



**European Union**  
European Regional Development Fund



## A STUDY ON REGIONAL INNOVATION SYSTEMS IN THE EU



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# 1 How good practices can remove obstacles – a study on regional innovation systems in the EU

Innovation is the engine generating the economic growth of an industrial society. For this reason, European, national and regional policies are focussing on the innovation process. This is the process which is ultimately expected to secure future prosperity and, therefore, every effort should be made to regulate its progress. Most notably, the economic development especially of regions characterized by weak growth dynamics or in the process of structural transformation is gaining impetus. But what exactly is successful regional innovation policy? When the funding coffers are empty, it is all the more important to clearly establish the instruments which are to challenge and evaluate the success of innovation funding. This is the objective of the EU-funded project INOLINK. Within the scope of this project the Saarland-based association NanoBioNet e. V. has examined regional innovation activities in selected European regions, identified the innovation barriers and determined which measures have proved to be especially efficient in removing them.

## 1.1 About INOLINK

INOLINK is a three-year European INTERREG IVC project, the overall objective of which is to extend the reach of regional innovation policies by improving connections within the regional innovation systems, especially those located in the outermost regions and less-developed areas. In order to achieve this objective the INOLINK project allows its participants, within the regional innovation system, to share their experiences in setting up and operating public structures and networks, which support innovation, cooperation in R&D programmes and the exchange of information between players in peripheral areas and less innovative sectors. Ten entities from eight European Countries are participating in the project: The Andalusian Technology Network – RETA (Spain), Etruria Innovazione, S.C.p.A (Italy), Maribor Development Agency (Slovenia), NanoBioNet e. V. (Germany), University of the Algarve (Portugal), Foundation for the Development of Science and Technology in Extremadura – FUNDECYT (Spain), North-East Regional Development Agency (Romania), Regional Agency for Entrepreneurship and Innovation – Varna (Bulgaria), Coventry University Enterprises Limited (CUE Ltd) (United Kingdom), Abruzzo Regione (Italy). The INOLINK project aims to develop the transfer of good practices between the participating regions and to improve the skills and competences of the staff responsible for establishing and implementing innovation policies in all the participating regions.

## 1.2 Critical factor evaluation

The aim of an evaluation is to measure the success of the innovation funding programmes. However, already the European Innovation Progress Report 2008 criticized the fact that substantiated and thorough evaluations or professional benchmarking in the public innovation process was not as widespread as one would expect. There are a number of reasons for this. On the one hand, the INOLINK study shows that even the underlying numerical data is difficult to collect: In the majority of the participating regions it was not possible to obtain exact figures, for example, on the industry-specific spin-off activities of the universities and research institutes. However, it is precisely such reliable figures which are required to evaluate innovation success and operate a plausible funding policy. On the other hand, however, the effect of innovation funding measures may not come to light until the medium to long term and a return on investment may not be directly attributable to the funding. Another, but not the sole reason quoted by the European Innovation Progress Report 2009 for the lack of sound evaluation is the subjective assessment of the institutions concerned that the internal knowledge available is sufficient. However, as would be expected, the expenditure and skills required, a lack of resources, costs or simply the fear of change and of unwelcome truths also constitute impediments.

### 1.3 Why regional innovation systems?

The specific geographical and cultural characteristics as well as the economic history of individual regions make them definable entities subordinate to the nation state. Due to their inherent homogeneity, they are particularly suited for the development of their own, independent innovation systems. For this reason, EU regional development policies are now directing their attention towards regional innovation capacity. The principal aim in doing so is to reinforce the endogenous potential of the respective region. The basic assumption is that the historical development of a region has a decisive impact on the potential of future development. This means that the range of the innovation objectives attainable in each case is also defined. Therefore, it follows that companies and institutions reflect on their own history to appreciate their unique quality. This, in turn, allows them to exploit their potential to the greatest advantage in order to distinguish themselves amongst the competition. This point of view is becoming widely accepted as demonstrated by the fact that approximately one third of the participants questioned in the INOLINK study quoted 'endogenous resources and traditional sectors' as a criterion for the evaluation of innovative industries (see figure 3).

### 1.4 Lack of innovation awareness obstructing regional development

Innovation support is not solely a technological question in terms of funds or infrastructure but depends on the capabilities, openness and skills of the players involved. There is no 'one-size-fits-all' in innovation policy, which means that regional governments must provide resources to adopt, implement and evaluate innovation support measures. Without clear responsibilities, an established communication flow and the persistent efforts of at least a few key players the implementation of a regional innovation policy will fail. The INOLINK study shows, above all, that the innovation potential of the individual region cannot be identified and developed until the regional players have reached a common understanding of the essence of innovation. The contrary and, in part, arbitrary information provided by the regional institutions and policy makers participating in the survey on, for example, how innovation success could be measured and evaluated does not only reveal how diverse the opinions on the subject of 'innovation' are, but also highlights the enormous efforts required to achieve at least a general consensus on what innovation means for the region. The assumption that innovation success, for example, can be measured according to criteria such as 'public perception' or 'the number of times a topic/company has appeared in the press' proves how often action is taken on the basis of subjective assessments. Even the evaluation of the innovative industries in a particular region demonstrates little clarity and unity. It is notable that in only a few cases do over 75% of the participants in the survey agree on which sectors are innovative in their region (see figure 2).

### 1.5 Future role of innovation networks

In addition to a large number of inspiring examples of successful and effective innovation policies, the INOLINK study also reveals several weaknesses in the infrastructure of the regions: Of particular note are the lack of innovation awareness and the lack of institutionalized communication between the players on the content, aims and evaluation options of their respective ventures. The importance of reliable figures in regional studies and a substantiated evaluation of the innovation policy cannot be emphasized enough. After all, there is a direct connection between evaluation attempts and success by innovation. As highlighted in the European Innovation Progress Report (EIRP) 2008, all the top innovation performers make considerable investments, especially in the area of measuring, substantiating and benchmarking success. Furthermore, it demands the expansion of the range of considerations for innovation and the guarantee of active involvement of the players and stakeholders.

By implementing the planned expansion of institutionalized regional innovation networks, analyzing the results of the survey and identifying diverse good practices, INOLINK and NanoBioNet wish to play their part in achieving these aims and sustainable regional development.

## 2 Methodology

Between June 2010 and March 2011 the survey was conducted by the INOLINK partners of a total of 127 institutions from ten European regions and a report compiled on the regional structures supporting innovation. These data collection methods and data sources were employed in the appraisal: workshops/meetings, interviews, surveys and drawing conclusions from previous surveys and their recommendations for innovation policy. The INOLINK survey was conducted in two steps. In the first part the INOLINK partners were asked to provide a portrait of their region using their own expertise, statistical data and evaluating already existing studies and surveys on their region. Data sources such as the European Innovation Scoreboard (EIS) and Regional Innovation Scoreboard (RIS) were used to create a general overview of the regions. In the second part the INOLINK partners directly addressed the regional institutional stakeholder. The second part focussed on the regional innovation environment and compiling a list of stakeholders, identifying the influence of regional government on regional innovation policy. This section of the survey focussed as well on identifying the main barriers and the measures proposed to overcome these barriers. In addition to collecting relevant data from the regions to achieve a better understanding of the partners' needs we aimed to present the results in a broader European context. Therefore, the stakeholder survey of this second part is partly based on the 'Consultation on the Effectiveness of Innovation Support in Europe' held in 2009 by Pro Inno Europe.

In the literature today the general consensus is that the driving force behind long-term economic growth is science, technology and innovation in its different forms and facets. Innovation policy, innovation support measures and the identification of good practices have long since been the focus of many European and regional studies. Therefore, the hypothesis on the main barriers to innovation and the most successful innovation support measures is widely known. However, it was necessary to examine the situation in relation to all partner regions and to adapt the measures to the specific needs of the project. It is also common knowledge that there is no 'one-size-fits-all' or a standard 'best practice'. Innovation measures and innovation policy depend very much on the regional infrastructure, culture and innovation environment. However, there seems to be a certain infrastructure and 'basic set of tools' which enable innovation players to be resourceful. Furthermore, there is evidence that communication and networking between these entities is of great relevance, factors which were also examined in the survey. The major innovation barriers for enterprises taken as hypothesis were identified in the Commission Staff Working Document<sup>1</sup>

- lack of access to finance,
- too high costs of innovation,
- lack of incentives facilitating cooperation between players.

The efforts made by the enterprises to introduce innovation were considered to be hampered, to a lesser extent, by 'difficulties in finding partners for innovation and a lack of information on support instruments.'

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<sup>1</sup> COMMISSION STAFF WORKING DOCUMENT, 2009, Making public support for innovation in the EU more effective: Lessons learned from a public consultation for action at Community level



### 3 General characteristics of the participating regions

The survey was conducted in ten European regions with a size of 2,170 km<sup>2</sup> to 87,399 km<sup>2</sup> and a population of 323,343 to 8,302,923 inhabitants. The regions differ not only in their historical development but also in structure, economic strength and level of administration. The Regional Innovation Ranking for the regions evaluated ranges from low to medium high. According to the European Innovation Scoreboard the most innovative regions are typically in the most innovative countries.. Germany is considered to be an innovation leader whereas Italy, Portugal, Slovenia and Spain are moderate innovators. Bulgaria and Romania are among the countries catching up<sup>2</sup>.

**Figure 1: General regional characteristics**

	RIS (2009)	Size/km <sup>2</sup>	Population	No. of students (%)	Population in cities > 100.000 (%)	Innovation Strategy since
West Midlands, UK	med-high	13,000	5,400,000	6.20	35.00	1999
Saarland, DE	med-high	2,569	1,022,585	1.83	16.90	2001
Abruzzo Region, IT	average	10,794	1,340,000	4.50	12.30	1997
Tuscany, IT	med-low	22,994	3,734,365	2.41	18.90	1994
Algarve, PT	med-low	4,669	434,023	2.23	0.00	2006
Andalusia, ES	med-low	87,399	8,302,923	2.76	31.78	2005
Extremadura, ES	low	41,634	1,102,410	2.09	13.40	1998
North-East Region, BG	low	14,487	988,935	3.30	42.80	2008
North-East Region, RO	low	36,850	3,712,396	2.15	21.94	2005
Podravska Regija, SL	n.a.	2,170	323,343	7.58	34.75	2007

<sup>2</sup> European Innovation Scoreboard, EIS 2008

### 3.1 Main economic and innovative sectors

One aim of the survey was to distinguish between the main economic and the main innovative sectors in the regions, taking into account the fact that the economic background of the regions covers a wide range of sectors such as agriculture, tourism, the service industry, coal and steel, the marine industry, etc.

