

SMART SPECIALIZATION STRATEGY OF SOUTH MUNTENIA REGION

Innovative instrument devoted to regional economic development



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01.

INTRODUCTION



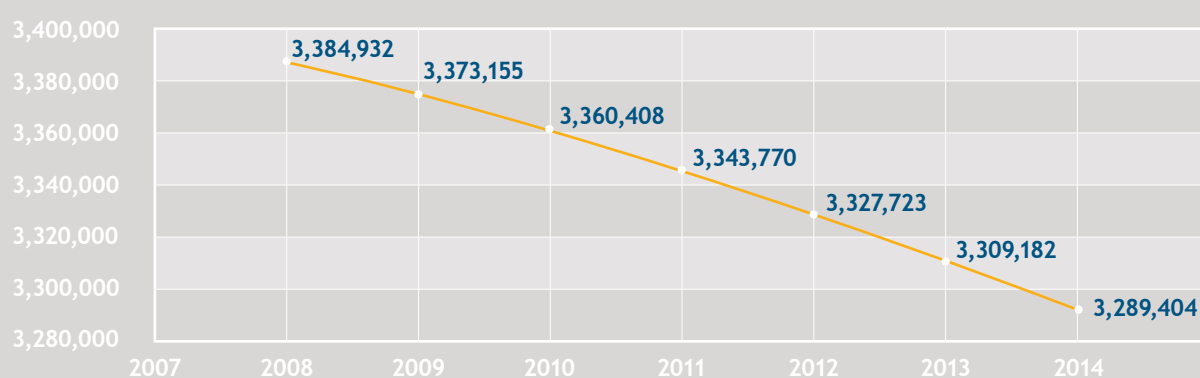
A.

General coordinates

DEMOGRAPHIC STATUS

South Muntenia region is the *second most inhabited region* in Romania, having a population of over 3.2 million inhabitants, that represents 15% of the national population. From the point of view of the demographic evolution, *the trend is descending*, the population decreasing with 13,000 people per year in average. South Muntenia is the region in Romania with the *highest number of inhabitants in the rural environment* (57% of residents).

Evolution of the population of South Muntenia Region, Trend in 2008 - 2014



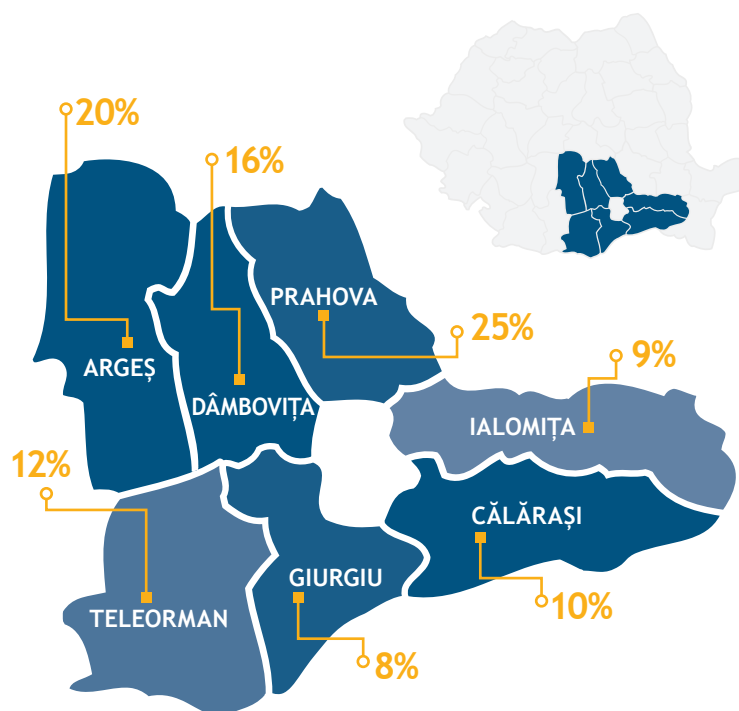
Source: National Institute of Statistics

TERRITORIAL STRUCTURE

South Muntenia region is located in the South-East of Romania. The region's territory encounters all forms of relief, from the mountain areas in the North, to the field and plain areas in the South and East. The center of South Muntenia comprises Bucharest-Ilfov region, area with a strong impact on the economic development.

Being the region comprising the highest number of counties (7), South Muntenia has an area of over 34,400 km² and occupies the third place in the national ranking of regions.

South Muntenia has the largest agricultural surface among all regions in Romania, in 2014 holding over 2.4 million agricultural hectares. With only 0.67 million ha of forests and another forest vegetation, the region is located on the penultimate place in the ranking of areas and with 0.1 million ha occupied surface with waters and ponds, occupies the second place in the ranking.



Geographical location of South Muntenia region and its counties

Population structure break-down on counties, National Institute of Statistics, 2014



ECONOMIC STRUCTURE

More than 53,000 active local units in South Muntenia region have reached over 12.8% of the turnover in 2012, obtained by the local units existing at national level, the region being situated on the second place at national level after Bucharest - Ilfov.

From the point of view of net investments performed, with over 10 billion RON, South Muntenia region also occupies the second place in the ranking of regions in Romania at this chapter.

The weight of the main indicators of South Muntenia at the national level, 2012

	TURNOVER - million RON -	EMPLOYEES - people -	LOCAL UNITS - number -	NET INVESTMENT - million RON -
South Muntenia	140,063	523,551	53,553	10,354
Romania	1,094,326	4,442,865	486,200	79,914
WEIGHT	12.80%	11.78%	11.01%	12.96%

Source: National Institute of Statistics

Recording a turnover of over 42% of the region's total turnover, the industry represents the economic engine. Nevertheless, approximately 70% of the employees from this region work in the field of services.

The structure of the main relevant economic indicators of South Muntenia, 2012

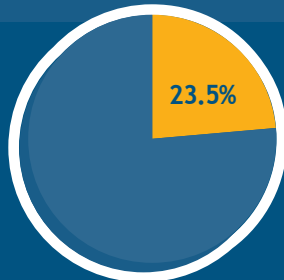
South Muntenia region		TURNOVER - million RON -	EMPLOYEES - people -	LOCAL UNITS - number -	NET INVESTMENTS - million RON -
1	Agriculture	7,575	21,623	2,934	971
2	Industry	60,780	182,528	5,292	6,085
3	Commerce	44,537	74,012	21,872	864
4	Services	27,171	245,388	23,455	2,434
TOTAL		140,063	523,551	53,553	10,354

Source: National Institute of Statistics

Compared to the national context, the region contributes with over 23% to the total turnover of the agricultural sector and with 20.31% of total employees in agriculture in Romania. In conclusion, the region has a very good agricultural potential.

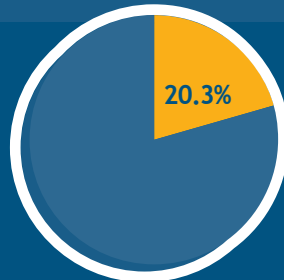
The weight of the main economic indicators of South Muntenia region at the national level

Turnover in
AGRICULTURE



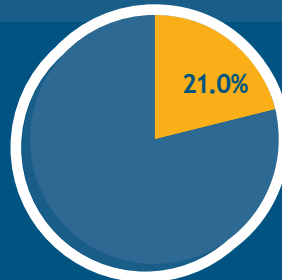
32,204
million RON

Turnover in
INDUSTRY



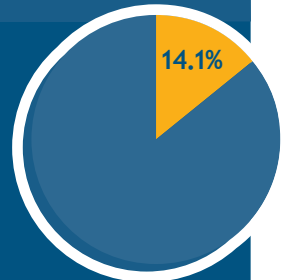
299,320
million RON

Employees in
AGRICULTURE



103,663
people

Employees in
INDUSTRY



1,295,692
people

South Muntenia region occupies the second place at national level, having a GDP of 67.55 billion RON that represents 12.4% of Romania's average GDP. The GDP's average value is calculated for the period 2008-2012.

