30 September 2014

Regional Innovation Monitor Plus

Regional Innovation Report North-West Romania

To the European Commission
Enterprise and Industry Directorate-General
Directorate B – Sustainable Growth and EU 2020
Regional Innovation Monitor Plus

Regional Innovation Report North-West Romania

technopolis [group] in cooperation with

Laura Roman, Technopolis Group
# Table of Contents

1. Main Trends and Challenges in the Regional Innovation System  
   1.1 Recent Trends in Economic Performance  
   1.2 Recent Trends in Regional Innovation Performance  
   1.3 Identified Challenges  
2. Innovation Policy Governance  
   2.1 General Regional Policy Autonomy  
   2.2 Innovation Policy Autonomy at Regional Level  
   2.3 Set-up of the Regional Innovation Governance System  
   2.4 The Regional Strategy-development Process  
   2.5 Intra- and Inter-regional Cooperation  
   2.6 Innovation Policy Institutional Set-up  
3. Innovation Policy Instruments and Orientations  
   3.1 The Regional Innovation Policy Mix  
   3.2 Regional Policies and Initiatives in Support of Advanced Manufacturing  
   3.3 Appraisal of Regional Innovation Policies  
   3.4 Good Practice Case  
   3.5 Possible Future Orientations and Opportunities  
Appendix A Bibliography  
Appendix B Stakeholders Consulted  
Appendix C Statistical Data  

# Table of Figures

Figure 1 Evolution of Nominal GDP in the North-West Region.......................... 5  
Figure 2 Economic Performance Indicators and wider Framework Conditions .......... 6  
Figure 3 Innovation Performance Indicators in a European context...................... 9  
Figure 4 Evolution of R&D Expenditure per Sector of Performance ..................... 10  
Figure 5 Distribution of R&D Expenditures by Sectors..................................... 11  
Figure 6 Evolution of GERD................................................................................... 11  
Figure 7 Technological and Non-technological Innovators................................. 12
Tables

Table 1 Innovation Policy Governance .................................................................18
Table 2 Innovation Policy Institutional Set-up and available Human Resources.......19
Table 3 Existing Regional Innovation Support Measures.................................22
Launched in 2010, the Regional Innovation Monitor continues to be one of the flagship initiatives of DG Enterprise and Industry of the European Commission. From the outset, it aimed at supporting sharing of intelligence on innovation policies in some 200 regions across EU Member States.

RIM Plus aims to help regions to improve their innovation policies based on better and harmonised policy intelligence. The new contract aims to contribute to the development of more effective regional innovation policies and promote policy learning. Building upon the experience gained and results obtained during the implementation of the RIM in the period 2010-2012, the RIM Plus service evolves towards providing practical guidance to regions on how to use the collected information, establishing a network of regional experts with thematic specialisation, and organising specialised workshops taking into account the relevance and potential interest among the regional innovation policy makers.

RIM Plus covers EU Member States: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom.

This means that RIM will not concentrate on Member States where the Nomenclature of territorial units for statistics NUTS 1 and 2 levels are identical with the entire country (Estonia, Latvia, and Lithuania), Malta which only has NUTS 3 regions, Slovenia which has a national innovation policy or Cyprus and Luxembourg which are countries without NUTS regions.

The main aim of 30 regional reports is to provide a description and analysis of contemporary developments of regional innovation policy, taking into account the specific context of the region as well as general trends. All regional innovation reports are produced in a standardised way using a common methodological and conceptual framework, in order to allow for horizontal analysis, with a view to preparing the Annual EU Regional Innovation Monitor Plus report.

European Commission official responsible for the project is Alberto Licciardello (Alberto.LICCIARDELLO@ec.europa.eu).

The present report was prepared by Laura Roman, Technopolis Group (laura.roman@technopolis-group.com). The contents and views expressed in this report do not necessarily reflect the opinions or policies of the Regions, Member States or the European Commission.

The Regional Innovation Access Point and Knowledge Hub presenting further details of the regional innovation measures, policy documents and regional organisations in North West is accessible through the RIM Plus online inventory of policy measures here: http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/region/select

Copyright of the document belongs to the European Commission. Neither the European Commission, nor any person acting on its behalf, may be held responsible for the use to which information contained in this document may be put, or for any errors which, despite careful preparation and checking, may appear.

---

1 http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/
Executive Summary

1. Main Trends and Challenges in the Regional Innovation System

The region of North West Romania is an emerging innovation space, with high development potential in the upcoming period. The region is faced with the structural challenge of high concentration of employment in traditional and less performing sectors of the economy, such as the food industry, textiles and clothing, wood and furniture production industry. These are sectors in dire need of innovation and performance increase. At the same time, emerging growth sectors in the region are the ICT, electrical equipment production and car manufacturing industries. While this is not an exhaustive list of sectors of specialisation in the region, it is indicative of the process of structural transformation ongoing in the North-West, and of the opportunities that the region can tap into if it infuses more dynamism in the private sector.

The North-West region benefits from the presence of some of Romania’s top performing Higher Education institutions as assets that can drive its transformation to more research and innovation based growth. However, the private sector’s research and innovation performance is among the lowest in Europe. There are signs that various regional industrial sector stakeholders are taking the need for innovation and cooperation more seriously. The region recently kick-started the process of cluster formation in four sectors: ICT, furniture, agro-food and renewable energy, which could contribute to advancing the research - industry linkages and ultimately improve the business and innovation performance of the regional system.

Overall, some of the main challenges that the region faces are the following:

Challenge 1. Improving the competitiveness and transforming the structure of the economy

Among the reasons for the lack of competitiveness of the region at EU level is the poor business sophistication of the regional enterprises. Local companies need to improve their business processes and become more competitive on the European and global markets. Within this framework, it would be important to enhance local industries’ and enterprises’ efforts towards new product development and improved labour productivity. There is a need to develop a policy mix to support both the supply and demand of innovation in the region.

Given the high toll paid by small enterprises in the aftermath of the economic and financial crisis in 2008-2010, when the numbers of enterprises diminished tremendously, supporting start-ups and the entrepreneurial environment should also be a core priority of the regional and local authorities.

Challenge 2. Encourage the adjustment of skills to face the structural changes in the regional economy

The region is faced with lower shares of employees with tertiary level education, and less employees working in the field of science and technology, in comparison to the EU average level. These are signs that the regional economy still lags behind in terms of offering job opportunities for the highly skilled graduates. Coupled with the fact that the provision of education and lifelong training is less than the EU average level in the North-West region, there are reasons to believe that a policy mix for better qualifying the workforce and young graduates and the support to the private sector enterprises to modernise and demand for better qualified workers could be a concrete goal for the regional authorities.
Challenge 3. Taking a systemic approach to promoting innovation in the region

The research and innovation stakeholders in the region need to be better connected and mobilised, in order to achieve better innovation performance and have a positive socio-economic impact in the region. The supply and demand for innovation need to be lifted. Provided that the government expenditure on R&D remains low in the future, the use of alternative sources of funding such as structural funds for R&I needs to be enhanced. Developing the private equity market for innovation and improving the regional infrastructure to support the innovation process in firms are further potentially useful approaches. Further enhancing cooperation between companies and research providers has been highlighted as an important need by the R&I stakeholders, and needs to be supported through further measures.

2. Innovation Policy Governance

Research and Innovation Policy is a centralised policy in Romania. The only NUTS2 regional level organisations are the Regional Development Agencies (RDAs), who implement territorial development policies and Structural Funds programmes also designed at national level. Formally, the National Council for Regional Development ensures national coordination of RDAs, while regional coordination is performed by the North-West Regional Development Council and North-West Regional Development Agency. The North-West RDA was responsible for 2007-2013 Structural Funds programmes and other national programmes implementation.

Romania has no formal regional RDI policy, and the North-West does not have a role in RDI policy-making. RDI policies are designed and coordinated at national level by the Ministry of National Education and the National Authority for Scientific Research (NASR) without any specific regional focus. However, we can observe an emerging capacity for innovation support policy within the North-West RDA, which has grown into an informal “innovation broker” for the regional level. This role could be further enhanced in the future.

3. Innovation Policy Instruments

The North-West RDA elaborated the 2007-2013 Regional Innovation Strategy for the North-West Region (REGIS NW) for 2008-2013, on the basis of its affiliation to the “Innovating Regions in Europe” network. The region decided not to update the innovation strategy or have a smart specialisation strategy for 2014-2020, as it considered the old strategy still valid due to lack of implementation of the designed steps. The North-West region developed the 2014-2020 Regional Development Plan by taking a more participatory approach, as devised by national guidelines. However, due to the fact that the region does not have legal capacity to undertake own development and innovation funding measures, the Regional Development Plan is not linked to national level policy-making and has had a low success rate in implementation.

The region does not have own policy instruments in support of innovation. However, the North-West RDA has engaged in several inter-regional cooperation projects, which resulted in building the capacity of the RDA in network management and innovation system stakeholder mobilisation. Some of the results of the RDA’s project include the creation of regional structures for four active clusters in different industrial sectors, as well as to initiate the creation of a science and technology park in the region. However, it is too early to assess the long-term impacts of the RDA’s work.

4. Conclusions: future actions and opportunities for innovation policy

Based on the analysis of the regional innovation system, including aspects of governance, policy effectiveness and the regional innovation landscape, there are several priorities that stand out as areas where future actions are needed, which could have an impact on improving the innovation performance and ultimately the sustainable growth of the region. They are listed below.
1. **Enhance the coordination of regional and national development and innovation policies**

It is crucial to find a better solution to articulate the regional development agencies’ role in the national and regional innovation system. A suggestion to better coordinate national level programmes with regional level needs, and to improve the placed-based character of development and innovation policies in Romania is to **better integrate the Regional Development Plans in the country strategic policy making** (see SAR, 2014) and link them to central funding allocations, as well as to a monitoring and evaluation framework. Especially since RDAs will become Intermediary Bodies for the implementation of both the ROP and Competitiveness OP, their efforts should be integrated in a wider national policy coordination framework. The already developed capability of Regional Development Agencies to coordinate a participatory regional development strategy-making process and their contribution to mobilising regional stakeholders for better absorption of structural funds stemming from different Operational Programmes (e.g. ROP, Competitiveness OP) are good reasons to also rely on RDAs for more substantial policy support in the development and innovation funding planning process.