**Figure 2: Regional innovative sectors**

	Abruzzo Region	Algarve	Andalusia	Extremadura	North-East Bulgaria	North-East Romania	Podravje	Saarland	Tuscany	West Midlands
Aeronautics										
Agriculture/Forestry/Fisheries										
Automotive industry										
Chemicals										
Consultancy services										
Energy										
Environmental technologies										
Fashion										
Food and beverage / agrifood										
Green energy										
ICT/software										
Industrial production										
Marine industry										
Engineering/construction/steel										
Medical care/health										
New Materials/Nanotechnology										
Pharmaceuticals/biotechnology										
Telecommunication										
Textile Industry										
Tourism										
Transport/Logistics										
Wholesale and retail trade										



As local assets, capabilities and economic potentialities have been progressively adopted in regional development policy, it is not surprising that the stakeholders do not only see innovative potential in high-tech sectors such as IT, bio or nanotechnology but also address other industries such as tourism or construction. Stakeholders and regional authorities still only have a broad understanding of the innovative sectors in their region. Figure 2 shows that only in a few cases over 75% of the stakeholders taking part in the survey were in agreement on their regional innovative sectors. The conclusions to be drawn are that it is not only necessary to raise awareness about innovation or to achieve a common understanding of innovation and innovation policy but also to make a greater effort to involve the stakeholders, improve the communication flow between the players and create (and naturally publish) evidence.

The question on how the stakeholders determined whether a sector was innovative and of importance for the region produced a long list of factors which often corresponded to the traditional factors listed in the literature. 'Endogenous or traditional resources of the region' was the answer most frequently given, followed by 'number of employees' and 'extent of use of new technologies, products or services'.

**Figure 3: Assessment of regional innovation and economic importance (all partners)**

Rank	Parameters or methods	%
1	Endogenous resources of the region/tradition	30.7
2	Number of employees	29.1
3	Extent of use of new technologies, products or services	22.0
4	Number of innovative enterprises	14.2
5	Investments in R&D	14.2
6	International excellence/global market competitiveness/export	14.2
7	Annual turnover	14.2
8	Regional strategy focus/importance for regional economy	14.2
9	Number of educational institutions/educational potential, talents	13.4
10	Presence/correlation of research institutions	12.6
11	Number of employees with higher education and PhDs/percentage of people involved in R&D activities	9.4
12	Investment in the sector	7.9
13	Growth of the sector/development as economic sector	7.1
14	Contribution to GDP	6.3
15	Patents	5.5

The sometimes completely individual answers such as ‘exposure in press, public perception’ provided evidence that the evaluation, definition and perception of innovation was open to many subjective, individual opinions. Furthermore the ranking of parameters differs between the regions. In the North-West Region of Bulgaria for example the importance of qualified human resources is up to rank 4.

**Figure 4: Assessment of regional innovation and economic importance (NW Region of Bulgaria)**

Rank	Parameters or methods	%
1	Development of economic sectors, traditional for the region	100
2	A sector is important for the regional economy	73
3	Introducing of new technologies, products, services	63
4	Number of education institutions /secondary and higher/ preparing qualified human resources in the sectors	50
5	Number of employed in the sector	45
6	Amount of Investment in new technologies	36
7	Share of the revenues from export	32
8	Number of employees with higher education and PhDs	23

### 3.2 Innovation policy and evaluation

The four most frequently provided forms of innovation support mentioned in the literature are the financing of innovation projects, support for networking and cooperation, awareness-raising and technology transfer. When asked to list those services which could work as ‘good practice’, the INOLINK stakeholders identified corresponding services. ‘Technology transfer and exchange of information’ was quoted in eight regions, ‘innovation clusters and networks’ and ‘raising awareness of innovations, entrepreneurship and technologies’ in five regions. The majority of those innovation-related activities produce results in the medium and long term and require sustained investments to be effective. Therefore, it is noteworthy, even if predictable, that the better performing regions in this survey had already created their innovation strategy 10- 15 years ago while the others initiated theirs 3 - 6 years ago (see figure 1). The first was set up in 1994 in Tuscany and the most recent in 2008 in the North-East Region of Bulgaria. Particular cases in the INOLINK survey are the Algarve and Slovenia, where regional autonomy is not as strong as in the other regions. Here, as innovation policy is mainly shaped by national players and national institutions, regional responses to the demand for innovation face special challenges due to the limitation of regional funds or influence.

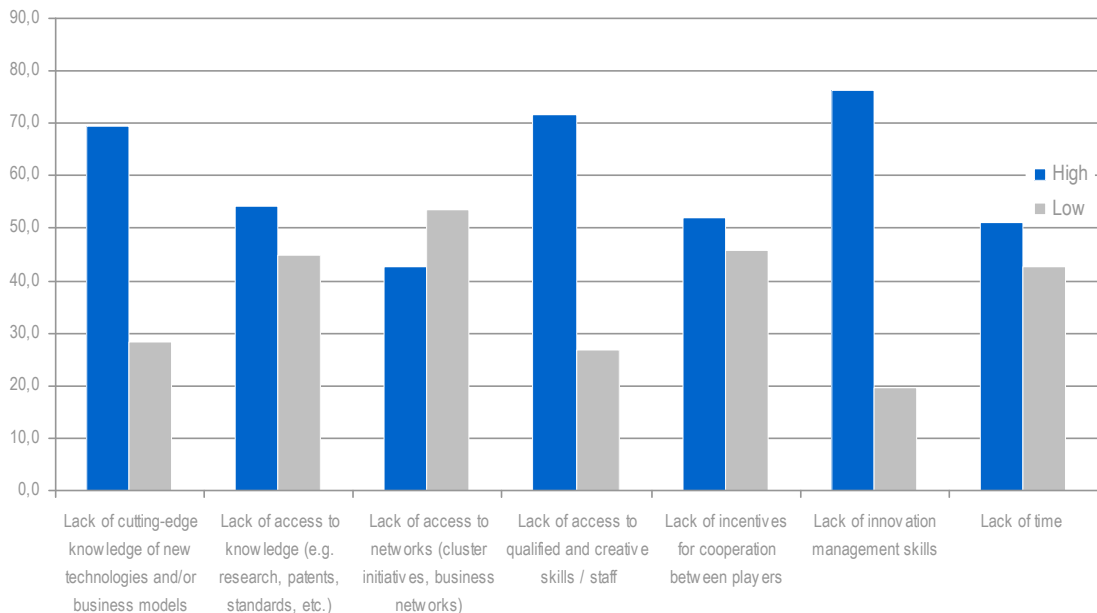
However, it is not only necessary to create an innovation policy; it is also important to evaluate the measures applied and policy adopted. A simple cost-benefit analysis is not generally suitable for measuring the value added by innovation. The expenditure arising from the innovation policy is allocated on a medium to long term basis and it is often impossible to account for or allocate success directly. The European Innovation Progress Report (EIPR, 2009) points out that the top-performing countries have not only the skills but also the tradition of investing

resources in evidence creation. Benchmarks and evaluations are widely used by innovation leaders to optimise their innovation system. During the evaluation of the INOLINK regional reports it became evident that even basic data is sometimes not available to or commonly known by the relevant stakeholders. On the other hand, almost all the regions already involved external expertise to produce innovation reports and to create evidence. However, the exact number of existing regional evaluation reports and studies was not examined in detail and further efforts to this end are recommended. Assuming that creation, adoption and implementation of innovation policy takes time, those developing the 'younger' policies have the opportunity of learning from previous failures and experiences, allowing them to progress more quickly.

### 3.3 Relevance of barriers preventing companies from organizing innovation processes more effectively

The results of the survey showed significant differences between the participating regions regarding the factors obstructing companies from organizing the innovation process. Regions with a less developed innovation infrastructure specify completely different barriers to those with a functioning innovation system. A summary of all the regions shows that the lack of access to qualified and creative staff and the lack of innovation management skills are of particular relevance (figure 5). These findings underline the challenges established in the EU-27 TrendChart reports (EIRP 2008) which identified capability failures inside companies (limited management skills, weak know-how on technological or organisational innovation, etc.) as the most significant type of failures.

**Figure 5: Relevance of barriers preventing companies from organizing innovation processes more effectively (All regions)**



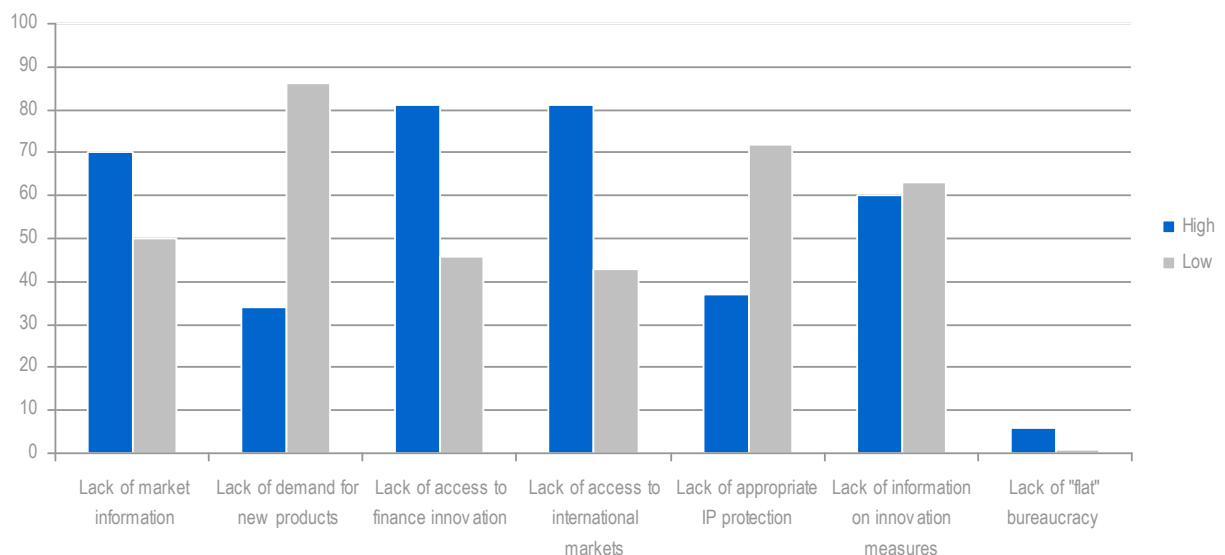
Also noteworthy is the fact that over half of the players participating in the survey quoted lack of time as an obstacle. It appears that innovation is perceived as something detached from daily business operations and that many companies do not recognize innovation as a growth engine for their company.

A different picture is presented by the situation in the highly innovative regions of the project – Saarland and the West Midlands region in England. In both regions, lack of time ranks as the major barrier to innovation. Other barriers appear to have already been minimized to a great extent by a functioning innovation infrastructure.

### 3.4 Relevance of barriers preventing companies from introducing innovations onto the market

The data compiled from all the regions (figure 6) showed that the main barriers preventing companies from introducing innovations onto the market were ‘lack of access to finance’ and ‘lack of access to international markets’ followed by ‘lack of market information’. ‘Lack of demand for new products’ was considered to have the lowest relevance. For the most part, these results correspond with the data compiled and the findings of the EU study conducted in 2009.

**Figure 6: Relevance of barriers preventing companies from introducing innovations onto the market**



The more interesting results are found on the regional level and have been analysed by the regional experts. In the North-East Region of Bulgaria for example financing is the main barrier whereas in the Algarve a ‘lack of access to international markets’ is identified as the main barrier. The regional analysis of the Algarve indicates that the most innovative domains are, in the Algarve, to a certain extent, not connected to the market. The main issue arising in this case is that the regional economy is limited in terms of innovation dynamics and, for this reason, innovation is not easily absorbed by the companies. In order to overcome this problem, the regional players are becoming increasingly involved by investing in university-enterprise collaboration and reducing the gap between the knowledge gained and on exploitation in the market.