GDP'S AVERAGE VALUE (2008-2012)
- billion RON -

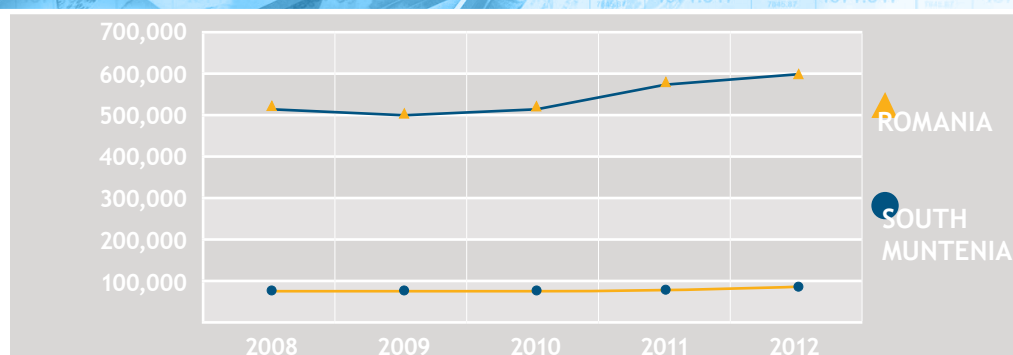
South Muntenia	67.55
Romania	546.11
WEIGHT	12.37%

Source: National Institute of Statistics

 **SOUTH MUNTENIA**

ECONOMIC EVOLUTION

Compared evolution of GDP in South Muntenia region with the GDP at national level



Source: National Institute of Statistics

If, at national level, the GDP recorded a significant increase during 2008-2012, the GDP of South Muntenia region remained relatively the same, the increase being from 64.74 billion RON in 2008 to 67.55 billion RON in 2012. As a value, for the entire time span, South Muntenia region is located on the second place in the ranking of regions from the GDP's point of view.



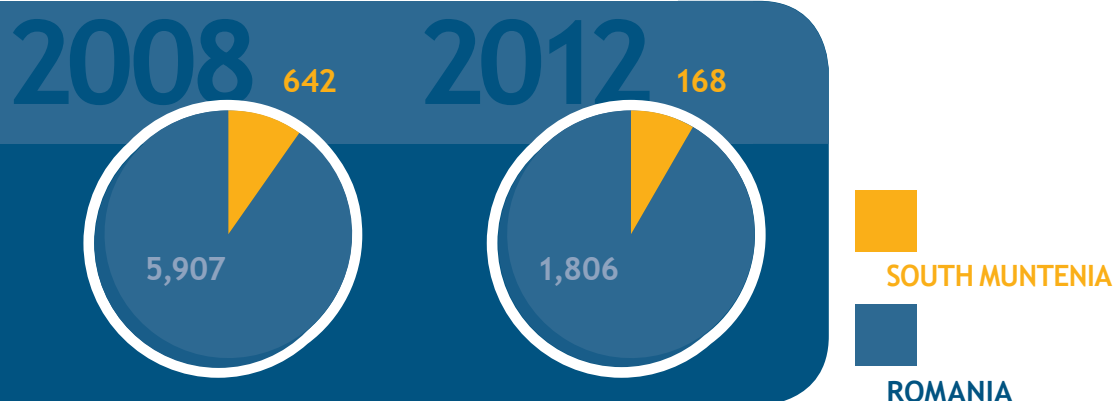
B.

Evolution in the field of Research, Development and Innovation (RDI) for the region

From the point of view of innovation expenses, with 890 million RON in 2010, South Muntenia region occupies the second place in the ranking of regions, after Bucharest-Ilfov.

Having in regard that the research-development activity involved 4,595 employees in 2012, the region is only outrun by Bucharest-Ilfov region with a number of 21,128 employees.

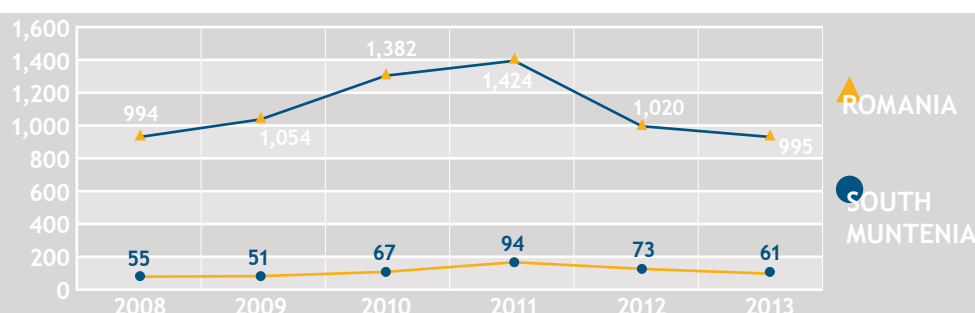
Number of innovative enterprises from South Muntenia region of the total of innovative enterprises existing at national level and their evolution



Source: National Institute of Statistics

The trend of the number of innovative enterprises, both at national as well as regional level is a descending one. If in 2008, there were 642 such units operating in South Muntenia region, in 2012, their number decreased to 168, value representing less than 27%. The trend is maintained at national level as well, where out of almost 6,000 existing units in 2008, in 2012 there were only 1,806 left.

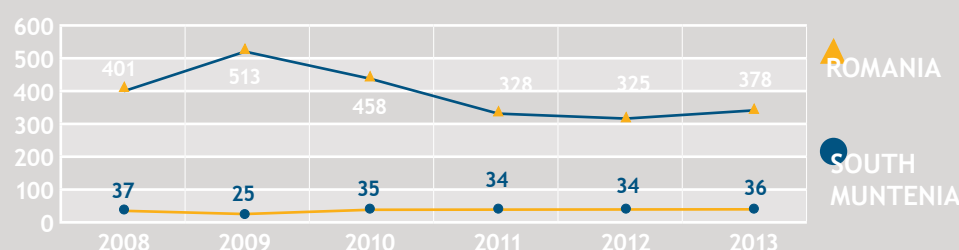
The evolution of requests for innovation patent submitted by Romanian applicants, 2008-2013



Source: National Institute of Statistics

Both at national and regional level, the requests for patents have recorded a slight increase during 2008-2011, subsequently decreasing during the period 2012-2013. The requests for invention patents submitted in South Muntenia region represent approximately 7% out of those submitted at national level.

Evolution of registration requests for drawings or designs submitted by Romanian applicants, 2008-2013



Source: State Office For Inventions And Trademarks

Compared to the patent requests, the number of registration requests for drawings or designs submitted by Romanian applicants from South Muntenia region, remained relatively constant, 37 requests registered in 2008 and 36 registered in 2013, year when they represented approximately 10% out of the total requests submitted at national level.

Evolution of RDI expenses and their weight in the region's GDP, 2008-2012

	2008	2009	2010	2011	2012
GDP SOUTH MUNTENIA (million RON)	64,740	65,901	66,784	70,037	70,300
RDI SOUTH Muntenia (million RON)	229	221	240	266	332
Weight of RDI in GDP (%)	0.35%	0.34%	0.36%	0.38%	0.47%

Source: National Institute of Statistics

As of year 2009, the RDI expenses performed in South Muntenia region had an ascending trend. In 2012, they exceeded 332 million RON and 0.47% of the region's GDP.

02.

ANALYSIS OF THE REGION'S DEVELOPMENT CONTEXT AND THE SMART SPECIALIZATION FIELDS



A.

Analysis of development and RDI potential status

The closeness to Bucharest generates both favourable as well as unfavourable effects on the development and RDI potential situation.

The above mentioned context has also lead to the lack of some strong university centers, as encountered in each region (Cluj-Napoca - North-West, Iasi-North-East, Constanta - South East, etc). Nevertheless, the closeness to Bucharest and its strong research institutes is one of the reasons for which South Muntenia region is on the second place in the ranking of requests for invention or drawing and designs patents.



Registration requests for patents and drawings submitted by Romanian applicants, 2013

	ROMANIA	BUCHAREST-ILFOV	SOUTH MUNTENIA
Requests for invention patents submitted by Romanian applicants	995	348	61
Registration requests for drawings or designs submitted by Romanian applicants	378	173	36

Source: State Office For Inventions And Trademarks

The main cities developed from the point of view of RDI from the region are:

- Târgoviște - Valahia University;
- Ploiești - PETROLEUM-GAS Ploiești University;
- Pitești - Pitești State University and „Constantin Brâncoveanu” University.

The Romanian Academy includes 60 institutes and research centers in its system, contributing to the development of science, letters and arts at national level. With respect to the situation at level of South Muntenia region, there is no institute, center or foundation run by it.

Being a mainly agricultural area, South Muntenia region comprises two National Research-Development Institutes:

● Fundulea National Agricultural Institute of Research

Development, located in Fundulea settlement from Călărași county, activates in the field of research - development on issuing and usage of conventional genetics method, biotechnology, molecular genetics, physiology, creating of stabile hybrid species and production of superior seeds, issuing of alternative technologies for cultivating plants issuing of epidemiologic and dynamic studies for populations of organisms harmful for the field crops.

● RDNI for biotechnologies in horticulture Ștefănești

Located in Ștefănești, Argeș county, activates in research - development in physical and natural sciences, issuing and perfecting biotechnologies of in vitro reproduction of horticultural species of economic importance, establishing the efficient methods for long and medium time preservation of vegetal cells and tissues; ecologic methods of fighting against disease and pests for vine and plants obtained through biotechnological methods.

