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Regional Report

Innovation Potential and Dominant Emerging Industries

Yugoiztochen Region (NUTS 2), Bulgaria

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Executive Summary

The study on the business environment and the regional innovation potential of Yugoiztochen (South Eastern) Planning Region of Bulgaria, explores the current regional innovation potential at macro and micro level (at organizational level) in the period 2010-2017.

The core methodology used in developing the Regional studies for identification of the dominant emerging industries comes from the:

- EIS Regional 2017 Framework –Bulgaria.
- The categorization of the emerging industries which has been developed and introduced by the EU INOVA project in 2010.

Findings indicate that in the researched period, the Yugoiztochen region is one of the leading country's innovator. Also the study identifies the dominant emerging industries which characterize the economy of the region, where the main focus is on mobility and experience industries as the dominant emerging industries in Yugoiztochen Region.

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1 Background

1.1 Location, Population, Economy

The South East region is part of Level 1 (NUTS1) "North and Southeastern Bulgaria", which includes The Northwest, the North Central and the North-East. In the territorial scope of the Southeastern region (NUTS 2 level) includes the following areas: Bourgas, Sliven, Stara Zagora and Yambol (NUTS 3 level) with a total of 33 municipalities. The area to the north is limited by Middle and Eastern Stara Planina, to the east by the The Black Sea, to the south, lies on the Strandzha Mountain, the Dervent Heights and Sakar Mountain. Here are the eastern part of the Upper Thracian Plain, part of the The sub-Balkan valleys, the Bourgas Lowland and part of the Sredna Gora Mountain - the Sarnena Mountain. The area of the area is 19 799 km² and accounts for 17.8% of the country's territory.The territorial structure is as follows: the agricultural territories are 41.87%, the forest 52.07 % urbanized 4.89%. The region borders on the west with the South Central region, The Republic of Turkey, the East with the Black Sea and north with the North East and the North central area. The Protected Areas under the Protected Areas Act in the Southeastern Europe are 7.6% and protected Natura 2000 sites are 32.2% (slightly below the national average) and are located mostly in the mountainous, coastal and riparian forests.The population of the area in 2011 is 1,078,002 people, which represents 14.64% of the area the total population in the country. The density of the population is 54.45 g / km², significantly lower of the average for the country - 66,34 g / km². Only the Northwestern region has a lower density. By demographic indicators and population structure the South-East region is in a relatively favorable situation compared to other areas.

Urban population, the degree of urbanization, reached 71.33%, an indicator of which the area is approaching the level of the Northeast, and above them is only Southwestern region. The big cities (over 100 000 g) are Bourgas - 200 271 d. And the Old Town Zagora 138 272, the average cities (between 30 000 and 100 000 g) are: Sliven - 91 620 d, Yambol - 74 132 and Kazanlak - 47 325 d. There are two more cities over 20 000 which complement and balancing the middle cities and district centers - Nova Zagora (22 507 g). and Aytos - (20,016 g).The main axis of urbanization is the Bourgas - Stara transport route Zagora. Meridian axes are Nessebar - Pomorie - Burgas - Sozopol and Sliven - Yambol,as well as Kazanlak - Stara Zagora - Radnevo - Galabovo.Out of a total of 33 municipalities in the region, have a small population and no prominent city-center,which can be referred to the category of targeted 5th support areas over 5 indicators of the 8 listed in Art. 6 of the RDP for the designation of targeted areas

Among the economic sectors of the Southeastern region, there is the largest contribution the services sector, which accounts for 51% of GVA for 2010, with an average share for the country 63.8%. The second-largest economic sector - industry is important for the regional economy by 43% on the average for the country 31%. The agrarian sector is shaping up 5.8% of GVA for the region at 4.8% for the country. Tourism occupies a leading position in the economy on the basis of favorable natural factors, the built tourist base and infrastructure and traditional experience in the provision of seasonal tourist services.On the GDP per capita indicator for 2010, the Southeast Region is ranks second after the Southwest region by 7,625 leva with an average indicator for the country amounts to BGN 9 359 but it accounts for only 36% of the GDP average European regions. Total GDP produced in the Southeast Region at

current prices 2010 amounted to BGN 8 475 000 thousand, which is 12% of the country's GDP. The South East region has a 12% contribution to the GVA of the country. In the SIR in 2010, 52,186 units were operating. enterprises in the non-financial sector or 14% of those in the country. Net income from sales of enterprises by the non-financial sector in 2010 amounted to BGN 25,009,940 thousand.Foreign direct investment in non-financial corporations as at 31.12.2010 total for the country is 22 114 446.3 thousand euro, and for SEE 2 728 916.2 thousand euro and this ranks second after the Southwest.The overall level of unemployment in the Southeastern Region in 2011 is 11.6% an average of 11.2% for the country. The average employment rate of persons aged 20-64 by the end of 2011 it is 62.9% and is close to the average for the country (63.9%). The healthcare system in the Southeastern region maintains sustainable development has a relatively well-established network of healthcare facilities that includes: 22 Multidisciplinary Hospitals for Active Treatment, 20 SHATs (Specialized Hospitals) hospitals for active treatment), 2 CPDs (Center for Mental Health, 3 skin-venereal diseases), 2 CTC (Complex Oncology Center), 1 SCD (State Psychiatric Hospital), 6 SGP (Specialized Rehabilitation Hospitals), 3 BDHRL (Hospital for Rehabilitation and Continuous Treatment and Rehabilitation), 4 CMS (Emergency Honey Assistance Center) and 30 SMP (Emergency Honey Aid Branch). The number of hospital beds is 6,634, and 100,000. there are 599.58 beds around the country average - 611 / 100,000 people. There are 3 universities and specialized universities in the education system Higher schools (in Burgas and Stara Zagora) and 68 special schools. The number of students in universities and specialized higher education institutions on the territory of The Southeast region during the school year 2011/2012 is 14 794 pieces. students it represents 5.6% of all for the country.Real estate assets are 4,270, among which are listed the world heritage of UNESCO is the Kazanlak tomb and Nessebar - the Old Town.There are numerous tourist reserves on the territory of the region and Burgas is one of the city-centers of cultural events and festivals in the country. The density of the constructed railway network in the South-East region is 33.5 km /1,000 km² and is lower than the country average of 36,7 km / 1,000 km² and the average density for regions in the EU-25 - 50 km / 1,000 km². The railway line Plovdiv - Zimnitsa -Karnobat - Bourgas, included in the European agreement on the most important lines for international combined transport (AGTC). Terminals in Stara Zagora and port Bourgas are also part of this combined transport destination. Improvement the parameters of the railway infrastructure in the SIR is a prerequisite for promotion the competitiveness of the regional economy, in line with the important priority of the European transport policy to increase the share of rail transport in the total transport traffic. Sea transport in the Southeastern region is well developed. International Port Bourgas is an important center of the transport system of the country during which passes 59% of the country's imports and exports and has a leading role in overall development of the economy of the country and the region. Air transport is represented by Bourgas International Airport as well from the airport for small airplanes in the town of Primorsko for tourist purposes. Bourgas airport is of strategic importance because of its specific geographic location - the border between Europe and Asia. Among its greatest advantages is the ability to intermodal transport by air, sea and land