### 3.5 Direct innovation support measures

A further issue to be examined was the question of which direct innovation support measures had the greatest potential to remove existing innovation barriers identified in the regions. The Slovenian partners, for example, pointed out that universities were self-sufficient and that the policy did not encourage their openness towards the needs of society or business as the organisational modus operandi within it whereas in Extremadura one of the

weaknesses identified was the disconnection between the business and scientific world: ‘The communication channels between institutions and companies are largely ineffective.’ Therefore, it is no wonder that the promotion of closer interaction between universities, public research institutes and companies is considered by far to be the most promising measure to foster innovation (70.5%). This is followed by grants and loans (47.5%) and services to develop business (43.4%).

**Figure 7: Innovation support measures - the greatest potential for the removal of existing innovation barriers**

Parameters or methods	Total %
Promoting closer interaction between universities, public research institutes and companies	70.5
Direct support of corporate R&D (grants, loans)	47.5
Business advisory services (general consultancy and support in developing business)	43.4
Promotion of entrepreneurship/start up (including incubators)	43.4
Incentives for investment in corporate R&D	34.4
Internationalisation	26.2
Feasibility funds	23.8
Funds for networking	17.2
Information and consultation on grants and funds	17.2
Information and consultation on technology transfer	15.6
Exchange of information on contract research. licences. IPR issues	15.6
Mediation of relevant partners or research institutes	13.9
Cluster support measures	13.9

Compared with the report on the ‘Consultation on the Effectiveness of Innovation Support in Europe’ in which participants were asked as well to address the most relevant barriers, the measures ranked in first and second position have in effect changed place (compare figure 7 and 8). The PRO INNO Europe measures ranked third (support for technology/exchange of information) and fourth (support for identification of innovation potential) dropped to 10<sup>th</sup> and 16<sup>th</sup> position in the INOLINK survey, while the measures ‘internationalisation’ and ‘feasibility funds’ gained in importance in the INOLINK survey.

The INOLINK results underline the importance of a regional point of view. It is necessary to take the specific regional circumstances into account and to adopt specific support measures to meet the regions’ individual needs. Some of the regions have achieved very good results thanks to tailor-made support measures for special sectors like the fund for feasibility studies especially for nano and biotechnology and the health-care sector (see chapter 3.7).

**Figure 8: Innovation support measures - the greatest potential for the removal of existing innovation barriers (PRO INNO Europe, 2009)**

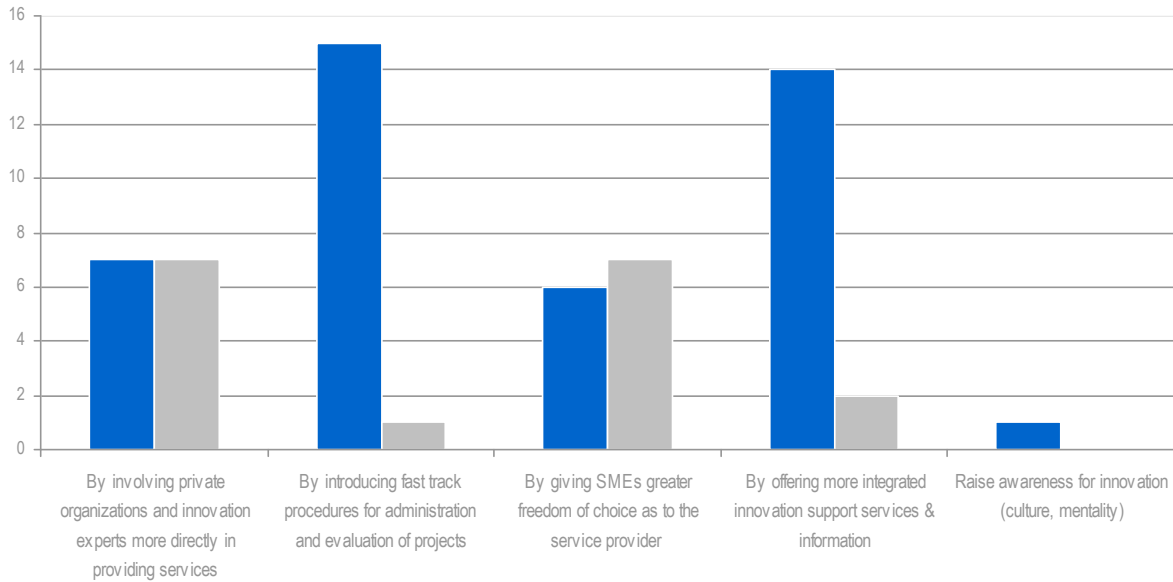
Potential	Total %
Support for financing innovation projects (including R&D)	56.30
Support for networking and cooperation between players	40.90
Support for technology transfer/ exchange of information	38.80
Support for the identification of innovation potential (information on market needs, market conditions new regulations, new technology,,etc.)	32.40
Support for innovation management. including IP management. design management and organisational innovation	31.40
Support for innovative start-ups (incubation, access to finance)	27.20
Support for awareness-raising and information on support possibilities	21.90
Support for the development of specific skills	18.50
Support for cluster development	11.80

### 3.6 How to provide more effective innovation support services

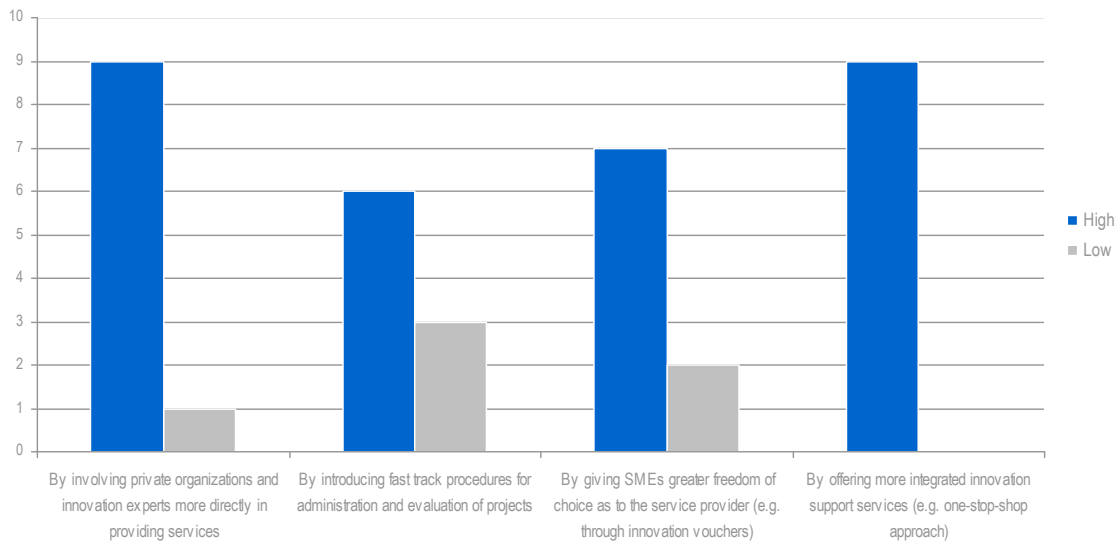
The response received from the majority of participants in the survey to the question on how to make public schemes for the funding of innovations more effective was ‘by introducing fast track procedures for administration and evaluation process’ and ‘by providing more integrated innovation support services (e.g. by offering a one-stop-shop system). The data compiled is most consistent with the results of the ‘Consultation on the Effectiveness of Innovation Support in Europe’ on the ranking of fast-track procedures and integrated innovation support measures. Once again, the regional data shows considerable differences. In Extremadura, for example, the stakeholders believe that private organisations and innovation experts have a significant impact on innovation support services. One reason for this could be that ‘the services offered by the innovation support system of Extremadura are diverse and complex. However, the communication established among different actors about the resources available for innovation is very poor and, due to this fact, enterprises ignore the process of innovation and its applicability in their field of activity.’ In Slovenia, too, 83% favour the involvement of private organisations and, therefore, express their dissatisfaction with the public support. The previous European Innovation Progress Report 2009 indicates as well shortcomings in Slovenian public administration: ‘... besides the complicated procedures, one of the handicaps of the ministries/agencies in delivery of the support measures is also limited human resources. This became especially obvious in the cases of measures where co-financing from the Structural Funds is applied. There is a need to simplify procedures and improve competence in the public administration.’



**Figure 9: How to provide more effective support services (all regions)**



**Figure 10: How to provide more effective innovation support services (Extremadura)**



### 3.7 Good practice feasibility studies: Minimizing risk on market entry

Regarded as a good example and pioneer of a 'fast track procedures for administration and evaluation process' is the funding programme for feasibility studies in the Saarland, which has been nominated for the European NGP Excellence Award 2011. This fund allows companies to conduct a feasibility study with minimal financial risk on a

project, such as on the development of a technology, the application of a process or the market launch of a product. It is cofinanced by 50%, the maximum amount funded being 25,000 Euros. From 2006 to the present day NanoBioNet has been able to cofinance 26 studies with the funds provided totalling 530,000 Euros. The positive results speak for themselves: follow-up projects generated from 37.5% of the studies, patents from 18.75% and even a marketable product from 12.5%. The evaluation of the studies clearly shows that studies without 'measurable success', for example on a new product or a patent, are also of crucial importance as they save the company further investments in what would lead to irrelevant blind alleys. The companies clearly underline the elimination of unnecessary bureaucracy and the rapid processing of applications as factors contributing to the considerable advantage gained from the administration of the funds by the network.

Other INOLINK partners are also using similar instruments: The innovation network in the West Midlands region in England is offering 50% funding at a relatively low maximum funding amount of 12,500 Euros to push-start cooperation between companies. A minimum of three companies in the region must come together to work on the development of a new innovative product or service. A further aim of this course of action by companies is to overcome two other innovation barriers: Firstly, the lack of funds and, secondly, the lack of specific qualifications required to transform an innovative idea into a product. Since 2002 over 330 projects have been subsidized, 770 jobs created or preserved and additional sales of over 16 million Euros achieved.

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### 4.1 Executive summary

Abruzzo has a long experience on Innovation. It participated in different projects like RIS Abruzzo phase 1 and 2. It was the 1<sup>st</sup> EU Region getting out from Objective 1. The Earthquake of 6<sup>th</sup> April 2009 in L'Aquila led to a sharp economic slowdown, whose recovery is still rather uncertain. At the present moment Abruzzo has a difficulty in job market access. The economic crisis involves in particular young people. Currently Abruzzo Region is at the 4<sup>th</sup> place in the ranking of economic growth. This fact means that the recovery of productive activities has been positively evolving although it is not a stable and diffuse recovery.

Currently in Abruzzo the most important innovative sector are: Pharmaceutical, Food and drink, Tourism and Automotive that not include anymore Textile/Fashion and construction due to the strong crisis that affect them. Abruzzo presents very important universities that cover all of the nominated economic sectors. The survey also shows the lack of spin-off from universities and the lack in the creation of new enterprises but it is also related to the economic moment that the every region in the world has been go through.

