking activities.



Regarding the field of the research offer, most offers are in the field of agricultural and biotechnologies (22.8%), followed by environment and machine construction, with equal shares (19.6%).



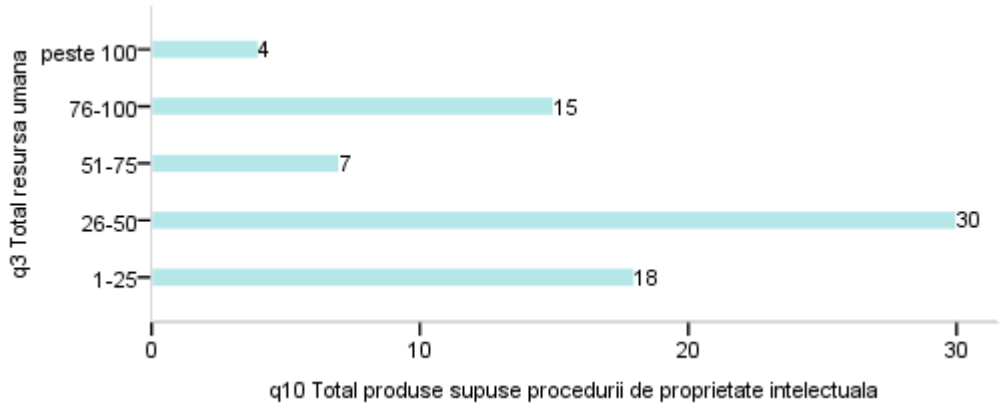
At the level of offer categories, the situation changes slightly, with agricultural and biotechnologies still having the largest share (29.5%), followed by machine construction (18.2%) and chemistry (13.6%).



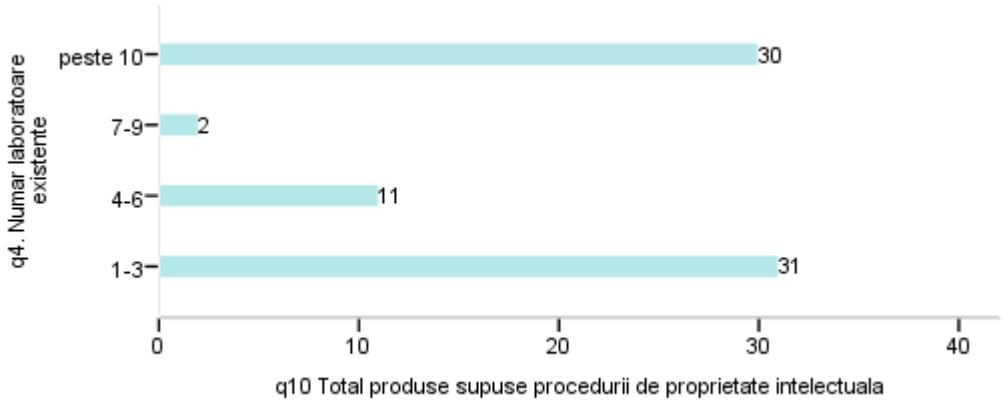
Another field researched concerns the intellectual property over the products developed. A total of 74 products were found to pertain to the intellectual property procedure.

Q10 Intellectual property - certificate/licence request	8
Q10 Intellectual property - protected	6
Q10 Intellectual property - secret technology	6
Q10 Intellectual property - certified	8
Q10 Intellectual property - exclusive rights/licence	5
q10 Intellectual property - other	41
Total	**74**

An analysis of the products included in the intellectual property procedure revealed that most of them are found in research centres employing between 26 and 50 people.



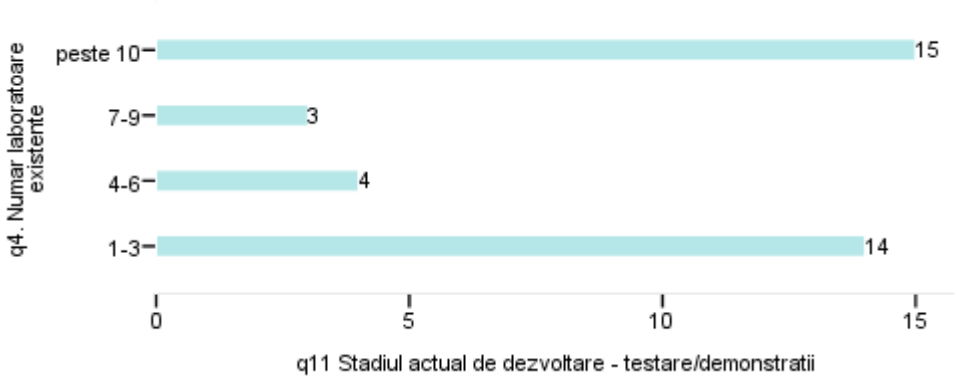
The same analysis, performed on the existing number of labs, revealed that the centres with no more than 3 laboratories own 31, followed by centres with over 10 laboratories. We can also see that there are large gaps between these categories and the centres that own 4 to 9 laboratories as regards the total number of products submitted to the intellectual property procedure.



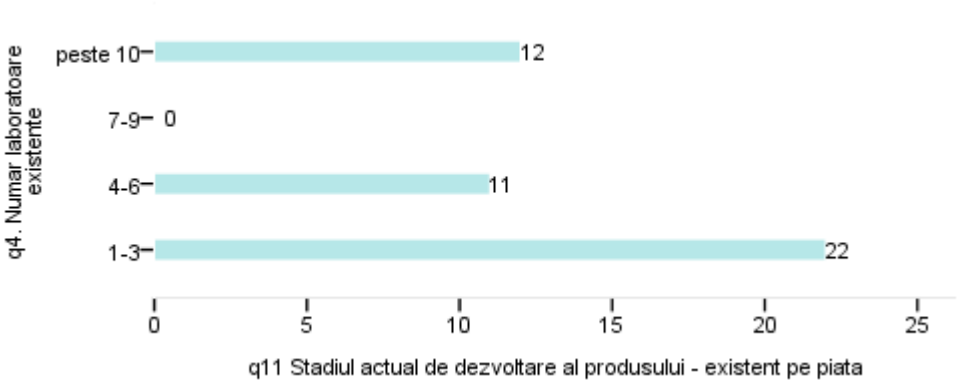
Another important indicator is the product development stage, so that some of them may already be on the market, while others may still be just in the testing phase. The analysis revealed a total of 114 products, of which 45 are already on the market, while the other 69 are potentially headed for the market.

	Sum
q11 The current stage of development - laboratory testing	33
q11 The current stage of development - testing/demonstrations	36
q11 The current stage of development - present on the market	45
Total	**114**

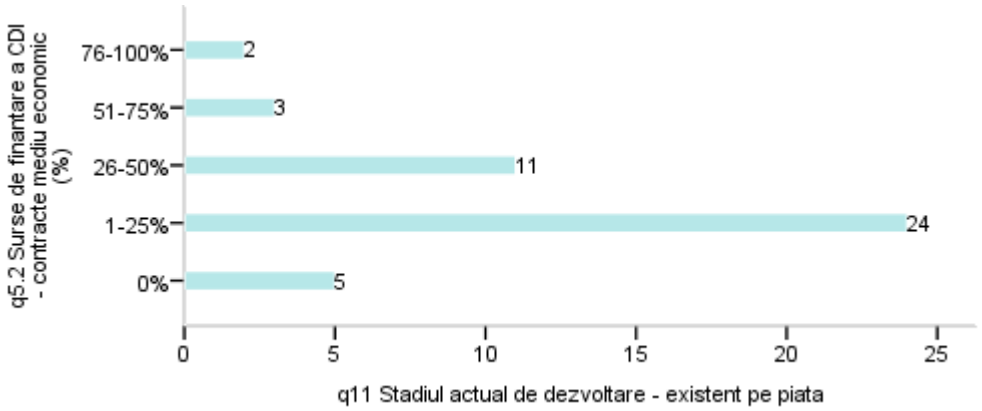
Resuming the analysis of the products currently in the testing phase which could be subjected to demonstrations revealed approximately the same structure, so that the centres with over 10 laboratories own 15 products, followed by the centres that own no more than 3 laboratories. We can also see that there are large gaps between these categories and the centres that own 4 to 9 laboratories as regards the total number of products tested.



The analysis of the products already on the market showed that most of them are in the centres with no more than 3 labs, while the centres with over 10 labs ranked second. Therefore, the size of the centres does not proportionally condition the number of products sold on the market – quite the opposite.



The analysis of the products already on the market showed that most of them are in the centres where up to 25% of the funding comes from business contracts, while the fewest products are in the centres where business contracts account for 76-100% of the total funding.



Questionnaire conclusions

⇒ In the context of a general staff dwindling in the RDI sector, the West Region ranked last at the end of 2006, a position that was also noticed in relation with the total active population.

⇒ From the point of view of staff skills, researchers form 70.3% of the staff, the West Region ranking 6th among the country's regions, ahead of Bucharest-Ilfov.

⇒ From the point of view of fund usage, the West Region is more efficient, allocating the least amount to current expenses (73.3%), the rest going to capital expenses.

⇒ The region's competitiveness is proven by the fact that 46.6% of the total funding sources are covered by enterprise funding, which brings them in third place.

⇒ From the point of view of the legal status, most centres do not have their own legal personality, being subsidiary to some university department, the challenge consisting in shifting the stress from fundamental research towards applied research, i.e. materializing the results of the fundamental research into products and services intended for the market.

⇒ From the point of view of existing staff training, an average of 5-6 professors can be found, depending on the actual academic rank.

⇒ At the level of infrastructure, most centres (48.39%) own between 1 and 3 labs, the average being 5, and the total being 167 laboratories. The analysis later revealed that the highest number of employees, researchers in particular, is in the centres with no more than 3 laboratories.

⇒ The research centres owe, on average, 19.65% of their revenues to business contracts, the most efficient in this respect being the centres with no more than 3 laboratories.

⇒ The multinationals sector forms a significant niche for the research centres, accounting for an average of 13.1% of their turnover, compared to the services provided to SME's, which account for up to 25% of the turnover in 41.9% of the centres.

⇒ The main services needed by RDI providers are connected to promotion (49.3%), followed by courses (20%) and support in the accrediting/development activity, thus showing that the research institutes have understood the need to identify some outlets for marketing their products and services; one solution to these needs could be to set up fairs or matchmaking activities.

⇒ As regards the production in RDI centres, it currently amounts to 74 products subject to the intellectual property procedure.

⇒ From the point of view of the finalization level, the total number of products is 114, of which 45 are already on the market. The analysis of the products already on the market showed that most of them are in the centres with no more than 3 labs, while the centres with over 10 labs ranked second. Therefore, the size of the centres does not proportionally condition the number of products sold on the market – quite the opposite.

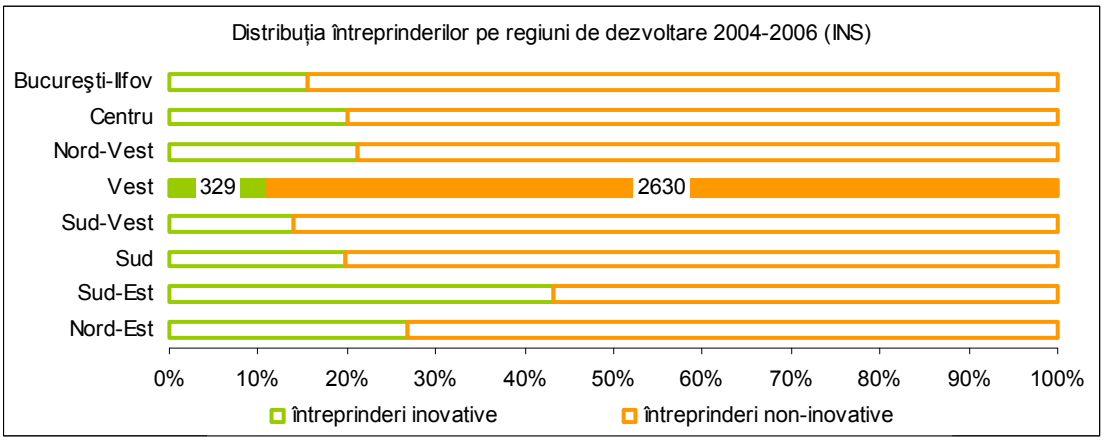
2.5. ENTERPRISES AND INNOVATION

In the private space of companies, innovation is a priority for securing the competitiveness of the final products. Nevertheless, innovation has several facets, so that we can talk about marketing or organizational innovation, which is a process for optimizing enterprises' activities/internal procedures, enabling their subsequent quantification in money or other economic effects (productivity, market share, etc.).

The implementation of some innovations, regardless of their level, puts the innovator into the category of innovating enterprise.

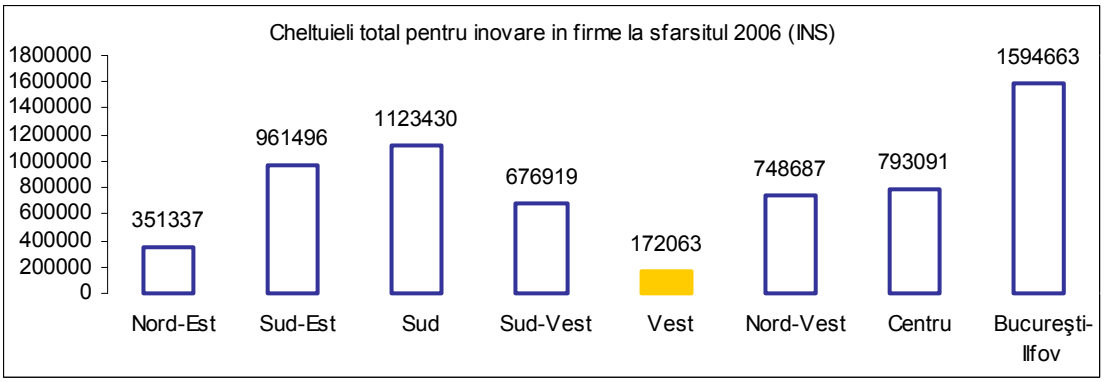
In order to identify the dynamics of innovation at the level of Romanian companies, the INS has made a study on a sample of 12,232 companies in the field of industry and services. The following data thus describe the representative sample taken from the INS database.

The chart below shows the distribution of innovative companies, the West Region bringing together a total of 329 companies, or 11.1% of the companies interviewed, the others being non-innovative. Compared with the other regions, the number of innovative companies is the smallest here, the South-East region ranking first from the point of view of the number of innovative companies.



The total innovation expenses represent an indicator of the enterprise dynamics, as well as of the interest given by companies to innovation.

Despite the economic dynamics characterizing the West Region (ranking second for the main economic indicators, after Bucharest), the total amount of innovation expenses puts it in last place, corresponding to a percentage of 2.7% of the total expenses incurred at national level. The immediately preceding position is occupied by the North-East region, which spent 5.5%, the other regions exceeding 10%.