From the point of view of private infrastructures, the presence of Dacia Company in South Muntenia region has contributed to the development of **Renault Technologie Roumanie**, a design and engineering center located in Titu, Dâmbovița County. This infrastructure can be considered the most relevant private agent in this field, having 450 employees and registering a turnover of over 120 million euro in 2013, obtained especially from the development of the newest technology in the field of tests and necessary methods for testing vehicles and components.

Although there is no university center in South Muntenia region which may be compared to the large centers in the other seven regions, the development of Valahia University from Târgoviște proves that the region has a potential to develop the RDI capacity. The investments performed within the Multidisciplinary Research Institute represent a first step in developing a RDI capacity of national importance.

In spite of the fact that, at macroeconomic level, the number of innovative enterprises has decreased, the increase of research-development expenditure percentage in the regional GDP indicates a focusing of research within strong entities, which assign large budgets for research.





B.

SWOT analysis

The SWOT analysis is the result of processing and filtering the conclusions resulted from the quantitative and qualitative analysis of the region. This operates as a scanning of all fields subjected to analysis, assessing the main influence factors, with the purpose of highlighting the strengths, weaknesses against the existing opportunities and threats. The region was analyzed especially from the perspective of specialization and RDI potential, the main influence factors being human, natural and cultural resources, area's infrastructure, the economy and RDI sector.

Human resources:

- High human potential in agricultural sector and processing industry;
- High level of available human resources volume.

Natural and cultural resources:

- Over 60% of the region's surface is located in the Romanian Plain, excellent agricultural area which provides the region a very high potential for agricultural;
- The largest agricultural surface at national level;
- The existence of all relief forms, from the Danube plain in the South, to the mountain areas in the North, provide the region with a high touristic potential.

Infrastructure:

- The existence of sailing Danube and its branches in the South - East part of the region;
- The largest network of highways at national level: A1 Bucharest-Pitești highway, A2 Bucharest- Fetești - Constanța highway and A3 Bucharest - Ploiești highway;
- Closeness to the country's main airport and Constanța port, the neighbourhood of the Danube in the South and East and Constanța port, at the cross border point from Giurgiu;
- The region is crossed by Brașov-Ploiești-Bucharest-Giurgiu development axis, from the North to the South, Romania's main development corridor, accumulating approximately 30% of the country's urban population;
- The region's positioning is a strategic one: it is both a border region, as well as at the crossroads of multiple TEN-T priority axis, which link Europe to the Mediterranean area and Asia.

Economy:

- The most important industrial concentration of the country, Dacia cluster, having the highest Competitive Potential Index in the country and a high innovation potential;
- The biggest number of industrial concentration fields at national level - Prahova County;
- Closeness of all counties to Bucharest, the largest economic point in the country, with easy access to the distribution market and good quality services;
- Access to the Danube represents a high advantage for the agricultural sector, in order to distribute the production, the highest at national level.

Research-Development-Innovation:

- Existence of research-development capacities both in the public, academic as well as private environment and their high interest for the sector's development, intensifying of interactions between environments involved and the technologic transfer;
- High level of informing of agents from the RDI sector with respect to objectives and strategic directions at Romania's and EU's level, aiming the RDI sector;
- High level of cooperation existing between the agents from RDI from the South Muntenia region and those from the most powerful pole of RDI in the country, namely Bucharest-Ilfov
- Existence of a real interest from all agents in the area from the RDI sector (public, private and academic environment) in order to develop and increase the collaboration, technologic transfer and partnerships.

STRENGTHS

Human resources:

- Closeness of all counties to Bucharest favors the exodus of young people and „brains”;
- A decrease rate of population with superior studies and the highest level of illiterates and persons with no schooling. These are owed partly to the residents structure of the population in South Muntenia having the highest level of rural residency in Romania;
- Low level of occupation of the population in the activity sectors with high added value;
- Decreased indicators with respect to the usage of computers or internet in households;
- Lack of specialized human resources, with a high level of qualification, both in public as well as private environment;
- Insufficient specialized human resources in the field of RDI;
- Lack of a constant legislation of social protection for the stimulation of graduates of superior studies with proved national and international performances, by granting benefits. This contributes to the migration of high qualification labor force outside

the country's borders.

Natural and cultural resources:

- Insufficient capitalization of existing natural resources, the mountain and Danube touristic potential, on account of reduced accessibility of natural and cultural touristic objectives;
- The urban cultural scenery is not capitalized, compared to other regions.

Infrastructure:

- The low quality of the existing road infrastructure (valid at national level)
- The water transport provided by the Danube is insufficiently capitalized at present;
- Poorly developed railroad;
- Touristic infrastructure and access infrastructure to areas with touristic potential is poor;
- Insufficiently developed border area restricts the economic, social and cultural exchanges. Although there are five pairs of border cities located in the Danube, the region only includes a single road bridge across the Danube: Giurgiu - Ruse.

Economy:

- Compared to the European references, South Muntenia region is less developed, with a GDP per capita lower than 50% of the European level;
- The highlighted heterogeneity of the counties within the region: Argeş and Prahova present a very low level of industrial sector, while Ialomiţa, Teleorman and Giurgiu are mainly agricultural counties, with a low level of industrial activities;
- The lowest number of clusters at national level: two, both built around the auto industry from Argeş county;
- Low collaboration between the business environment and superior learning, research-development units; low technological transfer;
- The wage level is not attractive for the qualified Human resources, especially in the advanced and technologized fields such as RDI.

Research-Development-Innovation:

- Innovative enterprises have a decreasing trend that is warning both at national as well as South Muntenia region level;
- The number of enterprises with product innovation and/or process has pursued an ascending trend during the horizon 2008 - 2012, decreasing the technological transfer and smart development potential;
- At the level of South Muntenia region there are currently only two accredited technological centers. Thusly, the region faces a lack of a major component of innovating infrastructure and technologic transfer and namely, with the lack of technological transfer accredited centers, technological and business incubators, offices for connection with the industry and the scientific and technological parks;
- Currently, the research development activities do not benefit from sufficient and stabile financing in order to be developed sustainably;
- Currently there is no legislative package which stimulates and improves the RDI activities, technological transfer and public-private partnerships.

WEAKNESSES

OPPORTUNITIES

Human resources:

- Closeness to Bucharest, to the largest university and research centers could facilitate the access to qualified human resources, in the context of some functional policies to draw them, both at public as well as private level.

Natural and cultural resources:

- Significant European funds available for the 2014-2020 time span for infrastructure or environment sectors;
- The existence of all relief forms, from Danube plain in the South, to the mountain areas in the North, represent a huge under-capitalized potential for the touristic sector;
- Area with weather proper for an optimum efficiency in capitalizing the sun energy;
- There is a commercial and touristic potential provided by the region's location on Danube's river route and the „cycling highway” VELO 15.

Infrastructure

- Infrastructure development of Bucharest-Ilfov peripheral area increases the accessibility of South Muntenia region in terms of economic units relocation potential, in order to reduce costs and better opportunities for accessing grants.

Economy

- Proximity against Bucharest and access to the Danube bear a high potential in order to easily identify the distribution markets;
- Implementation of European Union Strategy for the Danube Region and stimulating the cooperation with Bulgaria through the transnational and cross

border cooperation programs

- Existence of a favorable contact for developing the social innovation and social entrepreneurship;
- Strategic usage of innovation in agriculture may radically increase the added value of the agricultural production and implicitly exploit the agricultural potential;
- Capitalization of the huge potential in the field of green energy, resources of renewable energy in agriculture;
- The development of Bucharest metropolitan area and creating of 2nd ring road shall transform a part of the region in transit area and with delocalized potential for active units, due to the lower production costs and more generous state aids.

Research-Development-Innovation:

- The European, national and regional policies and strategies in force, have as main priority the development of RDI sector and development of fields with smart specialization potential, creating the premises for assignment of funds for investments and research significantly higher than in the past.
- Significant European funds are assigned to the research-development-innovation sector during the programming period 2014 - 2020;
- Both at regional and national level, the development of RDI sector and favouring of cooperation and the technological transfer is a priority, the trend of financing of this field being an ascending one, and the projects with a significant component for technologic transfer being a priority when financing.