On students and universities, Abruzzo has 3 Main Institutions (L'Aquila, Chieti – Pescara and Teramo). Chieti – Pescara presents the high number of students enrolled, followed by L'Aquila. Abruzzo's universities gathered students mainly from the south part of Italy and it is recognized as one of the important universities. Regarding the people engaged in R&D, inside the enterprise as % on the total in Abruzzo is 1,5% (26,5% Lombardy Region, 0,1% Molise Region - 2007), people engaged in R&D in public institution as % on the total is 1,1% (Lazio Region 43,3%. Valle d'Aosta Region 0,1% - 2007) and people engaged in R&D in universities as % on the total is 2,1% (Lombardy 12,4%, Valle d'Aosta Region 0,0%- 2007). In Abruzzo the level if investment is 1,04% with respect of regional GDP.

About Innovation Environment Abruzzo is a very dynamic Region. It has been working in different fields principally: issued a call (Activity of ROP ERDF 2007-2013) on 'Sustain to the creation of Innovation Poles' for the overcoming of the old logic of industrial district through the consolidation of the territorial system of Innovation Poles. Just in the month of April has been signed an agreement, the 1<sup>st</sup> one in Italy, with the Italian Ministry of Development for the financing and development of Enterprises' Network 'Abruzzo 2015'.

At the present moment Abruzzo Region is at the 4<sup>th</sup> place in the ranking of economic growth (1,67%); the national average is 1,19%. It is necessary to accelerate the processes' reform as well as those relating to Innovation Poles. The positive data came out from the activities of specific productive district that have been gradually formed in Abruzzo thanks to policies aimed to favour the logic of enterprises' networks and Innovation Poles.

### 4.2 The main results at a glance

- From the regional survey is evident that Automotive, Food and Drink and Tourism are the three pillars Abruzzo's economy. There are no discrepancies, the data provided make a clear and realistic picture of the

situation in the Region where sectors like Construction and Textile / fashions have been very affected by the crisis and are giving space in favour of more specialised sector as Pharmaceutical one.

- The major part of the spin-off in Abruzzo Region are supported by the university of L'Aquila especially in Pharmaceutical and Engineering /construction sectors that surely represent one of the most important economic sector in Abruzzo.
- The best practices and the actions carry on by Abruzzo regional Government by improve the competitiveness and innovation of development local actors are so many and such to reduce and, in some cases to eliminate, the innovation barriers identified. It appears fundamental the preliminary innovation activity promoter of the local actors in order to improve the consciousness that the competitiveness of a territory or of a local system it is measured, by now in all advanced economies, no more trough traditional productive factors, such as the capital and job, but rather with the analysis of the immaterial factors of the production and therefore of technology knowledge and human capital.
- The data show that the stakeholders have identified the lack of access to financial tools to support the main barrier that hinders firms in innovation. Process. The biggest obstacle on organizing innovative processes, is found whereas in the lack of innovation management skills. Also the lack of cutting-edge knowledge of new technologies and business models represents for the interviewed actors a major obstacle. The main measures of identified support, essential to remove the obstacles described above ,are the promoting closer interaction between universities, public research organizations and companies and the necessity to access at feasibility funds. The main measures requested to provide innovation support services are fast track procedures for administration and evaluation of projects. This is significant as it demonstrates that innovative projects are often blocked by bureaucratic procedures that heavily would slow them down and did not allow adequate development such that they can quickly improve the competitiveness of the proponents.
- Abruzzo Region presents a reasonable number human resources and qualified work force both in the innovative sectors and in the seed crystal sectors. The Region has three important universities that manage with many scientism and technological courses. Each university, especially the scientific one has an internal department for research and development. And over 72 research laboratories are localized in the whole territory, 55 of them belong to faculties departments of medicine, pharmacy and engineering of L'Aquila and Chieti-Pescara. There are no missing courses of infrastructures.
- Networks play a decisive role in the innovation process. The survey shows that the stakeholders interviewed are well connected, just few stakeholder have no relation with some others. Of course the networking could be improved but the major part of the stakeholders interviewed is linked to the others, and not also with them of course, and this means that the cooperation among them is favourable. Abruzzo Region believe very much in networking in all sector in fact, just in the month of April Abruzzo Region signed an agreement with the Italian Ministry of Development for the financing and development of Enterprises' Network called 'Abruzzo 2015'. Moreover the Region belongs to different European network promoting cooperation and innovation.
- The Abruzzo Region noted that the competitiveness of a territory or a local measure, it is measured by now in all advanced economies, not through the traditional factors of production such as capital and job, but rather with the analysis of factors assets of production and therefore of technological knowledge and human capital. In fact, the processes of creation and transmission of knowledge have become crucial in explaining the success of some areas and decline or stagnation of others. To this point, the regional government is working to consolidate the territorial system of innovation poles, to arrive later within this year to define a regional cluster for eco-innovation: a technology platform in which the centres of innovation 'flow down' and share their projects,

'contaminate' each other, with a common goal, to identify innovative development processes, high-tech, on regional chains, with the understanding of sustainability. This aim is to be achieved through funding put for facilitating the business combination in Technology Innovation Poles and then support the same 'aggregated' companies to carry on projects of research and experimental development in order to increase their competitiveness.

## 5 Algarve, Portugal

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### 5.1 Executive summary

The Algarve is a Portuguese region with almost 450,000 inhabitants in an area corresponding to almost five percent of the continental territory. The economy of the Algarve is based on three key sectors that are central to the region, both for the staff they employ and the generating wealth: tourism - including hotels and restaurants, construction and wholesale and retail trade. The region's economy is also characterized by limited innovation dynamics, combined with the low levels of knowledge-based companies and tolerance to risk.

The region's economy particular characteristics are also reflected at the human resources level that constitutes the labor market in the Algarve. In this sense, and despite the last decade the proportion of the active population with Higher Education has doubled, human resources are mainly characterized by low qualifications and expertise. Despite the human resources characteristics, the region has more than 21% of its population engaged in science and technology.

The importance of innovation as a factor of territories and regional economies development has been increasingly evidenced by regional actors. In the last decade, the region has been done an effort to overcome some of the identified structural problems. This effort has taken place mostly at the regional strategic planning driven mostly by the Commission for Coordination and Development of the Algarve. However, the implementation of such strategies is highly dependent on European funds and limited resources which constrain its real implementation. Finally, it's possible to emphasize that the Algarve has an urgent need for actors and infrastructures that enable implementation of a real culture of innovation, supported by regional policies able to retain knowledge-based resources in the region.

This survey was performed between July and November 2010. There were identified 24 innovation-related stakeholders of which 13 finally contributed to this survey.

### 5.2 The main results at a glance

- The five main sectors – according to the number of employees and the wealth they generate - are tourism (hotels and restaurants), wholesale and retail trade, construction, real state, renting and business activities and transport, storage and communication. For the other hand, stakeholders consider that the five most important innovative sectors are tourism, ICT, marine services, agro-food and agriculture and fisheries. However, the most innovative sectors considered like that according their potential to the region and the developments produced in recent years are biotechnologies, energy and tourism. In fact, the main conclusion of the matching between these points of view is that the only common sector is tourism, which is due to the fact that the Algarve has a huge

tourism potential if not only connected to the Sun&Beach products. Nevertheless, there are some sectors that have been emerging as having innovative and economic potential to the region: sea-related activities, biological agriculture, creative industries, touristic activities related to health/welfare and eco-tourism, renewable energy and agri-food industry.

- The most innovative domains have, in Algarve, some lack of connection to the market. In this sense, the main issue due to this fact is that the regional economy is limited in terms of innovation dynamics and for this reason the absorption of innovation for the companies is very weak. To overcome this problem, the regional actors increasingly become involved in invest in the university-enterprise relations, reducing the gap between knowledge produced and its exploitation in the market.
- In the next sections of this report it is possible to see that the main innovation barriers identified are related with the cooperation between actors, the qualifications and creative skills of human resources, the innovation management skills and the access to information, networks, funding and international markets. These barriers constrain the performance of the regional economy and the companies' capacity to incorporate innovation in theirs processes. In a broad range, the regional actors have been responding to these needs with measures that promotes an entrepreneurial culture and the access to information, networks and funding. The major problem that can be consider is that the majority of these measures aren't connected to specific sectors, which can constrain its effectiveness.

## 6 West Midlands, United Kingdom

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### 6.1 Executive summary

The West Midlands region is situated at the heart of England with a population over 5.3 million and spread across 13 square km.

The history of the West Midlands economy is one of reinvention and ingenuity, constantly adapting to changing circumstances and making the most of new opportunities. Half a century ago the region was one of the most prosperous in the country, experiencing rapid growth in population, output and employment. However, economic restructuring, market liberalisation and increasing globalisation have all impacted significantly upon the region's economy. Today, the West Midlands underperforms relative to national and international competitors.

The region also needs to address the global challenge of climate change. The scientific evidence that climate change is occurring is overwhelming and widely accepted. However, it is not too late to take the necessary action to avoid its worst impacts. Indeed, the recent Stern Review concludes that 'tackling climate change is the pro-growth strategy for the longer term, and it can be done in a way that does not cap the aspirations for growth of rich or poor countries'. The West Midlands economy needs to be at the forefront of this sustainable growth path, reducing carbon emissions while at the same time increasing economic output and realising the associated business opportunities.

Unemployment and economic inactivity varies significantly across the West Midlands, with particular areas (both urban and rural) experiencing concentrations of worklessness. Increasing the region's employment rate from 72.9% to the UK average of 74.1%<sup>5</sup> would help address the region's output gap, both by increasing the output capacity of the West Midlands economy and by increasing demand for goods and services. It would also help address regeneration and social inclusion issues.

There is a predominance of low productive sectors within the West Midlands economy, and to generally low levels of productivity across the board. Structural causes of the output gap can be addressed by promoting diversification within the economy and encouraging new business formation in more high-value sectors. Addressing low productivity levels requires greater analysis of the main drivers of productivity – identified as skills, enterprise, innovation, competition and investment.

While these drivers are all important and strongly interrelated, analysis concludes that low rates of innovation and a poor record on skills are the primary sources of the region's productivity challenge. The West Midlands performs poorly on levels of qualifications in the workforce, graduate retention, leadership and management, and work-based training, and ranks in the bottom quartile of regions on most skills indicators. There is weak demand for skills from businesses, particularly in relation to higher-level skills in private sector firms that are critical to the generation of added value in the region. The West Midlands also performs relatively poorly on some measures of



innovation. Business investment in research & development as a share of output is falling relative to the UK average and the West Midlands is ranked 7th out of the nine English regions on this measure.

As well as current issues and factors influencing the region's economy, the region needs to consider the opportunities and challenges that will arise in future, particularly the impact of climate change; continuing globalisation and the need for the region to compete in the international market place; demographic change including an ageing workforce, international migration & increasing population diversity; and the continued march of technology, particularly information & communications technology.