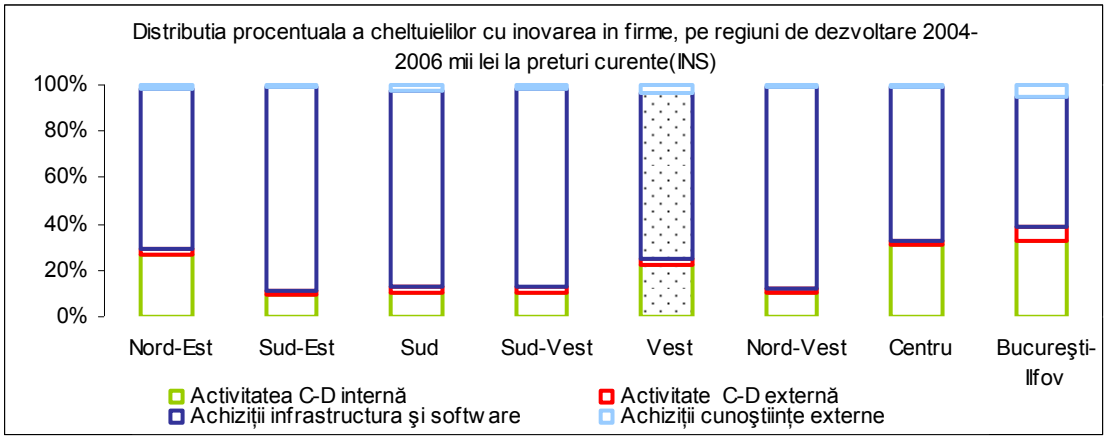
An analysis of the way in which the expenses are allocated according to the main R&D expense categories has revealed that the bulk of the financial consumption is centred around infrastructure and software purchases. This trend is absolutely normal, research infrastructure costs often exceeding the human resource costs. Although this are necessary expenses, the need to increase the centres' competitiveness raises the issue of equipment obsolescence rate.

The West Region ranks 5th regarding the percent weight of the infrastructure expenses, allocating for it 71.4% of the total expenditures.

Another trend noticed at national level was that the internal research and development activity ranks second, after the infrastructure expenses. Thus, companies do not outsource this activity, except for a very low extent.

This indicator puts the West Region in 4th place, with a value of 39,328,000 lei, corresponding to a percentage of 22%. We believe this is due to the lack of a rich research & development offer, so that the partnership between companies and the research centres could boost the innovation phenomenon at lower costs for the enterprises and with a higher potential from the part of the human resources within the centres.

Another research category is represented by the purchase of external knowledge, useful for technical updates, but also for the experience exchange.
Here, the West Region ranks 2nd from the point of view of competitiveness, allocating 3.3% of the total expenditures.



2.6. INNOVATION AND INTELLECTUAL PROPERTY

Innovation is an answer to the fast evolution of the market, due both to the increased competition and to consumer's requirements, tastes, and incomes, which are also changing rapidly.

Companies and research centres invest in the application of technologies and the development of innovative products that they can protect by way of patents, secrets or other protection mechanisms, thus totally or partly excluding the competition from their use, for a shorter or longer period of time.

Intellectual property is a form of legal title that allows its owner to control the use of certain intangibles, such as ideas or expressions. The common forms of intellectual properties include:

- the invention patent,
- the copyright,
- registered trademarks,
- **industrial models and designs,**
- the industrial secret.

The innovation patent

The patent is a legal title granting the inventor/owner exclusive rights to use the invention and forbidding others to use it, to exploit it in order to derive benefits, or to sell it without authorization.

In Romania, the legal regulation of patents is based on law 64/1991 regarding invention patents, with the subsequent amendments and additions. According to art. 3 of the law, the right to the invention pattern belongs to the inventor or their successor. The patent is the only title protecting inventions and grants the owner an exclusive right throughout its validity (extended to 20 years) of the moment when the patent request has been submitted. The improvement patent has the same validity period as the main patent (for the rest of the ongoing validity period), but not less than 10 years.
In order for an invention to be protected by an invention patent, it must meet 3 conditions:

a) **it should be new;** The novelty assumes that it is not known in the current stage of technology, which comprises all the knowledge that became accessible to the public up to the registration of the patent request or of the recognized priority.
b) **it should stem from an inventive activity:** This condition is met if, for a person specialized in that field, the invention does not evidently result from the current technical knowledge.
c) **it should be industrially applicable**: The object of the invention can be used in at least one field of activity in industry or agriculture and can be reproduced with the same characteristics as many times as possible.

The invention may have as its **object**: a product, a procedure, a method.

The copyright

The copyright protects almost any intellectual creation. The intellectual creation category includes music and lyrics, websites, software, paintings, photographs, books, manuscripts, poetry, films, theatre plays, TV programmes, etc. The copyright grants exclusivity of:
- the distribution right;
- the selling right;
- the public communication right.

Literary and artistic works are protected by the "Berna Convention for the protection of literary and artistic works", dating from 1886, revised in 1971.

According to the Berna Convention, it is no longer necessary to mention hat a piece of work is protected by copyright as long as "the intellectual property over a literary, artistic or scientific work belongs to the author for the mere fact that he/she has created id" and "all original literary, artistic, and scientific creations are considered objects of intellectual property, regardless of their environment of expression and medium, whether they are tangible or intangible, already known or yet to be invented."

At the moment, copyright is protected in Romania by Law 8/1996. This was amended and completed by Law 285 of June 23, 2004 and the Government's Ordinance of Emergency no 123 of September 1, 2005..

Registered trademark

The drawings, words, figures, shapes of products or wrappings, colour combinations, 3-D shapes, as well as any other combinations thereof may represent a **trademark**. A well-chosen trademark shall distinguish products and manufacturers and ensure customer loyalty. The trademark needs to be registered and protected.

A trademark is protected for a period of 10 years, with the possibility of repeatedly renewing this protection, thus obtaining a possibly unlimited period. The limitation of the protection for each registration to 10 is based on social reasons. Thus, according to articles 29 and 35 of Law no 84/1998, the registration of the trademark gives the owner exclusive rights over the trademark for a 10-year period starting with the date when the trademark was registered nationally.

Industrial models and drawings

The drawing represents the outer look of a product or of a part of it, made up of lines, colours, shape, texture, materials, and ornamentation. If the drawing is done in 2D or 3D, then it represents a drawing or a design. The new look of a product having a utilitarian function may be registered as a drawing or an industrial model.

A drawing or a model is considered to be industrial if the object to which the drawing or model refers can be reproduced industrially as many times as needed. An industrial drawing is mainly of an aesthetic nature and no protection is applied to any of the technical characteristics of the product. The industrial drawing or design whose aspect is determined by a technical function may not be registered even if it is a novel one.

Industrial secret

It represents the information in any documents, other objects or activities, regardless of medium, shape, way of expression or relevant putting in circulation, which, due to its levels of importance and consequences in case of possible unauthorised disclosure or dissemination, needs to be protected.

These rights can be transferred, rented (licensed), sometimes even used as a warranty, just like any real property. These rights nevertheless have specific limitations, such as time limitations. There are substantial differences compared with the classic property; the consumption of the classic property is exclusive – if someone eats an apple, no one else can eat it. In the case of intangibles, this is not the case – a book can be multiplied in any number of copies without affecting any reader.

The intellectual property rights are granted by the state in order to encourage the creation of such intangibles. These rights grant the owner the right to sue those in breach.

The actual tendency is for these rights to be extended, while still covering new fields such as databases, to extend the duration of these rights or remove restrictions and limitations governing these rights.

Patents in Romania

In Romania, the State Office for Trademarks and Inventions (OSIM) is the institution that works out the intellectual property development strategy. This institution records and examines the requests in the field of protection, granting the owners exclusive rights on the territory of Romania.

The table below gives an overview of the number of requests for invention patents received by OSIM between 2002-2007, as well as the number of invention patents issued by this institution to West Region entities.

Table XIV. Requests for patents, drawings, and models, trademarks at national, regional, and county level

a) Patents submitted by Romanian applicants	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Romania	**1477**	**881**	**996**	**1032**	**965**	**867**
West Region	90	42	40	64	62	69
Arad	20	3	2	4	15	9
Caraş-Severin	5	2	2	10	2	1
Hunedoara	22	15	13	14	6	14
Timiş	43	22	23	36	39	45
b) Drawings and models submitted by Romanian applicants	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Romania	846	705	781	745	688	486
West Region	78	59	38	37	43	44
Arad	12	21	12	14	13	16

Caraş-Severin	1	4	2	4	1	-
Hunedoara	29	8	14	10	10	21
Timiş	36	26	10	9	19	7
a) Trademarks submitted by Romanian applicants	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Romania	**6026**	**6840**	**10298**	**11121**	**12720**	**10988**
West Region	**320**	**319**	**457**	**667**	**654**	**505**
Arad	**48**	**69**	**98**	**141**	**178**	**109**
Caraş-Severin	**8**	**18**	**30**	**14**	**25**	**29**
Hunedoara	**43**	**59**	**74**	**82**	**120**	**52**
Timiş	**221**	**173**	**255**	**430**	**331**	**315**

Source: The State Office for Inventions and Trademarks (OSIM).

3. FUNDING OPPORTUNITIES FOR INNOVATION/RDI

One of the main hindrances or threats frequently found in the analysis of the RDI sector is the lack of access to funding sources or the lack of competitiveness of the projects submitted with this purpose. In the current context, however, funding opportunities are more numerous and better advertised.

The purpose of this chapter is to create an inventory of funding opportunities for the RDI sector, both domestically and at European level. The domestic funding instruments are closely connected with the Sector Operational Programmes. Within these, the RDI sector appears either within some axes meant for this, or within some activities following innovation at a subsidiary level, but included due to different activities.

3.1. NATIONAL FUNDING PROGRAMMES

The National Research, Development, and Innovation Plan for 2107-1013, also called the National Plan II or simply PN II), represents the main instrument through which the National Authority for Scientific Research (ANCS) implements the National RDI Strategy.

PN II has a total budget of 15,000 million lei coming from national sources between 2007-2013 and is made up of six programmes, as follows:

1. Human resources

General objective: The increase in the number of researchers and their professional performance

Specific objectives: 1. The increase of the number of PhD students and post-doctoral researchers

2. The increased attractiveness of the research activity, especially for eminent university graduates

3. Attracting Romanian high-performing Romanian researchers from abroad

4. Forming excellence centres around scientific personalities that are internationally known and recognized

5. Increasing researchers' national and international mobility

6. Stimulating the creation of excellence centres

7. Improving the management of RDI units

The directions for action: 1. The training and improvement of the researchers through doctoral and post-doctoral programmes

2. Funding projects whose aim is to integrate foreign researchers into the Romanian RDI system

3. Supporting excellence for researchers with internationally acclaimed scientific results and for internationally renowned excellence schools.

4. Funding internal and international mobility for researchers

5. Training in the field of research and innovation management

6. Awarding excellent research results

Eligible entities: - Research-development staff

- RDI entities

Programme budget: 1,350 million lei

2. Capacities

General objective: The development of research capacities and opening of the RDI system towards the international scientific environment and the national social-economic environment

Specific objectives: 1. Increasing the usage of the research infrastructure

2. Developing the research infrastructure

3. Developing the scientific information and documentation infrastructure

4. Utilization of the RDI potential and resources at regional level

5. The science-society dialogue

6. Participation of the RDI entities in domestic and international scientific organizations

7. Participation of the RDI entities in international research programmes

The directions for action: 1. Creating and supporting national-interest research infrastructures

2. Providing funds for stopping and preserving some complex national interest installations

3. Consolidating the research infrastructure with multiple users

4. Consolidating the bidding and usage capacity of the "experimental services"

5. Improving the quality of scientific magazines, especially by supporting co-publishing with major international publishing houses

6. Supporting scientific and exhibition manifestations

7. Improving and expanding the research infrastructure and communication services

8. Developing and acquiring RDI-specific databases

9. Developing access to online document sources

10. Promoting communication and consolidating the role of science in the society

11. Writing prospective studies in science and society

12. Preparing and stimulating the participation in international research programmes

13. Supporting the participation of RDI entities in international research organizations and programmes

14. Launching shared thematic calls in a partnership with other countries

15. Supporting Romania's representation in international research organizations and programmes

16. Providing consultancy and assistance activities for the state research authority

Eligible entities: 1. RDI entities

2. RDI entity consortia

3. Companies with their own RDI activity

Programme budget: 2025 million lei

3. Ideas

General objective: Obtaining high-end scientific and technical results, comparable with those at European level, reflected in increased visibility and international recognition of the Romanian research

Specific objectives: 1. Continuous improvement of the visible process that are internationally visible in the fields where Romania has research potential and where comparable results have been obtained with those of EU countries

2. Developing the fields in which Romania is interested to carry out scientific research activities with real contributions to knowledge quality, technical and technological development, and improving the quality of life (The following fundamental research fields are considered to have potential in Romania: biology, genetics, medicine, chemistry, environment, material science, mathematics, physics, technological physics, geology, atmosphere physics, border fields)

The directions for action: 1. Supporting fundamental, border, and exploratory scientific research

2. Organizing "exploratory workshops" meant to identify unexplored knowledge niches

3. Launching calls for international cooperation on fundamental, border, and exploratory research projects

Eligible entities: 1. R&D staff

2. RDI entities

3. RDI entity consortia

Programme budget: 2700 million lei

4. Partnerships in high-priority fields

General objective: Increasing R&D competitiveness by stimulating partnerships in the priority fields, materialized in innovative technologies, products, and services designed to solve complex issues, as well as creating implementation mechanisms

The priority research fields established at national level are: CIT, energy, environment, healthcare, agriculture, food safety and security, biotechnologies, innovative materials, processes, and products, space and security, social-economic research, and humanistic research.

Specific objectives: 1. Increasing the RDI sector capacity for the communication and information technology, in support of a knowledge-based society and economy

2. Increasing the technologic competence and promoting technology and knowledge transfer in the field of energy, under high-quality safe food conditions, observing the principle of sustainable development

3. Creating clean products, processes, and technologies and utilizing waste

4. Scientific grounding and technology development for the preservation, reconstruction, and consolidation of the biological and ecological diversity

5. Sustainably developing knowledge in the field of territorial planning

6. Optimizing disease prevention methods, developing medical therapies, and streamlining the public health system

7. Promoting sustainable agriculture, increasing food safety and security

8. Developing biotechnologies with an impact on life quality and the economic development

9. Developing new materials, products, and processes with a high added value

10. Increasing Romania's competitiveness in the field of research and space technologies

11. Identifying and solving the main social issues connected with education, living, and employment in order to achieve local, regional, and national development

12. Increasing competitiveness and creativity, the development of organizational culture in the systems of the economy, public administration, education and research, healthcare and military fields

13. Utilizing and developing the national cultural heritage

14. Reducing the social-human inequalities and regional disparities

The directions for action: 1. Supporting RDI project by topic

2. Supporting RDI projects according to the priority topics set based on consultancy

3. Supporting research networks

Eligible entities: RDI consortia:

- Consortia of RDI entities, companies, or local or central public administration units

- Companies or local or central public administration units in a partnership with RDI entities

Programme budget: 5400 million lei

5. Innovation

General objective: Increasing the capacity for innovation, technological development, and assimilation of research results into production, with a view to improving the competitiveness of the national economy and increasing life quality

Specific objectives: 1. Strengthening companies' innovation capacity and consolidating their contribution to creating new products and markets based on utilizing the research results

2. Stimulating the partnership between companies and research units

3. Developing the technological transfer capacity in universities

4. Stimulating SME's capacity to absorb RDI results

5. Implementing strategic agendas developed as part of the technological platforms

6. Creating and developing innovation infrastructures

7. Developing infrastructure and quality management

The directions for action: 1. Creating products and technologies at companies' initiative

2. Creating and/or developing innovation infrastructure:

- Scientific and/or technological parks

- Technological transfer centres

- Brokerage centres, knowledge stores

- Technological incubators

3. Supporting the offer of innovation support services

4. Supporting the development of the quality certification infrastructure

5. Supporting the accreditation of testing and analysis laboratories

6. Supporting the implementation and development of the quality management system

7. Supporting the creation and development of innovative networks

8. Supporting the activity of technological platforms

9. Organizing national prize contests in fields with innovative potential

Eligible entities: 1. Companies partnering with RDI entities/technological transfer entities

2. Local public administration in a partnership with RDI entities/technological transfer units

3. Companies/local administration units/technological transfer entities/RDI entities

4. RDI entities partnering with companies/local or central public administration units/technological transfer units

Programme budget: 2025 million lei

6. Supporting institutional performance

General objective: Supporting institutional performance by providing continuity and stability for the activity of RDI entities, aiming towards the implementation of own development strategies, worked out in compliance with the National RDI Strategy

Specific objectives: 1. Supporting institutional development in order to achieve excellence

2. Supporting the international competitiveness of the Romanian RDI system

The directions for action: Providing multi-annual funding, by contest, for non-business activities that will allow the RDI unit to carry out its medium-term development plan and to achieve a level of performance that will contribute to attracting additional funding sources.