THREATS

Human resources:

- The closeness to Bucharest, the largest university center in the country has a negative impact on the development of university learning in the region;
- Maintaining the trend on migration of highly skilled personnel, in lack of some policies meant to reduce this phenomenon, it shall have a negative long term effect on the economy and especially on the RDI sector;
- The trend of natural increment is descending and has as result the aging of population, decrease of critical mass of active and productive population compared to the inactive-aged population;
- Highlighting the external migration phenomenon, especially valid for young people with skills above average;
- Poor development of social infrastructure in the region (5 counties out of 7 are located under the average per country with respect to the number of associates), negative factor when using the human resources in significant activities of social innovation.

Natural and cultural resources:

- The weather changes have an important impact on the efficiency of agricultural activities, the most important and widespread field of activity in the region;
- Decrease of agricultural surfaces that pursue the uncontrolled urban spread.

Infrastructure

- Incorporation of Bucharest metropolitan area shall negatively influence the region; 25 administrative territorial units are transferred from the region towards the metropolitan area, by thus increasing the influence and degree of polarization of Bucharest on the region.

Economy

- High degree of dependency of the region, and not only, on the industrial colossus that is Automobile Dacia SA;
- Increase of costs with labour and delays with Pitești - Sibiu highway which could lead to the decisions of delocalize of Dacia plants;
- High dependency on agriculture of most rural localities from the South of the region, correlated to the low level of technology in agriculture and aged labor force;
- Lack of entrepreneurship culture and social fear are barriers against the possible social reconstruction projects for the area;
- Extension or highlighting of macro-economic crisis currently manifested inside the European Union.

Research-Development-Innovation:

- Financings for projects developed by innovation clusters are extremely restrictive, requesting a specific economic force, inexistent at the level of newly occurred clusters (except for the auto industry) and do not allow the development of clusters through own, innovating projects.

C.

Specialization model for South Muntenia region

Economic specialization criterion

- Construction of vehicles, components and production equipment
- Agriculture and food industry
- Bioeconomy: development of circular economy
- Tourism and cultural identity
- Smart localities
- High technology industry

Scientific specialization criterion

- Agriculture, food sciences and fishing
- Biology, biotechnology and biomedicine
- Chemistry and materials' science
- IT&C, calculus and Imagistics
- Physics, astrophysics and energy
- Environment and sustainability

Technological specialization criterion

- Robotics. Adaptronics, Mechatronics, Integronics
- Micro and Nano electronics, Photonics
- Nanotechnologies
- Advanced materials
- Advanced production processes
- Content Management technologies and Information management

SMART SPECIALIZATION FIELDS

Pursuing an elaborate assessment and selection process there have been selected six fields of smart specialization, that have the highest potential for innovation, development and training of the other activity fields in the region. Each field may be capitalized through multiple economic, technologic or scientific activities.

The six smart specialization fields, vertical priorities at the level of South Muntenia region are:

1. Construction of vehicles, components and production equipment
2. Agriculture and food industry

3. Bioeconomy: development of circular economy
4. Tourism and cultural identity
5. Smart localities
6. High technology industry

1 Construction of vehicles, components and production equipment



ECONOMIC SPECIALIZATION	Activities of interest refers to smart automobile manufacture, sustainable and safe according to EU regulations, digitization of the manufacturing processes (smart automation), electrical equipment and smart manufacturing equipment, production of engines, components, parts, engineering, mechatronics	
Scientific specialization in conjunction with technologies	<ul style="list-style-type: none"> • Engineering, artificial intelligence • Materials science • Biology • Environment and Sustainability 	<ul style="list-style-type: none"> • Robotics Mechatronics, Adaptronics, Integronics, digitization of manufacturing processes • Advanced materials for vehicles • Biofuel • Vehicles and green technologies and energy efficient
Technological specialization	Capacities	<ul style="list-style-type: none"> • Multidisciplinary STRIV Târgoviște • National Institute for Oilfield Equipment - Ploiești IPCUP • National Institute for Mechatronics and Measurement Technique • Competitiveness Pole Auto Muntenia • Cluster SPRINT • Regional Cluster Mechatrec • Regional Cluster Ind-Agro-Pol • Renault Technologie • ACAROM
Technological specialization	Technologies	<ul style="list-style-type: none"> • Robotics • Robotic equipment for measurement and control functions • Nanotechnologies • Nano-powders, Graphene • Advanced Materials, Advanced Processes • Sensors, automotive test tracks and benches
Reference Regions	Catalunia, Darmastad, Piemonte	

2 Agriculture and food industry



ECONOMIC SPECIALIZATION	Activities of interest relates to agriculture and food industry (genetic material, species diversification, irrigation systems, products with high nutritional value, fertilizers, short and online supply chains, agricultural equipment)	
Scientific specialization in conjunction with technologies	<ul style="list-style-type: none"> • Agriculture, Food Sciences and fishing • Biology, biotechnology and biomedicine • Chemistry and Materials Science • IT & C, computing and imaging • Physics, Astrophysics and Energy 	<ul style="list-style-type: none"> • Biotechnology • Biotechnology • Advanced Materials, Advanced Processes • Robotics • Information Management
Technological specialization	Capacities	<ul style="list-style-type: none"> • NARDI Fundulea, NRDI Ștefănești, RDI Maracineni, NIRDPC Bucharest, MTM NRDI Bucharest, RDI Agricol Albota, RD Resort for pomiculture Voinești, RD resort for pisciculture Nucet, RTEI Irrigations and Drainages Baneasa-Giurgiu • RDI for viticulture and vinification Prahova
Technological specialization	Technologies	<ul style="list-style-type: none"> • Robotics • Robotic equipment for measurement and control functions • Biotechnologies • Genetic engineering • Advanced materials, advanced production processes • Automated manufacturing flows • Information Management • Meteorological applications, agricultural forecasts, short supply chains
Reference Regions	Emilia Romagna, Aquitaine, Wielkopolskie	



3 Bioeconomy: Developing circular economy

ECONOMIC SPECIALIZATION	Production of biofuels, ecologic fertilizers, plant biomass, plastics and biocomposites, mobile facilities for biomass processing, nutritional supplements, cosmetics, herbal medicines	
Scientific specialization in conjunction with technologies	<ul style="list-style-type: none"> • Agriculture, Food Sciences and fishing • Biology, biotechnology and biomedicine • Chemistry and Materials Science • IT & C, computing and imaging 	<ul style="list-style-type: none"> • Biotechnology • Biotechnology • Advanced Materials, Advanced Processes • Robotics
Technological specialization	Capacities	<ul style="list-style-type: none"> • NARDI Fundulea • NIRDPC Bucharest, • MTM NRDI Bucharest • Regional Cluster Medgreen • Regional Cluster Ind-Agro-Pol
Technological specialization	Technologies	• Robotics
		• Robotic equipment for measurement and control functions
		• Biotechnologies
		• Nutritional supplements, cosmetics, homeopathic medicines
		• Advanced materials, advanced production processes
Reference Regions	Emilia Romagna, Aquitaine, Wielkopolskie	



4 Tourism and cultural identity

ECONOMIC SPECIALIZATION

Provide integrated tourism services, provide connections to international circuits, local tourism brand design, promote local traditional products, creation of tourism products and brands niche, rehabilitation of cultural objectives, creating themed events for promotion, portals that allow customization of travel packages by tourists, international certification of tourist capacities

Scientific specialization in conjunction with technologies

- IT & C, computing and imaging
- Environment and Sustainability
- Agriculture, Food and Fisheries Sciences