2. **Increase linkages between the university, the public research sector and the private sector**

The higher education sector is relatively the most important investor in the regional innovation system, when comparing it to the amounts of expenditures in R&D channelled by the private sector or the governmental / public research sector. A regional partnership-based approach needs to be undertaken so that the universities structure the education programmes in partnership with the business community, thus enhancing the skills base in the region. Providing support for research and development projects in businesses on an institutionalised basis would be a beneficial step. The engagement of the business and academic communities towards common development goals is crucial to enhance the innovation performance of the region.

3. **Create demand for innovation in the private sector**

Private sector investments in R&D and their innovation related activities are low compared to the EU level. However, given that the level of Business Expenditure in R&D in the region is above the national average, there is potential for business innovation activities to grow further. Business sector innovation could be supported through a mix of measures. On the one hand, the region could make more use of structural funds directed towards the private sector, using smarter schemes that support cooperation between SMEs. Schemes that support the innovation process and help companies cross the “valley of death”, such as incubators (which are scarce in the region), could be impactful as well. On the other hand, demand-side policies for the private sector can include investments in skills, raising awareness of the potential for innovation in the regional industries, or using public procurement of R&D results at pre-commercial stages, to support their demonstration and scaling up. City or county level innovation policies could be employed towards this goal, connecting the private sector activities to local needs, in order to achieve socio-economic and environmental impacts.
1. Main Trends and Challenges in the Regional Innovation System

1.1 Recent Trends in Economic Performance

The North-West region is strategically positioned at Romania’s borders of Hungary and Ukraine. It is composed of six counties (Bihor, Bistrita-Nasaud, Cluj, Maramures, Satu-Mare, Salaj), 15 cities, 28 towns, 403 communes and 1,800 villages. It has a surface of 34,159 km² (14.32% of the country) and a population of 2.74m that includes Romanians and Hungarians and is very culturally diverse.

Also known as North Transylvania, the North-West, an attractive region for investment, which witnessed a dynamic development of ICT and several manufacturing sectors recently. In spite of setback in entrepreneurial activities during the financial and economic crisis, the region shows high potential for innovation and development, driven by growing interest from private sector actors and the existence of some of the best performing universities in Romania.

The region’s GDP per capita is at €5,200, slightly below the national average and as high as 21% of the European average in 2011. The level of GDP per capita in the region reflects the regional disparities in the country. A major factor of economic disparity is the socio-economic contrast between the capital region, Bucharest-Ilfov, and the rest of the country. The capital region, as the heart of economic development and top attractor of foreign direct investments as well as talents, tilts heavily the balance across regions. North-West’s GDP per capita is only as high as one third of Bucharest’s. This shows the need for national policies and governance structures that are better targeted towards reducing regional disparities within the country.

Between 2000-2007, the nominal GDP in the region experienced an average nominal growth of 17%, similar to the national average, while European GDP increased by 4% only. The economic shock of the financial crisis was felt strongly in the region, with a 14% drop in nominal GDP, much stronger than at EU level (6% drop) (See Figure 1). It is also important to note that the regional economy is poised with economic disparities, as two of its six counties (Bihor and Cluj-Napoca) make up for more than 50% of the regional GDP in 2011 (Romanian National Institute of Statistics)

Figure 1 Evolution of Nominal GDP in the North-West Region

Source: Eurostat.

The long-term unemployment rate is at 2.24%, almost half the EU average. Average labour productivity growth was 9% in 2000-2010 in the North-West region, four times higher than at EU level (and similar to the national level) (see Figure 2). The relatively good status in terms of employment can be explained by the structure of the regional economy, which is considerably industrialised. A large share of the population is employed in industry (33%) and in the agricultural sector (26%). In comparison to the
Romanian average, there is a larger share of the working population employed in industry than in agriculture. However, in comparison to the EU average, the share of persons working in the agricultural sector is five times higher in the North-West region, while the share of persons employed in industry is 1.3 times higher. Mirroring the pattern of employment in Romania, it is important to note that on average only 2% of the workforce in the region is employed in Science & Technology, in comparison to 9% of the workforce in EU. It is thus striking that in spite of the good employment results and availability of jobs in the region, the regional economy is dominated by traditional, low-tech sectors, which offer limited professional opportunities for highly skilled people. Brain drain and outward migration of top performing individuals have been specific regional problems mentioned by the interviewed stakeholders.

Figure 2 Economic Performance Indicators and wider Framework Conditions

A deeper look at the dimensions of the Regional Competitiveness Index (RCI) provides the possibility to rank the region according to a set of wider framework conditions that characterise aspects influencing the competitiveness of the region.\(^2\) The labour market efficiency is one dimension where the region scores 12% above the EU average, driven

---

\(^2\) Competitiveness is defined as the region’s “ability to offer an attractive and sustainable environment for firms and residents to live and work” (Annoni et al, 2013, p. 4).
by the region’s low level of unemployment, gender balanced employment and low share of young population (15-24) who are not in education, employment or training.

However, the North-West regional and local authorities need to target more actions towards the field of training and education of the regional workforce, where several indicators show below average performance. In the field of providing higher education and lifelong learning, the region has a moderate score of 56 in the Regional Competitiveness Index scale. This result amounts to 80% of the EU average score. Relative to all employees in the region, employees with tertiary level education (ISCED 5-6) are 10% less than the national level average and 46% less than at EU level. This is also reflected in the low performance in terms of employment in science & technology, where the region scores considerably below EU average. Discussions with regional stakeholders also identified this area as a challenge for local businesses and larger companies, which need skilled personnel. Employment in medium-high-tech manufacturing and in knowledge-intensive services is (consequently) also lagging behind national and European trends, reflecting the regional specialisation in more traditional and less knowledge-intensive sectors. However, the rise in employment in medium-high tech / high tech manufacturing is above national and EU averages, which is an encouraging sign that the region is modernising. Thus, the region and local authorities need to invest more in upgrading the skills of the workforce to suit the needs of the employers and enterprises.

In terms of economic specialisation, the region displays higher amounts of economic activities in the wholesale and retail trade sector – 28% of total number of local enterprises in 2011 and the manufacturing sector – 10% of the total number of local enterprises and largest employment numbers in 2011 (Eurostat). The construction and transportation sectors also make up for relatively larger shares of enterprises (10% and 8% respectively). Professional, scientific and technical activities account for 8%, and ICT firms were 2% of the total number of enterprises in 2011 (Eurostat). It is also notable that there is a visible downward trend in entrepreneurial activities, with the number of enterprises diminishing by 14% in industry, construction and services during the financial and economic crisis in 2008-2010 (Eurostat).

The industrial patterns of the region highlight a high concentration of employment in traditional sectors such as the food industry, textiles & clothing, leather and shoes industry, wood and furniture production as well as metallurgy. On the other hand, the most productive sectors are ICT, electrical equipments production, and car manufacturing industry (see the draft North-West RDP, 2014). For instance, a sector such as wood and furniture production makes up for 22.5% of local enterprises, 19% of total turnover and 26.3% of the total number of employees in 2011. While the production of computers, electronics and optical products makes up for only 1.7% of total number of enterprises, 2.6% of the total number of employees but 17.6% of total regional company turnover in 2011 (ibid). However, the performance of the computer products sector was also arguably driven by the existence of the Nokia factory in the region, which de-located in 2011 and impacted the regional economic landscape and especially the overall regional performance of the sector negatively. Therefore, these figures might change for post-2012 performance, which is why the region needs to tailor different regional development priorities taking these aspects into account.

The region has recently started to develop clusters to boost the linkages within its economic sectors and between innovation system stakeholders. There were 4 clusters in 2009 (water, geothermal, renewable energy and ICT), to which two clusters in the field of furniture and on agro-food were added after 2012. According to the 2014-20 RDP, the water cluster disintegrated, while the geothermal cluster is practically not active. This shows the incipient phase of the regional ecosystem for innovation. The existing clusters are slowly building up and becoming fully functional, as the regional stakeholders learn to cooperate and start joint projects. However, this is a longer-term process.

In addition to the setbacks in recent entrepreneurial activity in the region, there are several factors that diminish the region’s competitiveness at a European level. The
average 2013 RCI weighted score is -1.23. This brings North-West Romania among the lowest ranked regions in Europe, and highlights the region’s needs for institutional and structural transformation. The RCI wider framework conditions show the weaknesses of the region in terms of quality of institutions, macroeconomic stability, market size and business sophistication. The quality of institutions is perceived as very low at regional level, reaching a score of 3 out of 100 (compared to the score of 44 obtained at EU level). This can be considered one of the key factors inhibiting innovation processes in the region and in Romania, with a low performance due to perceptions of corruption and weak government effectiveness.

The relatively limited regional market size is influenced by the low level of disposable income per capita of the population, and GDP (purchasing power standards), which is comparably low in the North-West region (with a score of 31) than in the EU (with a score of 50). The region also shows signs of low business sophistication, since the share of employment and the regional gross value added in service sectors such as financial and insurance activities and in professional, scientific and technical activities are also low, reaching a score of 36. However, this is not far from the average business sophistication of economic activities in the EU (which scores 43). Another regional challenge is thus to bring more dynamism to the private markets.