Eligible entities: 1. National research & development institutes

2. Post-secondary education institutions

3. Other non-profit research entities

Programme budget: 1500 million lei

For more information regarding PN II and the programmes presented, please go to the website of the National Scientific Research Authority, www.mct.ro.

3.2 CORE RESEARCH & DEVELOPMENT PROGRAMMES

The core research & development programmes, in short core programs, are R&D programs initiated by public law units, having their own legal personality, accredited for this purpose, which are part of the national-interest research and development system.
According to Government Ordinance 57/2002, the institutions that can benefit from core funding, which are accredited as being part of the national-interest research system, are:
a) national research-development institutes;
b) research institutes, centres, or stations of the Romanian Academy and R&D units belonging to branch academies;
c) accredited post-secondary education institutions or structures belonging to these;

These core programmes are funded by the Ministry of Education, Research, and Innovation through the National Scientific Research Authority (ANCS), within the limit of the funds allocated to these programmes. The competition for core programs is organized at the beginning of each calendar year.

The core program proposition is made based on a mandatory framework-structure, containing:
a) the purpose of the core programme;
b) the duration of the core programme;
c) the objectives and projects enrolled, in the order of their priority;
d) their estimated results;
e) the necessary human and material resources.

The annual value for the state budget funding of the core programme proposed by any R&D unit may not exceed 50% of the incomes generated by the research & development activity carried out by that unit during the preceding year.

More information regarding these core programmes can be found on the website of the Ministry of Education, Research, and Youth, through the National Scientific Research Authority, www.mct.ro.

3.3 SECTOR-LEVEL OPERATIONAL PROGRAMMES

The sector-level operational programme for the increase of economic competitiveness (POS CCE)[23]

POS CCE is a programme funding mainly (around 80% of the resources) the economic environment (both public and private), with a focus on small and medium-sized enterprises. The general objective of the POS CCE programme is to increase the productivity of Romanian enterprises by reducing the gaps between their productivity and the average EU productivity.

POS CCE has 5 priority axes, a first funding opportunity being ***Priority Axis 1 – An innovative production system***, starting from the assumption of the need to purchase new equipment, technologies, and know-how that will make it possible to adapt production to the requirements of the domestic market.

As part of this axis, the intervention field is worth noting: *1.1 –* ***Productive investments and the preparation for the market competition among enterprises, especially SME's.*** The funding within this intervention field provides the support of activities that reach the following specific goals:

- utilization of the productive sector based on expansion and modernization, by acquiring new technologies and equipment, licences, and know-how;
- innovation of the production processes and the products;
- adopting international standards and certification of the management systems (quality, environment, etc.);
- tapping into new markets;
- promoting sustainable development, reducing the negative environmental impact, and improving international competitiveness.

The analysis of the eligible activities indicates that their carrying out indirectly stimulates innovation. Of these, the most relevant for the RDI sector are:

[23] The planning documents and specific funding guides are available at http://amposcce.minind.ro

- Modernizing the enterprise, including changes to the production process of an existing plant (e.g.: modernizing installations, high-tech equipment and installations, manufacturing automation, the introduction of new production technologies);
- Creating and modernizing testing and gauging laboratories;
- Accrediting testing and gauging laboratories.

Another intervention field within Axis 1 is ***1.3 – Sustainable entrepreneurship development***. This field promotes several types of projects, focusing on SME's access to highly qualified consultancy services.

Another funding opportunity offered by POS CCE is **Priority Axis 2 –** ***Increasing economic competitiveness through research, development, and innovation*****, namely field 2.1. -** ***Research partnerships between universities/research institutes and enterprises, in order to obtain results that can be applied in the economy.*** In this case, the funding aims to encourage partnerships between universities/research-development institutes and enterprises, leading to the transfer of scientific R&D results into the economic environment, increased competitiveness, and the development of R&D staff capacity.

From a practical perspective, two examples of operations emerge that can be carried out within this field:

- Research projects carried out as a partnership between universities/research and development institutions and enterprises, in order to obtain technological transfer within the five priority topic areas below: healthcare, agriculture, food safety and security, energy, environment, materials, innovative products and processes.
- High scientific level R&D projects involving specialists from abroad, aiming to create scientific competence cores and/or high technology cores at European standards within a R&D institute, a university, or a host enterprise, by attracting renowned specialists from abroad, regardless of their nationality.

Another intervention field within the same competitiveness axis is ***2.3. Enterprise's access to research, development, and innovation activities***, a field that aims to support enterprises in increasing their research capacity, as well as in their innovative activities focusing on obtaining new or improved products, technologies or services through the use of R&D activities.

At the level of the funding policy, the focus is on the relationship between the R&D sector and enterprises, thus promoting the transfer of research results, the stimulation of enterprises in order to obtain new products, services, and technologies through the use of R&D results and an incentive for young enterprises to carry out R&D-based innovative activities.

From a practical perspective, the following operations are supported:

- Support for innovative startups and spinoffs – focusing on the transfer of the R&D results obtained in universities or institutes) in order to create new products and services, complementing the SOP HRD priority axis *"Increasing staff and enterprise adaptability"*, which promotes improvement programmes for the development of entrepreneurial and managerial skills, as well as support for new business initiation services;
- The development of enterprises' R&D infrastructure, by creating new R&D jobs – with the purpose of supporting enterprises' research capacity, in order to increase innovation and competitiveness on the market;
- Promoting innovation within companies – with the purpose of transferring the R&D activity results into new or improved products, technologies, and services.

The operations listed rely on the carrying out of some specific activities, including the purchase of innovation consultancy services and innovation support services, the purchase of equipment, industrial/applied research activities, and process and organization innovation activities.

The sectoral operational programme "Human Resource Development"[24] (SOP HRD)

The general aim of the SOP HRD is the development of human capital and the increase of its competitiveness, by connecting education and life-long learning with the labour market and ensuring increased participation on a modern, flexible, and inclusive labour market for 1,650,000 people.

The relevance of this funding opportunity resides in the fact that it specifies the development of a dynamic and competitive economy by increasing staff adaptability and flexibility, as well

[24] The planning documents and specific funding guides are available at www.fseromania.ro

as by developing highly qualified human resources (PhD student researchers) as the foundation of a knowledge-based competitive economy.

Thus, the axes will be presented that stipulate the funding of some target activities or groups closely connected with the RDI sector, thus meeting some requirements regarding long-term innovation.

A first funding opportunity is Priority Axis 1 – Education and training in support of economic growth and the development of a knowledge-based society, having as a general aim the development of flexible life-long learning routes and the increase of the access to education and training by providing modern, high-quality initial and continuous education, including university education and research.

Specifically, the funding intends to stimulate the quality of education at all levels through actions broadly intended for the management of the educational system, the most important ones for RDI being the professors, PhD students, and researchers.

The ESF funded operations follow the 9 priority axes identified in the Strategy, which have the highest potential of reaching social and economic progress: CIT, energy, environment, healthcare, agriculture, food safety and security, biotechnologies, innovative processes, products, and materials, space and security, social, economic, and humanistic research.

On a practical level, the funded operations focus on:
- Consolidating the national system of doctoral and post-doctoral studies and supporting the networking of universities, research centres, and enterprises;
- Supporting doctoral and post-doctoral studies by developing innovative content, including researchers' managerial skills, in order to promote the utilization of research results in economic activities;
- Supporting PhD students and researchers in participating in doctoral programmes and post-doctoral research activities, including through the development of transnational cooperation and mobility.

Another funding opportunity is Priority Axis 2: Correlating life-long learning with the labour market, which aims to facilitate access to education, increase employment and the level of

staff education and professional training through a life-long learning approach, in the context of the knowledge-based society. The field to remember from this axis is ***field 2 – Access to, and participation in, ongoing professional training.***

The fundamental concept that formed the starting point of the funding is a very general one, making it possible, on a practical level, to carry out diverse operations, including:

- Supporting innovative methods of flexible work organization, including new working practices and the improvement of work conditions;
- Providing in-company training for the development of staff skills in order to boost work quality and productivity;
- Promoting training in new technologies, including ITC, environment protection, and pollution control.

Through the activities it supports, the 2nd axis is actually closer to organizational innovation, offering support at the level of management and work organization, orienting it towards new technologies and environment protection.

3.4. FRAMEWORK PROGRAMME 7 OF THE EUROPEAN UNION (FP7)

FP7 is the European research programme that started at the end of 2006 and has € 70 bn worth of funding allocated for seven years. The European Commission sees it as "an investment in the future of Europe". It is one of the initiatives meant to bring to life the aim set by the state leaders in Lisbon in 2000, of making the EU "the most dynamic and competitive knowledge-based economy" by 2010.

The four major *specific programmes* within the FP7 are:

- "Cooperation" among various organizations (universities, institutes, industry, public administration) on nine topics (information technologies and communications; energy; health; food production; agriculture and biotechnologies; nanoscience; nanotechnologies, materials, and new production technologies; energy and environment, including climate changes; transportation; social-human science; security and space).
- "Ideas", aiming to support research creativity under the coordination of the European Research Council.

- "People", focusing on the quantitative and qualitative growth of the human resources involved in European research.
- "Capacities", concerning the strengthening of the research infrastructures, SME support, and the development of some "knowledge-based regions".

As of 2008, the projects contracted within Framework Programme 7 can be cofinanced through the National Research, Development, and Innovation plan for 2007-2013.

The table below[25] shows the future biddings to be held within FP7, which will be available during the first part of 2009.

Component	**Topic**	**Deadline**
People	People	2009-04-22
Cooperation	Energy	2009-05-05
Capacities	Research infrastructure	2009-03-17
People	People	2009-03-27
Ideas	ERC	2009-04-15

3.5 THE TERRITORIAL COOPERATION PROGRAMMES

The Operational Programme for Cross-Border Cooperation, Hungary-Romania

The eligible border area consists of the south-east of Hungary and the North-West of Romania. The area has over 4 million inhabitants, half living on the Romanian side and half on the Hungarian one. The eight counties of NUTS level III (the counties of Szabolcs-Szatmár-Bereg, Hajdú-Bihar, Békés, and Csongrád in Hungary, and Satu Mare, Bihor, Arad, and Timiş in Romania) display broadly similar economic and social situations.

The programme strategy intends to bring the various participants closer – natural persons, business players, and communities –, with the purpose of making more efficient use of the opportunities given by the shared development of the border area.

At the level of the programme, within priority axis 2, **Strengthening the economic and social cohesion of the border area**, one of the major intervention fields deals with *Promoting*

[25] More details on http://cordis.europa.eu/fp7

cooperation in the field of research, development, and innovation. This intervention field focuses on the following main investment types:

- The joint and complementary development of the RDI infrastructure connected with the carrying out of the cooperation projects (the development of the current RDI infrastructure serving cross-border cooperation, the harmonization of specific equipment purchasing, the creation of new research and development means, the setting up of technical research-development centres);
- New partnership creation, innovative activity support, cooperation among universities, research centres, and businesses; the support of exchange programmes for researchers;
- The implementation of joint research projects, the dissemination of information regarding the results of the RDI activities, the transfer of technologies towards the economic sectors;
- The carrying out of feasibility studies, the creation of technical design documents, architectural plans, environment evaluations and market studies connected with the shared development of the RDI structures.

The Operational Programme for Cross-Border Cooperation, Serbia-Romania

The IPA cross-border cooperation programme gives both countries an opportunity to continue their cross-border cooperation as part of the new instrument. The analysis shown in the Joint Programming Document (JPD) indicates that, even though there the economic development in the border area is unequal, this area of cooperation is characterized by similar industrial, economic, and agricultural aims on both sides of the border, so that the shared challenges can and should be partly approached through joint actions.

In this context, the strategic aim of the IPA cross-border cooperation programme for Romania and Serbia is to obtain, based on joint cross-border projects and joint actions of the Romanian and Serbian partners, a balanced and sustainable social-economic development of the border region between Romania and Serbia.

At the level of this programme, within priority axis 1 (economic and social development), one of the major intervention fields focuses on intensifying the support given to R&D and

innovation in the border region. This intervention field focuses on the following main investment types:

- Supporting the events connected with research and development – conferences, meetings, workshops;
- Creating and accessing networks of cooperation in the field of research and development;
- Supporting RDI centres;
- Joint initiatives of cooperation between the economy and research.

3.6 OTHER INTERNATIONAL PROGRAMMES

The EUROSTARS programme of the EUREKA network

The Eurostars programme is an initiative of the EUREKA network and the European Commission and represents the first support and funding programme dedicated specially to SME's. This programme stimulates SME's to make research and innovation projects in international partnerships, by facilitating access to support and funding. (EUREKA is an intergovernmental network created in 1985, with the purpose of developing research in industry, surpassing EU borders. EUREKA aims to increase European competitiveness by supporting business, research centres, and universities that carry out pan-European projects for developing products, processes, and innovative services).

The programme was officially launched on October 2, 2007. So far, 31 countries have joined, and the expressed budget is €400 million for a period of 6 years.

The programme aims to harmonize and synchronize the national SME support programmes with the research activity. The projects serve a civil purpose and are aimed towards the development of new products, processes or services and are initiated by SME's. These SME's must be from a EUREKA member state, engaged in the Eurostars programme (a Eurostars member state) and must cooperate with at least one participant from another Eurostars member state). According to the definition given by the European Commission, a SME is deemed as doing R&D if dedicates at least 10% of its total equivalent time to R&D or reinvests 10% of the profit in R&D.

The Eurostars programme aims:

- To encourage SME's, especially the ones with high growth potential, to create new business opportunities based on the R&D results
- To create an international network for the support of SME's doing R&D
- To bring new products, processes, and services on the market, faster than it would normally be possible.

Besides SME's doing R&D, other organizations (research institutes, universities, etc.) can also participate in the program, but only in consortiums led by SME's.

Other details connected with this programme (including application forms) can be obtained directly from this programme's website at www.eurostars-eureka.eu.

