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**RAINOVA RESEARCH REPORT**

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**Chapter 1: Introduction and background**

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**Chapter 1: Introduction and background**

**1. Foreword**

At the beginning of the RAINOVA project, the partners in the consortium believed there was a need to develop innovation policies and systems in our regions not only to support existing innovation practices but also to promote the emergence of new innovations and transfer them quickly and efficiently into VET institutions and small and medium-sized companies (SMEs).

In this context, we considered it necessary to research the position in each of the regions. We also thought that by sharing the experience we could shed light on the comparative strengths and weaknesses of any existing strategies currently in place.

We thought this would provide a benchmark to develop an Innovation Management Model (IMM) and also to create a culture of knowledge and innovation via Regional Innovation Networks, bringing together the key stakeholders and policy makers who are in a position to implement or take advantage of any innovations. This would also provide the basis for the development of innovation policies in the field of vocational education and training (VET).

We believed that the consortium had to include all the stakeholders necessary to create effective Regional Innovation Networks to ensure a wide geographical and economic spread. These are: VET institutions, VET national or regional associations, universities or research centres, innovation companies, specialist evaluation and dissemination organisations, and organisations who can influence regional or national VET policies.

The consortium was created to ensure that all these players were represented from across the whole of Europe. The inclusion of partners from China and Canada was intended to give us real added value, not only by enabling the regional networks to have an international influence but also because the Chinese and Canadian partners (CSMC and CEGEP) were key players within the field of VET in their regions and could bring added expertise into the project.

The European partners in the RAINOVA Consortium are frontline agents in vocational training: vocational centres in Wales (ColegauCymru), Denmark (EUC Syd) and Turkey (Mahzar Zorlu); a university research centre in Romania (University of Pitesti); some companies that work in innovation and creativity in Lower Silesia, Poland (DPIN), Wales (Adastra Cymru), Sweden (REK and STPKC) and Tuscany (CSCS); a Basque local development agency (Tolosaldea Garatzen-Lehiberri); and finally two Basque companies, Tknika and Ikaslan, which are closely connected with the development of training plans for VET and learning communities for teachers.

**2. Goals of the RAINOVA project**

According to the ***Description of the Project***, the document in which we fully described the characteristics of the RAINOVA project, the main goal of RAINOVA is to encourage the **development** of **regional innovation systems** for the regions represented by the project partners. This very broad objective could be approached from different perspectives. We needed to define, as accurately as we could, our own understanding of the project. In the *Description* document we therefore stated that this foremost target would be achieved by accomplishing several objectives:

1. To **research the current situation** of innovation systems and strategies in each region.

1. To **design an Innovation Management Model** (IMM), which would create the flexibility to adapt to each organisational and/or regional context and allow the challenge of innovation to be addressed in a more coordinated and intelligent way. The IMM would include:
2. Creating “virtual” **Innovation Observatories** in each region, which will gather relevant information online about the areas of interest.
3. Developing the Innovation Management Model methodology, using the results of the research in each region.
4. To draw up **action plans** for the implementation of the IMM in the Regional Innovation Networks, identifying the interventions needed to create or improve the regional innovation systems.
5. To **pilot the IMM** in four regions: Tuscany, Wales, Syddanmark and the Basque Country (which are all members of EARLALL), focusing on innovative sectors with emerging technologies.
6. To **create Regional Innovation Networks** ineach partner country.
7. To provide guidance and inspiration to facilitate the creation of an **International Innovation Network** (the RAINOVA Network).

**3. WP07 Research: planning**

Details of the type of research we needed to undertake to begin to accomplish the objectives of the RAINOVA project were outlined in the previous section and also the initial project document, which described, in section **G.1: Work Package 7**, some major tasks to be tackled, the allocation of responsibilities and the general characteristics of the document in which the results of the research undertaken were to be published (**Deliverable 14: Research Report**).

The next step, at the stage when we started to develop the research tasks, was to describe, in a document entitled ***Research Plan and Templates for Collecting Information***, the details of the activities to be undertaken. We summarise below the most important aspects of the planning set out in that document:

**Aim:** The aim of the work package was to explain the different innovation systems that exist in each region represented in the project.