## 6.2 The main results at a glance

- The West Midlands region has been undergoing a multitude of changes in terms of regional policy support and direction. The regional development agencies (RDAs), operating since 1999, in charge of delivering and monitoring a sustainable economic growth through regional innovation strategy and their implementation, have now been abolished. As a result, new structures have been developed the Local Enterprises Partnerships (LEP) which role is to continue the ex RDAs work. Being such a new structure challenging times and issues are ahead in the West Midlands region through this transition.
- The West Midlands is the heart of UK manufacturing. Manufacturing makes a larger contribution to their economy than it does in any other UK region. Over 20% of West Midlanders in employment work in the manufacturing sector, compared with just over 15% nationally. It is also fundamental to the culture and social fabric of many areas. However, employment continues to decline in manufacturing, especially in low value-added sectors, and sectors facing low-cost overseas competition or overcapacity in international markets. On average, productivity rates in the manufacturing sector are low by UK standards and even further behind many European countries; and the challenge with manufacturing is to ensure that low value-added sectors modernise and move up the value chain and the region as a whole must diversify into more high-technology based activity.
- Productivity performance, measured by GVA per employee, is low in the West Midlands compared with the UK average and the most prosperous regions of Europe. For the West Midlands to grow its economy at a faster rate than the UK average, businesses will need to continuously improve their competitiveness, productivity, market profile and local supply chain linkages so they can take advantage of new product and market opportunities. Regional partners must create the right operating environment which provides access to appropriate financial and human resources as well as customers, suppliers and associated support. The region needs to increase businesses' engagement in global markets in order to drive up their competitiveness and provide wider opportunities. The West Midlands must step up its performance in developing new products and services, implementing new processes, generating new businesses, and developing entrepreneurial business leaders. The public sector must support these goals through high-quality services
- The West Midlands has a strong and extensive research base in its universities, private institutions, commercial R&D and engineering facilities. Though this research base is smaller than in some other regions, the strength continues to be the exploitation of ideas by new products and processes rather than pure R&D. These strengths are often difficult to identify by analysing traditional economic statistics. The Innovation and Technology Council has identified five areas in particular that are important focuses for investment. These are transport technology, advanced materials, energy, medical technologies and digital media. The region also has a comprehensive range of venture capital and loan funds to address the equity gap experienced by early-stage businesses. Its mid-sized and larger businesses also benefit substantially from access to comprehensive, world-

class financial and business services, particularly in Birmingham. Foreign-owned local businesses are taking advantage of this support to become stronger world players, bringing benefits to the region.

- Innovative business activities are vital in the fast-moving and highly competitive global markets in which West Midlands businesses must compete. Support for low-carbon innovation through research and demonstration of new and emerging technologies is key to capitalising on climate change. It will not be possible to sell products and services based on yesterday's knowledge using yesterday's processes.
- Tackling the innovation agenda and placing the region at the heart of the UK's high-value economy also requires action from the supply side; ensuring the skills and attitudes of people living and working in the region are the correct ones; ensuring businesses have the right mix of people; and ensuring an attractive supply of premises that meet the needs of business. Traditional and established firms – including those in rural communities – need to use new ways to develop and access employment opportunities, and new forms of service delivery, to meet the challenges of competitiveness and productivity.

## 7 Extremadura, Spain

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### 7.1 Executive summary

Extremadura is one of the seventeen autonomous communities of Spain. Located in the southwest of the Iberian Peninsula, the region occupies 41,634 km<sup>2</sup> and has approximately 1,100,000 inhabitants, representing a population density of about 26 inhabitants per km<sup>2</sup>. The economic configuration of Extremadura, by production sectors, has a more traditional production structure than the national average. The primary sector in Extremadura is characterized by a low technological development and an over-dependence of the vast majority of farms on the environmental conditions. This explains that the main trade and industrial sectors in the region are related to agriculture and manufacturing sector, mainly food and drink.

In other respects, the low investment in research in the productive sectors affects the regional development.

Moreover, the research culture in the region is raising much slower than in other regions and the investments in R&D&i projects from the private sector are not enough to achieve a competitive industrial sector, which causes a low regional development.

Through the Law of Science, Technology and Innovation of Extremadura, public sector actions on scientific and technical research, technological development and innovation are regulated for the first time in the region. Therefore the agents involved into the generation of new knowledge, products, processes, methods and techniques, or participating in management tasks and project management of technical and scientific research, technological development and innovation are key actors in the Extremadura Science, Technology and Innovation System (SECTI). Concerning to the University of Extremadura, it aims for the creation, development and transmission of science and technology, making it the main engine of science, technology and innovation in the region. Nowadays, there are enrolled a total of 187 research groups and a total of 1.421 researchers registered in the Catalogue of Research Groups of the Science, technology and Innovation System of Extremadura.

In the 90's, the Community of Extremadura raised a debate on their regional development future, encouraging the articulation of its own System through studies and analysis of various national and international R & D Systems. Over the past ten years, Extremadura has set up and vertebrate their own System of Science and Technology, which is currently in full development, responding to the needs of a region with a distinctive socioeconomic profile and whose expectations were not covered before being taken the transfers in R&D&i.<sup>3</sup>

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<sup>3</sup> Rodríguez del Rincón Ángel y España Monge Encarna, "El Sistema de Ciencia y Tecnología en Extremadura" en: *Las Comunidades Autónomas frente a la I+D+i*, Monografía 22; Revista Madrimasd, Diciembre de 2008.

The Fourth Regional Plan for R&D&i of Extremadura reveals that internal spending on R & D in Extremadura was 1.1% of the total of Spain until 2008, while the extremeñian GDP reached the 1.69% of national GDP and the employment the 2.09% of the total. These data show that to converge towards the average values in Spain, Extremadura must continue with a higher growth in the coming years.

## 7.2 The main results at a glance

- The main innovative sectors are Energy, Food, Agriculture, fisheries and foresting, ICT and Communication equipment, and Tourism, according to the stakeholders. There are discrepancies about whether or not the construction industry should be considered an innovative sector in Extremadura, probably due to the crisis which the sector is experiencing since 2008 and the current uncertainties about the capacity of the construction companies to innovate. However, one of the most important and active technology centers of the region, INTROMAC, is dedicated to serve, in the R&D field, exclusively to companies in the construction sector, which are increasingly convinced that the only way to compete is to innovate.
- According to data from the University of Extremadura, 10 Spin-offs have been created to date; 4 belong to the Agrifood sector, 3 to the ICT and Communication equipment sectors and one to the fishery sector, coinciding with above. The other two companies belong to Health and Illumination sectors. It is noteworthy that, although Extremadura is currently a world leader in the field of Renewable Energy, there are no research dedicated companies in this field. The Energy Cluster in Extremadura and the Extremadura Energy Agency promote dissemination and cooperation activities between the energy field companies in order to encourage innovative actions within the sector to cushion the recent financial cuts imposed by the government. Also, the Extremadura Iberic Centre of Renewable Energy and Energy Efficiency will be set up in Extremadura shortly. Regarding the Tourism sector, there is a remarkable lack of innovation, even though it has great potential, especially in rural areas.
- The main identified barriers for the development of innovative actions are lack of time, lack of access to qualified and creative skills/staff and lack of innovation management skills. These barriers should be overcome with the existing tools; however, it would be necessary for the administration to take certain steps in order to use these tools more efficiently, due to the fact that local companies and research organizations are unaware of their existence in many cases. Also, it is necessary to improve the collaboration between the Science and Technology System agents, especially between the companies and the research centers, which allow for higher and greater use of the knowledge generated by the companies in order to develop new productive processes, products and services.
- The survey shows that one of the main barriers faced by companies in Extremadura is the lack of access to international markets in order to introduce innovations, plus the lack of an entrepreneurial and innovative culture. According to the results, innovation services could be provided more effectively by involving private organizations and innovation experts more directly in providing services. Certain measures have been taken to improve these aspects; proof of it is the recent Law on Science and Technology in Extremadura, which was approved at the end of 2010.
- One of the main barriers identified by the stakeholders in the innovation process of companies in Extremadura is the lack of access to qualified and creative skills and staff. The most innovative sectors which have been identified are closely related to the careers offered by the University of Extremadura where there is an important investment in infrastructure and training of human resources in the main trade and industry sectors in the region.

This indicates that this barrier identified by the stakeholders is not due to the lack of qualified professionals in the region nor because it lacks the necessary infrastructure for it; therefore, it should review other factors such as the lack of opportunities and working conditions offered that might generate the qualified professionals to obtain work elsewhere.

- There is no data indicating poor communication/ connection between the regional networks, because there are incentives that allow actors to cooperate and create synergies at different levels. In addition, the new Law on Science and Technology of Extremadura will allow these actions to be enhanced.
- As mentioned above, the main identified barriers at the regional level in the innovation process are lack of time, lack of access to qualified and creative skills/staff and lack of innovation management skills. According to the survey results, we reached the conclusion that Innovation is understood as the set of activities and initiatives managed by qualified staff, directed at improving the competitiveness of organizations in the medium and long term.

## 8 Podravska regija, Slovenia

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### 8.1 Executive summary

#### Portrait of the region Podravje

The industry, especially manufacturing depends mostly on the foreign markets (export rate: 70% to the EU, out of which 18% to the Germany). From the self-sufficient industry/market in the 20<sup>th</sup> century, the new companies are smaller in size with no innovation activities. On the national level; in innovation activities are involved only 50,3% companies, out of which 9,1% are only technologically innovative, 15,9% non-technologically innovative and 25,2% technologically and non-technologically innovative. The region has 6,023 active companies, 10,296 self-employed persons and 43 cooperatives, employing 129,750 people in total, i.e. 14.5% of all employed Slovenians. The net value-added per employee in the region amounts to € 29,700 and is below Slovenian average. Within the region, micro enterprises lead the field with a number of 5,510, small enterprises amount to 339 and medium-sized to 95. However, the 79 large enterprises in total have the largest influence on the economic picture in Podravska region. They employ 27,200 people and achieve 45 % net sales revenues amongst all companies in the region. As in the previous years, the most important field remains the processing industry, judging by employment numbers as well as net sales revenues. Companies from this field employ 41% of all workers and result in 41% of all net sales revenues. According to these criteria, the strongest communities of the region are Maribor, Ptuj and Slovenska Bistrica.

#### Human Resources

University of Maribor was established in 1975 and is the second largest university in Slovenia. It has 17 faculties, 24.600 students per year, 7700 beginners per year and 3300 graduates per year, 198 study programmes, 1800 employees and 89,8 EUR budge per year. According to the numbers of persons engaged in science and technology as percentage of total regional population (for the North-East Slovenia) increased from 13.61% in 2002 to 196.000 or 18.01% in 2008. Within the University the office for technology transfer (TehnoCenter) and University spin-off incubators were established. The establishment of the science park is planned.

At the NUTS 1 level the public R&D expenditure as percentage of GDP increased from 0.34% in 2002 to 0.36% in 2009 and as percentage of higher education was in average between 2002 and 2008 0.21%. Private business R&D was constantly increasing from 0.88% in 2002 to 1.07% in 2008. On the NUTS 3 level the number of patent applications filed at the national Patent Office per million inhabitants increased from 33 (16,5 per mio) in 2002 to 64 (31,2 per mio) in 2009 and at the European Patent Office per million inhabitants from 31 (15,5 per mio) in 2002 to 119 (58,6 per mio) in 2009.