The COST programme (European Cooperation in Science and Technology)

COST is the European instrument used to support the scientific and technological cooperation of researchers in Europe. The COST actions are meant to coordinate, at European level, the research done on national level. Together with the programmes of the EUREKA network and the ones in Framework Programme 7, COST is one of the three pillars of the shared research initiatives in Europe.

The COST mission is to consolidate Europe into the scientific and technological research by supporting European cooperation and the interaction of European researchers.

COST gives financial support for the cooperative efforts of the scientific groups throughout Europe and the coordination efforts of these research networks referred to as "Actions". The funds will cover the costs of the research networks, such as: conferences, workshops, seminars, meetings, etc. COST does not fund the research itself. The COST structure currently encompasses 34 member states and an associated state (Israel).

The COST programme supports the attainment of scientific excellence in nine great key fields:

- Biomedicine and molecular biosciences
- Food and agriculture
- Forests and their products and services

- Materials, physical sciences, and nanosciences
- Chemistry and molecular sciences and technologies
- Earth sciences and environmental management
- Information and communication technologies
- Transport and urban development
- Individuals, society, culture, and health

For more details and information regarding this programme, go to the COST website: http://www.cost.esf.org/.

The 7 EURATOM Framework Programme

FP7 EURATOM contains two specific associated programs – one for indirect actions in the field of fusion energy research, nuclear fission, and radiation protection, and another one for direct actions in the nuclear field, performed by the Common Research Centre.

FP7 EURATOM aims to solve the main issues and challenges in the nuclear research field and to contribute to the consolidation of the European Research Area in the nuclear energy sector. The programme also sustains the existing community policies, but it also responds to new requirements. The programme has a budget of €2,751 million for a period of five years (2007-2011).

NATO's "Science for Peace and Security" Programme

This programme offers grants for scientists in the NATO member or partner states, as well as the states that are part of the Mediterranean Dialogue, for the cooperation on priority research topics, including the priorities of NATO and, additionally, the priorities of the partner countries. Grants are also given to support the academic community in the partner states in order to develop the infrastructure of the computer networks and to optimize the use of electronic communication. Applications for these grants can be submitted three times per year, on dates preset by NATO.

For most information connected with this international programme, including application forms, you can visit NATO's website at http://www.nato.int/science/index.html.

Cooperation programmes

Through the National Authority for Scientific Research, Romania has signed 60 research cooperation agreements with 59 states throughout the world. There are currently 21 ongoing programmes with 18 countries and several calls open for bilateral cooperation projects in the field of research.

Besides the bilateral cooperations mentioned above, there are cooperations with IUCN-Dubna (the Dubna Unified Nuclear Research Institute) and CERN (the European Nuclear Research Centre).

4. SWOT ANALYSIS

The SWOT analysis takes into account the strengths, weaknesses, opportunities, and threats and has been created and used by enterprises as a tool for defining strategies.

This tool makes it possible to provide a quick analysis of key strategic issues such as the identification of strategic alternatives. Today, the SWOT analysis is applied in territory analysis and it is used as an instrument to facilitate planning within the public administration.

Before starting a SWOT analysis, a description of the existing background is necessary, so that all participants may start from a "common ground".

This preliminary stage is a fundamental element considering that, most of the times, active people in the community have asymmetrical information or different views regarding the research topics.

The SWOT technique of discussion/analysis and research is based on the brainstorming method, involving a discussion among the people involved in devising the strategy.

The SWOT analysis is based on the following elements: strengths, weaknesses, opportunities, and threats. What is strength for a community? A range of strengths may result from an analysis of the community indicators. These may be "hard strengths" or "soft strengths": While the former are usually identified rather quickly, the latter are shaped through subsequent talks or from research activities.

Weaknesses are the second parameter. Situated at the opposite end from the strengths, they represent the weaknesses of the local environment. Again, we can distinguish between "hard weaknesses" and "soft weaknesses".

The third parameter refers to the area of opportunities. These can only be studied and discussed if a preliminary choice has been designed. In this phase, a new, much clearer description of the people involved is needed.

There could be problems in the analysis if the strengths and weaknesses overlap. There is a clear difference between these two parameters. A simple, but useful rule for a correct SWOT analysis is to check whether there is a clear distinction between the strengths and the opportunities.

The threats include the negative implications of the measures adopted. The analysis of the opportunities and the threats involves a mix of the internal and external effects of the policy. The external effects can, in a way, generate threats.

In the SWOT analysis, there is no exclusive correspondence between the strength and the opportunities, on the one hand, and the weaknesses and threats, on the other. Sometimes, some power elements can lead to threats in a script "according to the policy".

The strengths and weaknesses are "static" concepts based on an area's descriptive parameters, within a specified period of time = WHAT IS. The opportunities and threats take into account the future and refer to the choices to be made by the people involved in the planning process = WHAT WILL BE.

The most powerful message of the SWOT analysis is that, no matter what actions are decided, the decision-making process should include the following elements:

- *build* on the Strengths,
- *eliminate* the Weaknesses,
- *use* the Opportunities,
- *remove* the Threats.

STRENGTHS	WEAKNESSES
- innovation is a strategic priority at regional level; - the concentration of a large number of entities involved in RDI in the area (RDI units, local public institutions, universities, central administration, the private sector); - the existence of regional institutions that encourage innovation, technological development, and the transfer towards the SME's; - a good institutional platform in the RDI sector, working in widely varying scientific fields; - high-performance institutions in the RDI sector; - research potential in universities and RDI institutes; - the presence of large national or foreign companies in the region, supporting innovation; - high RDI potential in the private environment; - the educational system stimulates creativity, the entrepreneurial spirit, and the innovative spirit; - the existence of a training offer for the enterprises, covering concrete relevant technological topics; - diversified industrial structures facilitating the cooperation among and within the economic sectors; - large-scale use of the information and	- weak cooperations between the RDI providers and enterprises; - weakly developed technical infrastructure in the rural environment; - lack of motivation regarding the RDI activity; - weak adaptability to the market needs and conditions of the academic environment; - the lack of incentives for RDI activities; - difficulties in performing the technology and know-how transfer; - weak interest in the field of intellectual property protection; - small number of patents applied; - small number of innovative companies; - reduced co-financing capacity for innovative projects or initiatives; - the lack of proper marketing for the innovation activities; - an often outdated technical equipment; - a small number of young people that remain in universities and research units in order to work in research, as they prefer other, better paid jobs; - weak interdisciplinary cooperation; - disparities within the region, resulting in a lower number of SME's in the underprivileged areas and the rural environment; - a grouping of the research-innovation potential, especially in Timişoara; - the research-innovation offer not adapted to

communication technologies.	the real needs of the enterprises.
OPPORTUNITIES	**THREATS**
- the importance of innovation at European level (2009 – European innovation year) - the exploitation of the synergies generated by the presence in the region of a high research and innovation potential; - the second regional strategic planning exercise in the field of innovation; - the national and European funding programmes for the RDI sector; - the increasing role of innovation in the development of the region; - the development of public-private partnerships; - national policies for the development of the RDI sector; - national SME support policies; - the possibility of involvement in European level consortiums in the innovation activity; - the development of potential regional clusters; - the promotion of the West Region as a region with a high intellectual capital.	- the financial crisis and the unavailability of liquid assets for investments; - fierce competition for attracting talented young people among researchers; - there is a risk that the research products may not be utilized in the region, for the benefit of the region; - the lack of policies and/or programmes for fitting research units with new equipment risks putting them out of the national and international competition; - the change of the development priorities with an impact on innovation. - the drastic cutting of research funds in 2009 compared with the previous period; - the reduction in the activity volume in the research institutes by firing some of the highly qualified staff; - the loss of some research-innovation capacities due to the field being under-funded;

5. THE REGIONAL INNOVATION STRATEGY

5.1 INTRODUCTION

The Regional Innovation Strategy is the strategic document written in close connection with the Regional Development Plan – West Region 2007-2013. Essentially, the Regional Innovation Strategy is the document that aims to involve all the RDI resources available in order to increase the competitiveness of the West Region.

The starting point in writing the Regional Innovation Strategy 2009-2013 – West Region is the Regional Innovation Strategy for 2004-2008. At the same time, this document takes into account the changes that occurred in the RDI field at European level (both national and regional) during this period, as well as the projects already implemented in this sector, especially at regional level.

For this purpose, the document written in a broad partnership framework follows punctual activities, starting from the competences and experience of the public and private institutions operating at regional level.

General aim of the West Region RIS

Speeding up the economic development of the West Region by integrating innovation and knowledge into the public policies and the current activity of the enterprises, in order to increase the competitiveness of innovative products and services on the global market.

This general aim was transposed into a series of **specific aims:**

1. Developing new regional projects in support of innovation in the public and private field, as well as capitalization of the existing projects;
2. Stimulating the absorption of innovation and of innovative product and service development within the business environment;
3. Correlating and interconnecting RDI activities at regional level.

These aims can be achieved in a time horizon of 3-5 years, by initiating and implementing innovative projects at regional level, thus continuing the action started as part of the 2004-2008 programming exercise.

Moreover, in order to achieve these specific aims, we have paid special attention to the following 3 strategic axes in the new West Region RIS document:

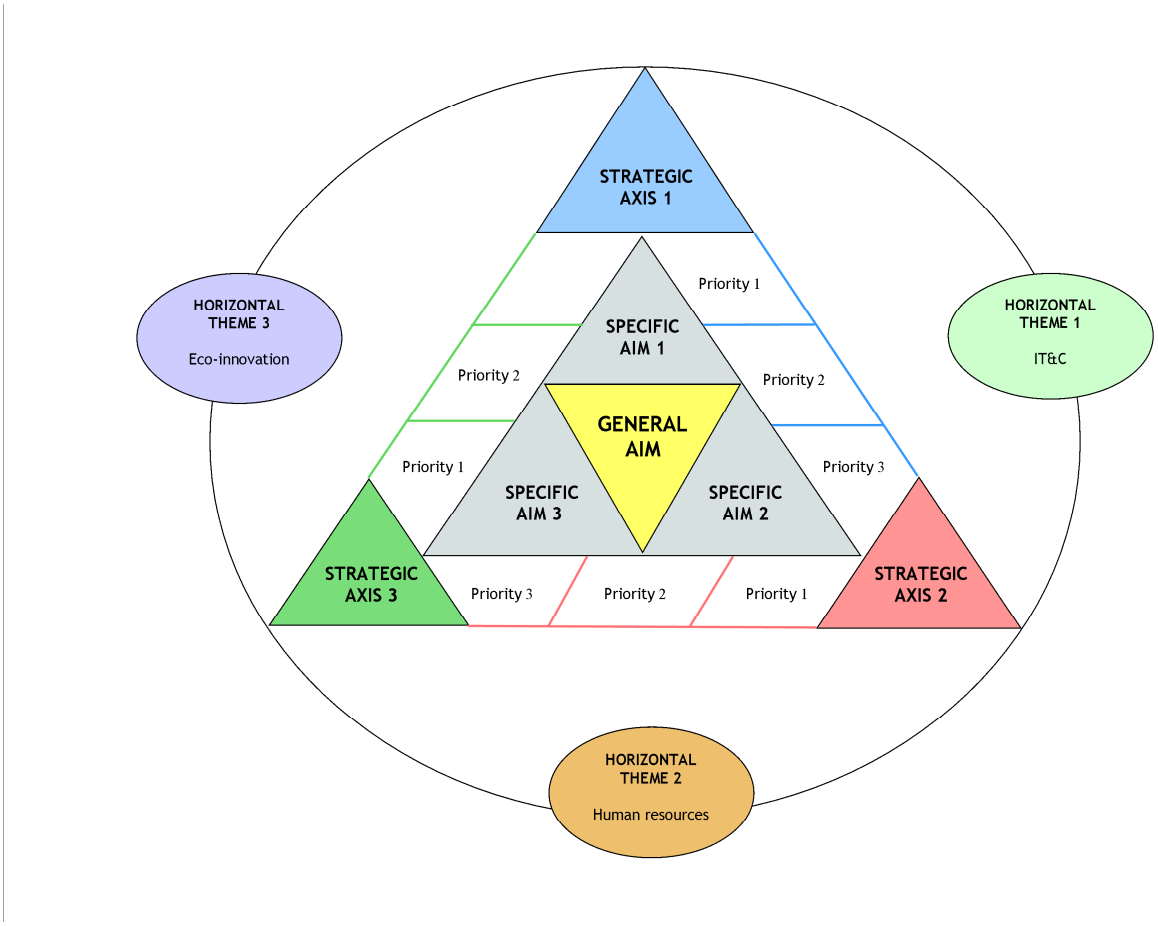
1. Supporting the innovation infrastructure, which generates added value in terms of RDI products/solutions/technologies
2. Supporting innovation in enterprises, also relying on their internationalization
3. Promoting the innovation culture at regional level

These strategic axes mentioned in the West Region 2009-2013 Regional Innovation Strategy take into account the financial resources available for Romania and are compatible with the intervention fields set in the following operational programmes: the Regional Operational Programme, the Sectoral Operational Programme for the Increase of Economic Competitiveness, and the Sectoral Operational Programme "Human Resource Development". Given the proximity of the region with Hungary and Serbia, we are considering the possibility of funding some activities in the strategic document through the operational programmes corresponding to the objective of territorial cooperation with these 2 states.

Two or even all of the three horizontal priority topics below can be found in each of these two strategic axes:

A) **The use of instruments that are specific to the information society;**
B) **Human resources;**
C) **Eco-innovation.**

The correlation and interconnection between the general aim, the specific aims, the strategic axes, and the horizontal priority topics of the strategy are given in the chart below:



In what follows, we shall have an in-depth look at the strategic axes and their corresponding priorities as part of the action plan of the updated West Region RIS document.

5.2 THE STRATEGIC AXES

STRATEGIC AXIS 1: Supporting the innovation infrastructure, which generates added value in terms of RDI products/solutions/technologies

Introduction

The development of a proper innovation infrastructure is something every region desires within the global competitive economy. Moreover, the many success stories in various EU regions confirm the positive role of the existence of a developed RDI infrastructure within the knowledge-based society.