1.2 Economic Potentials related to Districts

In the territorial-administrative area, the territory of the Southeastern Region comprises 3 districts (Bourgas, Yambol and Sliven) and 22 municipalities (13 in Bourgas, 5 in Yambol and 4 in Sliven region).
The bulk of the region's economic and demographic resources is concentrated in the Bourgas region. It has an area of 7753.1km2 and a population of 430000g. (about 52% of the population of the region). Its holding is specialized in petrochemical industries, machine building, food processing, tourism, fishing, sea and air transport.

- The main center of the region and the region is the city of **Bourgas** (1953). It develops in the place of a fishing village from the 18th century. Before the Liberation, Bourgas had less than 3000g, but since the beginning of XXV. is developing rapidly in connection with the development of maritime transport and the construction of the g. n. line from Sofia. The settlement develops from the beginning as an export port of a rich agricultural area in the country. Today the city is the 4th largest in Bulgaria and the port with the largest freight turnover due to the oil supply. The appearance of the farm is given to him by Neftochim, but in the city there are also furniture and parquet companies, freight wagons, cables, air-conditioning systems. Further development and production of office supplies / Hemus / was developed. Some industries such as shipbuilding are closed due to lack of orders. The town is a starting point for the resorts along the Southern Black Sea coast, so its airport is heavily loaded with charter flights in the summer. There is also a free duty-free zone, which is a favorable factor for its economic development. Burgas is a significant educational, scientific and cultural center of the Black Sea coast. There is an opera house, 2 HEIs, a chemistry research institute and others.

The town of Pomorie is the heir of the Greek apocalypse Anhialo from the 8th century BC. It is situated on the road to Varna - 18 km north of Bourgas. It is a resort village with developed food processing / production of sea salt, wine making, bread production /. He is also known for mud treatment.

The town of Aytos (22250g) is the center of a rich agricultural area. It is located 30km from Bourgas. A canning plant and a resistor and potentiometer enterprise operate in the village.
Karnobat (20900g) is an important g. n. and a road junction, located 52km from Bourgas. It operates cannery, bridge constructions, forage plant and Barley Institute.The town of Sredets (9800sq.) Is located 28km from Bourgas. It is the center of an agricultural area and there are enterprises for plastics, bricks and vegetable oils.

Nessebar (6400g) is the successor of the Greek colony Mesembria, established in the 8th century BC. on the island. Today, the old town is a museum with many ancient archaeological monuments. This, along with the beaches and the bays, has turned Nessebar into a famous seaside resort. The resort complex "Sunny Beach" is also administratively connected to the town.

Sozopol (3850g) is the heir of the ancient Greek colony Apollonia. Today the town is a resort and garrison village with a workshop of the fish company Slavyanka.
Malko Tarnovo (3100 g) is a border village relying on border checkpoints and mining.The town of Tsarevo (5300sq.) Is a resort village with a boat and yacht production company.Primorsko (1875sq.) Is a resort village where a MMC is built. Nearby is the resort

center "Perla".Ahtopol is one of the smallest towns in Bulgaria, along with Melnik. It develops only as a resort village.

- Sliven district has a population of 230965. / 28% of the region / and an area of 3536.6 km2 / 24% of the region /. The area's economy is specialized in food processing, textile industry, mining (before closure), viticulture, fruit and wine production. Center of the district is Sliven /105500g./. It is located 109km from Bourgas, 22km from Yambol and 61km from Stara Zagora. The village evolved rapidly during the Bulgarian Renaissance as the center of textile production. It is the birthplace of a number of prominent Bulgarian revolutionaries / Hadji Dimitar, Panayot Hitov / and Revival / Dobri Chintulov /. Today Sliven is an industrial center with developed textile industry, food processing, glass and building materials industry, machine building / metal cutting and textile machines, parts and tools, alternators and relays for cars / etc.

The town of Nova Zagora (26600g) is a center of food processing, textile industry, agricultural machinery.Kotel (7770g) is a historical settlement in the Balkan Mountains, connected with the Renaissance. Today there are textile, woodworking, lighting fixtures in the city. Kotel has a secondary music school and a number of museums. Near the town is Zheravna / architectural reserve /.The town of Tvarditsa (6750sq.) Is located 33km away from Sliven. North of the village in the Balkan Mountains are exploited deposits of hard coal whose quantity is minimized. The city has a woodworking enterprise.

- Yambol district has a territory of 3355,4 km2 and a population of 168681. A significant place in its economic structure is agriculture, due to the favorable soil and climatic conditions in the valley of Tundja. Industry is represented by machine building

2 Methodology

2.1 Research Goal and Objectives

The main goal of the study is to provide a detailed analysis of the regional competitiveness of the South Eastern (Yugoiztochen) Region, with a specific focus on the dominant emerging industries as the driver of future economic development in the region. InnoPlatform project uses the EU INOVA definition of an emerging industry which is the base of the EU approach in identifying the emerging industries. The emerging industries are “industrial sectors, typically based on new products, services, technologies or ideas, which are in early stage development and are characterised by high-growth rates and market potential.”
The main goal of the study is to provide a detailed analysis of the business environment and innovation potential of the country, with an aim to provide good starting point in identification of the main strength and weakness of the region in this area with specific recommendations for their improvement in the future. The study is financed by the EU and the funds of the member countries under the EU Interreg Balkan Mediterranean Program and the project InnoPlatform.
The main objectives of the Study are:

- To assess the current structural environment covering economy, growth, stability, business enabling environment and the socio-economic environment in order to understand the current enabling and or limiting macro environment for innovations in country;
- To assess the innovation potential at macro and micro (organizational level) in order to identify the strengths and weakness of the national economy when it comes to its innovation potential;
- To explore these strength and weakness over specific period of time (2010-2013) in order to understand whether there have been improvements or deterioration and where;'
- To provide a comprehensive analysis and recommendations structured in a way which will enable a range of key stakeholders as policy makers, investors, consultants, analysts and SMEs to make informed decisions.