Description of existing structures for encouragement of innovativeness in Podravje region was classified in the Research on the innovation activities in Slovenia in 2008. All five categories – from business plan to establishment or creation of company, development/transfer to the market as well the assistance/services to

market expansion are covered by the regional agents. However, there is still a need to deepen the co-operation between the agents. For the encouragement of generation ideas, suggestions, inventions as well as innovations and their commercialisation the following regional instruments (or at least networking with the existing ones outside the region) shall be set up: regional innovation platform (including the active participation of inhabitants by the means of ICT); regional development indicators that go beyond the GDP (e.g. the measures of subjective and material well-being on all three pillars of sustainable development), their monitoring and evaluation of impacts of selected programmes/projects; regional development platform for encouragement of IIPD (invention-innovation-diffusion-processes) for the cooperation of intermediaries, specialised organisations – funds, clubs etc., inventors and innovators as well the interested public and media; regional business angels club; regional fund for promising inventions; regional seed capital; regional marketing platform (including the internationalisation of regions).

### Conclusions drawn from previous surveys

There is no special regional study concerning the potential or the need for innovation. From the study done on the national level (Source://www.imamidejo.si/resources/files/RID.pdf), there is cutting-edge knowledge on new technologies and/or business models, qualified and creative skills/staff, enough market information and demand for new goods and services as well as the information on available innovation support measures. What is needed is the lack of: access to knowledge (such as research, patents, standards, etc.), access to networks (cluster initiatives, business networks), incentives for cooperation between players, innovation management skills, awareness for innovation, as well as the entrepreneurial culture. It should be mentioned, that from 2007 on the innovation is a - although not cross-cutting - theme of the Regional Development Programme of Podravje region.

## 8.2 The main results at a glance

- Although the five main sectors of economic activity (according to the total number of employees with the correlation degree course or research centres in the region) are manufacturing, construction, transport and storage, market, maintenance and repair of motor and other business activities, the surveyed sectors that are most innovative sector in the region listed by the regional stakeholders are divergent from those and they are: ICT and communication equipment, environmental services, energy, food/drink and tourism. As seen from the seed crystals in the region, the stakeholders incorporated in the description of the region its potentials and so the possible future developments: bio-plant, use of geothermal energy, logistics to energy optimised construction and food industry, potentials by the uni institutes (automatisation, new materials, biochemistry, renewable energy, environment) to the new generics in pharmacy, specific knowledge in sectors with higher competitiveness rate, medical equipment and tools (linked to the uni and clinical centre), engineering in connection with the plans for Science park and the green tourism linked to the organic food and nature protection.
- There are no official data concerning the number of the spin-off companies neither on the regional nor at local, municipal level. However, in the regional incubators, the University spin-off incubator as well as the regional incubator (Štajerski Tehnološki Park) in yearly average settles 9.2 new companies in their facilities. Officially, there are only two spin-offs companies from the University Maribor (with its shares). There is planned special University rule book that should regulate the IIDP issues and the roles and duties of researchers and their spin-offs as well the University share in such established companies.
- Concerning the innovation barriers identified in the surveys as well as the good practices of the Podravje region, there is a need for agent's specialisation and creation of special instruments that will be matched with the needs of the companies. The agreement or at least enhanced cooperation between the existing agents should be



reached in order to increase the variety of services. However, special regional innovation policy should be designed and its achievements monitored and evaluated.

- The measures to provide innovation support services more effectively are to: involve private organizations and innovation experts more directly in providing services, introduce fast track procedures for administration and evaluation of projects as well offer more integrated innovation support services. At the same time the lack of access to finance the innovation is the biggest barrier preventing companies from introducing innovations onto the market. In comparison with the provided services from the existing regional agents, it is seen that there are no special regional fund that would offer adequate financial instruments. Another topic yet to be addressed is the lack of cooperation between the agents, it is more or less founders-based (e.g. between the uni agents) or project based. There is an obvious need that the exercise with the strategic innovation management should be set up on the regional level, the forms of it, being either in the shape of regional innovation network or regional innovation system is a matter of discussion. The services that are provided are not sectoral specific and even not topic or theme specific and mostly they are addressing the same target group, the companies.
- Although there is a self-perception of highly qualified work force as well as of the guaranteed human resources, it is a question, how well is the educational sector prepared for alignment of the programmes to the real needs of the private sector. This is one of the aims of the reform of the higher-educational policy. More, most of the breaking through sectors (and according to it also the Centres of Excellence – e.g. in nano&biotechnology, new materials, space discoveries etc.) are placed in the Slovenian capital, closely linked to the University of Ljubljana and the most prominent institute Jozef Stefan as well as of the leading Slovenian companies (not necessarily based in the central region).
- From the networking point of view the innovation agents are linked more to the line ministries of the central government than they are linked on the regional level. Therefore it would be beneficial that some policies – even on governmental level – should be more interdependent, especially those of the Ministry for higher education, science and technology and those of the Ministry of Economy as well as of the Office for local self-government and regional policy who is Managing Authority for the current cohesion period. All mentioned are working through their own agencies (e.g. TIA – national agency for technology transfer; JAPTI – national agency for the Entrepreneurship and Foreign Investments; and 12 regional agencies). However, the Slovenian Government adopted in the beginning of 2011 two main strategic documents that will influence the higher education as well as the innovation policy from 2011 – 2020. The main goal of the Slovenian Resolution on the National Higher Education Programme 2011 – 2020 will be the quality and excellence, with diversity and accessibility of higher education being achieved by means of internationalisation, diversification, study structure and the financing of higher education. In the Resolution on the Research and Innovation Strategy of Slovenia 2011-2020, which is the highest strategic document in the field of research and innovation in Slovenia; its goal is to establish a contemporary research and innovation system that will ensure a higher quality of life for everyone.
- The long tradition in building the public awareness on innovation management and other related issues in the Podravje region (International Conference on Entrepreneurship and Innovation – this year the 31st took place in Maribor) as well as the system approaches developed at the University show clearly that the innovation should not be understood only in the terms of technical or technological innovation, but that the whole process for managing it within the organisations (being the public or private one) shall take into account all 5 phases of its development: from idea-suggestion-invention-innovation, which is actually the commercialisation of the invention (e.g. patent). By knowing, that from 3000 ideas only one and from 100 patents only one becomes innovation, and that from 100 innovations only one is successful, we have to rethink: our thinking as well as the praxis in the workplace(s), including does of the agents' ones.



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### 9.1 Executive summary

The North East Region (NER) is situated in the northeastern part of the country. To the east it is broadly opened to the Black sea. It has a population a slightly below one million of wich nearly 332 000 live in the biggest city at the Bulgarian Black Sea coast – Varna. Agriculture benefits from the extremely suitable natural and climatic conditions. The NER occupies first place in quantity of arable land in the country which serves as a base for agriculture development. The Black sea littoral is suitable for recreation activities and tourism. On the area of the NER are situated more than 15% of the enterprises from the non-financial sector in the country and it possesses 12.8% of the long term material assets. The industry in the North East Region is a mixture of big and small companies, presented on a wide industrial base. Among the most developed sub-sectors of the industry (according to the gross production volume) in NER, which are of national importance, are the production of food products and beverages (about 25% of the industrial production for 2008), of metal products and machine building (about 20%), of chemical products (about 18%), of production of electric and heat energy, gas and water supply (about 14%) etc. Very fast development is registered in construction, trade, and transport and hotel industry. The industrial sector is distinguished with high degree of concentration in the district centres and in the industrial agglomeration Varna-Devnya-Beloslav. This way for example in the industrial sub-sectors as chemical substances production, products and fibres, electric and heat energy production, gas and water supply as well as in the sector of services in the field of transport, warehousing and communications district Varna gives above 90 % of the total gross production for 2008.

NER is taking second-third place in the country after the South-West and South central regions in absolute and relative share of RTD expenses in GDP – with average for the country – 0.4%, which is a considerable lagging behind the objective set out in the Lisbon Agenda (4% of GDP). The invested funds are quite minimal and do not serve as a solid base for new technological and competitive development. NER universities are mainly concentrated in Varna (5) and Shumen (1). The existing research and development potential is limited, which does not contribute to the development of the regional innovative capacity. The number of functioning organizations in the field of RTD in the region is quite low and concentrated mainly in Varna (4– on fisheries; on marine research and oceanology; on hydro- and aerodynamics and on metal sciences). With the National Centre for Agricultural Sciences in General Toshevo and Shumen there are research and development structures. There is a lack of technological infrastructure, namely technological parks, incubators, technology transfer centres and other structures for technological partnership with the business. Innovations are still priority of the large enterprises.

For full and objective information for the innovation activity and the innovative needs of the NER two studies were conducted within the project 'Regional Innovation Strategy of NER'. First one was 'INVESTIGATION OF THE INNOVATIVENESS AND COMPETITIVENESS OF COMPANIES FROM THE NORTH EAST REGION' where the

proinnovative needs of the enterprises have been investigated (basically small and medium enterprises) from NER. Answers have been received from 538 companies, distributed according to the criteria in the developed project methodology in ten priority sectors and the NER districts. The second one was 'RESEARCH OF THE POTENTIAL FOR CREATION AND SUPPORT OF THE INNOVATIONS' for the potential and revealing of the innovation activity by the academic organizations, scientific and research institutes, and intermediary organizations from NER for creation, adoption and support of innovations. The results show the North East Region is lagging far behind the EU average one. GDP per capita is almost 2,7 times lower than EU-27 and the EU-25 regions correspondingly. At the same time rather high disparities are observed between districts, involved in the NER. NER labour productivity per person employed is also relatively low. According to official statistical data, the NER average gross monthly earnings are many times lower than those in EU. This fact and the observed wage dynamics cannot be interpreted as a sufficient condition for the low unit labour costs and thus for the competitiveness improvement. The combination between low salaries and the relatively low labour productivity is not a good starting point for raising competitiveness. This survey was performed between July and November 2010. More than 80 innovation-related institutions were identified of which 22 finally contributed to this survey.

## 9.2 The main results at a glance

- Tourism, marine industry, agriculture, transport, IT and chemicals are recognised as the top 5 innovative sectors in the region even if some of them have still low economic relevance and are seen as 'seed crystals' with promising potential. The basic parameters used in this selection are mainly - development of economic sectors, traditional for the region; important sectors for the regional economy and introducing of new technologies, products and services.
- The understanding of 'innovation' and the target-oriented application of evaluation or success measures varies strongly among the stakeholders. Direct innovation support measures have the greatest potential to remove existing innovation barriers are 'by Promoting closer interaction between universities, public research, organizations and companies', by 'Direct support of business R&D (grants and loans)' and Promotion of entrepreneurship/start up (including incubators).
- The question 'How could innovation support services be provided more effectively' was answered by the majority 'giving SMEs greater freedom of choice as to the service provider (e.g. through innovation vouchers)' and 'introducing fast track procedures for administration and evaluation of projects'.
- NER as a whole manifests its potential for development of a sound research and innovation infrastructure. The qualification of the researches is rather high, and the knowledge creators located in the region are in the fields identified as priority sectors for economic developments. On the other hand the innovation activities of researchers are limited to the development stage only, and there are not enough investments in research infrastructure. The other weaknesses of the knowledge supply process are insufficient funding of R&D activities.
- There is good cooperation between local government and branch industry organizations. At the same time there is a lack of links between universities and businesses both in research and in terms of training of specialists for the needs of companies.
- The most important barriers which prevent companies from introducing innovations onto the market are 'lack of access to finance (to enhance innovation and growth)' and 'lack of information on available innovation support measures'. The activity of RAPIV in this respect is very important for the development of innovative system in the region.