- Content Management Technologies and Information Management

Technological specialization

Capacities

- Valahia University
- Medgreen Cluster
- ANTREC

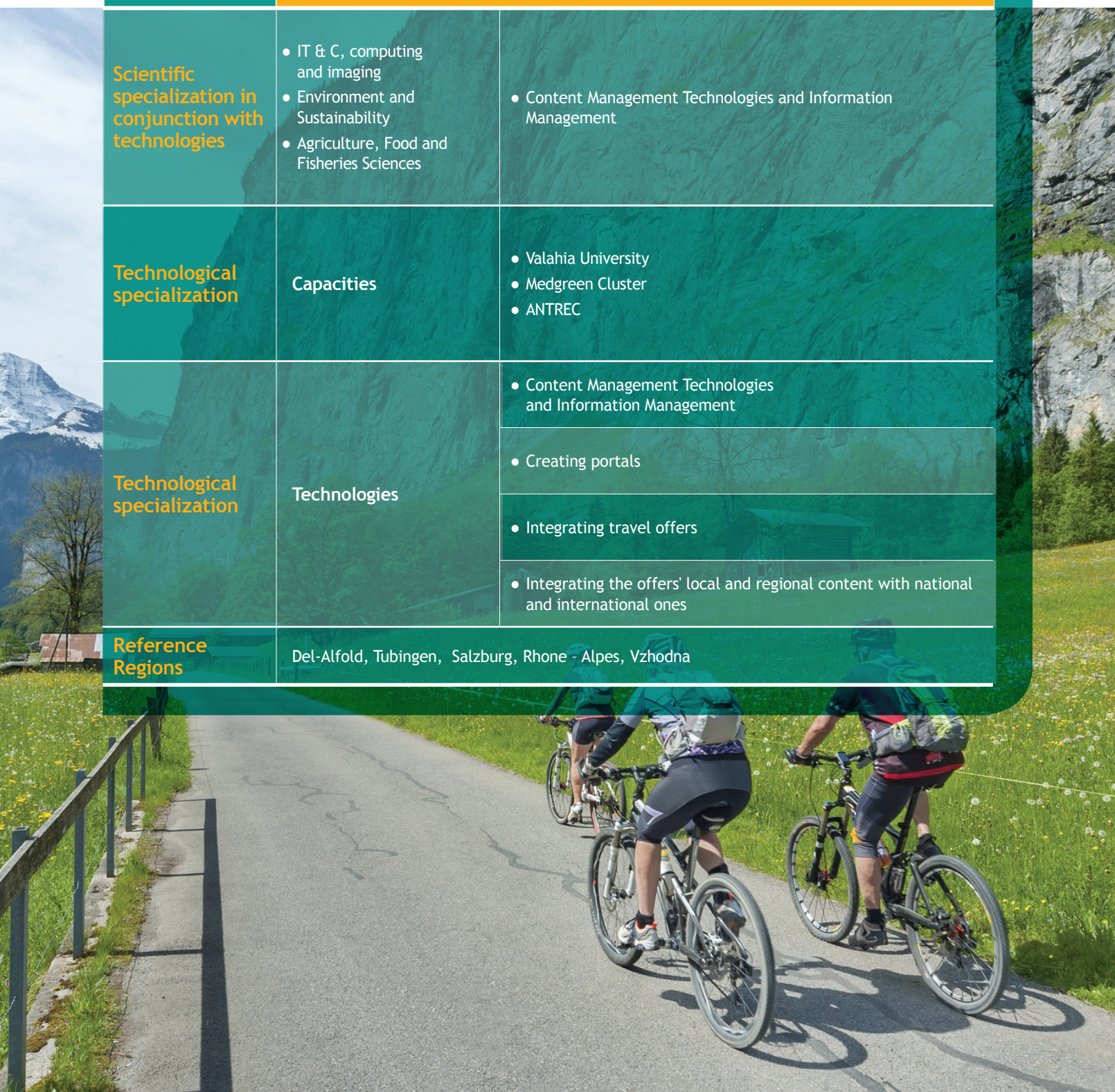
Technological specialization

Technologies

- Content Management Technologies and Information Management
- Creating portals
- Integrating travel offers
- Integrating the offers' local and regional content with national and international ones

Reference Regions

Del-Alfold, Tubingen, Salzburg, Rhone - Alpes, Vzhodna





5 Smart localities

ECONOMIC SPECIALIZATION	Smart Homes solutions for urban mobility, smart grid solutions, energy efficiency „zero-emissions” and renewable energy production, waste management collection, recycling, decontamination, water quality management	
Scientific specialization in conjunction with technologies	<ul style="list-style-type: none"> • IT & C, computing and imaging • Physics, Astrophysics and Energy 	<ul style="list-style-type: none"> • Micro and nano electronics • Robotics, advanced production processes • Content Management Technologies and Information Management • Photonics
Technological specialization	Capacities	<ul style="list-style-type: none"> • NIRDMMT • Cluster Mechatrec • Cluster Medgreen • Multidisciplinary STRIV Târgoviște
Technological specialization	Technologies	• Robotics
		• Measurement and control installations
		• Advanced production processes
		• Robotic Manufacturing Processes
		• Photonics
		• Production of solar panels, smart grid applications
		• Content Management Technologies and Information Management
Reference Regions	Vienna	



6 High-tech Industry

ECONOMIC SPECIALIZATION	Products incorporating advanced systems, advanced manufacturing processes that have the high added value. Measuring instruments, testing, monitoring and control, monitoring and remotely intervention systems , electronics, robots	
Scientific specialization in conjunction with technologies	<ul style="list-style-type: none"> • Engineering • Chemistry and Materials Science • IT & C, computing and imaging • Physics, Astrophysics and Energy 	<ul style="list-style-type: none"> • Robotics Mechatronics, Integronics, Adaptronics • Nanotechnologies, advanced materials • Information Management • Photonics
Technological specialization	Capacities	<ul style="list-style-type: none"> • NIRDMMT • Mechatrec Cluster • Cluster Medgreen • Multidisciplinary STRIV Târgoviște • Development and Tourism Promotion Association Prahova
Technological specialization	Technologies	<ul style="list-style-type: none"> • Robotics • Production of advanced artificial intelligence system • Advanced production processes • Robotic Manufacturing Processes • Photonics • Production module of renewable energy
Reference Regions	-	



03.

SMART SPECIALIZATION STRATEGY (RIS3) SOUTH MUNTENIA REGION



A.

Smart Specialization Strategy - vision and mission

VISION

South Muntenia region innovates and develops its economic competitiveness at internal and at international level by developing the scientific and technological potential of smart specialty fields, promoting cooperation between the agents of the innovation system and efficiently valorising the existing resources and capacities.

Through the implementation of the thematic priorities and measures envisaged by the Smart Specialization Strategy, South Muntenia region will generate a vector for its sustainable and competitive development on medium term. Thus, the sectors and key fields identified at regional level as a nucleus of smart development, by implementing specific actions from the strategy, shall influence the economic region as follows:

- Increase the level of research, development and technological innovation and generate competitive products and services, with high added value;
- Generate competitive products and services, both internally and externally, in addition to related activities that favor inclusion;
- Stimulate research, development and innovation activities and technological transfer and in the other regional economy's branches;
- Increase region attractiveness for external markets as well as production and trade;
- Creation of a favourable context for sustainable development at regional and national level.

MISSION

The strategy' mission for South Muntenia region is to capacitate and coordinate the agents involved (public sector, research and development institutions, teaching institutions, private companies, natural persons) in performing the proposed investment measures, actions and projects, in order to reach the final objectives, with the purpose of transforming the vision in reality.