So far, some initiatives supported with local funds or pre-accession financial instruments (especially the PHARE programme) have been used to start individual projects focusing

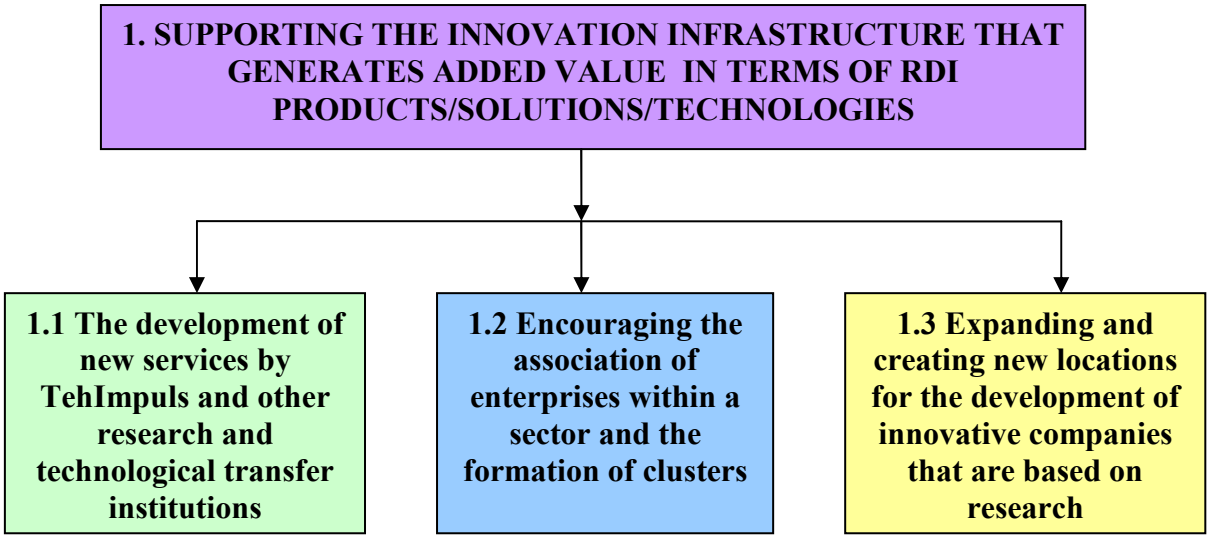
especially on the creation of business support infrastructures within the region. The easily identifiable examples include: The Timişoara Industrial and Technological Park (the Timiş County Council), the Timişoara Industrial Park (the Timişoara City Hall), the Hunedoara Industrial Park (the Hunedoara City Hall), the Arad Industrial Zone (the Arad City Hall), the Timişoara Business Incubator (the Politehnica University of Timişoara), the Software Park (the West University of Timişoara), Tehimpuls (ADR Vest).

The future projects to be developed in this sector at the level of the West Region will focus on the following types of activities: the diversification of the services offered to the potential target groups by the existing innovation and technological transfer structures, the encouragement of regional cluster associations, as well as the activities of creating new innovating structures. Such projects can be funded through the national and European programmes that encourage sector development, placing a stress on those projects that bring a high added value to the area where they are going to be implemented.

This first strategic axis focuses on three important aspects seen as priorities, namely:

1. The development of new services by Tehimpuls and other research and technological transfer institutions;
2. Encouraging the association of enterprises within a sector and the formation of sector clusters;
3. Expanding and creating new locations for the development of innovative enterprises.

This strategic axis, with the three priorities it consists of, is shown in the figure below:



Priority 1.1 The development of new services by Tehimpuls and other research and technological transfer institutions

Introduction

Tehimpuls (the Regional Centre for Innovation and Technological Transfer) is a nongovernmental organization created in 2006 by the West Regional Development Agency, in a partnership with six RDI institutions within the West Region, and aims to increase the regional economy by promoting innovation and technological development.

The Tehimpuls Association provides support services for the application and marketing of innovations at industry level.

The initial service package offered by Tehimpuls included:

- Assistance for the development of innovative projects and marketing of the results;
- Support in the carrying out of cooperative projects between enterprises and research-development-innovation institutions;
- Increasing awareness of innovation and technological development in the West Region.

Instruments

As of 2009, the following services have been added to the **Tehimpuls service portfolio**:

- **Marketing the research results** – extending the database of products/solutions/technologies offered by RDI organizations, drawing up trade agreements

between RDI entities and enterprises, enterprise-level promotion of the facilities offered by the RDI labs in the region's research units;

- **Applying technological solutions in enterprises** – performing innovation audits in enterprises, applying solutions/products/technologies in enterprises using innovation vouchers (10 vouchers);
- **Protecting the intellectual property rights** – Support for building the documentation and obtaining the intellectual property rights for the innovative solutions/products/technologies;
- **Computer design** – Support for enterprises that do not have design facilities, regarding the drawing up of projects/documentation for the execution of products/prototypes;
- **Training** – running individual modules of the course "Innovation and performance for managers", running a RDI project management course for the academic or the business environment.

Potential beneficiaries

- Innovative SME's actively involved in innovation activities;
- Universities and RDI institutions
- Individual researchers
- Innovation intermediaries and consultants

The impact

- Creating innovation consulting and implementation mechanisms that will ensure policy coordination and the participatory involvement of all stakeholders;
- Accessing national and European programmes for the funding of innovation projects;
- Increasing the added value of production (technological and non-technological elements of innovation: organizational innovation, innovative marketing);
- Promoting the use of proprietary rights, registered trade marks, patents, quality standards, etc. by enterprises;
- Lobbying for national regulations encouraging innovation;
- Promoting a dynamic market based on knowledge: the regional innovation system, innovative enterprise clusters, participation in international innovation-promoting networks.

Examples

The first service started by Tehimpuls was that of developing innovative projects and marketing research results. This contributed to the increase of the number of RDI projects

recorded and enabled making commercial use of their results, thus ensuring a positive impact on the research activities in the West Region.

The actual activities carried out for the provision of the service of innovative project development and research result marketing are:

- Identifying RDI solutions/products/technologies that have commercial value;
- Assistance in the process of regaining intellectual property rights, where applicable;
- **Promoting RDI solutions/products/technologies;**
- **Selling research results to the enterprises.**

Priority 1.2 – Encouraging sectoral enterprise association and cluster formation

Introduction

The main purpose of this priority is to provide the strategic and methodological framework for the development of clusters in the sectors that display potential at regional level. The cluster as a distinct entity contributes to the increase of business competitiveness and the development of innovation.

In Western economies, there are two main types of clusters:

- "vertical": this type involves a serious medium- and long-term commitment based on productive and commercial relations between enterprises buying or selling innovative products and services, supporting the activities of a large segment within the so-called supply chain;
- "horizontal": medium- and long-term cooperation between companies in the same sector (the same type of products and services promoted on the market), meeting similar market demands and encountering similar difficulties when it comes to purchasing, marketing, business environment, etc.

The clusters are not uniform groups of enterprises and/or other types of organizations. Additionally, there are alliances among clusters that combine elements of "vertical" and "horizontal" clusters in new tactical and strategic combinations, with the purpose of creating new productive groups to generate products and services.

The following West Region sectors have the potential to become clusters:

- The sector of automotive and automotive part manufacturers;
- Information and communication technology;
- Furniture;
- Tourism;
- The food industry.

Instruments

The activities included in this priority can be grouped into the following categories:

1. Bringing the advantages of the clustering process to the awareness of the enterprises in the region;
2. Supporting the creation of regional or transregional clusters (with cross-border regions from Hungary and Serbia and/or neighbouring Romanian development regions);
3. Promoting the clusters and cluster initiatives in an integrated regional manner;
4. Creating chains of domestic suppliers for the large foreign investors (satellite clusters);
5. Bringing added value with the purpose of maintaining foreign investments and attracting new investors to the region.

Potential beneficiaries

- Innovative SME's actively involved in innovation activities;
- Consultancy companies;
- Universities and RDI institutions;
- Local- and county-level economic development agencies;
- The Regional Development Agency;
- Associations of entrepreneurs;
- Chambers of commerce.

The impact

- The production of potential-assessment studies regarding the region's sectors that display clustering potential: the automotive sector, the ITC sector, tourism, etc.;
- The institutional support of the activity of creating 2-3 pilot regional clusters;
- Regional marketing for the clusters and their members;
- Lobbying for generating new clusters and stimulating cooperation among companies.

Examples

a) The AutomotiVEST Association, a nongovernmental, nonprofit, non-political organism registered as a legal person, was created in June 2007, with the mission of helping the members of the cluster-type network in the West Region to increase their market competitiveness for the automotive industry.

The founding members of the Automotivest Association are the West Regional Development Agency, Interpart Production SRL, Inteliform SRL, Neferprod SRL, the Timişoara Chamber of Commerce and Agriculture, the Arad Chamber of Commerce and Agriculture, the City of Timişoara, the City of Arad, the Politehnica University of Timişoara, and the Aurel Vlaicu University of Arad.

The 2009 objectives of the Automotivest Association are:

- to create a sound economic environment by developing a cluster-type structure, targeting the suppliers of the machine and automotive industry in the West Region;
- to operationalize the cluster service package;
- to increase the number of regional suppliers by 5%.

The services offered by the Automotivest Association to enterprises are:

- *Promotion, communication, and internationalization;*
- *Training;*
- *Support for potential suppliers*.

b) The innovation pole in the ITC sector is a project aiming to create a regional pole of excellence in the field of information and communication technology in the West Region by gearing up the substantial resources that exist in this field at regional level and using a shared development strategy to coordinate the innovative activities carried out.

Through the project, the ITC aggregation could become a regional pole of excellence that will support the increase of companies' competitiveness and the improvement of the performance of the public sector in the region. The strategic partnerships and the new RDI infrastructure created through the project will allow the ITC companies in the region to produce innovative solutions, services, and products that can be used by a wide range of beneficiaries.

The project has the following strategic aims:

- The institutional-based initiation and support of the transition from the current regional aggregation existing in the West Region ITC field to a pole of excellence that will group the innovative companies in this field (with a special accent on SME's), the education and research institutions, the business support organizations, based on a shared long-term development strategy;
- The creation of a shared RDI information, and communication infrastructure among the ITC players in the West Region, that will stimulate horizontal cooperation and the shared use of resources, as well as the stimulation of staff mobility and participation in collective projects, with positive consequences regarding the staff training level in the ITC sector at regional level;
- The promotion of innovation, both within the ITC sector (especially the SME segment) and the other business sectors, through the innovative applications and solutions produced within the pole of excellence;
- The increase of the competitiveness of the region's economic and administrative players based on the innovative solutions and applications produced within the pole of excellence.

Priority 1.3 – Expanding and creating new locations for the development of innovative, knowledge-based enterprises (scientific parks, technological parks, etc.)

Introduction

In addition to the basic infrastructure – transport, utilities, telecommunications, etc. –, the economic environment needs facilities connected with establishing the location of enterprises and their production facilities. This measure focuses on supporting innovative enterprises – whether recently created or with a longer experience – whose core or future operation development aim is research.

The technological transfer and innovation infrastructure, i.e., the specialized organizations for the dissemination, transfer, and economic utilization of the research-development results, is still weakly developed. Moreover, the technology-based enterprises, as well as spinoff businesses – business ideas coming from the academic environment – need to be supported in particular, since they bring considerable added value to the overall regional economic development.

Given that their need for a specific infrastructure, access to utilities, services, it is essential that public and private institutions should create new locations and expand the ones already in

use, so that the innovative enterprises may benefit from logistic support that can speed up their development.

Instruments

As regards the support instruments, they can take the shape of *hard*-type infrastructures (industrial, scientific, and technological parks; innovation, technological transfer, multimedia, and resource centres) or *soft*-type infrastructures (services, networks, consultancy, etc.). These can be provided by organizations whose profile is the RDI activity. It should be mentioned that these organization can be new or existing ones.

Potential beneficiaries

- Innovative SME's actively involved in innovation activities;
- Public administration;
- Consultancy companies;
- Universities and RDI institutions;
- Local- and county-level economic development agencies;
- The Regional Development Agency;
- Associations of entrepreneurs;
- Chambers of commerce.

The impact

- The diversification of the instruments supporting entrepreneurial initiatives, by creating new locations or expanding the existing ones;
- A larger number of innovative startups/spinoffs and SME's in the region;
- A greater competitiveness of the economic environment;
- A more diverse range of facilities given within the locations.

Examples

The **MITKE** project ("Managing Industrial Territories in the Knowledge Era") is funded through the INTERREG IVC European territorial cooperation programme and has been worked out by a consortium of 11 organizations in the EU, under the leadership of SPRILUR, the Regional Development Agency of the Basque Country in Spain.

ADR Vest is one of these partners, the others being the Labein Foundation, the Pannon Business Network Association, the Rzeszow Regional Development Agency, the Lubeskie Voivodship, SOPRIP, FIRST – the Wakefield District Development Agency, Shannon Development, the Geltacht Authority, the Catalan Land Institute.

The main aim of the MITKE project is to build a transnational and inter-regional platform for the transfer of knowledge and good practices regarding business locations and industrial parks. Within the project, a complex set of instruments shall be used to facilitate the exchange of information and expertise among the partners, so that, by using the relevant experience gained at international level, each participating region can develop its own Plan for Improving the Management Practices of Industrial Territories. A Shared Action Plan will also be developed, in order to capitalize on the results and the experience gained with the help of this project.

For more information on this project, go to www.mitke.eu.

STRATEGIC AXIS 2: Supporting innovation in enterprises with the help of their internationalization

Introduction

The SME category is not very homogeneous – the size, type, features of the sector (labour intensity, capital, knowledge). At the same time, the activity sector, the age, the type of property (family-owned, joint-stock company, etc.) are very diverse.

The economic environment brings innovation into the daily activity at the level of products, technologies, and services. SME's are permanent sources of new jobs, while also being key players in the innovation process.

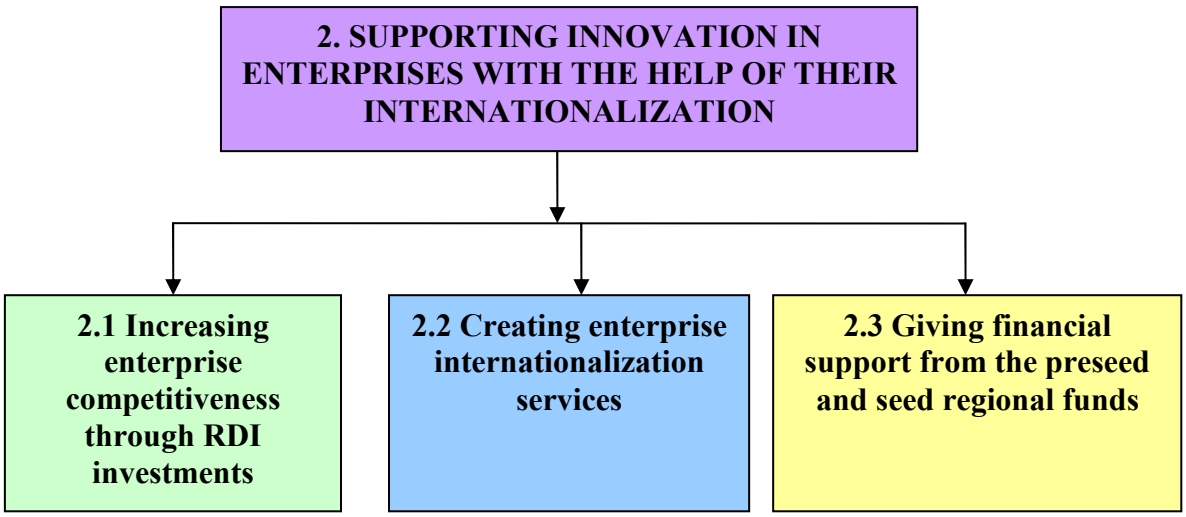
Based on a European economic background where the SME's have been, during the past years, the backbone of the highest-performing economies in the European Union, we believe that it is very important to identify priorities and measures that will support entrepreneurship and the private entrepreneurs in the region, with the purpose of stimulating the creation and absorption of innovation within companies.

The economic growth of the West Region requires actions that will gear up additional resources to support this development, especially the enterprises with potential, and the main aspects this strategy will focus on are innovation, technological evolution, and ongoing staff training and improvement.

Some priority directions are focused on within this strategic aim:

1) The stimulation of innovative activities through RDI investments within enterprises;
2) Enterprise internationalization;
3) The preseed and seed regional fund for RDI.

This strategic axis contains three priorities, outlined below:



Priority 2.1 – Increasing enterprise competitiveness by investing in research, development, and innovation

Introduction

Generally, there are no RDI departments planned at the level of the region's enterprises, which is why the connection with the research environment in the region is most of the times weak.