2.2 Innovation – Definition and Determinants

Governments are increasingly making innovation a key issue on policy agendas today, recognizing its potential to promote economic growth and address social and environmental challenges. However, many countries face significant innovation "gaps", resulting from a variety of binding constraints. Tracing development paths that help overcome these constraints is an important task of innovation policy.

What is innovation and why is it important?

- An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (OECD/Eurostat, 2005).

- Innovation plays a key role in the economy and society by contributing to growth and jobs and helping address social and environmental challenges.

- Innovation is important for growth at all stages of development, specifically by creating and diffusing new technologies; different types of innovation play different roles at various developmental stages.

- Innovation may be characterized by several dimensions including (1) the degree of novelty, (2) the type of innovation (product and process innovation), (3) the impacts of radical and incremental innovation and (4) the source of innovation (technological and non-technological innovation).

- The notion of what innovation is and what role policies to encourage innovation can play has changed considerably over the past decades.

2.3 Nomenclature of Territorial Units for Statistics

The Southeast Region Regional Development Plan for the period 2014-2020 takes into account the scope of the area determined in accordance with the requirements of Regulation (EC) 1059/2003 and Regulation (EC) No 176/2008 amending and supplementing Regulation EC) 1059/2003 on the Common Classification of Territorial Units for Bulgaria and Romania and regulated by the provisions of Art. 4 of the Regional Development Act. The Southeast Region is part of Level 1 (NUTS1) "North and Southeastern Bulgaria", which includes the Northwest, North Central and North-East regions. In the territorial area of the Southeast Region (NUTS 2 level) the following are included: Bourgas, Sliven, Stara Zagora and Yambol (NUTS 3 level) with a total of 33 municipalities.

2.4 Core Methodology

The core methodology used in developing the Regional studies for identification of the dominant emerging industries comes from the:

- EIS Regional 2017 Framework - has already successfully been used on many EU countries and their regions; Similar to the EIS, where countries are classified into four innovation performance groups, Europe's regions have been classified into regional Innovation Leaders (53 regions)
  - regional Strong Innovators (60 regions)
  - regional Moderate Innovators (85 regions),
  - regional Modest Innovators (22 regions)

- The categorization of the emerging industries which has been developed and introduced by the EU INOVA project in 2010. EU INOVA identifies and classifies seven emerging industries:
  - Creative industries;
  - Eco industries;
  - Experience industries;
  - Maritime industries;
  - Mobile services industries;
  - Mobility industries; and
  - Personalised medicine industries.

- The priority directions of the **National Research Development Strategy 2020** are:

  1. Energy, energy efficiency and transport. Development of green and eco technologies;
  2. Health and life quality, biotechnologies and ecologically clean foods;
  3. New materials and technologies;
  4. Cultural and historical heritage, socio-economic development and management;
  5. Information and communication technologies

The EU RIS assesses the performance of the EU regions in several specific dimensions:

1) **Framework conditions**, cover conditions of utmost importance for innovations to flourish in a specific territory. At regional level, these indicators cover the: available human resources seen as agents of knowledge, and the attractive research systems.
2) **Investment climate,** or the financing of innovative activities covers the factors of financing and support, as well as the investments of companies in research and development activities (R&D) and innovation.
3) **Existing innovation activities of companies,** covers factors which determine the behaviour of innovators, the existence of business connections and the protection of intellectual property and intellectual assets.
4) **Impact innovation** covers the determinants as the impact on employment and the impact on sales through the use of appropriate indicators.

The overall regional economy, the business environment, and the socio-demographic trends affect these categories of factors either supporting, or challenging the innovation of the companies. Therefore, these trends also assess regional GDP, composition of employment, and the structure of the business sector.

Each consists of NACE level 4 sector categories as a way of relating the same to the traditional nomenclature of sectors and industries. The analysis is based on the use of secondary data coming from officially recognized institutions, predominantly from Eurostat, National statistical offices and other national and international institutions. APA style referencing format is used.

3 Regional Context

3.1 Economy and Growth of the Yugoiztochen Region

In the period 2007-2008, after the accession of Bulgaria to the EU, the Southeastern region continues its positive economic development - a trend typical of all regions of the country. 2009 is the first year of the last decade in which, as a result of the global economic crisis, there is a process of economic downturn for the country as a whole, and for the Southeastern region. According to Eurostat data for 2009, Bulgaria's GDP registered a decrease of 5,5% in real terms (- 4,2% for the EU-27). All sectors of the economy contribute to the decline in GDP, with industry contributing the most to the negative impact of the crisis. The impact of the global economic crisis on our country began to be felt in the fourth quarter of 2008, when real GDP growth slowed.

Overall, the sound financial system and the relatively cautious fiscal policy did not allow the national economy to be more seriously affected, which happened in part of the newly acceded member states, and in 2010 the country achieved a general economic rate close to zero, but with (0.4%), while in 2011 GDP growth continued to reach 1.7% on an annual basis. For comparison, the GDP growth for the EU-27 for 2010 and 2011 is 2% and 1.5%, respectively. Eurostat's data for Bulgaria's GDP for 2014 and 2015 are 3,6 % and 3,4 %, respectively.

Table 3-1Economy and Growth of the South Eastern (Yugoiztochen)

Table 3.1. Economy and Growth of Yugoiztochen Region							
	2010	2011	2012	2013	2014	2015	2016
GDP PPP billion euros)	4,55	4,86	5,11	5,21	5,33	5,53	N/A
Structure of the Economy - Composition of employment	295 672	294 099	289 827	290 813	293 783	295 394	298 121
Agriculture & Mining	20 268	20 544	21 015	21 135	20 984	21 522	21 364
Manufacturing	72 927	73 415	69 772	69 457	73 063	76 796	78 278
Other (services, construction and public administration)	202 477	200 140	199 040	200 221	199 736	194 076	198 479
Trade Balance	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Source: NSI (2017)							

3.2 Socio-demographic environment

The variables which provide an insight into the structure of the regional socio-demographic context cover the: GDP per capita, PPS, (last year of its availability); population size by age, gender and education, population density, and the degree of urbanisation (%).