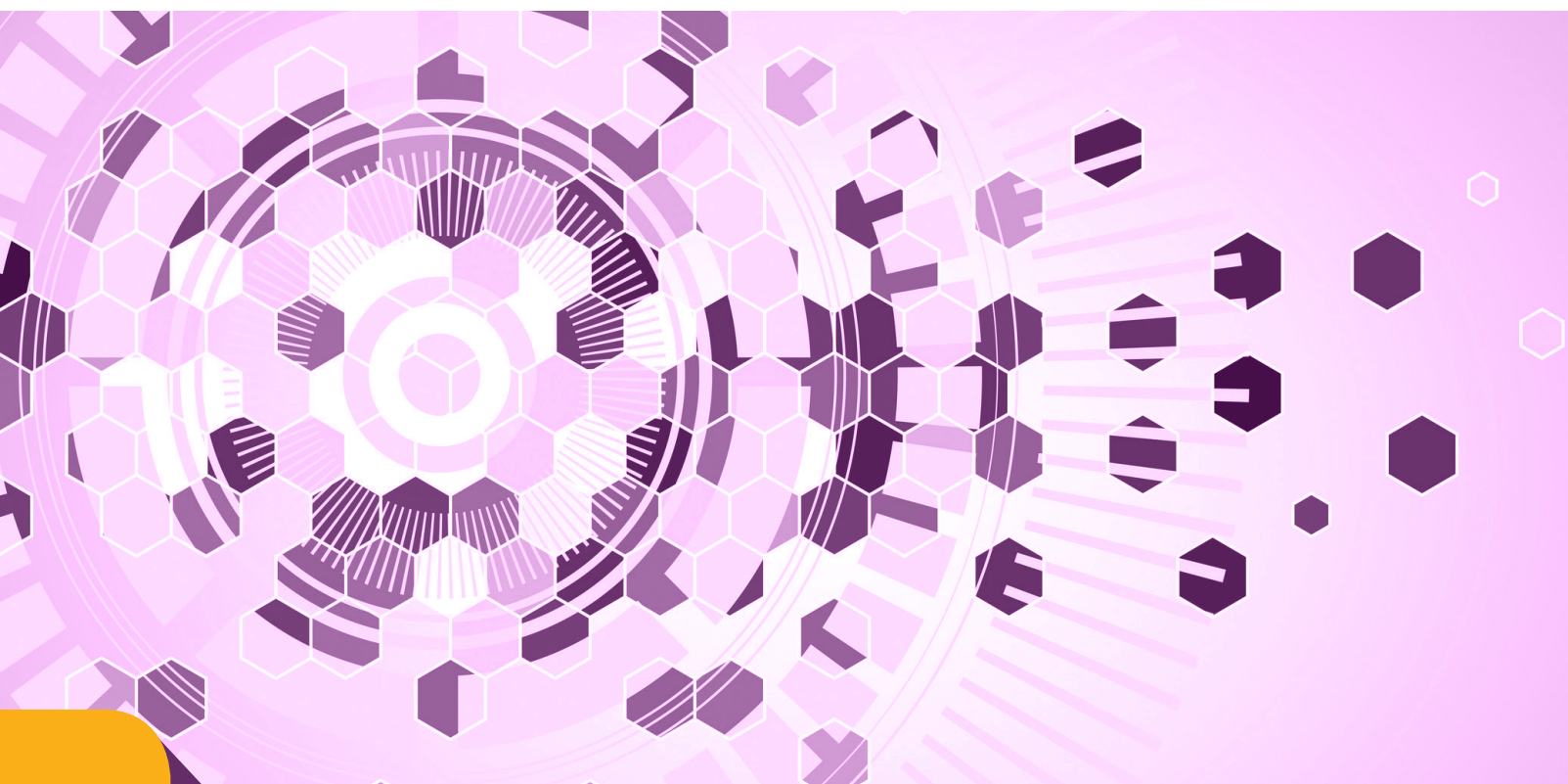


RIS3 generates an economic development based on synergy (complementarity) of the priority specialty sectors, benefiting from the collaboration potential between these fields. The region is concentrated on benefiting in a creative manner by the region's natural potential, especially related to agriculture and tourism, where there are unique competitive advantages at national and European level.

One of the strong points of the region is the industrial development in production of vehicles and production equipment that is added to the production of parts and components for this. In these strong domains there are excellence centers developed based on high technology and new industries and services in the maximum potential points.

Economic innovation is augmented by social innovation and innovation in protecting and valuing the environment.

Local cultural identity is the main pillar which a responsible and modern tourism is developed on, valuing emerging niches that shall have a strong development in the next programming period.



B.

Thematic priorities

1. Competitive regional economy based on innovation

From the quantitative and qualitative analysis, South Muntenia region is located on the last places at national level for most of the indicators that measure the competitive development of the economy based on innovation, the only one with good results being the automobile industry. Except for this top industry, where the innovation applied in economy is at the highest standards in Europe especially due to development pole created around Dacia factory, in other fields the innovation degree of the economic activities is extremely low, thus deepening the regional disparities.

The development of new enterprises in the fields with innovation potential is extremely low except for the automotive industry. Additionally the number of companies that perform the product innovation and process has decreased during the 2008-2012 period with 74%, a radical decrease that raises a great question mark on the future of the region's innovation.

The qualitative analysis shows also that the private entities cooperate at a reduced level and the partnership culture is almost inexistent.

2. Stimulate the technological and scientific transfer

Technological transfer means how the RDI activities performed at academic level are used and sought after on the market. One of the main problems of RDI field in Romania and implicitly of South Muntenia region is the low level of RDI outcomes that can be capitalized on the market, resulting in inefficient expenditures.

The main conclusion of the analysis that the European Union has performed in the period before the current programming horizon for the strategic planning was that an insufficient number of results of research and development generates market products and services. The European Union's message is clear: the days of fundamental research oriented to the publication of the results

and international recognition of the performers have passed, now it is a time of market targeting from the early stages of research.

The findings of the qualitative analysis indicate a number of highly modern and efficient investments made in RDI infrastructure (research infrastructure of Valahia University e.g.), while the findings of the quantitative analysis reveals a poor infrastructure in terms of stimulating technology transfer and scientific work by the low number and irrelevant activity.

3. Develop and maintain highly skilled human capital in the region

The geographical location of the Bucharest-Ilfov area in the center of the South Muntenia region has a major impact: in addition to the significant role that it plays in its long-term development, is also the cause of some problems. The migration of youth and of highly skilled human capital to Bucharest is one of the main challenges faced by the region. Also, given that Bucharest represents the largest university center of the macro region composed by South Muntenia and Bucharest-Ilfov, the development of high education is profoundly affected.

From the point of view of schooling degree, South Muntenia is the second to last in terms of higher education graduates per hundred inhabitants, with only 10.5% of the total population. Given the two values stated, it is necessary to take measures for the development and maintenance of human capital in the region. Transforming the proximity to Bucharest-Ilfov from threat to opportunity by creating a context for attracting high potential of human capital is one of the main challenges of innovation-based development of the region.

4. Facilitate the assimilation of knowledge and innovation results

RDI activities are a recognized priority for the sustainable regional development, being a necessity for the development of infrastructure, human resources and specific legislation.

Assimilation of knowledge and research results represents the shift from product/service innovation to its distribution on a large scale. This is the most selective process, most initiatives failing to pass something that in economic literature has been defined as the „valley of death”. Although the concept derives from the

financial area, describing the large financing needs up to market penetration and conquest of the target segment, it can be generalized to the whole process of assimilation of knowledge because of the high failure rate specific.

The Romanian RDI Strategy 2014 - 2020 has as main directions some actions targeting the access to knowledge and fundamental, cutting edge and exploratory research. The Regional Smart Specialization Strategy is required in order to complement these actions by specific measures of assimilation of the results obtained from the access to knowledge or research activities.

5. Improve the internationalization capacity of the businesses

A weak point of Romania and of the region is the low level of exports. In the present context of globalization, international cooperation and economic exchanges are vital to improve the business environment, especially for SMEs and to develop a strong and sustainable industrial base able to cope with foreign competition.

The improvement of the capacity for internationalization is a necessity resulting on one hand from the quantitative analysis and interactions with businesses in the region, as well as from national policies and priorities set. Thus, the regional development of exports represents an important element in order to increase the competitiveness.

As a strategic objective, Romania aims that export of goods and services to exceed 40% of GDP by 2020. In order to achieve this goal it is necessary to integrate Romanian goods and services in the international value chains, globally, of components of products and services with higher added value.

The international competitiveness of Romanian research, the presence in international markets of innovative products made in the country and the global opening of the national RDI market depend on the support for the Romanian membership or participation in the initiatives of different international organizations, agencies, programs and regional, European or international infrastructures. Directions and measures taken at each regional level will help to achieve the national strategic objectives. In this regard, at the level of South Muntenia region three measures have been identified to stimulate the internationalization of businesses.



C.

Measures

The main actions identified following the qualitative assessment of the region regarding smart specialization, applicable in all vertical priorities are listed below, grouped within each horizontal priority.

1. COMPETITIVE REGIONAL ECONOMY BASED ON INNOVATION

1.1 Support the creation and development of new businesses and business support structures

Creation of business support structures that will support the development of enterprise activity and the access to new markets.

1.2 Support the development of production capacities and innovative services

The innovation of products and services is the main asset in a globalized market.

1.3 RDI investments for businesses and research

The trend in public investment in research is to identify attractive RDI projects that motivate SMEs to come up with their own contribution in addition to public investment, as a guarantee that the chosen research theme has value and potential market penetration.

1.4 Support the creation and development of innovative clusters

Clusters, particularly the innovative ones, represent a core of development that allows valorisation of complementarities between businesses and projects and creating synergies in their development.

2. STIMULATE TECHNOLOGY AND SCIENTIFIC TRANSFER

2.1 Support the development of technology transfer entities

Specialized technology transfer entities act as catalysts and interface between business and research institutions, facilitating the practical application of research results.

2.2 Promote the creation of partnerships for knowledge transfer

Partnerships between businesses and research institutions are the expression of „short” branch of technology transfer, where the two agents collaborate directly for the creation of innovative products and services.

2.3 Foster the creation of networks of research and development affiliated to European networks

Connections between research institutions worldwide ensure the transfer of new and valuable information that are the starting point for the creation of new technologies able to conquer the market.

3. DEVELOP AND MAINTAIN HIGHLY SKILLED HUMAN CAPITAL IN THE REGION

3.1 Improved quality and efficiency of higher education in the region

Higher education provides valuable researchers for research institutions and highly skilled labour force for the productive sector, creating added value in a key area, that of human resources.

3.2 Improve the entrepreneurial skills of researchers

Business creation by those who have contributed to the development of the technology represents the most direct way to motivate the researcher to focus on achieving results applicable in the market and the most efficient transfer of knowledge. The researcher represents the element of continuity in the process.