1.2 Recent Trends in Regional Innovation Performance

Figure 3 provides a snapshot of the regional RTDI sector performance in an European context. Overall, there are high discrepancies between the North-West’s performance and the EU average level. Business and Government expenditures in R&D (or BERD and GovERD respectively) are extremely low in the region. The Business R&D expenditure amounted to only 0.23% of GDP in 2011, whereas Government R&D expenditure was even lower, at 0.07%. This places the region at 72% distance from the European average in terms of GERD. Business expenditure in the North-West is only 18% of the EU average. This portrays the dire lack of resources available for major R&D projects in the region.

The North-West has a somewhat better performance than average Romanian regions in terms of Higher Education spending on R&D (HERD), which reached 0.2% of GDP in 2011. Albeit low, these figures show a 72% higher concentration of resources in the Higher Education research sector in the region than the national average, which could be explained by the large number of universities in the region and their intensified activities. Nevertheless, HERD lies only at 40% of the EU average.

It is noteworthy that the region shows strengths in the absorption of structural funds for business innovations and for core RTDI, relative to the national level. This capacity needs to be capitalised on and enhanced in the future programming period. However, the overall structural funds absorption performance is below the EU level, especially with regard to the core RTDI activities investments, which amount to 56% of the EU average. These resources need to be capitalised on more.

Even though businesses in the North-West region spent on average 28% more than the average companies in Romania, compared to the EU level, Business R&D expenditures were 62% lower in the region. Therefore, it is important to strengthen the businesses’ involvement in R&D activities and capitalise on the already existing private sector efforts, which can fuel regional development.

A recent characterisation of the start-up scene in the city of Cluj provides a snapshot of an emerging start-up ecosystem in the field of IT in the region, which has witnessed a hype especially since the beginning of 2013 (see Vadan et al, 2013, p. 36). While the IT start-up community contained 10 known active and successful companies at the beginning of 2013, it grew to 35 start-ups already by the end of 2013, and already experienced the first failures (ibid). This exponential development has been driven by a combination of factors, such as the growth of the number of start-up events, but also a broader involvement and interaction of the local community (including the local
authorities, the university and research actors, as well as the business community). This way, the entrepreneurial community is accumulating business experience and displays a growing potential to attract more followers and investors. However, this is rather the infancy phase of the start-up scene in the city and the region, as most of the newly founded companies have yet to raise more financing, and develop their own market. The lack of business education and training, as well as the scarce number of facilities such as incubators or accelerators to support the crossing of the “valley of death” were two important barriers to the development of the young firms.

Figure 3 Innovation Performance Indicators in a European context

![Figure 3](image)

Source: Eurostat.
Figure 4 Evolution of R&D Expenditure per Sector of Performance

In time, as shown in Figure 4 above, the trends in R&D spending have been indicating a constant disengagement from the private sector with R&D activities, but a somewhat increased investment from the Higher Education sector in R&D activities. Private sector R&D investment grew in 2011 in the North-West region, but it is too early to say whether this is a long-term trend. The higher education sector is clearly a driver of innovation in the region. Therefore, a key challenge is to strengthen the cooperation between the university sector and the private sector in R&D activities.

Source: Eurostat.
Government expenditure in R&D witnessed an overall increase by 2008, but with the start of the economic crisis, public resources were shifted from the R&D sector, which brought the share of GovERD down to 0.07% of GDP in 2011 in the North-West region. This trend reflects national tendencies and is a sign of the volatility of the R&D resources in the country, which can act as a disincentive for the research and innovation performers to pursue such activities without the trust in the stability of the funding resources.

Figure 5 Distribution of R&D Expenditures by Sectors

The distribution of the portfolio of expenditures in R&D by the different sources of funding portraits again the relatively important role that the Higher Education R&D has started to play in the regional research and innovation system since 2005 (see Figure 5). It also shows an unbalanced involvement of the regional stakeholders from the private sector in R&I activities. As noted above, this is a systemic issue not only at regional level, but also at national level, pointing to the need to concentrate efforts to stimulate the demand for innovation and innovation activities in the private sector. A caveat can be made here, since in 2011 the share of the Business R&D expenditure as % of GDP doubled as opposed to 2010, which is an encouraging fact. This needs to be followed up with more recent data once available, in order to prove the consistency of this trend and understand whether the private sector has taken the role of research and innovation more seriously in fuelling growth.

Taking a broader perspective, there have been marginal yearly changes in the overall level of Gross Expenditure on R&D (GERD), except for the year 2005, when the system witnessed a considerable increase in resources, driven by the higher level of HERD presumably. However, one can grasp the lack of stability of the region’s expenditures in the R&D sector, given the variation of the level of GERD, which dropped by 3% in 2009 and did not recover in 2010 (see Figure 6).

Figure 6 Evolution of GERD
In line with the low level of resources dedicated by the private sector to research and innovation, the private sector’s innovation performance is rather poor. Figure 7 points to the disparity in performance between innovators in the North-West region of Romania and the average EU level. The regional SMEs are less prone to be technological innovators, with only 10% of SMEs (slightly less than the national level and a fourth of the EU level) reporting a technological innovation. A more encouraging performance is seen from the side of the non-technological innovators (20% of SMEs), which represent a relatively larger share of the number of SMEs in the region, than technological innovators. This performance is also fairly better than at national level, but still far from the EU performance. Figure 7 also shows a challenge of the regional innovation system. Very few innovative SMEs (5%) are cooperating with others, which should make the formation of stronger R&I linkages in the private sector another priority for the region.

Figure 7 Technological and Non-technological Innovators

Source: Community Innovation Survey, UNU-MERIT.

1.3 Identified Challenges

Based on the economic and innovation performance results, there are several challenges at regional level that could benefit from increased policy attention. Albeit the progress along several dimensions depends on national level measures as well, the regional development agency can have a role to play as a catalyst of change, together with private initiatives.

**Challenge 1. Sustain efforts towards improving the region’s competitiveness and transform the structure of the economy**

Among reasons for lack of competitiveness of the region at EU level is the poor business sophistication of regional enterprises. Local companies need to improve their business processes and become more competitive on the European and global markets. Within this framework, it would be important to enhance local industries’ and enterprises’ efforts towards new product development and improved labour productivity. There is a need to develop a policy mix to support both supply and demand of innovation in the region.

Given the high toll paid by small enterprises in the aftermath of the economic and financial crisis in 2008-2010, when the numbers of enterprises diminished tremendously, supporting start-ups and the entrepreneurial environment should also be a core priority of the regional and local authorities.

**Challenge 2. Encourage the adjustment of skills to face the structural changes in the regional economy**

The region is faced with lower shares of employees with tertiary level education, and less employees working in the field of science and technology, in comparison to the EU average level. These are signs that the regional economy still lags behind in terms of offering job opportunities for highly skilled graduates. Coupled with the fact that the
provision of education and lifelong training is lower than the EU average in the North-West region, there are reasons to believe that a policy mix for better qualifying the workforce and young graduates could be a concrete work goal for the regional authorities. This could also entail support to private sector enterprises to modernise and offer more opportunities for qualified workers.

**Challenge 3. Taking a systemic approach promoting innovation in the region**

Research and innovation stakeholders in the region need to be better connected and mobilised, in order to achieve better innovation performance and have a positive socio-economic impact in the region. Regional research organisations and firms need to re-design their interactions and create sustainable relationships that produce added value for the region. Enhancing demand for research and innovation from the private sector, as well as the capacities for R&I of both the public and the private sector are part of the challenge, as technology transfer and university-private sector co-operations are scarce. The use of alternative sources of funding such as structural funds for R&I needs to be enhanced. Developing the private equity market for innovation and improving the regional infrastructure to support the innovation process in firms are considered as potential approaches. Further enhancing cooperation between companies and research providers has been highlighted as an important need by the R&I stakeholders, and needs to be supported through further measures.
2. Innovation Policy Governance

The second section provides information on the institutional framework and the general strategic approach under which regional innovation policy is designed in the respective region. It underlines the constraints and opportunities faced by regional authorities in designing and implementing regional innovation policies.

Central issues to be addressed in this section will include the degree of general regional autonomy, the degree of autonomy with regard to innovation policy, the set-up of regional governance system (centralised/de-centralised/fragmented), the nature of the process of strategy development (top-down/bottom-up/participatory), as well as different forms of intra- and inter-regional co-operation in the process of policy design and implementation.

2.1 General Regional Policy Autonomy

Formally, it is important to note that the regional level has no legal status in Romania, and hence no real policy-making responsibilities. The NUTS 2 regions are territories that have been introduced for statistical purposes as territorial units in Romania, and have no administrative autonomy. General regional development policies are designed and implemented at national level by the Ministry of Regional Development and Public Administration (MDRAP) and are deployed through national level instruments (primarily supported through the Regional Operational Programme, the only operational programme in Romania that supports regional development).

The North-West Regional Development Council (RDC) and its executive body – the North-West Regional Development Agency (RDA), perform regional level policy coordination. The Regional Development Council is composed of representatives from the six County Councils in the region. The RDA has a Non-governmental Organisation status and is mandated by the RDC to perform strategic planning for the region. The RDA is also an executive / implementing body for the Regional Operational Programme and the Sectoral Operational Programme – Economic Competitiveness at regional level, without any decision-making and planning capacities.

Some of the main tasks of the North-West RDA are i) to elaborate regional development plans and strategies, which are approved by the North-West Council for Regional Development; and ii) to ensure implementation of regional development plans according to RDC’s approval.

2.2 Innovation Policy Autonomy at Regional Level

Research & Innovation policy is a centralized policy in Romania and only integrated to a small extent in regional development policies. RDI policies are designed and coordinated at national level by the Department for Research, Development and Innovation in the Ministry of National Education (MEN) without any specific regional or territorial focus. The programme implementation agency of the Ministry of National Education is the Executive Unit for the Funding of Higher Education, R&D and Innovation (UEFISCEDI). The Ministry of National Education is the Managing Authority for the RDI support priority axis of the national level Sectoral Operational Programme for Economic Competitiveness funded by Structural Funds. The Regional Development Agencies are Implementing Bodies of this OP as well, without any decision-making or planning capacity.