## 10 Andalusia, Spain

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### 10.1 Executive summary

Andalusia is the most populated region of Spain, with 8.3 millions of inhabitants, corresponding to 17.8% of the overall national population. It is located in the South and it ranks in size between Portugal and Austria. Andalusia is the second largest region in terms of surface area, with its 89,000 SqKm accounting for 17% of Spanish territory. It was traditionally a region of emigration, but it has become recently a region of immigration of mainly low-skilled workers. The region consists of eight provinces – Almería, Cádiz, Córdoba, Granada, Jaén, Huelva, Málaga and Sevilla – and a total of 770 municipalities.

All these parameters also make the region exceptional within the European context: Andalusia has a larger surface area than 14 of the European Union's 27 member states and has higher population than 11 of them.

From an economic point of view, Andalusia is an ideal location for investment thanks to its geo-strategic situation, its diversity, the unique qualities of the territory, the potential of its human resources, its infrastructure and its economic strengths, especially in technology and innovation.

Andalusia has undergone remarkable growth over the last 30 years, existing two different stages of development of the recent economic history of Andalusia. The first wave of modernization interested the region until the late 1990s and was largely based on investments in infrastructure. The second wave of modernization builds on the main principles set out in the 2000 EU Lisbon Agenda and it emphasizes the role of public and private investments in R&D, fostered co-operation between industry and university, etc.

Variety is one of the main characteristics of Andalusia's economy. Traditionally, Andalusia has been linked to agriculture and tourism, but today it is much more than that, as is demonstrated by its industrial diversity and dynamism. Andalusia is a world reference point for intensive agriculture technologies carried out under plastic. Based very largely on its origins within the arable and livestock farming sector, biotechnology has become diversified, focusing particularly on health sciences. The region has been a pioneer in instigating mother cell research. With its climatic characteristics, and its innovative thrust in the renewable energies like photovoltaic, wind power, thermal and biomass, Andalusia is also a world reference point in the use of such energy sources, and in the equipment technology and installations used in their production.

Andalusia is one of the Spanish regions with the highest index of qualified young people. In Andalusia there are 10 public universities, business schools, over 300 non-university technical training centres and almost 2,000 research groups that depend on the Andalusia universities and both public and private organisms. The 10 public universities, at the ones are enrolled more than 225,000 students, offer 123 degrees and 300 postgraduates' courses. Despite this environment it must be pointed out that in the last decade Andalusia universities have lost nearly 50,000 students, due to the boom of construction and tourism, since no strong universities competencies are required.

Andalusian economic development policies have evolved during the last 30 years. The regional government has produced a number of documents, programmes and organisations that set the objectives to make Andalusia a more competitive region. Among the different documents, the Innovation and Modernisation Plan for Andalusia (PIMA) and the Andalusian Plan for Research, Development and Innovation (PAIDI) are the most relevant ones. These plans stress the importance of enterprise R&D investments, industry-university technology transfer and intermediate organizations such as technology centres and parks.

This survey was performed between July and November 2010. Around 25 Andalusian Innovation Agents were identified and finally 16 have contributed to the document.

## 10.2 The main results at a glance

- Biotechnology, ICT, Energy, Aeronautics and Space, and Tourism are recognized as the five most important innovative sectors in the region even some of them have no still a high economic relevance since the number of employees or the new companies established in these sectors are low. Not all these sectors are in agreement with the main sectors of economic activity. Agriculture, agroalimentary and construction are identified as sectors of economic activity but these are not innovative sectors. This shows the effort of the regional government towards the development of strategic sectors instead of traditionally low added-value sectors.

The sectors identified as ‘seed crystals’ are some of the innovative sectors as energy since Andalusia is the region receiving more solar radiation; however others are not the identified as the most innovative sectors such as the creative innovation sector or nanotechnologies.

- In the last years the number of new companies has experienced a remarkable growth in the number of registered businesses, with ICT and Biotechnology (innovative sectors) as the most dynamic ones. However, the number of spin-offs is still low compared to the total number of companies. The crisis has however slowed down this process.
- The different stakeholders show similar opinion concerning the innovation barriers. The lack of access to international market and the lack of market information are considered the main barriers in relation to the access to the companies to the market, whereas the lack of innovation management skills and the lack of access to qualified and creative skills are the main barriers to organize more effective innovation processes. Business development, promotion of consulting/information/general advisory services and raising awareness of innovation, entrepreneurship and technology, should be taken as regional innovation measures to decrease these barriers.
- Considering the measures the ones the stakeholders have identified to provide innovation support services more effectively, three answer got the same punctuation: ‘by involving private organizations and innovation experts more directly in providing services’, ‘by introducing fast track procedures for administration and evaluation of projects’ and ‘by offering more integrated innovation support services’. Andalusia innovation and modernization strategies are on the right way.
- Andalusia universities, business schools and non-university technical training centres offer degrees and postgraduates’ courses related to the main innovative sectors, more over there are a high number of technology centres and scientific parks devoted to these sectors.
- RETA, the Andalusian Technology Network plays a specific role connecting and coordinating of the overall regional innovation system, it means all the different innovation agents consider in the PAIDI (Andalusian Plan for Research, Development and Innovation).

- The Andalusian Plan for Research, Development and Innovation (PAIDI) is still an operational plan until 2013, but it is necessary to set a strategic to develop more training programmes related to innovative sectors to improve firm productivity and innovation, to promote an entrepreneurial culture and to foster spin-offs creation among others.

## 11 North-East Region, Romania

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### 11.1 Executive summary

The region covers the North-East part of the country and, according to the tradition; it is a part of the old historical region of Moldavia. Having a total surface of 36,850 km<sup>2</sup> and a population of 3.712.396 inhabitants, North-East Region is the larger of the 8 development regions of Romania. The North-East Region consists of six counties (Bacau, Botosani, Iasi, Neamt, Suceava and Vaslui). The geographical and historical conditions have determined a serious social and economic gap in the North-East Region. The economic feature of the '60s was agriculture prevalence, the living standard being very low. During 1965-1985, the region was subject to a forced industrialization, aimed at restoring the existing economic condition by purchasing modern producing capacities, fact that determined the establishment of an industrial culture, labour force qualification and training of a large number of specialists. Nevertheless, the industrial development was planned to be too diversified and didn't take into consideration the natural, energetic and environmental resources available in the region.

During 1998 -1999, it could be ascertained that there was a decline registered at both regional and national levels, due to effects of liberalization of the foreign currency exchange rate against Romanian Lei and because of the loss resulted from the restructuring process initiated during 1997. The faulty management, a direct result of the reticence in implementing the quality standard system for the production and products, lack of enterprise development strategy, undeveloped marketing rules in promoting the products, alongside the loss of sales markets and drop in the level of competitiveness of the products due to the lack of resources for maintaining the investment, have caused a sharp decrease in the industry since 1997, with serious implications on the development of the region as concerning all the economic sectors.

In North-East Region, the crisis influenced some industrial activities, with a previous explosive development (textile and ready-made clothes industry, construction materials industry) which, due to the worldwide economy regression, had to be restructured. At county level, within entire region (except Suceava County), the textile and ready-made clothes industry is placed on the first position. The development of timber industry is important for administrations from Bacau, Suceava and Neamt counties, and food industry in Bacau, Botosani and Suceava counties. An increased attention is given to support of strategic branches. The most frequently options are related to development of IT and biotechnologies sectors, and the less are referring to nanotechnologies, pharmaceutical industry and energies produced by alternative sources. The counties Suceava and Iasi are closer to support biotechnologies industry; IT industry is in Bacau, Botosani and Suceava counties, and pharmaceutical industry in Botosani, Iasi and Neamt counties. As concerning the business support structures, the highest interest concerns the business incubators.

In the region there are several research units: RD units, 8 universities, agricultural research units and companies with RD profile. Very important is the development, since the last years, of the research and Excellency centres within universities of the region, recognised by the National Council of Scientific Research from Higher Education, with the governmental program CEEEX. In this context, between 2001-2006, in North-East Region, were set up 12 Excellency Centres within the following universities: University 'Alexandru Ioan Cuza' Iasi, Technical University 'Gh.Asachi' Iasi and University for Medicine and Pharmacy 'Gr.T.Popa' Iasi. In the same time, between 2001-2006, CNSIS recognized 79 research centres in North-East Region, located within University 'Alexandru Ioan Cuza' Iasi, Technical University 'Gh.Asachi' Iasi, University for Medicine and Pharmacy 'Gr.T.Popa' Iasi, University from Bacau and University 'Stefan cel Mare' Suceava.

In North-East Region, the financing of research and innovation sector is made with public funds (more than 55%) but it was registered an ascendent trend of annual expenses for research-development and an increased number of employees in this sector. Also, it was registered a low receptivity of companies regarding the RDI results due to a low absorption capacity of the RDI results. Also, can be noticed a lack of communication and partnerships which can support the development of RDI sector. Technological and innovation transfer towards economy is still at the beginning because the specific infrastructure for the diffusion, transfer and valorisation of RDI results, is under cristalization.

The previous activities developed under the RIS project which encouraged development of a regional innovation strategy in our region underlined several conclusions:

- there is a need of a regional action plan, with specific financing sources, which will meet the need and offer of innovation.
- there have been indicated several networks dedicated to innovation and which should be interconnected or, at least, promoted in a common manner.
- the universities and scientific parks are the main actors in promoting technological innovation and technological transfer, so they have to raise their visibility in the region regarding the offered services
- the local technological transfer units from Iasi and Botosani are recognized as being functional and those from Bacau and Vaslui can be improved
- cluster initiatives in agri-food, tourism and textile sectors have a positive perception in the region, so it should be encouraged to be more developed
- there are major elements which are affecting the innovation process, as financing conditions, economic risks and rigidity between different types of actors

This survey was performed between October and December 2010. More than 30 innovation-related institutions and companies received the questionnaire and finally, 10 recipients contributed to the survey.

## 11.2 The main results at a glance

- Food / drink, Tourism, Wholesale and retail trade, Software, ICT and Communication equipment, are recognized as the top 5 innovative sectors in the region and are seen as 'seed crystals' with promising potential.