3.3 Attract highly skilled human capital in the region

The use of the attractiveness elements of the region in order to create an offer for highly skilled staff, especially for the residents of Bucharest-Ilfov area, is a measure of immediate impact, which substantially supports project and priority economic sectors development.

4. FACILITATE THE ASSIMILATION OF KNOWLEDGE AND INNOVATION RESULTS

4.1 Promotion of multidisciplinary collaboration between knowledge generators agencies

The market demands for complex and integrated products and services, increasingly tailored and their achievement involves inclusion of packs of specialization in the development of these products and services. Multidisciplinary collaboration is the key element in the development process.

4.2 Facilitate the access to international scientific research literature

The use and appliance of the latest information and knowledge in the product development process increases the success chances of a RDI project in achieving the objectives of market penetration.



4.3 Stimulate enterprises demand for innovation through RDI projects

The action of the research institution as a catalyst is complementary to the other two approaches, when the RDI project initiative comes from the researcher or entrepreneur. The research institution has the power to initiate technology transfer and stimulate the demand for innovation.

4.4 Support for the creation of support centers to access Horizon 2020 program

The accessing of international financing is a challenge for the RDI market agents in Romania. Preparation of projects ideas recognized throughout Europe and the development of sound and mature projects is an alternative to the traditional source of funding already optimized for innovative projects.

4.5 Facilitate the access to financial tools to support RDI projects

Innovative projects need a different financing approach compared to classical projects, because they present a whole package of risks related to products novelty and lack of validation from the market. Creating financial guarantees and smart financing instruments (common risk, subordinate financing, structured financing with thresholds validation) is a priority to allow the development of production from prototype to large scale production.

5. IMPROVE THE INTERNATIONALIZATION CAPACITY OF BUSINESS

5.1 Investments to adapt processes to certification and standardization systems specific to foreign markets

The external market is attractive to almost any type of service and product. Certification and standardization support the entrepreneur to send a clear message to the target market that can offer good quality services and products.

5.2 Participation in trade missions, fairs, exhibitions

Promotion on foreign markets of innovative products and services is a process that has to be correlated with the development process. The shift to a production for external markets has to be linked to validation of these products by these markets and the trade missions, fairs and exhibitions are a traditional promotional instrument, direct and with major potential.

5.3 Access to support services for internationalization: partners identification, legal advice, tax counselling, etc

Overcoming the inherent difficulties of new markets penetration requires a partnership structure and reliable support services. The identification of foreign partners involves a process of international cooperation, supported by databases of potential service providers and recommendations for quality of service provided by them.

D.

Project portfolio

Smart specialization area 1 Construction of vehicles, component and production equipment

Leader, including partners	Project title
MTM NRDI in partnership with Dacia Renault, Comefin Costești, Delta Rom Technologies, Ely Automotive	Mechatronics of the vehicle and the technological processes
MTM NRDI in partnership with Dacia Renault, Renault Technologie, Pitești University, Catoprest	Mechatronics of production flows for car production



Smart specialization area 2 Agriculture and food industry

Leader, including partners	Project title
Fundulea NARDI	Innovating technical sequences for reducing technological inputs, for preserving soil resources and environment protection
MTM NRDI	Mechatronics, integratics and adaptronics of HI-TECH agricultural cars
NIAM	Integrated system of conditioning horticultural products for fresh consumption
Ialomița County Council	Clusters' association from agriculture
Ialomița County Council	Technological and scientific park in agro-food production in Fetești municipality
Ialomița County Council	Smart and integrated irrigation systems
RO-Invest Project	Smart and independent irrigation systems



Smart specialization area 4 Tourism and cultural identity

Leader, including partners	Project title
Prahova Association for Development and Tourism Promotion	"Drumul fructelor" Branches
	Expo Vacanta
	Tourism Awards Ceremony
	Themed tourist guides
	Romania tourism fair
	Panoramic view point development
	Tourist information centers
	Making promotion thematic brochures
	List of training guides and tour guides in each locality of tourist interest
	Making of bilingual tourist maps (Romanian / English)
	Implementation of Prahova County tourism brand
	First snow criterion Infotrip
	Wine road Infotrip
	On the Voievods trail - Activation of Voievods' road
	Touristic Prahova in pictures
	Bachus' secrets
	Touristic signaling
	International tourism fairs
	Tourism scholarship - First snow criterion
Cycling Romania, ROI association	Creating of cycle-tourism portal: Danube route
Amfiteatru foundation	Centre for Research, Innovation and promotion in responsible tourism
Amfiteatru foundation	Cluster for responsible tourism
Tourism and Ecology Foundation from Dunarea de Jos „Ciulinii Baraganului”	Nautical tourism in Lower Danube's basin
Gaiseni commune, Giurgiu county	Restoration, rehabilitation, rebuilding and sustainable touristic capitalization, of Strambu-Găiseni skete
Comana commune, Giurgiu county	COMANA MONASTERY- „ Radu Șerban Voievod - Socio-cultural center”
Giurgiu county, Romania and Ruse district, Bulgaria	Supporting the promotion and usage of cultural/natural inheritance potential through investments in sustainable tourism infrastructure
Giurgiu county council	Consolidation, rehabilitation and restoration of “Cultural-pastoral center Gavril Druganescu”



Smart specialization area 3 Bioeconomy. Developing circular economy

Leader, including partners	Project title
NIRDCP, cluster AGRI-BIO-TECH	Superior valuing of co-products / sub-products from the food industry for obtaining nutritional supplements
NIAM	Integrated system for valuing the vegetal, animal resources, energetic plants and other renewable energy resources in order to insure the energy independence of farmers: 1. Ecological system for waste management; 2. Energy plant cultivation (Myschantus).
NIAM	Technologies and technical equipment for establishing protective forest belts in arid areas
KONTRASTWEGE	Use of marginal fields for energy purposes - energetic willow



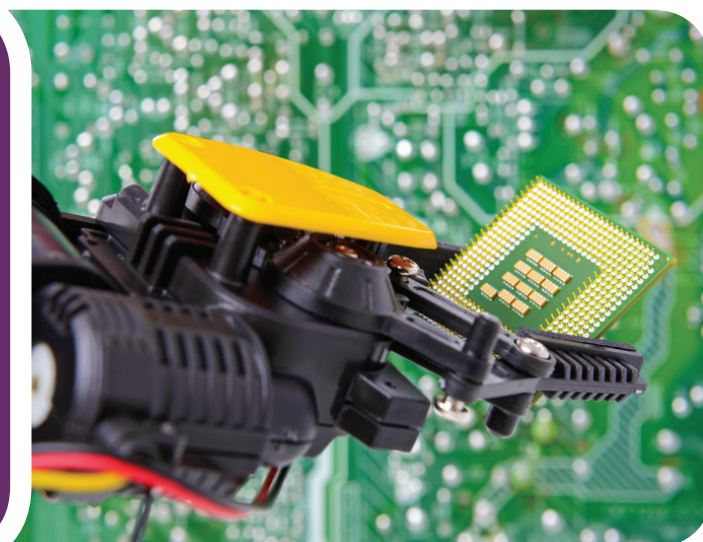
Smart specialization area 5 Smart localities