Romania has thus no formal regional RDI policy, and the North-West region does not have a formal role in contributing national RDI policy-making. Nevertheless, regional innovation system stakeholders have been involved in a consultative process during the national RDI strategy-making exercises, such as the proposal for the 2014-2020 national RDI Strategy for Smart Specialisation.

There seems to be a conflicting perception on the involvement of the regional development agencies in the national STI policy-making process. On the one hand, the North-West RDA mentioned that the positions of the regional level are not taken into
account at national level. On the other hand, national level stakeholders note that the positions of the RDAs are not articulated enough and do not match national-level priorities, as well as European level priorities. The bottom-line is that, for many reasons, including the lack of leadership, policy coordination and evidence-based policy-making capacity within the government, the Ministry or Regional Development and other Ministries (e.g. the Ministry for Education, Ministry for Labour or the Ministry of Economy), national policies are highly influenced by the European structural funds programming and are generally tailored based on the priorities defined at EU level, but are not thoroughly tailored to the different needs at regional level. The fact that there is only one Regional Operational Programme for Romania, in spite of the large size of the country can be an indicator of the less place-based character of the Romanian development policies. It is crucial to develop a better coordination process between local, regional and national policy-making and implementation institutions, to set up better communication and information tools and work towards more cohesion within the Romanian multi-level governance system.

Some further possible underlying constraints that could explain why there is a lack of innovation policy coordination are the complexity and fragmentation of the innovation system at national and regional level in Romania (see Technopolis 2012, World Bank 2011). Romania’s Council for Science & Technology is composed of Ministers in various policy areas and chaired by the respective Minister for Education and Research, and is formally the appointed body for R&I policy coordination. However, this cross-governmental body is not sufficiently active and does not take visible initiative to promote investments in science and innovation in the agendas of the various ministries. This has been emphasised in the 2011 Functional Review of the R&I system performed by the World Bank, and confirmed during the field visit discussions with regional and national stakeholders This could be a key issue why mainstreaming of innovation across policies and governance levels is still happening in Romania. The lack of trained personnel with a holistic understanding of innovation system thinking in the different public organisations administering national and regional level policies poses another barrier to supporting innovation at regional level.

The situation seems to be stalling in this format, as there are no clear visions for changing the current set-up of innovation promotion towards a multi-level governance system. There are conflicting perspectives on the level of autonomy that regions should have. The national level perspective is that Regional Development Agencies and especially local authorities (county councils and city halls) have freedom to make use of available funds according to regional or local level priorities. On the ground, regional stakeholders are critical with respect to the lack of autonomy in prioritising regional investments according to regional needs and see this as lack of empowerment and mandate. One further critical aspect is the lack of capacity of regional agencies in general to undertake own policies in such a specialised field as innovation funding. Further capacity-building efforts such as the ones undertaken by the North-West RDA itself within INTERREG projects (as explained below) are needed to promote the innovation policy-making agenda at regional level in a coherent structure in more regions. In addition, an improved framework for regional policy-making needs to be developed, so that RDA driven initiatives are sustainable.

2.3 Set-up of the Regional Innovation Governance System

In case of the North-West region, we can highlight an emerging capacity for innovation policy development and implementation. Therefore, although the region has not had any clear mandate for innovation policy-making or implementation, the North-West RDA has taken the opportunity to promote innovation in the region in various ways. A regional innovation governance system is emerging, with the North-West RDA as catalyst, network developer and innovation broker.

Several regional structures have been created over the years with the help of the North-West RDA to advise on the strategic planning process. While they are not
permanent contributors to the regional policy implementation process and are generally involved only in the planning stage of the regional strategy, they are part of the emerging governance of regional innovation processes.

- The Regional Planning Committee is composed of representatives from RDA North-West, counties, county council members, “de-concentrated” institutions (bodies with a territorial office, such as the regional Institute of Statistics), and from higher education and research organisations as well as private and non-profit sectors. This Committee is a permanent advisory body for the RDA's planning work.

- The Executive Coordination Committee is made up of the coordinators of the sectoral Working Groups, who are experts in their field, as well as the vice presidents of county councils and chief architects of county councils. They coordinate the activities of sectoral Working Groups.

- The Scientific Coordination Committee is made up of representatives from the academic sector, who are in charge of validating the methodology used for elaborating the programming documents. Together with the Executive Coordination Committee, the Scientific Committee proposes planning methodologies and evaluates the process.

- Sectoral Working Groups were formed and are representing private sector stakeholders in the fields such as ICT, higher education and research, tourism, agriculture, agro-food industry, machines & equipment industry.

The actual public investment decisions are taken by members of the Regional Development Council. Applications for funding are made by local authorities that do not always take into account regional level considerations. Following the discussions with regional and national stakeholders, there seem to be some missing links in the cooperation between the Regional Development Council and the Regional Development Agency: in spite of the fact that the members of the RDC need to endorse the regional strategy proposed by the RDA, and then implement projects based on the commonly adopted regional strategic priorities within own local communities, the projects that are in the end submitted for funding by the county councils and city halls are not always fitting to the commitments taken in the regional development strategy. This could also have to do with the issue of ownership of the regional development strategy. As long as the Regional Development Council does not see the RDA as a legitimate coordination mechanism for the regional level, the council members and local policy makers will not pursue projects for a common regional-scale impact. While soft coordination mechanisms such as the Regional Development Agencies can be impactful (depending on context), there is a need to evaluate the role of RDAs and their impact, in order to improve the institutional design of the RDAs and their potential role as policy coordinators and agenda setters for regions. This thought process needs to be included as part of the ongoing national debate on regionalisation, which has been initiated by the Ministry of Regional Development and Public Administration. Spatial planning, economic geography analysis and foresight processes are further crucial elements that are missing from the national level debate on regionalisation, which risks being politicised and may result in less positive impacts than expected.

### 2.4 The Regional Strategy-development Process

Regional development planning was undertaken based on a participatory process, coordinated by the Regional Planning Coordination Committee, which engaged the regional stakeholders in various sectoral Working Groups and were complemented in their work by the Executive Coordination Committee and the Scientific Coordination Committee. Once the regional strategy is drafted and endorsed at regional level, the document is sent to the Regional Development Ministry to contribute to national level development priorities setting. However, in practice the regional strategy only accounts for orientation purposes for the definition of regional priorities and
generation of regional projects. It is not underpinned by an Action Plan or Implementation Plan, and, most importantly, not linked to an own budget at regional level. There are no regional Operational Programmes, only national-level Operational Programmes, which are targeting regional development and research & innovation, among others.

As previously mentioned, the Ministry of Regional Development is the body in charge of the process of designing the national policy for regional development, which is supported by structural funds through the national level Regional Operational Programme, the only OP directly supporting regional development. The Ministry is in charge of planning the Regional Operational Programme – the main regional policy instrument. In the design of the Regional Operational Programme, the Ministry makes a selection of priorities based, among other policy intelligence tools, on commonly voiced priorities from the regional level. The Ministry also puts a high emphasis on the EU-level imposed earmarks for specific funding areas. For example, while the North-West region prioritised RDI infrastructure and projects to a high extent in its regional development strategy for 2014-2020, the final version of the Regional Operational Programme funding prioritises investments in energy efficiency in buildings to up to 50% of the funds.

2.5 Intra- and Inter-regional Cooperation

Theoretically, national coordination of RDAs is to be ensured by the National Council for Regional Development, but this body has not met in six years, according to interviewees. It is therefore not common that Regional Development Agencies meet and develop common approaches or solutions to dealing with regional problems. The National Council of RDA could become a real representative body for the RDAs, with a clearer responsibility for being a more active part in the national level debates regarding the process of regionalisation and the role of RDAs, as well as in fields that are tangible to the competences of the RDAs (e.g. regional development, urban development, innovation promotion, sustainable development).

Intra-regional cooperation happens on a more pragmatic basis, especially within projects involving road or waste management infrastructure investments. Representatives of the local councils meet as part of the Regional Development Council to develop the regional development plan together with the RDA, but as stated before, these meetings do not always translate in financial commitments and actions at local level as part of a common strategy. The local stakeholders from different communities of the region still need to work out a solution for constructive cooperation, in order to find common grounds for their regions to work together as part of a region-wide rationale.
Table 1 Innovation Policy Governance

<table>
<thead>
<tr>
<th>Description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Degree of general regional autonomy</strong></td>
<td>• Low level of regional autonomy for regional development policies</td>
</tr>
<tr>
<td></td>
<td>The RDAs have very low level of autonomy in performing their policy development tasks and are currently more and more tasked with implementation of SF OPs, rather than policy-design and strategy-making</td>
</tr>
<tr>
<td><strong>Degree of autonomy with regard to innovation policy</strong></td>
<td>• No autonomy with regard to innovation policy</td>
</tr>
<tr>
<td></td>
<td>The regional administrations are free to undertake strategy-design of own regional innovation policy, but are not provided with any funding resources to support strategic commitments.</td>
</tr>
<tr>
<td><strong>Set-up of regional governance system (centralised/de-centralised/fragmented)</strong></td>
<td>• Fragmented governance system at regional level</td>
</tr>
<tr>
<td></td>
<td>The regional governance system is rather fragmented, as the various innovation sector actors are not well linked to each other.</td>
</tr>
<tr>
<td><strong>Nature of the process of strategy development (top-down/bottom-up/participatory)</strong></td>
<td>• Participatory</td>
</tr>
<tr>
<td></td>
<td>The regional strategy development process was a participatory one, as the RDA formed groups of regional stakeholders debating the proposals to put into place.</td>
</tr>
<tr>
<td><strong>Intra- and inter-regional co-operation</strong></td>
<td>• Inter-regional cooperation is in an incipient phase among the regions in Romania</td>
</tr>
<tr>
<td></td>
<td>Regions participate in European or macro-regional cooperation projects funded by INTERREG or further cross-border programmes</td>
</tr>
<tr>
<td></td>
<td>The Romanian regional bodies cooperate rarely on policy development, but in the case of the North-West region, there are signs of inter-regional endeavours. North-West RDA has been part of a common project with RDA Centre region, establishing a common network for Business promotion (BiSNet), part of the European Enterprise Network.</td>
</tr>
</tbody>
</table>

2.6 Innovation Policy Institutional Set-up

As the regional innovation governance is a fragmented process in Romania, the responsibility for innovation policy is only in an emergent state in the North-West Regional Development Agency. The agency’s total number of employees reaches around 40, and it has been fluctuating severely during the past years. There is no specific department dedicated to innovation policy development, but there are specific positions (three persons) within the Strategic Development Department of the RDA that are tasked with promoting the innovation ecosystem in the region and contribute to the regional strategy development in this field. The strategy development department of the RDA has been witnessing high fluctuation of the personnel. However, the inclusion of personnel directly in charge of innovation at a strategic level is a good sign of the RDA’s priority to support innovation in the region.