Table 3-2Socio-demographic environment of Yugoiztochen Region

Table 3.2. Socio-demographic environment of Yugoiztochen Region							
Socio-demographic environment	2010	2011	2012	2013	2014	2015	2016
GDP per capita in PPP (euros)	4556	4864	5110	5211	5339	5535	
Population size TOTAL (numbers)	1106448	1072850	1067981	1063690	1058515	1052575	1046125
Age 0-14	110.637	159238	160950	162363	162662	162468	162885
Age 15-64	420.643	71801	709140	699196	690171	680995	671741
Age 65+	72.889	195602	197891	202131	205862	209112	211499
Gender (numbers)							
Men	537959	524737	521732	519226	515862	512404	508687
Woman	568489	548113	546249	544464	542653	540171	537438
Population density (persons per km^2)	55,5	55,2	54,9	54,8	54,8	54,8	55,5
Degree of urbanisation (%)	70,2	71,6	71,7	71,8	71,9	72,2	70,2
Source: NSI (2017)							

The region had 6.7 % annual growth of the GDP per capita in the period 2010-2016 (Table 3.2.). This is a moderate growth compared to the annual inflation rate in the same period (2% average). The largest group of the population is in the age bracket of 15 to 64 years of age.

The population of the region in 2011 is 1,078,002, which represents 14,64% of the total population in the country, and in 2016 - 1,046,125. The density of the population is 54,45 g / km², much lower than the average for the country - 66,34 g / km². Only the Northwestern region has a lower density. By demographic and population structure indicators, the Southeastern region is in a relatively favorable situation compared to other areas.
The urban population, the degree of urbanization, reaches 71.33%, an indicator of which the region approaches the level of the Northeastern region, over which is only the Southwest region. The big cities (over 100 000 g) are Bourgas - 200 271 d. And Stara Zagora 138 272 d., The middle cities (between 30 000 and 100 000 g) are: Sliven - 91 620 d., Yambol - 74 132 d. and Kazanlak - 47 325 d. There are two more towns over 20 000 which complement and balance the middle cities and district centers - Nova Zagora (22 507 g). and Aytos - (20,016). Among the economic sectors of the Southeastern Region, the services sector accounted for 51% of the GVA for 2010, with an average share of 63,8%. The second-largest economic sector - the industry has an important role in the regional economy with 43%, with an average of 31% in the country. The agrarian sector formed 5.8% of the GVA for the region at 4.8% for the country. Tourism has a leading position in the economy on the basis of favorable natural factors, the built tourist base and infrastructure and the traditional experience in providing seasonal tourist services.

The active Eurostat measures for decreasing unemployment rates along with the presence of increased number of the same indicators the country resulted in decrease of the unemployment rate at regional level, from 12,1 % in 2012 to 7,6 % in 2016.While the percentage of employed people reached the top for this period at 48,4%.It can noticed some kind of “job” migration to Burgas municipality ,especially during the active summer season. During that time thousands of people from purest region invade that region for couple of months only for job.

In 2016 and in the six statistical regions, the population declined by 2015, with the decrease in the Northwest being the largest - by 1.8% and the lowest in the Southwest region by 0.3%.

At the moment the ageing of the population decreases the size of the active population, where in 2010 were a growth in active population 749 004 and in 2016 -671 741.Even this is not the capital region of the country, Southeastern region attracts one the most educated labour force in the country

3.3 Structure of the Private sector

The innovative activities in the region will depend on the structure of its private sector and its R&D activities. FDIs presence should also be noted in the analysis due to their role in technology and knowledge transfer. For understanding the trends and the movements in the private sector, the analysis explores the following trends:

- Structure of the Private sector:
  - Composition of (total number and share (%))
    - Micro enterprises (0-9 employees);
    - SMEs (10-249 employees);
    - Large enterprises (250+ employees);
- Share of foreign controlled enterprises (%)

As regards the structure of the private sector, the number of micro-enterprises has grown by about 10%, that of SMEs is growing by about 20, while large enterprises are down by 3. The state of the non-financial sector of the economy in the South-East region is characterized by the prevalence of micro- small enterprises above medium and large enterprises (a country-wide tendency). The share of micro-enterprises in the total number of enterprises in Southeast Europe in 2010 was 92.6% (average for the country - 91.9%), SMEs - 7.2% (average for the country - 7.9%) and of large enterprises - at 0.2%

According to latest data, investments in the country have grown, with foreign direct investment (FDI) cumulatively increasing by EUR 1.6 billion by the end of 2015 compared to a year earlier. The main part of the new foreign investments are in the Burgas region 767 million euro growth compared to the end of 2014), the capital being invested mostly in new facilities in Lukoil Neftochim. Infrastructure.Burgas continues to be among the districts with highest investment activity. This is the second area after the capital by the number of non-financial enterprises compared to the population and the third area with the highest attracted foreign investments. PIC increases sharply in 2015 by EUR 767 million (mainly due to the modernization and expansion of the refinery Lukoil Neftochim Bourgas, including a new plant) reaching 4,124 euros per person by the end of 2015 at 3250 euros per person in the country .

Second place on revenue from non-financial sector activity among the level 2 regions in the country (after the SWU);

Only 0.2% of enterprises in the Southeast Europe region are in the "big" category, but they contribute 36.7% to form aggregate revenues in the productive sector of the region's economy.

4 Innovation Environment and Performance

4.1 Description of the Regional Innovation system

Bulgaria has not yet developed a regional dimension to its research and innovation policy. Existing public authorities in Yugoiztochen region, similar to the remaining five Bulgarian regions at NUTS 2 level, lack the autonomy, as well as the administrative and financial capacity to design and implement their own innovation policies.

Yugoiztochen Regional Development Plan 2014-2020, the main strategic regional document for the new programming period elaborated in cooperation between local, regional and national institutions, sets the priorities and goals for the region's economic, social and territorial development. Interviewed regional stakeholders confirmed that experience from the previous programming period 2007-2013 has showed that the major weakness of current strategic planning system consists in the centralised programming and management of Operational Programme (OP) Competitiveness, the single most important source of funding in the area of innovation. The competitive allocation of funding at the national level creates fragmented results as attracted funds hinge mainly on the ability of regional enterprises to attract and absorb available funds. The current institutional set-up fails to take into account the regional characteristics and specific challenges of the regional innovation system and stakeholders in Yugoiztochen. There are no evidence that the disconnection between the need of targeted regional funding and the opportunities offered by nationally coordinated innovation support programmes will be resolved during the recently started programming period 2014-2020. So far, no credible actions have been undertaken in this direction.