The measures that accompany this priority support the research activity that the region's enterprises should develop in order to become competitive and to penetrate the external market.

Activities are needed that support the development of innovative projects between enterprises and research units, meeting specific business needs.

The purpose of this action is to stimulate the development of the region's SME's and boost their competitiveness through an efficient cooperation with the universities/research units in the region. This measure encourages the development of projects with results that will be used by a group of enterprises in a certain economic sector.

Instruments

The development of innovative projects will be supported through grants, based on a funding scheme. The increase of SME competitiveness through RDI activities can only be achieved if the companies follow certain aims:

- Carrying out cooperative projects between companies and RDI institutes;
- Analysing the degree of innovation in the companies;
- Submitting solvable requests to the RDI units;
- Generating innovative projects in the company;
- Innovating as a strategy/constant working method in the company;
- Selling the RDI results (patent acquisition, usage rights, etc.).

Another concept tested is the so-called **voucher support**, aiming to use the already existing external expertise in the public or private research institutions within or outside the region (the relationship with the international policy dimension).

An innovation voucher is actually a subsidized assessment provided to an enterprise in order for an RDI institution or expert to solve a specific innovation request.

A research voucher is a coupon that grants SME's a certain number of days of research or consultancy (free of charge or otherwise) by visiting large organizations with an intensive research activity or innovation suppliers such as companies, research and education institutes. The research voucher is also called an innovation voucher and was first introduced in Limburg (the Netherlands).

The coupon that will be given to the SME has a certain value, e.g. 3 days of research or consultancy. The question, followed by the detailed definition of the issue, including a possible solution, will be outlined by the organization/consultant.

Potential beneficiaries

- Innovative enterprises in the region;
- Research institutes in the region;
- Tehimpuls and other intermediaries/RDI consultants.

The impact

- Developing innovative projects among enterprises and research units, including the solution of problems and utilization of the opportunities;
- Establishing cooperations between enterprises and research units and making them permanent;
- Increasing the share of innovative products and processes within enterprises. This increase can be evaluated indirectly by monitoring some statistical indicators, such as: innovation expenses, the number of patent/invention requirements, the increase in the number of innovators.

Examples

In 2ooi, **the Tehimpuls Association** will grant vouchers, through a Phare project, to 25 enterprises in the cross-border region between Romania and Hungary, with the purpose of offering innovative solutions to the problems they encounter in their day-by-day activity.

The actual support will consist in assessments performed by RDI institutions and experts, funded through the project, and given to enterprises based on specific innovation requests.

The solution proposed by the RDI body in order to find a solution to a specific innovation request may consist in: doing a marketing study, launching a research/design/development topic based on some trials, analyses, tests performed in order to make a higher quality product, with a view to optimizing a technological flow or applying a modern technology in the production process, etc.

Priority 2.2 – Creating enterprise internationalization services

Introduction

Under the influence coming from the emergence of the common market in the European Union, the international relations among companies have made way to more complex technical cooperation relations, partnership agreement, and co-design. More and more enterprises, including SME's, are faced with increasing competition on the domestic markets and are thus forced to look for new products and services to implement. The need for a more efficient manufacturing or operation makes the companies look for new technologies and new production processes. The newer tendencies push the SME's working in the traditional sector to form alliances with local partners from the regions where the main clients are setting up new subsidiaries, or to access cheaper components in order for them to stay competitive. Given this situation, all the institutional interventions, both theoretical and methodological, issued by European, national, and regional authorities have pointed to internationalization.

Through the specific policies dedicated to SME's, the EU member states are employing significant resources for the internationalization of the enterprises on the markets in Central and Western Europe, Asia, and North America, in order to increase exports, to delocalize production or expand the existing outlets. The beneficiaries of these resources are individual enterprises, associations of entrepreneurs or social clusters. The resources involve the provision of consultancy services related to internationalization (legislation, procedures, marketing strategies, etc.), financial instruments (loans), the organization of business missions and international events (fairs and sectoral or thematic exhibitions, one-to-one meetings, etc.), the creation of specialized regional organizations, etc.

One of the prerequisites for the successful use of the internationalization strategies is for the management and senior staff of the companies to raise awareness regarding their necessity.

In order to prepare efficient strategies with this purpose, the suggestion is to promote sound managerial education and to offer access to this type of education offered by foreign business schools – if possible, in a joint venture with universities and higher education organizations.

An intermediary body (agency, association of entrepreneurs, etc.) can offer a wide range of services for the internationalization of enterprises, depending on the form of internationalization desired. These services can be grouped in 6 categories:

- Information and promotion services
- Training services
- Customized services
- Specialized collective services
- Export funding instruments
- Hands-on management

Supporting some internationalization services dedicated to strategic sectors that bring added value, such as IT, is very important: the study carried out by ADR Vest regarding the region's ICT sector has shown that 53.6% of the companies have their own products in at least one field, but, on average, 82.4% of the products and services are intended for the domestic market and 17.55% for the foreign market, which points to a moderate level of accepting competition.

Thus, the existence of some own products, regardless of their complexity or particular features, is still a foundation of competitiveness that can be improved through the promotion on markets that have more experience in this sector.

The study has also shown the trend among some categories of companies in the ICT sector to operate on increasingly larger markets (regional and national), this variable being significantly associated with the existence of some own products.

On the strategic level, 73.3% of the companies that already have their own products have also accepted, to a higher extent, that they need to identify new partners, their significant percentage indicating a tendency to expand on the market.

Instruments

The incentive of the internationalization of companies has several instruments at its disposal:

- Basic services: these consist mainly of providing market-related information, contracting market studies, identifying potential agents or arranging visits, organizing targeted national or sectoral seminars, providing training sessions meant to increase awareness of the potential of internationalization among local or regional SME's;
- The organization of international fairs for SME's;

- The organization of subcontracting fairs and matchmaking events;
- The Technological Transfer Days;
- A regional office abroad;
- Loans for export and warranty schemes;
- Jobs for graduates in companies;
- Networking instruments: clubs or clusters;

Potential beneficiaries

- SME's actively involved in innovation activities;
- Associations of entrepreneurs;
- Chambers of commerce;
- Consultancy companies;
- The Regional Development Agency.

The impact

- The creation of a solid database for international action;
- A larger number of international events attended by the enterprises in the region;
- Increased exports from the region;
- Expansion of the internationalization service range.

Examples

In 2007, the West Regional Development Agency, in a partnership with Co-Makers International, organized a "Meet & Match" event. This meeting brought together Dutch and Romanian companies, to mark the completion of the first stage in the reconstruction of the "Subcontracting Meet & Match Romania" network.

The uniqueness of the Co-makers.com method resides in the participants' ability to study the profile of the companies whose activity is similar to theirs. This method makes it easier to assess the potential "match company". Another reason why this is an efficient method is that the meetings only take place based on mutual consent and subject to prior confirmation.

The "Subcontracting Meet & Match" event was organized exclusively for the companies operating in the machine construction and automotive field, such as OEM's, system providers, subcontractors (at level 1, 2 or 3) and service providers (development, design, engineering.

"Meet & Match" is a brokerage method developed by Co-makers.com for the machine construction and automotive industry, both for manufacturers as for the subcontractors. "Meet & Match relies on transparent and objective methods used by Co-makers.com in their regular meetings. During the Meet & Match events, the buying and supply companies can cooperate and make new contacts in their own chain of suppliers.

Priority 2.3 – Providing financial support from the pre-seed and seed regional fund

Introduction

The research and innovation activities are key factors for the development of modern economic systems, featuring a high level of competitiveness and dynamism. In order for innovation to be the starting point of a value chain, the results of the technical research need to become knowledge, a process that involves that their transfer and use on the market, as well as the creation of innovative companies with a high growth potential.

International experience has shown that the starting point for the success of initial funding programmes and business incubation schemes is the creation of some financial instruments enabling the use of the results of the scientific research and their transformation in a business (pre-seed funds) and supporting new enterprises during the first stages (seed funds)

The competitive pre-seed funds dedicated to universities and research institutes in the public domain shortens the path between promising scientific discoveries and the selling activity.

The pre-seed facility aims to support independent researchers or a team in their research activity, in order to complete a business idea involving the provision of services with an added value.

The seed fund is capital granted in the first stages of a business or enterprise, especially meant to cover the initial operating costs. The purpose of the seed fund is to help new entrepreneurs

who have promising ideas concerning commercially viable and exportable products and services to gain access to these capital resources and put their business ideas in practice.

Instruments

- Grants for researchers (fellowship and mentoring);
- Vouchers for researchers and entrepreneurs;
- Specialized consultancy for entrepreneurs;
- Promotion and raising awareness.

Potential beneficiaries

- Consortium made up of various organizations;
- Newly created innovative enterprises;
- Universities;
- Research centres and institutes;
- Independent researchers;
- The Regional Development Agency;
- Technological transfer centres.

The impact

- The creation of new innovative startups;
- The development of a new economic sector;
- The bringing of investments for startups;
- The bringing back of the expatriated "grey matter" into the country and the region.

Examples

In 2007, a study was carried out in the West Region regarding the possibility to set up a pre-seed and seed regional fund in support of the innovative SME's in the region. It was suggested that this fund should be managed by a management body, led by a board of directors. The facilitation of the pre-seed funding would be completely supported from public funds; in the case of the seed fund, a mixed funding source was suggested (70% from public funds and 30% from private funds). The maximum total budget suggested for the pre-seed component is of € 2 million for a period of 3 years, during which a pilot action will be carried out. This sum will be partly provided from the European Social Fund and partly from public funds, but it

does not exclude the possibility of private funding. The amount of the seed fund is between 3 and 5 million (minimum) and 15 million euros, of which 20% will be allocated to seed funding and 80% to startup funding. The maximum investment in a company cannot be higher than €1.5 million, with an average of €300,000. The study suggested that both funding programmes should be carried out during 2007-2013, so as to overlap with the structural fund programming cycle.

STRATEGIC AXIS 3: Promoting the innovation culture at regional level

Introduction

The West Region RIS document marks the initiation of a long-term process in the region, which we hope will facilitate a range of structural changes at institutional level and mentality changes at the level of the players involved in the creation and implementation of development policies. Thus, the actions within this strategic axis focus especially on promoting the culture of innovation at the level of the following target groups:

- The academic environment and RDI institutes;
- The public sector;
- The private sector;
- The citizens of the West Region.

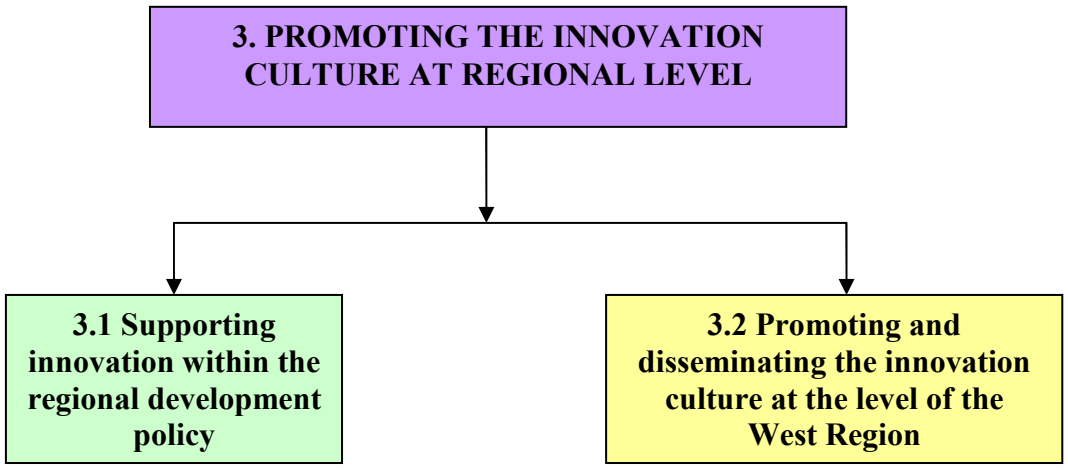
This action area concerns a double challenge: on the one hand, it focuses on the systematic dissemination of the innovation culture in the regional environments, through events for the support of innovative enterprises and products; on the other hand, it aims to create a regional economic environment encouraging innovation, direct foreign investment, and the implementation of an innovation policy included in the regional development policy as a whole.

The main aims of the actions within this strategic axis are:

- To increase awareness regarding the knowledge-based society among the region's population;
- To promote the results of the research, development, and innovation activity;
- To promote the entrepreneurial spirit;
- To increase citizens' involvement in RDI projects and activities;

❖ To innovate in public administration

These aims can be found in the two priorities of the strategic axis, as shown in the chart below:



Priority 3.1 Supporting innovation within the framework of the regional development policy

Introduction

The main objective of this measure is to create a regional identity in terms of innovation, through a unitary promotion of all the public players involved in this process at regional level.

This measure also addresses mainly the interface organizations, since these will be the ones supporting, in addition to ADR Vest, the connection created between research and business. Thus, round tables and thematic or sectoral workshops will be addressing the public authorities in the region, providing the opportunity of permanent access to the innovation request from those that contribute to prioritizing the innovation actions in the region.

Instruments

- Lobbying and advocacy campaigns for putting innovation on the priority agenda;
- Organizing workshops, seminars, and conferences on the topic of innovation.

Potential beneficiaries

- Public administration;

- Universities and RDI units;
- Chambers of commerce;
- Local and regional institutions creating policies and development plans;
- Other organizations representing the public environment;
- The Regional Development Agency.

The impact

- Making the public players in the region aware of the issue of innovation;
- Continuing the implementation of the regional strategic measures in the field of innovation;
- Increasing the involvement of the regional partnership;
- Increasing the number of public-public partnerships meant to implement strategic measures in the field of innovation;
- Harmonizing regional and national strategies with the regional and sectoral allocations;
- Coordinating, at regional level, the projects carried out with European funding, focusing on the field of innovation;
- Stimulating innovative projects within the public administration.

Examples

In the context of the activities for putting innovation on the regional development policy agenda, we can mention the planning actions carried out between 2006-2007. Thus, as part of the 2007-2013 Regional Development Plan for the West Region, the field of innovation is a distinct development priority, identified and supported through concrete areas of intervention. At national level, the 2007-2013 National Development Plan views innovation as being associated to the competitive economic development and to a knowledge-based economy. Following such initiatives, innovation can be found among the strategic axes in the Sectoral Operational Programme for Increasing Economic Competitiveness.

Priority 3.2 Promoting and disseminating the innovation culture at the level of the West Region

Introduction

The promotion and dissemination of the innovation culture aims to introduce innovative concepts and practices at all levels of the region's social-economic life. This transformation is

not limited to investments, but also includes mentality, education, professional guidance, organizational culture, institutional development, dissemination of information and good practices, etc. All these aspects will deeply change the individual and institutional perception of innovation, thus integrating this element into the social-economic development of the region and influencing the major strategic decisions of the territory.

Instruments

The main forms taken by the promotion actions are: events of dissemination and exchange regarding new and emerging technologies, technological solutions for various sectors or the technological transfer services available. The participants, whether exhibitors or potential partners, have the opportunity to know each other, to promote their offer or pave the way to a concrete cooperation in the future.