The programming of funds for regional development, research and innovation is undertaken at national level by several Ministries. The use of Structural Funds for research and innovation in the region was deployed mainly through three Operational Programmes (OPs), managed at national level: the Regional OP, Human Resources OP and the Competitiveness OP. The Managing Authority for the Structural Funds Regional Operational Programme has been the Regional Development Ministry. The Regional Development Agency North-West was designated an intermediary body for the funds directed at the North West region. In 2013, the Ministry for European Funds took over the management of the Competitiveness OP from the Ministry of Economy and the management of the Human Resources OP from the Ministry of Labour. North West RDA became an intermediary body and for the implementation of the Competitiveness OP in the North West region.
Monitoring and evaluation of the regional strategy implementation are not functions engrained in the structure of the RDA. Monitoring is rather an activity performed for the Regional Operational Programme. The RDA’s department in charge of implementing the ROP contributes to the national level monitoring exercise of the ROP. Evaluations of the ROP and the Sectoral Competitiveness OP are contracted by national level to independent evaluation consortia.

The institutional set-up highlights again the need for an improved institutional coordination between the national level and the regional level of strategy making in the field of regional economic development and innovation.

Table 2 Innovation Policy Institutional Set-up and available Human Resources

<table>
<thead>
<tr>
<th>Policy stage</th>
<th>Primary organisation</th>
<th>Number of personnel directly in charge of innovation</th>
<th>Total number of employees</th>
<th>Change in the number of personnel directly in charge over the last five years</th>
<th>Summary assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy development</strong></td>
<td>North-West RDA, Strategic Development Department</td>
<td>3</td>
<td>14</td>
<td>-10 persons overall</td>
<td>High personnel fluctuations but encouraging that the RDA maintains personnel engaged in innovation promotion.</td>
</tr>
<tr>
<td><strong>Programming</strong></td>
<td>National level</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td>North-West RDA, department for Regional OP Intermediary Body</td>
<td>4</td>
<td>14</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td><strong>Monitoring and evaluation</strong></td>
<td>North-West RDA, Regional OP Intermediary Body</td>
<td>4</td>
<td>14</td>
<td>n.a.</td>
<td></td>
</tr>
</tbody>
</table>
3. Innovation Policy Instruments and Orientations

This section provides information on the nature and content of both strategies and actual policy measures implemented in the region.

The North-West region developed a Regional Innovation Strategy – REGIS NW for 2008-2013 within an FP6 funded project in 2006-2007. The concept of the strategy was to provide a wider framework to develop the regional innovation ecosystem in the region, and increase the capacity of the regional stakeholders to catalyse innovation. REGIS NW served as a basis for the Regional Development Plan 2007-2013, which included several innovation policy priorities. Nevertheless, neither the Regional Development Plan, nor REGIS are matched by financial commitments. This is another consequence of the region’s lack of autonomy in directly supporting innovation projects.

In spite of the lack of own or national level resources managed by the RDA for innovation promotion, the RDA found alternative sources of funding for own measures from European level initiatives (mainly sponsored through the Competitiveness and Innovation Programme) and inter-regional cooperation projects (INTERREG).

3.1 The Regional Innovation Policy Mix

As mentioned before, the regional level in Romania does not have the autonomy to design an innovation policy mix and manage own innovation support measures. However, as a result of the regional planning process that the RDA is undertaking periodically, the Regional Development Plan includes a portfolio of priority projects that are considered strategic for the region. These are projects prioritised for implementation with the help of Structural Funds Operational Programmes or other national programmes. These national programmes will not be described in-depth, as they are not under the scope of this report.

So far, the Regional Development Plan 2007-2013 and the Regional Innovation Strategy for North West 2008-2013 have been the main guiding policy documents for regional level activities in support of innovation.

One of the specific objectives of the Regional Development Plan 2007-2013 targets the process of “increasing the attractiveness of the region by improving competitiveness and stimulating economic innovative activities in order to obtain products with high added value.” The Regional Development Strategy 2007-2013 was complemented by sectoral Regional Plans in the fields of Transport, Environment, Human Resources and Competitiveness. The development priorities foreseen under the Competitiveness Plan of the Regional Development Strategy complement the innovation system development priorities agreed under the Regional Innovation Strategy 2008-2013. The main priorities listed under REGIS-NW 2008-2013 included:

1. Promoting a culture of innovation at regional level and raising capacity for innovation system management
   - Raising the awareness level for an innovation culture
   - Developing innovation system management capacities for the public sector
   - Developing a regional “observatory” of innovation to monitor and evaluate REGIS-NW

2. Developing the regional infrastructure for innovation and supporting excellence poles
   - Creating an intelligent structure for the private sector support
   - Creation and management of the Regional Institute for Education, Research and Technological Transfer (IRCETT)
3. Supporting the formation of inter-regional operational partnerships and developing inter-regional cooperation for innovation
   - Support for participating in regional, national or European networks and projects
   - Creation and support of thematic networks in priority sectors
   - Improving connections between supply and demand of research and technology development and support to technology transfer

4. Ensuring an adequate environment for developing innovative entrepreneurship initiatives through developing human resources and skills for innovation
   - Support to “brain re-gain” and international mobility for young researchers
   - Support for new business creation through entrepreneurship trainings and support for young entrepreneurs
   - Developing a culture of learning across all levels of formation, in support of innovation and entrepreneurship
   - Support for life-long learning

5. Developing innovative companies and increasing the competitiveness in priority sectors
   - Support to RDI activities in SMEs
   - Launch of an annual award ceremony for innovative companies
   - Support to acquiring intellectual property rights for public and private sector stakeholders in the region
   - Support to creating clusters in priority sectors

The implementation of the REGIS strategy together with the Competitiveness pillar of the 2007-13 RDP followed two approaches. On the one hand, the Regional Development Agency encouraged regional and local stakeholders to undertake projects according to the priorities set out in both strategies and bid for EU funds on a competitive basis at national level. On the other hand, the North-West RDA has been seeking to secure alternative funding means and got involved in various EU funded initiatives (mainly supported by the INTERREG programme) to improve its capacity to understand the need for innovation of the regional stakeholders and to contribute to the development of the innovation ecosystem in the North-West region. Table 3 below provides an overview of the own measures of the North-West RDA and of the regional level initiatives. The RDA also engaged in further other inter-regional cooperation projects that ended before 2013. Among the latter was the ASVILOC Plus project (Agency Supporting Value of Innovation System in Regional & Local Economies),3 in which the RDA participated in 2009-2012. An outcome of the project was supporting the RDA in developing the Transylvania Furniture Cluster.

3 See http://www.asvilocplus.eu
Table 3 Existing Regional Innovation Support Measures

<table>
<thead>
<tr>
<th>Title</th>
<th>Duration</th>
<th>Policy priorities</th>
<th>Budget</th>
<th>Organisation responsible</th>
<th>More information</th>
</tr>
</thead>
<tbody>
<tr>
<td>RegioNET – Clusters and networks as successful drivers – guiding regions towards competitive NSS and innovation (as part of SMART+ project)</td>
<td>2011-2013</td>
<td>5.1. Cluster development 5.4. Innovation management and advisory services</td>
<td>322,792.0 EUR</td>
<td>Territorial Office for SMEs Cluj North-West RDA</td>
<td>RegioNET fact sheet <a href="http://www.smar">http://www.smar</a> tplusinnovations.eu/</td>
</tr>
<tr>
<td>STP – Creating and Managing a Science &amp; Technology Park (as part of SMART+ project)</td>
<td>2011-2013</td>
<td>5.2. Science-technology parks and incubators 4.5. Knowledge transfer and cooperation between firms (incl. technology acquisition) 2.3. Knowledge transfer structures between academia and industry</td>
<td>226,717.22 EUR</td>
<td>North-West RDA</td>
<td>STP Fact sheet <a href="http://www.smar">http://www.smar</a> tplusinnovations.eu/</td>
</tr>
<tr>
<td>BISNet</td>
<td>2008-ongoing</td>
<td>5.4. Innovation management and advisory services 4.5. Knowledge transfer and cooperation between firms (incl. technology acquisition)</td>
<td>n.a.</td>
<td>North-West RDA; RDA Centre; Technical University of Cluj; INCDO-INOE2000;</td>
<td>BISNET Transylvania</td>
</tr>
</tbody>
</table>

Source: RIM Plus repository North West Region, Romania.
The investment in RDI and regional development was undertaken as part of the national level Regional Operational Programme, the Sectoral Competitiveness OP and the Human Resources OP. While it is far from an exhaustive list, notable results of the 2007-2013 programming cycle are described below for the North-West region.