- The barriers which prevent regional companies and organisations from introducing innovations into the market are referring to the lack of access to funding (to finance innovation and growth), lack of incentives for cooperation between players, lack of appropriate IP – high protection and information on available innovation support measures.
- The majority of the answers related to '*How could innovation support services be provided more effectively*' referred on 'offering more integrated innovation support services (e.g. one-stop-shop approach)' and 'involving private organizations and innovation experts more directly in providing services'.
- Available infrastructure like universities, research institutes and involved stakeholders offer a good basement for innovation. The universities and scientific parks are the main actors in promoting technological innovation and technological transfer, so they have to raise their visibility regarding the offered services within the region.
- There are several networks dedicated to innovation and which should be interconnected or, at least, promoted in a common manner and which should offer a good interaction and cross-linking between the regional stakeholders, enable the exchange of experiences and the communication flow.
- There is a need of a regional action plan, with specific financing sources, which will meet the need and offer of innovation in North-East Region.



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### 12.1 Executive summary

The Saarland is located in the west of Germany and adjoins France and Luxembourg. It has a population of a little over one million of which nearly 180.000 are living in the capital Saarbrücken. Defined in the past predominantly by coal and steel, the Saar region has undergone a structural transformation which has been influenced not only by the IT sector but also by the automotive, mechanical engineering and steel industries. Today, one in four jobs is created by automotive engineering and the related supply industry. In the course of the last few decades Saarland has developed into a business location with great diversity, the fields of power generation technology, food technology, IT technology and automotive engineering ranking amongst the most important growth sectors. One of the strengths of the Saar economy is its world orientation, which is reflected in a rapidly developing export capacity. Saarland's weaknesses lie traditionally in the below-average number of business enterprises (lack of entrepreneurs) and in poor start-up activity. Moreover, there is limited scope in the region for financial undertakings - in 2010 one third of Saarland's state budget was financed through loans.

Saarland's universities play a significant role in the regional research landscape. Saarland makes a relatively important contribution to educating the new generation of scientists. The 11,2 percentage rate of all the doctorate degrees awarded at its universities is the highest in Germany. Between 1985 and 1995 Saarland's policy on technology generated the development and expansion of an impressive research landscape. Saarland University was extended to include a Faculty of Natural Sciences and Technology. Ten independent research institutes were also established, of which the Max Planck Institute for Computer Science, the Leibniz Institute for New Materials and the Fraunhofer Institute for Biomedical Engineering and Non-Destructive Testing are especially worth mentioning. Saarland's Innovation Strategy has seen the most promising areas in the field of IT, nanotechnology and biotechnology, the automotive industry, logistics and knowledge. It has therefore set-up five related cluster-organisations.

Several studies investigated the Saarland with quiet divergent results revealing several strengths but as well weaknesses which lead finally to a ranking in the middle field of innovation. The European Regional Innovation Scoreboard (RIS) classify the Saarland's innovation performance in 2004 and 2006 as medium-high and concerning the enablers (tertiary education, life-long learning, public R&D, broadband) as average. Other studies reveal a low R&D rate of employment and of turnover in research and development or identify the areas of public finances and demography as Saarland's real weaknesses. On the other hand it is pointed out that the Saarland 'shows how it is possible to approach a structural transformation through a shrewd innovation policy and the favourable tailwind of global economic activity' or foster the Saarland as Entrepreneur-friendly: 'between 2000 and 2008 there were 40% more company start-ups than closures in this region. The ratio nationwide is 27%.'

The INOLINK survey was performed between July and November 2010. More than 40 innovation-related institutions were identified of which 16 finally contributed to this survey.

## 12.2 The main results at a glance

- Automotive, steel industry, machine building, automation technology, IT, healthcare, health care-management, medical devices and nanotechnology/new materials are recognised as the top 5 innovative sectors in the region even if some of them have still low economic relevance and are seen as ‘seed crystals’ with promising potential. In some interviews it was pointed out that in the major enterprises of the economic relevant sectors, the innovations are not created directly in the Saarland but in the holding company. But as long as jobs and taxes stay in the region the role as ‘extended work bench’ does not necessarily imply disadvantages.
- The understanding of ‘innovation’ and the target-oriented application of evaluation or success measures varies strongly among the stakeholders. Especially the input and output factors are difficult to trace. As public funding sources are getting low it is essential for the donors to evaluate or estimate the return of investment (ROI). Interestingly the lack of innovation management skills and a lack of time were declared as high barriers to innovation as if innovation was separated from the daily life work. Further investigations or activities should focus on this point.
- The question ‘How could innovation support services be provided more effectively’ was answered by the majority ‘by introducing fast track procedures for administration and evaluation of projects’ and by offering more integrated innovation support services (e.g. one-stop-shop approach). With the offer of the externally managed feasibility studies the Saarland is already on the right path.
- Available infrastructure like universities, research institutes and involved stakeholders offer a good basement for innovation. In several promising areas there is a clear cohesion between existing degree courses, research activities and companies. Nevertheless the ‘lack of access to qualified and creative skills / staff’ was mentioned as another important barrier. The ‘NanoBioNet Branchenbarometer 2010’ supports this conclusion even though other economic sectors suffer more from the deficiency of engineers.
- The very good interaction and cross-linking between the regional stakeholders enables the exchange of experiences and the communication flow. Therefore it is not surprising the ‘lack of access to networks’ is no issue for the interrogated stakeholders.
- In contrast to some regional and German-wide studies where the little ‘amount of entrepreneurs and self-employed/freelance workers’ is tackled the interviewed stakeholders do not focus on this point very much. But it is clearly visible that the Spin-Off activities in the nano- and biotechnology sectors decreased rapidly within the last years.

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### 13.1 Executive summary

Tuscany covers an area corresponding to 7.6% of the area of Italy. It is located in central Italy and is bathed by the Liguria and Tyrrhenian Seas. With a surface of 22.994 km<sup>2</sup> and 3.734.355 habitants, Tuscany covers a strategic location in Italy linking Milan and Rome. Tuscany has an excellent transport infrastructure: 2 main international airports in Pisa and Florence for passengers and freight; 2 commercial ports in Livorno and Piombino and an excellent High Speed Rail network. The scholastic system is concentrated around 3 University poles: Pisa, Florence, Siena with more than 126,000 university students (7% of the Italian total), and a large population studying: Medicine, Science, Chemicals and Pharmaceuticals, Defence and Security, and Engineering. Tuscany is the 3rd Italian Region for University R&D, spending 542 M€ and more than 10,600 people is dedicated to R&D activities (increasing by 3%). R&D sector specializations, within the 17 Institutes and 15 entities of the CNR Research Centre (Centro Nazionale Ricerca) is dedicated in particular to Life Sciences, I.C.T., Chemical-Physics. The industrial sector is structured around 12 traditional 'Industrial Districts' and recently the regional authority has started a process of formalisation of new innovation poles in the following sectors: Shipbuilding, Textiles, Tannery, Footwear, Paper, Stone; Goldsmith, home furnishings, technology applied to the material / formal innovation, mechanisms for transport, optoelectronic systems, robotics and mechatronics and mechanical engineering, nanotechnology, biotechnology, ICT, Technology for renewable energy.

Over 1,500,000 individuals are employed in Tuscany, distributed as follows: 3% in agriculture, 31% in industry and 66% in private and public services. In the last 15 years the number of employed has increased by about 180,000 (+8.6%, Italy +7.6%). This increase is almost entirely due to the growth of the service sector (over 200,000) while the number of employees in the manufacturing industries has dropped by about 5%. The supply of graduates in the technical-scientific field is considered adequate and the level of preparation high, even if the relationship between the professional qualifications of an individual and the post held is often severely unbalanced (10% of workers fall into this category).

As far as the innovation (competitiveness of the territory) is concerned the following objective were set for the programming period 2007-2013 :

1. Regional space of research and innovation: overall coordination and promotion of research activities in collaboration with universities, research centres, promotion of industrial research and technological transfer, valorisation of research and innovation for the benefits of the Tuscan territory. Amount allocated: 250 million Euro
2. Regional integrated district: support to the new organisational models for the business sector; support to innovative investments; support to 'physical infrastructures' projects aimed at rationalizing and consolidating the network of service centres for businesses; support for projects of 'intangible infrastructure', such as the creation, consolidation and development of business networks, service centres for businesses, aimed at technology transfer between research institutions and production system; Support for the diversification of products of

traditional manufacturing sectors. Among the Implemented actions: innovation poles, Regional Network of Incubators, Marine Integrated District, Life science integrated District. Amount allocated: 249 million Euro.

The above considerations highlight the necessity that policies must be realized with a mix of different tools, differently declined on the base of the aim that they pursue: from a general action for transversal support to innovation, for the benefit of the overall territory/system, to an action for the support of the existing or upgrading clusters/business sectors and promoting new clusters/sectors with high knowledge content.

## 13.2 The main results at a glance

- As results of interviews the most innovative sectors in Tuscany are considered: ICT & communication equipment, Security & defence, Mechanical engineering & robotics, biotechnologies, energy & green energy. Parameters used to identify the above mentioned sector are: volume of affairs and relevant % of R&D investments, % of people involved in R&D activities, adoption of innovative business models and potential impact on products/ manufacturing process of traditional sector. As sectors with innovation potential impact and with possibilities to be strategique for future tuscan economy are considered: sector of marine industry and sector of cultural heritage. In particular this last sector, considering a great wealth presents in the territory, could be an opportunity, not only for tourism, but also a key to development competencies and new jobs connected to storic research, resaturation, valorization and promotion with use of ICT technologies.
- The most frequently measures adopedted to promote innovation are been: incentives and financial support to R&D, promotion closer interaction between universities, public reserach centers and technological organization, networking and co-operation among enterprises. The Tuscan production system is market by the presence of small-size enterprises and by self-employment, networking among enterprises is the only possibilities to be competitive, and infact regional policies supported these process through incentives, that moreover foreseen (in order to be financed) the necessity to enlarge collaboration with scientific and academic system.
- Stakeholders involved in questionnaire are a small number, but very representative, including in the group: large and small enterprises, university, local authotity, and business centre. Considering collaboration with intermediaries and innovation players in the region emerge a ristric number of usual collaboration and the aspect to underline is the lack of knowledge respect the presence of innovative subject which operating in territory. Further investigation in this aspect probably could be necessary.
- Considering the part of questionnaire related to 'needs for innovation' the principal barrier to introduce innovation is the lack of access to finance, following by the lack of access to international markets. These aspects have certainly importance, but as a stakeholder put in evidence, another aspect is the lack of awareness of innovation relevance.
- Tuscany is a repository of a wealth of codified knowledge, with important local branch offices of scientific centres, universities, businesses and so on, infact as barriers for organizing innovation process more effectively are not considered the lack of access to knowledge or lack of access to qualified and creative skills/staff, instead the lack of access to network and to innovation management skills, like so lack of cutting-edge knowledge of new technologies are considered crucial elements in innovation process, these aspects are elements to better investigate and that the whole system (public and private) should support in the process of innovation transfer.

- 'Involving private organization and innovation experts more directly' and 'introducing fast track procedures for administration and evaluation projects' are two indications, one for the support innovation system (service and business centres) and one for regional authority in order to provide more effectively services for introduction of innovation in the production system.

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The INOLINK project is co-financed by ERDF and made possible by INTERREG IVC Programme