In terms of economic development and innovation, Yugoiztochen Regional Development Plan 2014-2020 sets the following specific policy goals related to boosting the competitiveness of the regional economy:

- Improving the access to industrial zones, business infrastructure, networks and clusters
- Supporting R&D activities and innovation deployment in enterprises
- Supporting traditional economic sectors such as agriculture, food processing and shipbuilding
- Improving energy efficiency and expanding the use of renewable energy sources
-

The Regional Development Plan, however, does not contain concrete measures for achieving the envisaged strategic goals. A general conclusion from stakeholder consultations is that the current system of competitive and uncoordinated allocation of innovation funding at the national level delivers fragmented and unsustainable results.

Similar to the previous programming period, the evaluation of progress and impact will be limited to annual monitoring reports of the Regional Development Plan, a mid-term and an ex-post evaluation. In view of the concentration in the Ministry of Economy and Energy of decision-making powers with regards to financing innovation it is to be expected that the monitoring mechanism will neither inform policy debates, nor will lead to political decisions concerning regional development.

Current initiatives in support of public-, social-, demand-side, and design innovation are project-based and sporadic in nature. They are mainly driven by non-governmental organisations, universities and the private sector. Some municipalities emerge as active and capable institutions that implement nationally and EC-funded projects in the innovation domain. However, channelling investments in transport infrastructure, urban development and environment remain by far the most important areas of intervention.

4.2 Human Capital and R&D activities in the region

Although the region is not ranked among the leaders in terms of research and development (R&D) activities, it has an availability of researchers in the chemical and agricultural industries. The university in Sliven has experts in the field of information technologies and energy efficiency. According to Scopus, Trakia University in Stara Zagora has the most citations and articles in the region for 2005-2011. The region however ranks third out of six planning regions by share of students (177,669). This share is 13.8% of all Bulgarian students (Eurostat, 2017). Nearly a quarter of the population aged 30-34 in the region (26.9%) have tertiary education, which is higher than both the country average of 33.8% and the EU average of 39.1% (Eurostat, 2017). Overall, about twenty research institutes and centres, such as the petrochemical research institute in Burgas, the agriculture institute in Karnobat, and the livestock selection centres in Sliven function in the region. Some of the business centres in the region, established with the support of the UNDP JOBS programme, host business incubators linked in a network.
Employment in high-tech industries and knowledge-intensive services is 1.5% of the total employment of the region, a value lower than the 3.5% for Bulgaria on average for the period 2012-2016. The region ranks fifth in the share of households with broadband access-59% (Eurostat, 2017).
In terms of the attractive research systems, there are no available data for regional level.

Table 4-1Human Capital and R&D Activities in the Region

Table 4.1. Human Capital and R&D Activities in the Region								
		2010	2011	2012	2013	2014	2015	2016
1	**Available human resources**							
	Population aged 30-34 with tertiary education *e	n/a	n/a	23,30%	22,20%	24,20%	26,20%	26,30%
	Lifelong learning *e			1,3%	1,2%	1,1%	1,4%	1,6%
2	**Attractive research systems**							
	International scientific co-publications per million population *	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Top 10% most cited publications per total publications*	n/a	n/a	n/a	n/a	n/a	n/a	n/a
								Source: NSI (2017)

4.3 Regional investments in R&D

The investment environment or the financing of innovative activities covers the analysis of financing and support, as well as the investments of companies in research and development activities (R&D) and innovation. In general in the area of *financing and support*, the following indicators are analysed:

1. Finance and support
   - R&D expenditure in the public sector;

2. Firm investments
   - R&D expenditure in the business sector
   - Non-R&D innovation expenditures for SMEs only;

The region generates 4.1% of all R&D expenditures in the country or €14m (Eurostat, 2017) and is very low in comparison with the EU average of €286m. The gross domestic expenditures on research and development (GERD) are 0.26% of the total regional GDP, a rather low rate compared to the average 0.79% for the country and 1.39% for the Southwest region (Eurostat, 2017). An interesting fact is that more R&D expenditures in the region come from the private than from the public sector, which is not the general case in the country where the public sector is predominant. The human resources in science and technology (HRST) in the region are 29.5% of the active population, which is lower than the 36.1% average value for Bulgaria for 2016 (Eurostat, 2017). The R&D personnel in the region in 2015 were 6.6% of the total in the country, mostly due to the fact that over half of the R&D personnel (67.9%) are concentrated in the South West region (NSI, 2017).

Table 4-2Regional investments in R&D

Table 4.2. Regional investments in R&D								
1	Finance and support							
	R&D expenditure in the public sector	7751	4209	3764	6397	4259	4169	7436
2	Firm investments							
	R&D expenditure in the business sector	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Non - R&D innovation expenditures for SMEs only	10630	5866	8483	10183	20540	29222	26409
Source: NSI (2017)								

4.4 Regional Innovation activities

The status of innovation activities in the national innovation environment covers the analysis of the innovators behaviour, or the existence of business connections and the protection of intellectual property and intellectual assets.

1. Innovators

- SMEs with product or process innovations
- SMEs with marketing or organisational innovations
- SMEs innovating in-house

2. Linkages
   - Innovative SMEs collaborating with others
   - Public-private co-publications

3. Intellectual assets (if available – please request data from the available institutions)
   - EPO patent applications
   - Trademark applications
   - Design applications
   -