Such actions can create a network of enterprises with regular mutual visits (3 times a year, for instance), in order to create the feeling of belonging to a group in an innovative region. We can think of events in which one company may invite other companies and institutions and present its own activity, encouraging opportunities for networking, dissemination, or the start of a cooperation.

Within the framework of this priority, we are thinking about the organization of some targeted events. Such an event can be carried out with the occasion of the **Annual Regional Innovation Award**. Such a distinction will be given for the innovation of products, processes or generic innovative projects, whether sectoral, multidisciplinary or regional, that will have a significant impact on the social-economic development of the region and the integration of innovation among the current activities of the business environment or the RDI environment.

Potential beneficiaries

- Innovative SME's actively involved in innovation activities;
- Associations of entrepreneurs;
- Chambers of commerce;
- Exhibition and business centres;
- Consultancy companies;
- Universities and RDI units;
- Public administration;

- The Regional Development Agency.

The impact

- Raising awareness regarding the innovation issues;
- Developing models of good practices in innovation at regional level;
- Stimulating innovative projects in enterprises;
- Stimulating contacts between regional, national, and European organizations;
- Promoting the regional technological offer;
- Introducing new technological transfer solutions to domestic enterprises;
- Cooperation among companies;

Examples

During 2004-2007, a series of annual events took place under the name **Annual Innovation Forum**. The purpose of organizing such events is to develop a constructive approach to innovation at the level of all West Region sectors – citizens, public institutions, businesses.

As we were saying at the beginning of the strategic document, we can find two or three priority horizontal themes for each of these strategic axes. In what follows, we shall briefly analyze these 3 horizontal themes in close connection with the 3 strategic axes.

HORIZONTAL THEME 1: The use of instruments that are specific to the information society

The information society is that society in which the production and consumption of information is the most important type of activity, information is recognized as main resource, information and communication technologies are fundamental technologies, and the informational environment, together with the social and the ecological one, is an environment in which people live.

Promoting an informational society accessible to everyone contributes to the increase of the region's development opportunities. In order for the development of a system based on knowledge and technological development to be possible, the society must understand the importance of using RDI both for economic development and for citizens' daily life.

The use of **instruments specific to the information society** at the level of individuals, public institutions, and companies will allow a better participation in the innovation activities and highly productive activities. *At the same time, protecting intellectual property and ensuring information security* are important elements of the competitive development based on investment and innovation.

In what follows, we shall analyze this horizontal theme as part of the strategic axes approached in the RIS document. Thus, within the *strategic axis 2 – Supporting innovation in enterprises with the help of their internationalization* –, we shall approach the topic of e-business as one of the solutions specific to the information society that can be used by companies in their current activity.

E-business is a new way of doing business, a new way of using technology, and a new way of creating companies. It is no longer a secret for anyone that the Internet has revolutionized the world of business, which is forever changing, trying to adapt to the needs of the digital market. In Romanian, e-business is termed "electronic business" and refers to the organization of transactions, communication, and information, as well as the planning and control of a business using the full potential of the information technology.

The term "e-business" was first used by IBM to define the use of the Internet technologies for the improvement and transformation of the key processes in a business. In IBM's definition, e-business is a way of "secure, flexible, and integrated access for carrying out different business activities by combining the processes and systems that perform basic business operations with those that make it possible to find information on the Internet."

The most important advantages of developing an electronic business are:

- The opportunity to sell and make products known globally;
- The communication with the company suppliers and customers involves a low level of costs and is much more efficient;
- In order to start a successful online business, compared to a traditional business, one needs only a minimum investment.

Due to the continuous growth in the number of Internet users, but also to the higher value of the transactions performed online, electronic business is present in various fields and is

divided into various categories, the most important ones being: e-commerce; e-auctions; e-banking; e-brokering; e-marketing, etc.

In addition to the use of ICT in companies' activities, the use of technologies specific to the information society in the governing process and the public administration is a widespread reality of our days. Thus, at the level of *strategic axis 3, Promoting the innovation culture at regional level*, we will take into account elements connecting to e-governing, e-administration and e-citizen, as part of the discussion concerning **promoting technologies and solutions that can support public administration projects**.

The advantages brought by the new technologies lead to simpler and more dynamic governing processes. The spreading of this technology also has in mind the possibilities of interaction with the citizens using this means of communication. In this respect, the Internet and digital technologies offer a high level of interactivity of the information systems implemented in administration, making communication possible both ways. In this respect, the citizen cam be informed via websites regarding the main government actions and can send information and data for the carrying out of some transactions.

E-governing consists in the interaction between the government, the parliament, and other public institutions with citizens through electronic means. Information regarding the legal bills being discussed, the expression of opinions by the citizens, tax payment, filling in online complaints and requests are all efficient means provided by the authorities in order for citizens to be able to exercise their fundamental rights. The electronic governing is implemented top-down, from the state to the citizen. The latter is in the centre of the e-governing process, as the main beneficiary of the integration of the information technologies in this field. For these reasons, a crucial role for the successful implementation of the e-governing applications is the information of the citizen regarding the new solutions in this field and their advantages regarding other means of communication.

Example

At the level of the West Region, the focus is on implementing an integrated concept of computerizing the public administration, which will create, to an equal extent, an e-administration platform (streamlining on the internal operation of the institution) and an e-citizen (facilitating citizens' access to the services of the institution).

Through this project, the focus is on modernizing the services provided by the local public administration in order to provide administrative services through modern electronic means, based on paradigms of **interoperability, safety, and traceability**.

The results and benefits of the project will be seen in:

- Automated workflows;
- Improved information management;
- Improved access (both qualitatively and quantitatively) to information for office workers, citizens, and the business world;
- IT support for the creation of new tasks/services;
- Improved information exchange among the public institutions in the county;
- Providing a single data management platform for the county councils and subsidiary public institutions or other institutions and services relevant at county level;
- Ensuring the IT coherence of the institution's development framework;
- Improving transparency and communication with the public.

HORIZONTAL THEME 2: Human resources

The fast changes on the labour market, the increasingly tighter connections between the knowledge-based society and the human factor require high flexibility and a permanent willingness to learn on the part of the active population. The development of innovative and creative, value-added sectors is closely linked with the increase in the number of graduates and employees in knowledge-based fields.

The West Region has highly trained human resources, with various specializations available in the secondary and tertiary education. Nevertheless, the labour market displays a faster evolution than the educational curricula. On the other hand, vocational education requires significant resources, in order to be able to respond to the employers' demands for different jobs.

As part of the measures focusing on human resources in enterprises, we shall have a look, within RIS, on the introduction of innovation management in enterprises through specific actions (strategic innovation plans, technological diagnoses, messages, etc.).

Within this framework, at the level of ***strategic axis 2 – Supporting innovation in enterprises with the help of their internationalization***, a discussion is needed regarding the concept of innovation manager.

Innovation management is a separate field in the general management of a company. Moreover, the European Commission supports the creation of a new professional profile called "innovation manager", responsible for coordinating and implementing the company's innovation strategy once it has been defined based on the strategic innovation exercise, forming an innovative management team, and supervising the innovation planning activities, innovation training, information dissemination, creating innovative projects, suggested the budget thereof, etc.

Even if no specialized departments are created in the preliminary stages, innovation management instruments can be introduced into enterprises: e.g., courses organized by third-parties, technological audits performed by consultants, product innovation or process innovation etc.

Example

In 2009, the Tehimpuls Association – the Regional Centre for Innovation and Technological transfer) – carried out two training sessions on the following topics: **Investment Management and Innovation & Knowledge Management** Within the investment management course, practical information was given regarding the preparation and implementation of an investment project for enterprises. The innovation and knowledge management aimed to suggest some optimal ways to integrate research solutions into companies' current activity. The two sessions were organized as part of the project "Brokinnovoucher – Supporting cooperation and innovation among small- and medium-sized enterprises in the Romania-Hungary area", a project funded through the PHARE CBC 2006 programme for Romania and Hungary, launched in December 2008.

Another initiative that can be included in the horizontal topic of human resources, closely connected with the innovation field, is **entrepreneurship**. In the modern sense of the word, an entrepreneur is a businessperson that adopts an active and innovative behaviour, deliberately taking some risks in order to develop new projects. For this reason, a significant number of companies pay great attention and recognition to entrepreneurs, largely also due to

the contribution the latter bring to the evolution of the entrepreneurship and the influence they have on the macroeconomic indicators.

Promoting **the entrepreneurial spirit and culture**, both by supporting initial education and training for the acquisition of managerial and entrepreneurial skills and by ongoing professional training, is an important solution both for counterbalancing the negative effects of the industry's structural adjustment and restructuring process and for the increase of competitiveness.

The potential of young researchers and graduates is still unused in the spinoff or spinout initiatives, due either to the lack of adequate financial mechanisms or to the absence of an entrepreneurial culture and spirit. The actions for promoting the entrepreneurial spirit and culture have so far focused on creating an institutional, legal, and financial framework favourable to the development of SME's and the private enterprise and stimulating for investments, while the specific measures concerning human resources were put in second place.

HORIZONTAL THEME 3: Eco-innovation

Eco-innovation includes the new production processes, new products and services, new methods for managing and performing economic activities, whose use and practical application may prevent or substantially reduce environment risks, pollution, and other negative impacts of the use of resources, in the life cycle of complex activities.

Eco-innovation is a field offering promising perspectives for the emergence of a pilot innovation market. Eco-innovation can be reinforced by an environment policy, especially by creating adapted regulations and by adjusting some market-oriented instruments. Thus, we could come up with a mechanism to allow a certain number of products that currently offer "the best performance" on the market to become reference norms in a given interval, in order to encourage other enterprises to go in the same direction. Eco-innovation can also be encouraged by supporting the cooperation between research and enterprises in promising fields, such as constructions, water management, bio industries, and carbon capture, storage, and recycling.

In what follows, we shall analyse this field from the point of view of ***strategic axis 1 – Supporting the innovation infrastructure that brings added value in terms of RDI products/solutions/technologies.*** Thus, with the global market of eco products and services in full boom, the stimulation of research and development in the field of waste management can help the West Region become more competitive on a technological market that has great potential. There is vast global potential for the technologies used in obtaining products at low prices based on these waste flows, which can replace the current raw materials. We are thus talking about a market that is both large and diverse. The activities for improving the separation processes of industrial, household, electric, and electronic waste, as well as the innovations consolidating competitiveness in the recycling industry are a few of this sector's initiatives. Thus, there is support for the separation, reuse, and recycling of waste coming from construction and demolitions; systems for saving water, reusing natural water, rainwater and grey water, green roofs.

Example

Waste recycling is one of the major challenges facing human communities, especially in the context of the growing amount of waste produced by the economic dynamics during the past years. By using advanced technologies, water could be reused profitably, reducing the stress on the environment.

Unfortunately, even though waste recycling is recognized as a priority in most programmatic and public strategy documents relevant for the West Region, there is no specific business infrastructure dedicated to the needs of the companies operating in the field of recycling different types of waste. An eco-park is needed for this purpose.

As regards ***strategic axis 2 – Supporting innovation in enterprises with the help of their internationalization***, attention must be paid to those innovative products that reduce the environmental impact and/or support a rational use of the natural resources. This is where the **eco-business** concept comes into focus. Products and services resulted from the economic activity will observe the principles regarding the integrated policy of products and life cycle and those regarding the approach depending on the various policies on sustainable consumption and production and sustainable industrial policy; the application and promotion of some environmental criteria for enterprise buying decisions.

The eco-business concept is a complex notion covering a large sphere of actions. This has to do, on the one hand, with the more or less high-performance green goods and services as a whole and, on the other hand, with the whole activity carried out at the level of production, selling, and consumption in all the economic sectors, where the environment protection aspects are an integral part of the decisions regarding the overall economic development.

The eco-business concept involves all the ecological and eco-efficient goods and services in the context of promoting some implementation mechanisms and instruments, such as: industrial ecology, environment management systems, economic incentives, funding actions, bi- and multi-lateral agreements regarding environment protection, etc.

6. 6.
INDICATORS, TARGETS, AND FUNDING OPPORTUNITIES

STRATEGIC AXIS	PRIORITIES	INDICATORS	TARGETS	FUNDING SOURCE
1. Supporting the innovation infrastructure, which generates added value in terms of RDI products/solutions/technologies	1.1. The development of new services by Tehimpuls and other research and technological transfer institutions;	- n° of services developed - n° of partnerships between research organizations - n° of trade contracts signed - n° of vouchers - n° of assisted organizations - n° of trained people	- 5 types of new operational services - 5 trade contracts signed - 10 partnerships signed - 15 vouchers given per year - 50 assisted organizations - 20 people trained annually	- National programmes - The Sectoral Operational Programme for Increasing Economic Competitiveness - The Operational Programmes for Territorial Cooperation
	1.2. Encouraging the association of enterprises within a sector and the formation of sector clusters	- n° of companies in a cluster - n° of clusters in the region - types of activities/services carried out	- 6 itemized cooperations among companies within the cluster - 2 functional clusters	- The Sectoral Operational Programme for Increasing Economic Competitiveness - The Operational Programmes for Territorial Cooperation
	1.3. Expanding and creating new locations for the development of innovative enterprises	- n° of new scientific and technological parks - n° of companies located in new parks - n° of affiliations with European networks - n° of supported innovative activities/services	- 2 new hard infrastructure initiatives - 10 companies located - affiliation with 3 European research networks	- Programul Operațional Regional - Programul Operațional Sectorial Creşterea Competitivității Economice - Programele Operaționale de Cooperare Teritorială

STRATEGIC AXIS	**PRIORITIES**	**INDICATORS**	**TARGETS**	**FUNDING SOURCE**
2. Supporting innovation in enterprises with the help of their internationalization	2.1. Stimulating innovative activities through RDI investments within enterprises	- RDI expenditures at enterprise level - n^{o} of technological transfers - n^{o} of innovative companies - n^{o} of academic-business partnerships - n^{o} of products resulted from the academic-business cooperation - n^{o} of spinoff companies - n^{o} of companies involved in European projects - n^{o} of intellectual property certificates - n^{o} of innovative projects at company level	- 10% higher RDI expenditures - 5% more innovative companies - 10 technological transfers - 10 academic-business partnerships - 2 spinoff companies - 5 partner companies in European projects - 10 intellectual property certificates - 15 innovative projects carried out within companies, resulting in products and services	- National programmes - The Sectoral Operational Programme for Increasing Economic Competitiveness - The Sectoral Operational Programme "Human Resource Development"
	2.2. Enterprise internationalization	- n^{o} of fairs - matchmaking events - commercial contracts	- 30 companies participating in international fairs - 3 matchmaking events organized	- National programmes - The Sectoral Operational Programme for Increasing

		signed or joint ventures created	at regional level - 10 contracts signed	Economic Competitiveness
	2.3. The preseed and seed regional fund for RDI	- n^{o} of funding applicants - n^{o} of projects that have received funding	- 5 funding beneficiaries - 5 projects carried out	- National programmes - The Sectoral Operational Programme for Increasing Economic Competitiveness
3. Promoting the innovation culture at regional level	3.1. Supporting innovation within the framework of the regional development policy	- innovation promotion events - input for strategic documents created at national, regional, and local level	- 3 regional events promoting innovation - comments, suggestions, proposals regarding the policy documents created at national, regional, and local level - the convergence of strategies regarding innovation	- National programmes - The Sectoral Operational Programme for Increasing Economic Competitiveness - The Operational Programmes for Territorial Cooperation - The Sectoral Operational Programme "Human Resource Development"
	3.2. Actions promoting and disseminating the innovation culture at the level of the West Region	- n^{o} of events on the topic of innovation - n^{o} of participants - press conferences sent - publications on relevant RDI topics	- 6 events - 200 people participating - 6 press releases - 20 press materials - publication of relevant material on the topic of innovation	- National programmes - The Sectoral Operational Programme for Increasing Economic Competitiveness - The Operational Programmes for Territorial Cooperation - The Sectoral Operational Programme "Human Resource Development"

7. ESTIMATED BUDGET

STRATEGIC AXIS	PRIORITIES	BUDGET (EURO)
1. Supporting the innovation infrastructure, which generates added value in terms of RDI products/solutions/technologies	1.1. The development of new services by Tehimpuls and other research and technological transfer institutions;	600.000
	1.2. Encouraging the association of enterprises within a sector and the formation of sector clusters	1.000.000
	1.3. Expanding and creating new locations for the development of innovative enterprises	10.000.000
	STRATEGIC AXIS 1 total:	**11.600.000**
2. Supporting innovation in enterprises with the help of their internationalization	2.1. Stimulating innovative activities through RDI investments within enterprises	900.000
	2.2. Enterprise internationalization	250.000
	2.3. The preseed and seed regional fund for RDI	250.000
	STRATEGIC AXIS 2 total:	**1.400.000**
3. Promoting the innovation culture at regional level	3.1. Supporting innovation within the framework of the regional development policy	25.000
	3.2. Actions promoting and disseminating the innovation culture at the level of the West Region	25.000
	STRATEGIC AXIS 3 total:	**50.000**
	West Region RIS 2009-2013 total	**13.050.000**

8. GLOSSARY

Entrepreneurship: A complex concept designating the process in which one person or a small group of people, through systematic, organized efforts and adequate means, utilize(s) opportunities in order to create value and achieve growth, meeting needs through innovation and uniqueness, regardless of the resources controlled at a specific moment.