**Tasks**: The tasks of the work package were:

* To describe agents within the regions that act in the field of innovation (educational organisations / government agencies and departments / entities specialised in research and innovation / business organisations, regional and local agencies, etc.).
* To describe the role that each institution plays in the general innovation process.
* To explain existing relationships between the different identified agents.
* To identify the different standards, programmes and other resources related to innovation management existing in each region.
* To analyse effective innovation systems and identify the elements of good practice that make them effective, e.g., how they collaborate and engage with industry (large enterprises and SMEs), how they promote the creation of new jobs/enterprises/services, how they contribute to identifying business opportunities, how they inform and promote innovation within the companies, etc.

**Methodology**: The methodology of the work package was based on using different quantitative and qualitative techniques in order to collect data with the aim of creating a multifaceted situational analysis in each region. The mixed evaluation methods were designed to produce a richer and more comprehensive understanding of the regional situation in all the partners’ countries and also of the project’s accomplishments. The methods included:

* Prior studies, reports and databases that might partly or completely cover the regional innovation system.
* Individual and group meetings with different representatives from the identified agents.
* Interviews with experts / regional analysts.
* Observations.
* Case studies.

The situation analysis carried out in each region had to identify the strengths and weaknesses of each innovation system or identify where no such systems existed, enabling a situation report to be drawn up that can be used to guide decisions by regional governments and different agents in the system.

This study has since been jointly developed by all the regions participating in the project, providing an insight into other regions and the best practices developed in them.

The study allowed us to carry out an inter-regional analysis of the most significant shortfalls in the regional innovation systems, facilitating the creation of common solutions to common problems.

**Activities:** The research consisted of a number of activities or tasks. Each activity was strongly connected to previous activities. The end result depended both on the quality of the analytical model and each partner’s contribution to collecting and analysing data. We anticipated certain difficulties in implementing what we learned from the research plan in all the partner countries. A key element for success was to create a clear overall analytical idea, and based on that idea have a number of factors that would act as common denominators for all the partner countries.

The **key questions** were:

* What are the characteristics of an effective innovation system?
* What are the strengths and weaknesses of each innovation system?

**Templates: Testing** the **data collection** on a group of people or organisations:

* The template for individual interviews with experts.
* The template for meetings with groups or organizations.
* The template for case studies.

Based on these templates, a full-scale data collection exercise was launched. The **sources of information** and data that we used were:

* Prior studies that might cover the regional innovation system.
* Individual interviews with different representatives from the identified agents and other experts.
* Group interviews with organisations and SMEs in the region.
* Case studies.

**Analysing data**: Each partner analysed their data, looking for similarities or differences between the local innovation systems. We assumed there would be percentage differences in the numbers of innovative firms due to several possible causes, chiefly different industrial structures, but also differing interpretations of the concept of innovation.

Analyses took into account factors such as size (small, medium or large enterprises), activity sector (health, industry, education, services, construction, etc.) and ownership (owned nationally, foreign-owned).

**4. Chapters and appendixes of this report: the content of each chapter**

Based on each partner’s regional summary, we have written this overall **RAINOVA Research Report** about all the project research work. The report contains the following main sections:

**Chapter 1: Introduction and background** (*this chapter*): Here we wanted to provide an introduction to the document, outlining its purpose and the methods we employed for data collection and analysis, bearing in mind all the steps we took from first submitting our proposal for the RAINOVA project to the Commission right up to the elaboration of this final report.

We now introduce the other chapters in the report, where we have divided the results of our research and reflections on it, outlining the contents of each chapter:

**Chapter 2: Description of the Research Report and the data collection in each region**: This describes the methodologies for the research report and the data collection in each region. We introduce some of the thinking that guided us in our surveys for RAINOVA. We explain the decisions taken about the classification of the survey into different blocks.

A chart with figures shows the results of the research in each partner region. Then we summarise the type of templates we used for our interviews and the questions that interviewees were asked to answer.

We also offer some reflections about our research in each region, based on our understanding of the type of data we collected and the value they brought to the research.

Finally, we discuss the case studies we review in this report. We attempt to draw conclusions from the research done, linking them to our proposals for Regional Innovation Observatories and Regional Innovation Networks.

**Chapter 3: Innovation management models: an overview**: This chapter provides an overview of different innovation management models and some recommendations, based on prior studies, reports and strategies from the partner countries. At the beginning of the chapter there is a summary of the research that led to the evolution of the IMM concept carried out by a RAINOVA partner, who offers us a proposal for designing our own RAINOVA IMM.

Other RAINOVA partners have researched various models for our proposed regional observatories. In this chapter we summarise what they found and what they consequently propose. We supplement this section with a sample of good practice in this area.