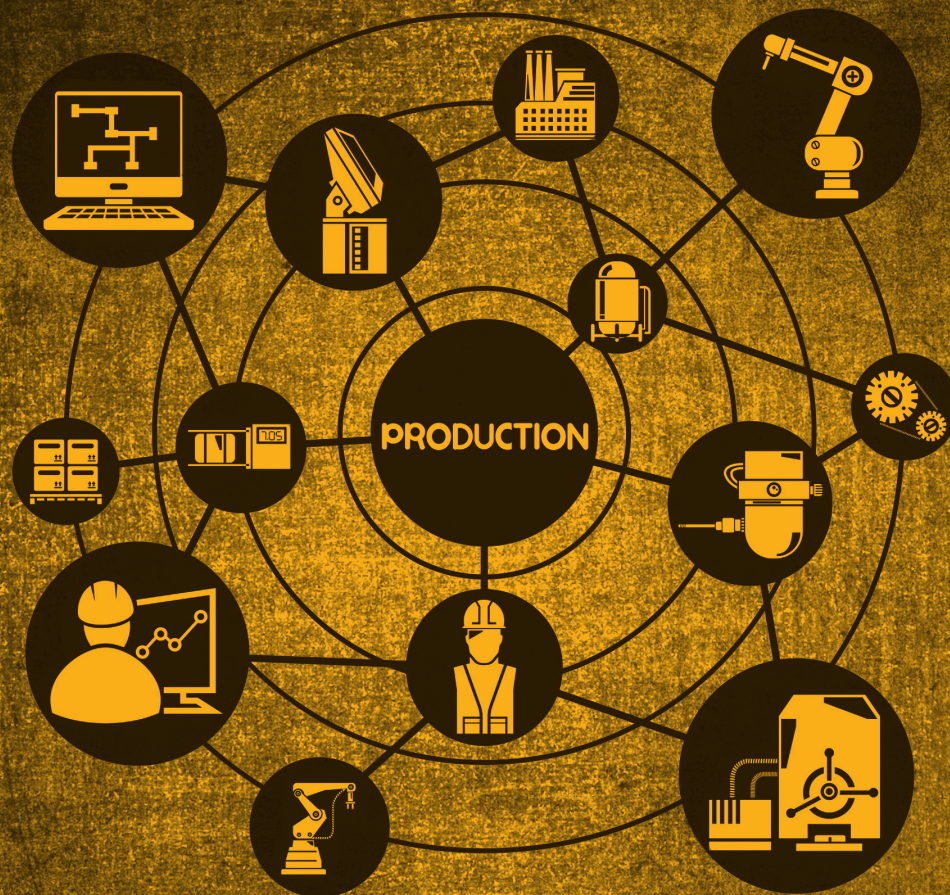
Leader, including partners	Project title
Valahia University in partnership with MTM NRDI, ICPE, Ana Imep	Innovative solution for sustainable energy and its related technological processes
Pitești University in partnership with MTM NRDI, Argeș - Vedea Basin administration, Hesper SA	Mechatronics of water quality
MTM NRDI in partnership with Valahia University Târgoviște, Pitești University, NRDI-ERDI CA	Research, production, testing and integration in urban and rural localities of smart traffic lights, powered by new unconventional energy sources.
MTM NRDI Bucharest in partnership with NRDI Urban Project Pitesti, NRDI-ERDI CA Bucharest, SC Ana Imep Sa Pitești	Buildings, households and other infrastructures to support the smart city
MTM NRDI Bucharest	Research regarding the execution of a modular smart unit for power production and supply to rural and urban buildings and households from renewable sources: wind, photovoltaic, biogas
Edas Exim	Regional Centre of studies and tests in the water treatment field



Smart specialization area 6 High technology products

Leader, including partners	Project title
Process Innovation Nucleus Giurgiu	Prototype for performing innovative nanotechnology and production lines
Technology and Eco Innovation, Călărași	Alternative methods for producing the graphene
RATEN ICN Pitești	Demo facility for lead cooled fast reactors technology





E. Implementation, monitoring and assessment



IMPLEMENTATION

The implementation of RIS 3 will aim to focus economic development efforts and investment on the specific advantages of the region, capitalizing on economic opportunities and emerging trends that occur and aiming at economic growth. In order to effectively implement RIS3 that capitalize on the potential for excellence, the following activities shall be followed:

1. Structuring and defining Guidelines for Applicants Priority axis 1: Promoting technology transfer and Priority Axis 2: Improving the competitiveness of small and medium enterprises in the Regional Operational Program 2014 - 2020, in close correlation with the

priorities of RIS3 in the South Muntenia region and consultation with relevant stakeholders.

2. Provide assistance to potential beneficiaries identified in RIS3 in South Muntenia to identify, develop and finance projects and supply of advisory services on available financial instruments. The financing sources are not limited to the above mentioned measures, but will cover the research & Innovation programs (Competitiveness Operational Programme, Horizon 2020), the SME (COSME, the Minimis Rule, etc.), those for professional training and other relevant available program.
3. Access alternative funding instruments, such as those provided by the European Investment Bank or guarantee funds, able to finance a whole conglomerate of projects that serve to implement the same strategic directions, both for granting funding from non-refundable funds as well as to mobilize financial resources for ensuring a part of the projects' co-financing.

These measures are intended to ensure a proper implementation of RIS3 in South Muntenia region in order to achieve the proposed indicators in the exploitation of regional competitive advantages.

MONITORING

The prerequisites imposed ex ante to RIS3 EU Member States and regions in order to implement a Smart Specialization Strategy, include a requirement that they „contain a monitoring and evaluation system”. The monitoring system, related to RIS3 in South Muntenia region will have an approach adapted to the region's specificity and will consist of three main types of activities:

1. Monitoring the evolution of projects identified as priorities and updating of data on the implementation of these three deadlines: 2017, 2020, 2023. This activity will be based on the correlation of relevant data concerning status of projects with established strategic directions and strategy indicators. Data will be collected regarding the results of projects quantitatively and qualitatively, the degree of achievement of the objectives set in the strategy, measured by indicators.
2. Analysis of the problems identified in the development of priority projects, developing a set of observations and recommendations, identifying punctual solutions and adaptation of the RIS3 in South Muntenia region in accordance with the realities of quantitative and qualitative data.
3. Development of a Priority Action Plan to correct the imbalances reported by quantitative and qualitative data analysis, plan to be implemented in partnership with the projects' beneficiaries and other relevant structures (associative, public institutions, etc.)

ASSESSMENT

The assessment process will involve analysis of outcome indicators for projects developed in the sectors with regional potential, in order to prepare a Final Report which shows the extent of development and smart specialization in South Muntenia region focusing on: the smart growth level, removing financial barriers to investment, supporting and directing investments in areas of strategic relevance, capitalization of the potential for excellence, integrating research in the business environment, technological innovation and stimulate investment in the private sector.



RIS 3 INDICATORS SOUTH MUNTENIA

Priorities	Measures	Indicators
Competitive regional economy based on innovation	Support the creation and development of new businesses and business support structures	<ul style="list-style-type: none"> Number of businesses created The number of enterprises maintained over three years in activity The number of business support structures created Number of enterprises supported
	Support the development of production capacities and innovative services	<ul style="list-style-type: none"> The number of newly developed innovative companies Number of enterprises' intellectual property claims The share of innovative products and services in the companies' portfolio
	RDI investments for businesses and research	<ul style="list-style-type: none"> The number of newly created infrastructure RDI Evolution of the degree of use for existing infrastructures Evolution of research and development spending among enterprises supported
	Support the creation and development of innovative clusters	<ul style="list-style-type: none"> The number of clusters established The number of active enterprises in cluster The evolution of the enterprise's turnover within the cluster in the total turnover in the field
Stimulate technology and scientific transfer	Support the development of technology transfer entities	<ul style="list-style-type: none"> Number of newly created technology transfer units The number of intermediate technology transfer activities Evolution of enterprise's turnover that benefit from technology transfer
	Promote the establishment of partnerships for knowledge transfer	<ul style="list-style-type: none"> Number of partnerships created Number of SMEs involved in such partnerships
	Foster the creation of networks of research and development affiliated to European networks	<ul style="list-style-type: none"> The number of networks created and affiliates
Develop and maintain highly skilled human capital in the region	Improved quality and efficiency of higher education in the region	<ul style="list-style-type: none"> Covering the need for human resources in the area with skilled resources The degree graduates who employ in the specialization field. The number of specializations developed by universities in collaboration with the industry
	Improve entrepreneurial skills of researchers	<ul style="list-style-type: none"> Number of businesses launched by researchers in the areas of smart specialization Average period of survival for businesses launched by researchers
	Attract highly skilled human capital in the region	<ul style="list-style-type: none"> Number of highly skilled persons attracted in the region Number of young people with higher education who return to work in the home settlements
Facilitate the assimilation of knowledge and innovation results	Promotion of multidisciplinary collaboration between knowledge generators agencies	<ul style="list-style-type: none"> Number of collaboration initiated Number of common projects generated from such collaboration
	Facilitate the access to international scientific research literature	<ul style="list-style-type: none"> The number of new subscriptions made
	Stimulate enterprises demand for innovation through RDI projects	<ul style="list-style-type: none"> Number of innovative projects completed
	Support the creation of support centers to access the Horizon 2020 program	<ul style="list-style-type: none"> Number of centers created; Number of beneficiaries who use the center's services ; Number of project applications submitted for funding The applications' degree of success
	Facilitate the access to financial tools to support RDI projects	<ul style="list-style-type: none"> Number of financial instruments developed; Number of organizations supported; Number of projects supported; Value Financial instruments accessed
Improve the internationalization capacity of businesses	Investments to adapt processes to certification and standardization systems, specific to foreign markets	<ul style="list-style-type: none"> Number of organizations that certify The certification impact on the organization exports
	Participation in trade missions, fairs, exhibitions	<ul style="list-style-type: none"> Number of organizations supported Evolution of turnover from exports for supported businesses
	Access to support services for internationalization: partners identification, legal advice, tax counseling	<ul style="list-style-type: none"> Number of organizations supported; Number of partners identified; Number of contracted partners Number of organizations supported; Number of partners identified; Number of contracted partners

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