1. The Regional Operational Programme

By May 2014, 45% of the ROP funds allocated for the North West region have been absorbed, or €304.6m out of the allocated €522m allocation was spent (document provided by the North-West RDA, 2014). The contracting rate is surpassing 109%.

The Regional Operational Programme (ROP) contained two interesting axes promoting regional innovation:

- **Axis 1 – Urban Development.** One of the funding priorities under ROP Axis 1 includes funding of Growth Poles in each of the eight development regions. The largest city in the North West region – Cluj-Napoca, together with Cluj County, have been designated a Growth Pole and received funding. The North-West RDA has been the coordinator of the growth pole. The city was allocated €82.4m (more than 50% of the total Axis 1 allocation for the North-West region), in order to undertake urban development projects, out of which €35.26m were spent. Some of the initiatives contracted for funding under Axis 1 of ROP are a regional excellence centre for creative industries, as well as an industrial park. Through these investments, the city plans to develop the creative industry potential in the region and better connect industries to research facilities. However, it is too early to assess the results of the investments.

- **Axis 4 – Entrepreneurial Environment,** which was allocated €70.7m, out of which €35.7m (or 47%) is spent by May 2014. The three priorities under this Axis 4 of the ROP include 4.1 business infrastructure; 4.2. industrial sites; 4.3 microenterprises. Axis 4.2 was suspended at national level due to burdensome implementation. Under axis 4.1 – business infrastructure, there were 13 projects contracted for funding, including business incubators and business support centres. Axis 4.3 supported 369 microenterprises, with payments of already €27.8m made to beneficiaries, 75% of the allocated sum. The high number of applications reflects growing interest of the private sector in using Structural Funds.

2. The Sectoral Competitiveness Operational Programme

- **Axis 1 – An innovative and eco-efficient production system.** The sectoral competitiveness OP is funding “competitiveness poles”, which support clusters and industrial research and innovation projects in fields such as renewable energy, pharmaceuticals, car manufacturing industry, IT, autonomous systems and robotics. Project selection is undertaken at the national level. Several R&D and cluster development projects proposed by the Transylvanian Furniture cluster in the North-West region were selected for funding, totalling circa €9m.4

3.2 Regional Policies and Initiatives in Support of Advanced Manufacturing

The North-West region has not prioritised the promotion of advanced manufacturing in an articulated manner in its regional development plans. The region has a good starting position, as it is endowed with research infrastructures that can be used for advanced manufacturing projects with applicability in the local or international industry. The incipient cluster initiatives also possess a potential for developing an advanced manufacturing specialisation.

---

During the process of programming regional investments for the period of 2007-2013, regional stakeholders identified specific research centres located in the Technical University in Cluj that have been already actively participating in projects with industrial partners and have potential to be engaged in advanced manufacturing initiatives in the region:

- The Centre for Robotics Simulation and Testing
- Romanian-Korean Centre for training in advanced technologies Ko-Ro ATTC
- National Rapid Prototyping Centre
- Regional Centre for Industrial Metrology
- Mechanical Systems Engineering Centre

Recently, the Centre for Robotics has been, for instance, starting to work with foreign companies, developing intelligent robotics technology projects. However, it is important to note that while cooperation with foreign companies on applied technological development projects is increasing, the demand from Romanian regional companies is still low and needs to be stimulated.

The main industrial sectors where the region identified potential for competitive advantage include the ICT sector, transport, agro-food and furniture. These are industries where companies and universities also recently established clusters and initiated cooperation projects, following mobilisation actions and stakeholder roundtables initiated or promoted by the Regional Development Agency or other local authorities in North West.

Focused on a rather traditional industrial sector, another regional initiative that has the potential to pursue advanced manufacturing activities is the Furniture Cluster, which was founded in 2012, gathering small furniture producers in the region. One of the main concerns of the cluster members is their outdated production capacity. As a consequence, the cluster has identified specific applied research projects, which are undertaken in cooperation between the Technical University in Cluj and companies in the cluster.

The Smart Furniture R&D project developed within the Transylvanian Furniture Cluster aims to improve the furniture production process of the participating SMEs. Its main objective is to contribute to increasing competitiveness of the cluster by technological capital transfer and innovation resulting from research activities in the field of furniture production. The project design ensures that the results of the R&D process are introduced in the production of three categories of products (multifunctional furniture, modular office partitions offices, metal furniture). The entire project is funded through structural funds and amounts to €907,624.32 (based on data provided by the cluster management).

Overall, the participation of regional stakeholders in European networks and initiatives in the field of advanced manufacturing is limited. The cluster members and industrial sector in general are at an incipient phase in developing their cooperation projects and in orienting themselves towards applied R&D and innovation. More notable contributions come from the academic sector in the region, albeit still at a small extent. For instance, the Technical University of Cluj has been participating (but not as partner) in the Cluster PoliSEE projects. No other stakeholders mentioned their involvement in transnational networks, as their activity seems not to be very well known.

There are still many challenges to be overcome in the future to enhance the regional industry’s orientation towards advanced manufacturing. Some of these challenges belong to the overall systemic issues that the region faces:

- The regional economic structure concentrated in a few traditional manufacturing sectors, while the IT sector is dominated by outsourcing
companies that are not oriented towards technological development. In addition, the region suffers from brain drain and shortage of skilled human resources.

- **Low demand from the private sector for innovative processes and products**, and modernisation, which translates into very low levels of investment in R&D and innovation. National funding for SMEs and competitiveness poles has been very slow to appear in the 2007-2013 period, but has been welcome by the regional stakeholders. It needs to continue in the 2014-2020 programming period, but there are still uncertainties regarding its shape.

- **The culture for cooperation is generally poor in the region**, with few associative projects and intermediary organisations to facilitate the process of innovation at regional level. Cooperation projects between the research and the private sector are in their incipient phase. There already are some success stories, but more are needed to motivate further engagement from the private sector, and overcome their reluctance towards cooperation.

### 3.3 Appraisal of Regional Innovation Policies

It is still early to see the effects of the investments made by structural funds in regions in the 2007-2013 period. Ex-post evaluations of the Regional Operational Programme and Sectoral Competitiveness Programme can only start after 2015, also taking into account the fact that the funds allocated for 2011-2013 can still be spent until the end of 2015. There are no comprehensive publicly available documents evaluating regional level initiatives. A mid-term evaluation of the ROP was undertaken in 2011 focusing on the strategic level, such as the impact of the financial and economic crisis on the implementation of the OP strategy as well as the impact on beneficiaries in the business sector (see EWC, 2011). However, it does not disaggregate the results per region. As the evaluation shows, by 2011, only 3.5% of the funds available at national level had been spent. The evaluation also notes the need to change the funds allocation mechanism of the ROP, which disbursed funding for the regions only inversely proportional to the regional GDP. The report highlighted the need to establish a more qualitative approach for regional allocations (ibid).

The 2014-2020 draft Regional Development Plan of the North-West region provides a brief overview of the results of the implementation of the Regional Innovation Strategy REGIS-NW 2008-2013 and of the RDP 2007-2013 competitiveness pillar:

- **Support to the private sector** was provided through projects developed by local authorities and regional RDI stakeholders, funded under national OPs (Regional OP and Sectoral OP for Competitiveness).
  - The local authorities (city halls and county councils) developed six industrial parks and six business centres, one business support centre and one technology, business and innovation centre.
  - Under the entrepreneurship support priority, the initiatives undertaken were targeting the support to acquisition of high technology equipment, support to obtaining ISO certification, and for improving quality management and environmental management systems in SMEs.
  - Support to innovative spin-offs
  - Support to integrating ICT tools in private enterprises

- **In terms of support for accelerating the research and development results’ road to market**, the regional RDI stakeholders founded a centre for advanced studies, a testing lab, an institute for horticultural studies, and GRID centres for hardware and computing power development for the academic sector in Transylvania.

- **Under the REGIS priority targeting the development of regional infrastructure for innovation support**, the Regional Development Agency facilitated the creation of IRCETT – the Regional Institute for Education, Research and
Technological Transfer, which is a pilot project under the RDA’s management. The institute was created based on the European Institute of Technology model, uniting 16 public, private and academic stakeholders under an umbrella. Its main goal was to develop and train the region’s skills in education, research and innovation. However, due to issues regarding fraudulent accounting that were discovered recently, the performance of the institute’s projects has been destabilised.

- The RDA supported the formation of excellence poles and of competitiveness poles (clusters), by mobilising regional stakeholders to apply for national level resources (from various Operational Programmes). The RDA has been also designated the coordinator of the National Growth Pole Cluj-Napoca, the main city in the North-West region. As highlighted in the previous chapter, the region’s growth pole was supported through the Urban Development Axis of the Regional Operational Programme.

- The North-West Regional Development Agency pursued the development of four clusters in priority sectors such as IT, furniture, agro-food and renewable energy. In addition, the North-West RDA was part of the process establishing the Cluj Metropolitan Science & Technology Park, which is under development.