There is then an overview of existing regional networks. Looking ahead to chapter 6, where we will reflect on the results of our research before presenting our recommendations for designing the RAINOVA IMM, we conclude this chapter with some reflections and conclusions on what we have found around these three topics: innovation management models, observatories and networks.

**Chapter 4: Summary of the research work in the project**: This is effectively a study of each region, with a subsection for each one (based on the regional summaries, individual interviews with stakeholders, and group interviews with SMEs). The summary of each innovation system has a number of segments:

* Standards, programmes and other resources existing in each region related to innovation management.
* Agents or organisations within the region that act in the field of innovation.
* The role that each organisation plays in the general innovation process.
* The existing relationships between the different identified organisations.
* Analysis of the strengths and weaknesses of each innovation system.

**Chapter 5: Overall summary of the research work in the project**: This offers an overview of the innovation systems in the project countries as a whole. It analyses the similarities and differences between innovation systems. We show all the different regional innovation systems in an overall chart in which we display the level of innovation of each innovation system. *(pending)*

**Chapter 6: Characteristics of an effective innovation management model**: This chapter offers some reflections about the characteristics of an effective innovation management model, and a few recommendations providing the leaders of WP08 with a number of options for designing the RAINOVA IMM. *(pending)*

**Chapter 7: Bibliography / Other sources**: This gathers together the sources we used in elaborating this report. We also include a glossary of concepts that have been relevant for the report.

We have attached to this report some appendixes providing documentation of interest for those who wish to fully understand the objectives and results of the research done by the RAINOVA partners:

* **Appendix 1**:Templates for individual interviews, group interviews and regional research.
* **Appendix 2**:Summary of answers collected through the individual interview process.
* **Appendix 3**:Summary of answers collected through the group interview process.
* **Appendix 4**:Summary of the research into regional innovation systems**.**
* **Appendix 5**:Case studies used for the RAINOVA Research Report.
* **Appendix 6**:Studies and analyses by the RAINOVA partners.

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**Chapter 2: Description of the Research Report and the data collection in each region**

1. **Introduction**
2. **Table of research results: number of interviews**
3. **Comments about the research:**
   1. **Individual interviews**
   2. **Group interviews**
   3. **Reports on each partner region**
   4. **Case studies: previous project studies and proposals**
   5. **Observations**
4. **Comments about research done and linked to the Observatory and Networks**

**Chapter 2: Description of the Research Report and the data collection in each region**

**1. Introduction**

As we noted in the previous chapter, the partners considered it important, in undertaking research activity concerning the situation of innovation management systems in the RAINOVA project regions, to look at both the quantitative and qualitative aspects.

Our priority was to gather as much information as possible, within the limits and time constraints of a project of this nature. But we also wanted to ensure that the qualitative aspect remained paramount throughout the research.

In the information we collected and analysed, we aimed to identify a percentage of relevant and topical information, because it either came from people who were knowledgeable about the subject or from previous studies and alternative analyses. We also worked to create a good environment for gathering research information from interviews by helping our interviewees to relax and feel sufficiently comfortable to provide us with honest, verifiable and intelligent responses.

In each case our ultimate goal was to have at our disposal a wide range of rich information at regional level, allowing us the opportunity to develop a comprehensive understanding of the real situation regarding innovation management in the companies from each region.

Based on our initial research planning, we decided to split the data collection into four blocks:

1. The first and largest block deals with the **individual interviews** with people who carry out their work in small and medium-size technological companies, or in educational organisations, business associations, local development agencies, social enterprises and public bodies or intermediate agencies which do most of their work around innovation.
2. The second group refers to the **group interviews**, in which we tried to gather a group of people from different areas of the labour market with a good understanding of the innovation concept and its management characteristics. These were people who due to their training and experience were able to provide qualified opinions of a sufficient standard for us to use as a guide when drawing conclusions about the real situation of innovation in their organisations. They provided important evidence to guide our partners who are responsible for developing an Innovation Management Model for the European regions.
3. The third block consists of **regional reports** on innovation management in the RAINOVA regions. Even though this was not fieldwork done directly by members of the project, we considered it very interesting to analyse existing reports of this type because, in most cases, they were written ​​by reputable agencies and organisations such as the OECD. Their reports used proven techniques and methodologies, some of them were commissioned by regional governments, and they were a valuable source of credible and reliable information. In fact we encountered problems with the wide range of data we collected from external sources when we tried to avoid relating it to our own data and studies. From time to time, though, it was necessary to remind ourselves about RAINOVA’s core objectives and the commitments we had made to produce specific results.
4. The fourth block has been devoted to existing **reports or analyses**, some of them from previous European projects, especially those which, in their subject or approach, could possibly provide us with suggestions, proposals and models. Even if they did not exactly match the approach or objectives of the RAINOVA project, they gave us access to knowledge and content for reflection and discussion, greatly increasing the information available if we had relied only on interviews and regional reports. Finally, we chose a small number of reports as essential sources of information for this report (see Chapter 3). However, it should also be noted that we had the opportunity to review other reports and documents before we wrote this report.