According to the national Innovation Strategy for Smart Specialisation 2014-2020, manufacturing is a leading sector in the country, providing almost 80% of the production output. Although advanced manufacturing is not explicitly mentioned under one of the four thematic areas in the above mentioned strategy, it can be found indirectly in most of the priority directions related to "Mechatronics and clean technologies", "Industry for Healthy lifestyle and BioTech", "New Technologies in the Creative and Recreative Industries" deemed as the key thematic areas in the South East region. Leading among medium-high and medium-low tech economic activities in this region are the production of metal products, transport equipment and rubber/plastics (NSI, 2017). More concretely, according to a study published by the Ministry of Economy on regional specialisation there is a high concentration of medium-high and medium-low tech production of automobiles in Burgas and Yambol, of machinery and equipment in Sliven and Yambol and of transport equipment in Burgas. In addition, there is a high concentration of medium-high and medium-low tech production of basic metals and fabricated metal products, of electrical equipment, of rubber/plastics products and of machinery/equipment in Stara Zagora. As already mentioned Bulgaria is traditionally a highly centralised country and therefore most of the measures and initiatives related to innovation and support programs are coordinated centrally. However, it is expected that innovative companies and research institutions from the region will be funded through the announced procedures „Support for the introduction of innovation in enterprises" and "Development of products and production innovations" under Operational Programme "Innovation and Competitiveness" 2014-2020 and/or procedure "Creation and development of centres of competence and centres of excellence" under Operational Programme "Science and Education for Smart Growth". The main challenges for advanced manufacturing to contribute to the future of industry in the region are related to the shortage of technical and engineering experts, the need for better cooperation science-business, the PPP promotion and the internationalisation of the businesses. The main organisations that are involved in supporting advanced manufacturing technology development and R&D in the region are the Bulgarian Industrial Cluster Association, the Marine Cluster, Trakia University, University "Prof. Dr Asen Zlatarov" together with leading companies such as Yazaki Bulgaria, SE Bordnetze-Bulgaria, Standard Profil, Caproni, HES Plc, Bulmetal and others.

Table 4-3Regional Innovation activities (2010-2016)

Table 4.3. Regional Innovation activities (2010-2016)								
		2010	2011	2012	2013	2014	2015	2016
1	**Innovators**							
	SMEs with product or process innovations.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	SMEs with marketing or organisational innovations.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	SMEs innovating in-house	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2								
	Innovative SMEs collaborating with others.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Public-private co-publications.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	**Intellectual assets**							
	EPO patent applications.	n/a	n/a	n/a	n/a	n/a	n/a	0,19
	Trademark applications.	n/a	n/a	n/a	n/a	n/a	n/a	3,24
	Design applications.	--	--	--	--	--	--	0,84
								Source: NSI (2017)

5 Dominant Emerging Industries

The report uses a combination of indicators for identifying the dominant emerging industries in the Skopje region. As explained in the Methodology section i.e. 2.3, the indicators are a combination of the EU RIS methodology 2017 and EU INOVA classification of emerging industries from 2010.

5.1 Innovation Impacts

Table 5-1Impacts from Innovation Activities

Table 5.1. Impacts from Innovation Activities		2012	2013	2014	2015	2016
1	Exports in MHT manufacturing / knowledge-intensive activities					
2	Employment in MHT manufacturing	4,2%	4,05%	3,8%	4,9%	5,4%
3	Employment in knowledge - intensive activities	24,6%	27,24%	26,5%	26,0%	26,8%
	Source: Eurostat (2017)					

The dominant emerging industries are identified through the following indicators:

- Employment in MHT manufacturing/ knowledge-intensive activities

Number of employed persons in the medium-high and high tech manufacturing sectors include Chemicals (NACE24), Machinery (NACE29), Office equipment (NACE30), Electrical equipment (NACE31), Telecommunications and related equipment (NACE32), Precision instruments (NACE33), Automobiles (NACE34) and Aerospace and other transport (NACE35).

Statistical data indicate that the percentage of employment in the MHT manufacturing (% from total employment among SMEs with more than 10 employees) is 4,9% in 2015, while the data for 2016 are 5,4%

Number of employed persons in the knowledge-intensive services sectors include Water transport (NACE 61), Air transport (NACE 62), Post and telecommunications (NACE64), Financial intermediation (NACE 65), Insurance and pension funding (NACE 66), Activities auxiliary to financial intermediation (NACE 67), Real estate activities (NACE 70), Renting of machinery and equipment (NACE 71), Computer and related activities (NACE72), Research and development (NACE73), and Other business activities (NACE 74).

Statistical data indicate that of employment in knowledge incentive industries (% from total employment among SMEs with more than 10 employees) is 26,0 % in 2015, while the data for 2016 are 26,8 %

. Although **the share of the employed in the high-tech sector in Bulgaria (high-tech activities and knowledge-intensive services) in total employment** had been changing in the period 2008 – 2015, the annual rate **remains positive and moves within the range of 1 and 2 %**. This growth, however, is not high enough to make up for the lagging behind other EU member states in the framework of which Bulgarian exceeds only Romania by this indicator.

- *Exports of MHT manufacturing*

Exports in Chemicals and chemical products (NACE Rev. 1.1 category 24), Machinery and equipment (NACE Rev. 1.1 category 29), Office machinery and computers (NACE Rev. 1.1 category 30), Electrical machinery and apparatus (NACE Rev. 1.1 category 31), Radio, television and communication equipment (NACE Rev. 1.1 category 32), Medical, precision and optical instruments (NACE Rev. 1.1 category 3), Motor vehicles, trailers and semi-trailers, and Other transport equipment (NACE Rev. 1.1 category 34).

The share of **export of medium high-tech and high-tech** products in total export of products rose by **over 28 %** for the period (despite this, 27th place for 2015); (Bulgarian Innovation Scoreboard 2016)

5.2 Dominant Emerging Industries

Data is available only narrative

Table 5-2Dominant Emerging Industries

Table 5.2. Dominant Emerging Industries		
	2016	
	Number of companies where the main income code belongs to the required NACE categories	Number of employees
Mechatronics and clean technologies	n/a	n/a
Information and Communication Technology	n/a	n/a
Biotechnology	n/a	n/a
Nanotechnology	n/a	n/a
Creative industries, including cultural ones;	n/a	n/a
Pharmacy	n/a	n/a
Food Industry	n/a	n/a

South East Region

- Bourgas. RIS3 capacity of the region is in product and technology niches such as tourism (environmental, health, cultural, etc.) and wellness; Chemical products and technologies; Information and communication technologies, services and telecommunications; Marine biology, aquaculture and fish farming; Biotechnology, organic food and bio-based products; Manufacture of motor vehicles and electric cars; Energetic technologies and biofuels; Processing and light industries. The Office for transfer of innovative technologies in businesses of South-Eastern region assists to improving innovation infrastructure, industrial capacity, export profile and competitiveness of enterprises in the south-eastern region of Bulgaria, supporting them in search process and introduction of new services and innovative solutions in the field of information technologies and their applications. Priorities are information technologies, environmental and energy-saving technologies and economic analyses and assessments. As an University and Research Center interests are focused on ICT, materials and material sciences, environmental protection and water, RES, biomedicine, molecular modeling linked to eco- toxicology. As a result, the priority thematic areas for RIS3 are “Mechatronics and clean technologies” and “Industry for Healthy lifestyle and BioTech”. •
- **Sliven**. The available RIS3 capacity is concentrated in the thematic area “Mechatronics and clean technologies” (capacity in the field of automotive — prototypes with electrical and hybrid propulsion, network and innovative technology for an accelerated battery charging with electricity, availability of critical mass for development of design

center focusing transportation, textiles and design and Cluster Mechatronics and clean technologies", developed ICT sector fostering mechanical engineering) and "New Technologies in the Creative and Recreative Industries (focus on developing smartphone apps and digital guides for advertising and visits to objects related to cultural, historical and alternative tourism in the region, electronic platforms for advertising and promotion of alternative tourism in the region). •