The RDA undertook several initiatives in the North-West region as part of the SMART+ project supported by INTERREG IVC (2011-2013), which enabled the development of several sub-projects that funded the further development of the regional innovation ecosystem. With the help of the SMART+ project and its sub-project RegioNET that focused on good practice exchange in the field of cluster development (see Table 3), the North-West RDA kick-started the development of four regional clusters. Based on a scoping study funded within the RegioNET project examining the regional potential for cluster formation in specific sectors and further consensus building activities in the region, four clusters started to be created in the fields of IT, agro-food, furniture, and transport (see RDA North-West, 2012). A transnational cluster in the field of renewable energy also emerged as part of the SMART+ sub-project TREC. The clusters’ creation has been considered a major step towards enhancing regional cooperation among businesses, and also the development of public-private and private sector – research sector projects. A further sub-project of the SMART+ initiative was the development of a Transnational Renewable Energy Cluster (TREC), where clusters from partner regions cooperate across borders. Throughout its development initiatives the RDA has been creating opportunities and supporting the project idea generation process for local actors in the region to make use of national funding. This is inline with one of the priorities of Romania’s regional development strategy, which states that RDAs should “support the coherence of national level public support measures at the level of regions and stimulate local initiatives through capitalising on local and regional resources” (Law 315/2004 regarding regional development). In addition to ensuring coherence with national level frameworks, through its independent initiatives, the RDA tried to tackle regional problems, such as the lack of competitiveness of the regional industry and the entrepreneurial environment. As indicated by the poor innovation performance of the regional private actors, one of the perceived challenges is the companies’ and SMEs’ poor track record of cooperation on joint R&D and innovation projects, as well as cooperation on R&D between the academic and the private sector. One of the achievements of the North-West RDA is to have started tackling these issues more actively, by contributing to the setting up of cooperation mechanisms and networks between local SMEs in specific industries. This also happened through the involvement in INTERREG IVC projects that supported the capacity and knowledge building in these sectors. This can be a capability and experience that the RDA or a potential similar regional level innovation promotion body could capitalise on.

---

5 see http://www.smartplusinnovations.eu
3.4 Good Practice Case

Many initiatives are still in the incipient phase in the North-West region, therefore it is not possible to categorise them as good practice cases, but as initiatives with potential, which are interesting to follow up on. They represent a good practice in the way they are being developed, as they highlight a more mature community that is closer to taking a systemic innovation approach to regional and local development. They are an opportunity for local and regional development, but do not yet present lessons learned.

As mentioned in previous chapters, the RDA followed a policy intervention logic in the region for establishing support for the regional innovation system. This was based on the assessment of the regional innovation landscape and the formulation of a Regional Innovation Strategy within the FP6 funded project REGIS-NW, as part of the past Network of Innovating Regions in Europe (IRE). Following this framework of intervention, the RDA undertook several further projects to implement the strategy, in spite of the lack of funding resources for own policy measures.

The most telling example of the results of the Regional Development Agency’s work for implementing the REGIS-NW innovation strategy during the 2007-2013 period is the kick-starting of the four regional clusters in North-West. The RDA took the engagement in European inter-regional cooperation projects as an opportunity to learn from international partners and experiences and to implement concrete capacity building projects in the region that would start building regional networks and create linkages between universities and private sector needed for innovation. The involvement in the INTERREG IVC SMART+ project can be considered as one of the most fruitful initiatives of the RDA, as it resulted in three mini-projects that were very relevant for the regional innovation ecosystem (development of the concept of the Science and Technology Park, development of regional clusters to support the regional SMEs sector and the engagement in a transnational European renewable energy cluster).

An example of a visionary project for the region is brought by the development of the Cluj IT Cluster since 2012, which has been one of the clusters developed together with the North-West RDA and further regional public and private sector stakeholders. This is one of the regional initiatives that can be highlighted as a good example of concrete long-term plans for applying innovative ICT solutions developed by local companies in order to tackle urban problems in the region. The cluster has high chances to become sustainable, due to the fact that it benefits from the commitment to cooperation of a wide network of regional partners, and from the establishment of a clear governance structure made up of partners from the universities, private and public sector.

The Cluj IT Cluster started from the opportunity to capitalise on the growing specialisation of the region in the field of ICT and the need to make concerted efforts to upgrade the skills of the workforce to fit the new demands of the market. Cluster stakeholders understood the horizontal character of ICT technology and intend to capitalise on it in future industry-research sector cooperation projects. The cluster’s first R&D project is “Next Generation Brained City”, which has just received funding from national level, as part of the Structural Funds Sectoral Competitiveness Operational Programme. The project intends to build a “research collective” composed of 20 companies and the Cluj Technical University and the Babes-Bolyay University in Cluj. Through the project, cluster members form four sub-groups that work on a specific software development sub-project meant to provide a solution that tackles an urban problem faced by communities in the region.

Another major project of the cluster is the “Cluj Innovation City” initiative. Designed as a location for SMEs and large companies engaged in technology development, the project intends to offer companies and research actors located on its premises the facilities for research and technological development. However, the project is in the phase of searching for funding sources to cover its feasibility studies and development phase. Regional stakeholders highlight the difficulties in integrating the project under national level priorities for Structural Funds programmes, as specific instruments are
still under discussion for the period 2014-2020. The disconnection between national level funding priorities and the regional level needs for funding was mentioned as a further barrier to project development.

3.5 Possible Future Orientations and Opportunities

It is not an easy task to provide an overview of possible future opportunities for the region. For now, these depend entirely on the determination of regional stakeholders to find ways to pursue innovation and apply for nationally available funds, as well as on the measures taken at the central government level to promote an innovation friendly climate in the country.

Enhance the coordination of regional and national development and innovation policies

It is crucial to find a better solution to articulate regional development agencies’ role in national and regional innovation system. Currently, most of the programme funding is steered at the national level in Romania. The Ministry of European Funds has coordinated the national planning and programming process since 2012, in order to sign the Partnership Agreement with the European Commission for the allocation of European funds for 2014-2020. According to a report by an independent think tank – the Romanian Academic Society - the process of drafting the Partnership Agreement has been undertaken without any basis of a vision for development, as the Romanian government failed to develop a National Development Strategy, and only resumed itself to complying to EU level funding requirements (see SAR, 2014, p.53). The programming process for the period of 2007-13 included both a National Development Plan defining national needs and national funds allocation, and a National Strategic Reference Framework that allocated Structural Funds, while the 2014-2020 planning process included only drafting the Partnership Agreement in collaboration with the European Commission, without an own separate national vision-building and strategy-making exercise (ibid). It is striking that for 2014-2020, strategic planning has been rather undertaken by Regional Development Agencies whose Regional Development Plans are not systematically integrated in a national development strategy. Therefore, it is imperative that the Romanian government improves its policy and strategy coordination capacity across multiple governance levels.

A suggestion to better coordinate national level programmes with regional level needs, and to improve the placed-based character of development and innovation policies in Romania is to better integrate the Regional Development Plans in the country strategic policy making (see SAR, 2014) and link them to central funding allocations, as well as to a monitoring and evaluation framework. Especially since RDAs will become Intermediary Bodies for the implementation of both the ROP and Competitiveness OP, their efforts should be integrated in a wider national policy coordination framework. The already developed capability of Regional Development Agencies to coordinate a participatory regional development strategy-making process and their contribution to mobilising regional stakeholders for better absorption of structural funds stemming from different Operational Programmes (e.g. ROP, Competitiveness OP) are good reasons to also rely on RDAs for more substantial policy support in the development and innovation funding planning process.

Create demand for innovation in the private sector

Private sector investments in R&D and their innovation related activities are low compared to the EU level. However, given that the level of Business Expenditure on R&D is above national average, there is high potential for business innovation activities to grow further. Business sector innovation could be supported by making more use of Structural Funds directed towards this sector, using smarter schemes that support cooperation between SMEs, but also ones that support the innovation process and help companies cross the “valley of death”, such as incubators or accelerators.

Demand-side policies for the private sector include investments in skills, raising awareness of the potential for innovation in regional industries, setting up testing
centres or using public procurement of R&D results at pre-commercial stages, to support their demonstration and scaling up. City level innovation policies could be employed towards this goal, connecting private sector activities to the needs of the city, in order to achieve socio-economic and environmental impacts.

**Increase linkages between universities, public research and the private sector**

Regional innovation landscape is driven by higher education sector in terms of R&D spending. Private sector activities and performance have been less impressive. A partnership-based approach needs to be undertaken so that the universities a) structure the education programmes in partnership with business community, thus enhancing the skills base in the region and b) provide support for research and development projects in businesses on an institutionalised basis. The engagement of business and academic communities towards common development goals is crucial to enhance the innovation performance of the region.
Appendix A Bibliography


Appendix B Stakeholders Consulted

1. Alexandru Tulai, President, Cluj IT Cluster (Cluj, 26/05/2014).
2. Andrei Kelemen, Executive Director, Cluj IT Cluster (Cluj, 26/05/2014).
3. Ioan Dragan, Cluj IT Cluster (Cluj, 26/05/2014).
4. Prof. Dr. Stelian Brad, Technical University of Cluj-Napoca (Cluj, 26/05/2014)
5. Adrian Raulea, Head of Strategy and Local Development Department, Cluj-Napoca City Hall (Cluj, 26/05/2014)
6. Claudiu Cosier, Director, Strategic Development Unit, Regional Development Agency North-West (Cluj, 27/05/2014)
7. Ana-Maria Gorog, Cluj-Napoca Growth Pole Coordinator, Regional Development Agency North-West (Cluj, 27/05/2014).
8. Ovidiu Matan, Founder of Today Software Magazine (Cluj, 27/05/2014)
9. Ciprian Morcan, Hygia Consult and Transylvania Furniture Cluster (Cluj, 27/05/2014)
10. Prof. Dr. Adrian Curaj, General Director of the Unit for Higher Education, Research, Development and Innovation Funding, Romania (Bucharest, 29/05/2014)
11. Luiza Radu, Advisor, Planning Unit, Regional Operational Programme Managing Authority, Ministry of Regional Development and Public Administration, Romania (Bucharest, 30/05/2014)
12. Stefan Oachesu, Advisor, Planning Unit, Regional Operational Programme Managing Authority, Ministry of Regional Development and Public Administration, Romania (Bucharest, 30/05/2014)
## Appendix C Statistical Data