Seed capital: Funding granted in order to study, evaluate, and develop an initial concept and test the technical validity of the product/service. The seed capital is often essential in high-tech projects, enabling business people to carry out investigations, as well as research-development activities on prototypes that are to become the companies' core business.

Research and development: All the activities carried out within an organization, by which technical and scientific progress is designed and implemented.

In-company research-development includes the creative activities carried out systematically within the enterprise, in order to increase knowledge and its use, so as to create new and improved products (goods or services) and processes, including software development.

Outsourced research-development includes the research-development activities carried out by other enterprises or research institutes.

Clusters can be defined as a group of companies, business players, and related institutions located in proximity to one another and having reached a sufficient level to develop specialized competences, services, suppliers, and skills.

Spinoff company: A new company, created by the separation of a division or a subsidiary from a corporation, by issuing shares of the newly created company to the shareholders, with the purpose of continuing the activity of that division or subsidiary

Startup Company: A newly created company that is currently in the market research-development phase

Competitiveness: A competitive economy has high productivity growth rate. Competitiveness depends on the performance of the industry fuelled by SME's. In order to become competitive, the EU needs to get better results than its competitors in the fields of research and innovation, information and communication technology, entrepreneurship, competition, education, and training. The Lisbon Strategy has set out to turn Europe's economy into the most competitive and dynamic economy in the world. Competitiveness is therefore one of the main priorities on the EU agenda.

Exploiting knowledge: The process by which an innovative idea is turned into a marketable result that brings it economic value

Preseed fund: A financial aid specialized in supporting the knowledge utilization process, either through value-added services or through financial incentives (grants or loans to people interested in the market and/or technical validation of the business idea), offered before the company is created.

Grant: A subsidy paid (with no refund obligation) by the public authorities to companies investing in a region, with the purpose of facilitating their setting up and development.

Grant Fellowship: An amount of money given to a natural person for studies, training or research for the completion of a business idea

Incubation: A business support process aiding the development of a startup company by providing space and services to entrepreneurs

Innovation: Changes that bring out a new performance dimension

Spinoff: A spinoff is a company whose activity resides in the application or use of the research & development activity carried out at a university or research centre.

Startup capital: Funding given to companies for the initial product development and marketing.

9. APPENDICES

Appendix 1

List of the input-output indicators for the macroanalysis of innovation

INPUT – INNOVATION VECTORS

- The number of education graduates/1000 people aged between 20-29
- The academic graduate population/1000 people aged between 25-64
- The broadband service penetration rate (number of broadband lines/100 people)
- The participation in the process of lifelong learning /100 people aged between 25 and 64
- School success (% of the 20-24-year-old population having graduated from the secondary school level)

INPUT – CREATING KNOWLEDGE

- Public expenditures regarding research and development (% of the GDP)
- Private expenditures regarding research and development (% of the GDP)
- The share obtained from average and high-level High-tech (% of the research & development costs in the manufacturing process)

INPUT – INNOVATION AND ENTREPRENEURSHIP

- % of the total number of SME's doing in-house innovation
- % of the total number of SME's doing innovation in cooperation with other SME's
- Innovation costs (% of total earnings)
- Capital invested in newly founded companies (% GDP)
- ICT sector costs (% GDP)
- SME's using organizational innovation (% of the total number of SME's)

OUTPUT - APPLICATIONS

- Employment level in high-tech services (% of the total workforce)
- High-tech product exports of total exports
- New product market sales level (% of total earnings)

- New product company sales level (% of total earnings)
- Employment level in medium and high-level high-tech manufacturing (% of the total workforce)

OUTPUT - INTELLECTUAL PROPERTY

- The number of patents registered at the European Patent Office/million people
- The number of patents registered at the US Patent and Trademark Office/million people
- The number of triadic patents/million people
- The number of community trademarks/million people
- The number of community sketches/million people

Appendix 2

QUESTIONNAIRE REGARDING THE OFFER OF PRODUCTS/TECHNOLOGIES/SERVICES RESULTING FROM THE RESEARCH ACTIVITY

A. DETAILS CONCERNING THE PROVIDER

1. Contact details of the RDI (research-development-innovation) entity

Name .....

Legal status .....

Address.....

Tel., fax, email.....

Contact person's name and job title.....

Tel., fax, email.....

2. RDI entity staff

Number of researchers

- CS1/professor.....
- CS2/associate professor.....
- CS3/lecturer.....
- CS/assistant professor.....

Number of PhD holders .....

Number of students.....

Other (MA students, PhD students, etc.).....

Please describe the team .....

.....

3. Infrastructure – equipment – resources for RDI activities

Number of labs for RDI activities .....

Types of labs for RDI activities[26].....

[26] FIELD CODE (12 TOTAL)

.....

.....

Laboratory accreditation method.....

.....

Main devices/equipment for RDI activities.....

.....

4. Research/development funding sources within the department:

- Public (national, European) funding-*percentage*.....
- Research contracts with the business world -*percentage*.....
- Other funding sources (please specify) .....
- Services offered for: *(percentage of the turnover)*
    - SME.....
    - Multinationals.....
    - University departments.....
    - Research centres.....
    - Other.....
- Sectors in which you offer products/technologies/services.....

.....

5. Types of services necessary for the RDI entity to promote and market the RDI results:

.....

.....

.....

6. Priority research fields (no more than 3)

Research fields

<u>For the 3 priority research fields, please provide the following information from point B regarding the offer of products/technologies/services</u>

Name of the bidder *(Acronym)*.....

The person in charge of the product/technology/service offered:

Name and job title.....

Tel., fax, email.....

B. CONTENT OF THE OFFER

Please fill in a separate Section B for each distinct offer and then attach it to Section A (pages 1 and 2), which is to be filled in once.

Name of the product/technology/service: *Please provide a name in plain language, so as to be understood by any layperson*

Description of the product/technology/service: Please provide a description of the relevant results or other research features

Innovative aspect of the product/technology/service: *Please provide a clear description of the innovative aspects of the research and try to specify the advantages by comparison with the existing technology.*

Scope of the product/technology/service: *Main market applications*

Intellectual property **Current development stage of the product/technology/service**

☐ Development phase – lab testing	☐ patented *
☐ Available for registrations – testing	☐ Already on the market

Comments:

☐ secret technology	☐ other (registered project, model construction rights, etc.)*

- *If the patent/licence request has been filed in, please list the countries where this has been requested in the "Comments" part.*
- *If there is an existing patent, please append the list of countries where the patent has been recorded, in the "Comments" part.*
- *If either the "patented" or "exclusive rights" box has been checked, please also indicate where the patent/licence was initially recorded and add a few words about the company.*
- *Finally, if the offer belongs in the "Other" category, please provide explanations.*

Comments:

Appendix 3

The list of fields and subfields of the innovation offers coming from RDI units in the West Region

1. Nanotechnologies

1. Micro- and nano-engineering: consultancy for thin film and film covering technologies and production equipment
2. Form-memory alloys belonging to various families, including biocompatible ones, in a massive form, as well as sheets or thin film
3. Micro-opto-electromechanical systems, based on the use of intelligent materials for buffering or actuation
4. An installation for nanoparticle synthesis in an ultrasonic field with sonotrode immersion
5. Metallographic analyses, hardness and chemical composition tests
6. Product and technology design

2. Machine construction

1. Ultrasound welding equipment for metal and plastic
2. Wear part thermal spraying technology using hard metals and ceramics
3. Computer-aided mechanical design services using the AutoDesk Inventor 11 software
4. Microstructural examinations using the electronic scanning microscope
5. Devising technologies for processing materials with concentrated energies: electrical discharge machining, fluid jet, laser
6. Optimizing technological processes and technologies in the field of mechanics
7. Technical and economic testing of new materials and technological equipment and of used ones, in order to assess their usage and reusage characteristics
8. The behaviour of metallic, steel-concrete, and wood structures to exceptional actions
9. The stability of structures and constructions made of bars with thin walls
10. Technical support for the technologies of cold pressing manufacturing (stamping, cupping, blanking, profiling)
11. Technical support for polymeric material processing (injecting, extruding)
12. Technical support for prototyping and three-dimensional measurements
13. Technical support for the utilization of innovative technical solutions

14. Integrated planning of products and the mechanical manufacturing processes related to them
15. Consultancy in the operation of conventional machine tools or CNC
16. Consultancy in the implementation of statistical control technologies in manufacturing and experiment design processes

3. Hydraulics

1. The determination of the magnetic, rheological, and magnetorheological behaviour of complex fluids
2. Determining the working parameters and technical condition of hydro-aggregates
3. Hydro-aggregate operation optimization system
4. Design, consultancy and expert services regarding power-generating hydro-aggregates
5. Energy and cavitational tests on turbine and hydraulic pump models
6. Automation, measurement, protection and control, and diagnosis equipment for hydro-aggregates, local and regional dispatch centres for the management of hydro-energy processes. Permanent magnet hydrogenerator design

4. Automation

1. Automated system for the nondestructive examination of ferromagnetic materials using nanostructured sensors
2. Applicative research regarding the operation and programming of numerical control machine tools
3. VARISTOR WITH ENHANCED ENERGY ABSORPTION CAPACITY
4. OVERVOLTAGE PROTECTION MODULE FOR LOW-VOLTAGE APPLICATIONS (HOUSEHOLD APPLIANCES OR THE LIKE)
5. DETERMINING INSULATION CONDITION AND ESTIMATING THE LIFE SPAN OF MEDIUM- AND HIGH-POWER ELECTRIC MACHINES
6. Design and execution of control and automation equipment for synchronous, asynchronous, and direct current machines in the mid- and high-power range

5. ICT

1. Computer-aided design and training in this field

6. Virtual modelling and simulation

1. The study of the flow through hydraulic machines by numerical simulations and mathematical modelling

7. Agro- & biotechnologies

1. Optimizing the microclimate in animal farms in compliance with the specific technologies
2. Non-polluting integration of the organic matter coming from agricultural and animal farms
3. Improving vine planting material
4. The application of the right vine growing technologies with the aim of improving the quality of grapes
5. The design of innovative flows for grape processing and wine maturing-conditioning-stabilizing and bottling
6. Variety and hybrid breeding
7. The application of suitable agricultural technologies to improve the production quality
8. The production of certified seeds of higher biological categories
9. Complete structural analysis of biological products for the identification of peptides, lipids, carbohydrates, pesticides
10. Design/development of new materials and innovative processes using textile biotechnologies
11. Sensory and physical-chemical analyses of cereals, flour, and bakery products.
12. Sensory and physical-chemical analyses of wines, distilled alcoholic beverages, natural juices
13. Sensory and physical-chemical analyses of oleaginous raw materials and of vegetable oils
14. Consultancy and extension in the agricultural field
15. Rural development models and methods
16. Rural enterprise management
17. Detection and quantification of genetically modified organisms in agricultural and food products
18. DNA analyses in plants
19. Micropropagation and *in vitro* selection for species of horticultural and agricultural interest
20. Analyses specific to food products

21. Determining the main physical-chemical indexes of cereals and oleaginous and leguminous seeds
22. Prevention and control of weed growth on agricultural fields, integrated weed control management
23. Complex physical-chemical and microbiological analyses in agricultural food products, fodder, water, soil, biological products
24. The highlighting of genetically modified organisms
25. Technical consultancy regarding ecologic, sustainable agriculture, food security and safety
26. Technical consultancy regarding environment protection

8. Environment technology & renewable energies

1. Analyses specific to environment monitoring
2. Optimizing water treatment plants for potable and industrial purposes
3. The use of electrochemical methods in chemical engineering and environment protection
4. Determining contaminants (nitrates, nitrites, ammonium, pesticides, micotoxines) in the water, soil, and vegetable products
5. Procedures for assessing the compliance of equipment intended for industries with high risk of potentially explosive atmosphere due to gases, vapours, mists, and flammable dust
6. Procedures for assessing the compliance of explosive substances, pyrotechnic items, and shooting techniques used in the civilian extraction of useful mineral substances, in building roads and tunnels, demolitions, fireworks, and other special shooting works
7. Occupational health and safety and environment protection for the industries with toxic and/or explosive atmosphere hazard

9. Medicine

1. Biometric investigation of spinal column deformities
2. Designing and prototyping osteosynthesis implants
3. Analysis of the biomechanical parameters of movement
4. Mechanical and physical-chemical trials for medical device components and other types of products

10. Physics

1. Photonic heating system

11. Chemistry

1. The use of unconventional methods in the synthesis of oxide compounds
2. Analyses of metals present in agricultural and food products and in the environment
3. Computer-aided molecular design
4. The synthesis, application, structure, and reactivity of the organic and elementorganic compounds of phosphorus, nitrogen, and fluorine
5. Inorganic and hybrid compounds relevant for nanostructured material science Precursors for advanced materials
6. Controlling the catalytic activity for solid materials from the class of supported oxidic compounds and metallic cations by modifying the composition, structure, texture, and acidic-basic properties, in reactions of oxidization and dehydrogenation of some organic compounds.
7. Multifunctional organic compounds, materials with applications in medicine, industry, and environment protection
8. Electrochemical reactors with asymmetrical current densities
9. A technology for obtaining PbO2 electrodes deposited on a titanium or graphite base
10. Organic compound synthesis and characterization
11. Static mixer applications in reactive environments
12. Synthesis and characterization of oligomers and polymers.

12. Metallurgy

1. Steel production technology with minimal energy losses
2. Industrial slag utilization technology