• **Stara Zagora**. The analysis of strengths addressed the available RIS3 capacity of the area to the thematic area "Mechatronics and clean technologies" ("Research and Development" in engineering and technology, medical sciences, agricultural sciences — mechanics, electronics, nanotechnologies, management systems, software to clean technologies (eco mobility) storage and energy saving; Architectural and engineering activities; Consultancy in the field of management; Manufacture of instruments and appliances for measuring, testing and navigation, Manufacture of radio, television and communication equipment and appliances) and "Industry for Healthy lifestyle and BioTech" ("R & D on clean manufacturing processes, technologies at the service of medicine, medical and spa tourism; Business practices for clean production, storage and processing of specific food and cosmetics (bio-) products, medicines, substances and products and competitive bio-based products with curative medical effects, organic farming, production of food and non-food bio-based products, including for therapeutic and cosmetic properties (hip, rose etc.), export orientation of biological and pharmaceutical products, certification and development laboratories. Yambol. Yambol Region has the potential to attract investors in the manufacturing industry and particularly in the processing of fruit and vegetables. The territory of the area has the potential for exploitation of energy from air currents. Favourable geographic location, high proportion of arable agricultural land and green clean environment are a prerequisite for the development of a prosperous farming. The existence of large cultivated agricultural areas, traditional cereal production, vegetable and 35 Innovation Strategy for Smart Specialisation 2014-2020 animal husbandry outline potential which should be exploited. The development of efficient agriculture is one of the main possibilities for improving the labour market, supporting and encouraging businesses and enhancing investment. It is these circumstances justify the choice for the thematic areas "Industry for a healthy life and biotechnology and "new technologies in creative and recreational industries. The existence of regional specialization and the density of enterprises is the basis for the implementation of a cluster policy in the various economic activities. In the programming period 2014-2020, the European Union emphasizes its Territorial Agenda, which focuses on the territorial dimension of European cohesion policy and strategy "Europe 2020". The following challenges and threats for regions are identified: • Increasing globalization: structural changes after the global economic crisis; • Changes to the integration of the European Union and growing interdependencies between regions; • The demographic situation in different areas. Challenges and social isolation of vulnerable groups; • Climate change and risks to the environment: the effects in the various geographical areas; • The increasing energy challenges that threaten regional competitiveness; • Loss of biodiversity, endangered species, risks to the landscape and cultural heritage. The National Concept for Spatial Development 2025 takes into account these challenges and emphasizes the role of urban centres as a key factor for sustainable economic growth. Integrated plans for urban regeneration and development have been developed, with identified areas for economic development. The idea is that in the future these areas would become an attractive feature for

foreign investors in industrial development and for clusters and innovation cooperation. Some of these cities have the potential to become "smart cities", including in the European Innovation Partnership on Smart Cities and Communities (EIP-SCC).

Vision: By 2020 Bulgaria must make a qualitative leap in its innovation performance at EU level to tackle public challenges in the field of demography (reverse brain drain and youth entrepreneurship), sustainable development, intellectual capital and the nation's health. Strategic Goal: By 2020, Bulgaria will move from the group of "modest innovators"31 to the "moderate innovators" group. Each year the European Commission published an Innovations Score board where based on integrated methodology each EU country is assessed and compared in terms of its performance. Trends and progress of each Member State are evaluated. Evaluation is made by using a set of indicators that allow assessing human resources, funding and support for businesses, corporate investment, networks and entrepreneurship, intellectual property, innovators and economic effects. Tracking changes in the value of these indicators will allow taking effective management decisions. The required growth rate and the values which the country should reach are described in Section 8 of the Strategy. Take change in the value of indicators in practice is the external measurement of innovation policy. In practice, this change in the indicators will be implemented in an effective policy to promote:

- Innovation, research and development of human capital,
- Investment in high-tech areas in which Bulgaria has traditions, good professionals and successfully competes in the international market,
- Emerging export-oriented industries. Development of areas with growth potential will attract young people and reduce the "brain drain." It will improve living conditions and nutrition of the population and many other factors which affect the life of people, including general labour conditions. Innovation strategy for smart specialization is a new approach to economic development, which is based on targeted support for identified technological niches that are promising and where business is interested to invest, and where human potential is available.

6 Strengths and Weaknesses

Strengths

1. Favorable transport geography at the Black Sea basin; parts of three ETC on the territory of the region - 4, 8 and 10;
2. Existence of two urban centers of national importance - Bourgas and Stara Zagora;
3. Competitiveness of the regional economy, higher than the average for the country; stability of the regional economy in terms of GDP and GVA;
4. Various structure of the economy; the clear potential and real contribution of the region to the industrial development of the country and the growing importance of the service sector;
5. Traditions in the development of energy as a key economic sector;
6. High concentration of foreign investments in the region; there is no fall in FDI as a result of the economic crisis;
7. Relatively stable structure of different types of enterprises; large enterprises account for over 1/3 of the region's revenue;
8. Highly developed maritime recreation tourism; favorable natural factors, built tourist facilities and infrastructure and traditional experience in the provision of seasonal tourist services; the industry occupies a leading position in the economy of the region;
9. Rich cultural and historical heritage, preserved attractive and varied natural environment;
10. Highest birth rate in the region; the highest proportion of the population at sub-working age;
11. Most of newly built highways on the territory of the region; high average density of motorways and first-class roads;
12. Higher percentage of electrified railway lines in the region than the national average and the EU-27;
13. Possibility of intermodal transport by air, sea and land;
14. Gasified Industrial Areas and Settlement Areas and Possibilities for Additional Gasification of Production Areas