<table>
<thead>
<tr>
<th>ECONOMIC INDICATORS</th>
<th>RO11 Nord-Vest</th>
<th>Country</th>
<th>EU27</th>
<th>Year</th>
<th>Source</th>
<th>Performance relative to</th>
<th>Performance relative to</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita (Euros)</td>
<td>5300</td>
<td>6200</td>
<td>25200</td>
<td>2011</td>
<td>Eurostat</td>
<td>21.0</td>
<td>85.5</td>
</tr>
<tr>
<td>Long term unemployment rate</td>
<td>2.00</td>
<td>3.40</td>
<td>5.10</td>
<td>2013</td>
<td>Eurostat</td>
<td>255.0</td>
<td>170.0</td>
</tr>
<tr>
<td>Labour productivity growth (%)</td>
<td>7.87</td>
<td>8.83</td>
<td>2.19</td>
<td>2001-2011</td>
<td>Eurostat</td>
<td>359.1</td>
<td>89.1</td>
</tr>
<tr>
<td>RCI 2013</td>
<td>-1.23</td>
<td>-1.21</td>
<td>0.00</td>
<td>2013</td>
<td>JRC</td>
<td>17.2</td>
<td>92.6</td>
</tr>
<tr>
<td>Share of employment in agriculture</td>
<td>0.26</td>
<td>0.29</td>
<td>0.05</td>
<td>2011</td>
<td>Eurostat</td>
<td>515.2</td>
<td>89.2</td>
</tr>
<tr>
<td>Share of employment in industry (including construction)</td>
<td>0.33</td>
<td>0.29</td>
<td>0.25</td>
<td>2011</td>
<td>Eurostat</td>
<td>130.7</td>
<td>113.5</td>
</tr>
<tr>
<td>Share of employment in business</td>
<td>0.23</td>
<td>0.30</td>
<td>0.25</td>
<td>2011</td>
<td>Eurostat</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Share of employment in public sector</td>
<td>0.14</td>
<td>0.14</td>
<td>0.25</td>
<td>2011</td>
<td>Eurostat</td>
<td>54.5</td>
<td>98.5</td>
</tr>
<tr>
<td>Share of employment in S&amp;T</td>
<td>0.02</td>
<td>0.04</td>
<td>0.09</td>
<td>2011</td>
<td>Eurostat</td>
<td>25.3</td>
<td>63.4</td>
</tr>
<tr>
<td>Specialisation in number of local units by NACE</td>
<td>0.38</td>
<td>0.34</td>
<td>0.36</td>
<td>2012</td>
<td>ISI-Eurostat</td>
<td>108.1</td>
<td>113.7</td>
</tr>
<tr>
<td>Employment in 2 and 3 star clusters (strong clusters)</td>
<td>44.98</td>
<td>45.37</td>
<td>31.39</td>
<td>2010</td>
<td>MERIT-CO</td>
<td>143.3</td>
<td>99.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WIDER FRAMEWORK CONDITIONS</th>
<th>RO11</th>
<th>RO</th>
<th>EU27</th>
<th>Year</th>
<th>RCI</th>
<th>Performance relative to</th>
<th>Performance relative to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions</td>
<td>3.00</td>
<td>3.00</td>
<td>43.55</td>
<td>2010</td>
<td>RCI</td>
<td>6.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Macroeconomic stability</td>
<td>13.00</td>
<td>13.00</td>
<td>56.20</td>
<td>2010</td>
<td>RCI</td>
<td>22.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>49.00</td>
<td>53.88</td>
<td>74.64</td>
<td>2010</td>
<td>RCI</td>
<td>65.7</td>
<td>91.0</td>
</tr>
<tr>
<td>Higher education/ Training and Lifelong Learning</td>
<td>56.00</td>
<td>56.25</td>
<td>70.07</td>
<td>2010</td>
<td>RCI</td>
<td>79.9</td>
<td>99.6</td>
</tr>
<tr>
<td>Labour market efficiency</td>
<td>62.00</td>
<td>50.00</td>
<td>55.03</td>
<td>2010</td>
<td>RCI</td>
<td>112.7</td>
<td>124.0</td>
</tr>
<tr>
<td>Market size</td>
<td>31.00</td>
<td>33.50</td>
<td>50.27</td>
<td>2010</td>
<td>RCI</td>
<td>81.7</td>
<td>92.5</td>
</tr>
<tr>
<td>Business sophistication</td>
<td>36.00</td>
<td>40.63</td>
<td>43.16</td>
<td>2010</td>
<td>RCI</td>
<td>83.4</td>
<td>88.6</td>
</tr>
<tr>
<td>It is important to think new ideas and being creative</td>
<td>0.54</td>
<td>2010</td>
<td>MERIT-ESS</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### RESEARCH & TECHNOLOGY INDICATORS

<table>
<thead>
<tr>
<th>Indicator</th>
<th>RO11 Nord-Vest</th>
<th>Country</th>
<th>EU27</th>
<th>Year</th>
<th>Source</th>
<th>Performance relative to</th>
<th>Performance relative to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees with ISCED 5-8 (% all employees, ISCED 2011)</td>
<td>17.9</td>
<td>19.8</td>
<td>33.5</td>
<td>2013</td>
<td>Eurostat</td>
<td>53.5</td>
<td>90.5</td>
</tr>
<tr>
<td>Business R&amp;D (% GDP)</td>
<td>0.23</td>
<td>0.18</td>
<td>1.29</td>
<td>2011</td>
<td>Eurostat</td>
<td>17.8</td>
<td>127.8</td>
</tr>
<tr>
<td>Government R&amp;D (% GDP)</td>
<td>0.07</td>
<td>0.2</td>
<td>0.25</td>
<td>2011</td>
<td>Eurostat</td>
<td>28.0</td>
<td>35.0</td>
</tr>
<tr>
<td>Higher Education R&amp;D (% GDP)</td>
<td>0.19</td>
<td>0.11</td>
<td>0.48</td>
<td>2011</td>
<td>Eurostat</td>
<td>39.6</td>
<td>172.7</td>
</tr>
<tr>
<td>EPO patent applications (per mln population)</td>
<td>0.18</td>
<td>1.38</td>
<td>110.4</td>
<td>2009</td>
<td>Eurostat</td>
<td>0.2</td>
<td>13.4</td>
</tr>
<tr>
<td>Employment in medium-high &amp; high-tech manufacturing (% total employment)</td>
<td>3.80</td>
<td>4.60</td>
<td>5.60</td>
<td>2012</td>
<td>Eurostat</td>
<td>67.9</td>
<td>82.6</td>
</tr>
<tr>
<td>Employment in knowledge-intensive services (% total employment)</td>
<td>17.30</td>
<td>20.30</td>
<td>39.00</td>
<td>2012</td>
<td>Eurostat</td>
<td>44.4</td>
<td>85.2</td>
</tr>
<tr>
<td>Total R&amp;D personnel (% active population) - all sectors</td>
<td>0.31</td>
<td>0.43</td>
<td>1.66</td>
<td>2011</td>
<td>Eurostat</td>
<td>18.7</td>
<td>72.1</td>
</tr>
<tr>
<td>Structural funds on business innovations (Euros per mln population)</td>
<td>76.39</td>
<td>74.32</td>
<td>77.74</td>
<td>2007-2013</td>
<td>Eurostat</td>
<td>98.3</td>
<td>102.8</td>
</tr>
<tr>
<td>Structural funds on core RTDI (Euros per mln population)</td>
<td>35.55</td>
<td>33.87</td>
<td>63.01</td>
<td>2007-2013</td>
<td>Eurostat</td>
<td>56.4</td>
<td>105.0</td>
</tr>
<tr>
<td>Change in Employment in medium-high &amp; high-tech manufacturing (%-point)</td>
<td>0.19</td>
<td>-0.38</td>
<td>-0.38</td>
<td>2008-2012</td>
<td>Eurostat</td>
<td>113.2</td>
<td>113.3</td>
</tr>
<tr>
<td>Share of innovators receiving public financial support (SMEs, CIS 2010)</td>
<td>1.14</td>
<td>1.13</td>
<td>9.95</td>
<td>2010</td>
<td>MERIT-CIS</td>
<td>11.4</td>
<td>100.7</td>
</tr>
</tbody>
</table>

### BUSINESS INNOVATION INDICATORS

<table>
<thead>
<tr>
<th>Indicator</th>
<th>RO11 Nord-Vest</th>
<th>Country</th>
<th>EU27</th>
<th>Year</th>
<th>Source</th>
<th>Performance relative to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technological (product or process) innovators (% of all SMEs)</td>
<td>12.59</td>
<td>13.17</td>
<td>37.85</td>
<td>2010</td>
<td>MERIT-CIS</td>
<td>33.3</td>
</tr>
<tr>
<td>Non-technological (marketing or organisational) innovators (% of all SMEs)</td>
<td>24.41</td>
<td>25.54</td>
<td>39.83</td>
<td>2010</td>
<td>MERIT-CIS</td>
<td>61.3</td>
</tr>
<tr>
<td>Innovative SMEs collaborating with others (% of all SMEs)</td>
<td>2.80</td>
<td>2.93</td>
<td>8.89</td>
<td>2010</td>
<td>MERIT-CIS</td>
<td>31.5</td>
</tr>
<tr>
<td>SMEs innovating in-house (% of all SMEs)</td>
<td>17.77</td>
<td>30.73</td>
<td>22.63</td>
<td>2010</td>
<td>MERIT-CIS</td>
<td>78.5</td>
</tr>
<tr>
<td>Share of turnover of newly introduced innovations new to the market</td>
<td>4.64</td>
<td>4.48</td>
<td>4.67</td>
<td>2010</td>
<td>MERIT-CIS</td>
<td>99.3</td>
</tr>
<tr>
<td>Share of turnover of newly introduced innovations new to the firm</td>
<td>9.50</td>
<td>9.81</td>
<td>8.71</td>
<td>2010</td>
<td>MERIT-CIS</td>
<td>109.2</td>
</tr>
</tbody>
</table>