Weaknesses

1. Significant intra-regional imbalances;
2. Achieved economic development, significantly below the EU-27 average;
3. Disproportion in the distribution of foreign investments - mainly in the Bourgas District and in the other districts - to a much lesser extent;
4. Low share of enterprises at high technological level;
5. Low share of R & D expenditures from the region's GDP;
6. Accelerated and large-scale building on the Black Sea coast, which lead to an overload of the infrastructure;
7. Concentration of the tourist base and tourist services along the coast; no trends are noticed to overcome the seasonality of sea tourism and diversify the tourist product;
8. Negative trend of continuous decrease of the population;
9. Unbalanced distribution of the population - crowding of the population in the more attractive areas of Bourgas and Stara Zagora;

10. Highest share of early school leavers; weak links between research centers, universities and businesses;
11. Labor supply significantly outstrips demand;
12. Lowest road density of all classes of WFD;
13. Leastly developed regional road network among the level 2 regions in the country and poor operation status of II and III class road

7 Conclusions and Recommendations

By 2020 Bulgaria must make a qualitative leap in its innovation performance at EU level to tackle public challenges in the field of demography (reverse brain drain and youth entrepreneurship), sustainable development, intellectual capital and the nation's health. Strategic Goal: By 2020, Bulgaria will move from the group of "modest innovators"31 to the "moderate innovators" group. Each year the European Commission published an Innovations Score board where based on integrated methodology each EU country is assessed and compared in terms of its performance. Trends and progress of each Member State are evaluated. Evaluation is made by using a set of indicators that allow assessing human resources, funding and support for businesses, corporate investment, networks and entrepreneurship, intellectual property, innovators and economic effects. Tracking changes in the value of these indicators will allow taking effective management decisions. The required growth rate and the values which the country should reach are described in Section 8 of the Strategy. Take change in the value of indicators in practice is the external measurement of innovation policy. In practice, this change in the indicators will be implemented in an effective policy to promote:

- Innovation, research and development of human capital,
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- Emerging export-oriented industries. Development of areas with growth potential will attract young people and reduce the "brain drain." It will improve living conditions and nutrition of the population and many other factors which affect the life of people, including general labour conditions. Innovation strategy for smart specialization is a new approach to economic development, which is based on targeted support for identified technological niches that are promising and where business is interested to invest, and where human potential is available.

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Appendix 1. Statistical Data

Table 3.1. Economy and Growth of Yugoiztochen Region							
	2010	2011	2012	2013	2014	2015	2016
GDP PPP billion euros)	4,55	4,86	5,11	5,21	5,33	5,53	N/A
Structure of the Economy - Composition of employment	295 672	294 099	289 827	290 813	293 783	295 394	298 121
Agriculture & Mining	20 268	20 544	21 015	21 135	20 984	21 522	21 364
Manufacturing	72 927	73 415	69 772	69 457	73 063	76 796	78 278
Other (services, construction and public administration)	202 477	200 140	199 040	200 221	199 736	194 076	198 479
Trade Balance	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Source: NSI (2017)							

Table 3.2. Socio-demographic environment of Yugoiztochen Region							
Socio-demographic environment	2010	2011	2012	2013	2014	2015	2016
GDP per capita in PPP (euros)	4556	4864	5110	5211	5339	5535	
Population size TOTAL (numbers)	1106448	1072850	1067981	1063690	1058515	1052575	1046125
Age 0-14	110.637	159238	160950	162363	162662	162468	162885
Age 15-64	420.643	71801	709140	699196	690171	680995	671741
Age 65+	72.889	195602	197891	202131	205862	209112	211499
Gender (numbers)							
Men	537959	524737	521732	519226	515862	512404	508687
Woman	568489	548113	546249	544464	542653	540171	537438
Population density (persons per km^2)	55,5	55,2	54,9	54,8	54,8	54,8	55,5
Degree of urbanisation (%)	70,2	71,6	71,7	71,8	71,9	72,2	70,2
Source: NSI (2017)							

Table 4.1. Human Capital and R&D Activities in the Region								
		2010	2011	2012	2013	2014	2015	2016

1	**Available human resources**							
	Population aged 30-34 with tertiary education *e	n/a	n/a	23,30%	22,20%	24,20%	26,20%	26,30%
	Lifelong learning *e			1,3%	1,2%	1,1%	1,4%	1,6%
2	**Attractive research systems**							
	International scientific co-publications per million population *	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Top 10% most cited publications per total publications*	n/a	n/a	n/a	n/a	n/a	n/a	n/a
								Source: NSI (2017)

Table 4.2. Regional investments in R&D								
1	Finance and support							
	R&D expenditure in the public sector	7751	4209	3764	6397	4259	4169	7436
2	Firm investments							
	R&D expenditure in the business sector	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Non - R&D innovation expenditures for SMEs only	10630	5866	8483	10183	20540	29222	26409
								Source: NSI (2017)

Table 4.3. Regional Innovation activities (2010-2016)								
		2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
1	**Innovators**							
	SMEs with product or process innovations.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	SMEs with marketing or organisational innovations.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	SMEs innovating in-house	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2								
	Innovative SMEs collaborating with others.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Public-private co-publications.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	**Intellectual assets**							
	EPO patent applications.	n/a	n/a	n/a	n/a	n/a	n/a	0,19
	Trademark applications.	n/a	n/a	n/a	n/a	n/a	n/a	3,24
	Design applications.	--	--	--	--	--	--	0,84
								Source: NSI (2017)

Table 5.1. Impacts from Innovation Activities		2012	2013	2014	2015	2016
1	Exports in MHT manufacturing / knowledge-intensive activities					
2	Employment in MHT manufacturing	4,2%	4,05%	3,8%	4,9%	5,4%
3	Employment in knowledge - intensive activities	24,6%	27,24%	26,5%	26,0%	26,8%
	Source: Eurostat (2017)					

Table 5.2. Dominant Emerging Industries		
	2016	
	Number of companies where the main income code belongs to the required NACE categories	Number of employees
Mechatronics and clean technologies	n/a	n/a
Information and Communication Technology	n/a	n/a
Biotechnology	n/a	n/a
Nanotechnology	n/a	n/a
Creative industries, including cultural ones;	n/a	n/a
Pharmacy	n/a	n/a
Food Industry	n/a	n/a

Regional Report on Innovation Potential and Dominant Emerging Industries

Interreg
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INNOPLATFORM

InnoPlatform project is co-funded by the European Union
and National Funds of the participating countries