**2. Table of research results: number of interviews**

After completing these scheduled tasks, we arrived at the following results:

* Individual interviews: 86
* Group interviews: 2
* Regional reports: 9
* Previous reports or studies about regional innovation systems: 10

The following table sets out the relationship between the type of interview or report and the organisation which developed it. We do not include here previous reports on regional innovation systems, which all our partners had the possibility to analyse from the start of the project when they were uploaded to the RAINOVA extranet, where they have been accessible to everyone involved in the project.

**ANALYSIS OF DOCUMENTS FOR THE RAINOVA RESEARCH REPORT**

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| **PARTNER NAME** | **INDIVIDUAL INTERVIEWS** | **GROUP INTERVIEWS** | **REGIONAL RESEARCH REPORT** |
| **P1 Ikaslan**  **P6 Tknika**  **P10 TG** | 32 interviews | Yes | Yes |
| **P2 EUC SYD** | 19 interviews |  | Yes |
| **P3 STPKC**  **P11 REK** | 14 interviews | Yes (2 interviews) | Yes |
| **P4 Adastra**  **P9 ColegauCymru** | 12 interviews |  | Yes |
| **P5 Mazhar Zorlu TTC** | 12 interviews |  | Yes (+ explanation) |
| **P7 DPIN** | 17 interviews | Yes | Yes |
| **P8 CSCS** | Short summary |  | Yes (+ overview) |
| **P12 UNI Pitesti** |  |  | Yes |
| **P13 PGC** |  |  |  |
| **P14 EfVET** |  |  |  |
| **P15 CSMC** |  |  | Yes |
| **P16 CEGEP** | 4 interviews |  | Yes |

Where possible, RAINOVA members from the same region worked together as a team to conduct surveys and develop regional reports.

So, in the Basque Country, Ikaslan, Tolosaldea Garatzen and Tknika jointly planned the tasks related to this work package and distributed the individual interviewing tasks between them. They also collaborated in organising the interviews with groups and developing the Basque report on innovation management systems.

In Sweden, the two organisations STPKC and REK also coordinated their work. In Wales, ColegauCymru and Adastra acted in the same way.

Partner 13, PGC, the external evaluator of the project, did not participate in this work package. Partners 14, EfVET, and 15, CSM, from Tianjin in China, also did not participate in collecting information. However, CSM did submit a report about vocational and educational training in the Tianjin area.

Partner 15, CEGEP, also contributed some interviews and produced a report about innovation systems in the Quebec region.

**3. Comments about the research**

The research undertaken for RAINOVA was designed at the beginning of the project in a document called ***Description of the Project***, as previously explained in Chapter 1. In the description of Work Package 7, we stated that the aim of the research was to explain the different innovation systems existing in each region represented in the project. We also laid out the initial tasks.

Later, when the time was approaching to begin our research, the partner responsible for the task proposed the **research plan** and outlined several important aspects: the research process and its characteristics, the activities required and the work schedule.

There were also proposals for the templates to be used for collecting information. The templates were revised by partners and finally approved. They can be found in **Appendix 1** (English version). In most cases these templates were later translated into the different national languages. In the same way, information provided by interviewees was also later translated into English so that it could be analysed and compared with the information from other regions.

**3.1 Individual interviews:**

Individual interviews – using the **template for individual interviews with experts** – were carried out in two ways: either in person, with a member from a RAINOVA organisation interviewing the person directly, or via email. While face-to-face interviews certainly offered us more reliable data, transcribing the answers proved to be difficult for some RAINOVA members. We noticed a lower quality in the results obtained from the face-to-face interviews. Perhaps this was because in surveys via email the respondents had more time to reflect on their responses to our questions; perhaps also because email-based interviews provided direct information from the respondents rather than after-the-event interpretations of face-to-face conversations.

The templates for individual interviews with experts consisted of 9 questions:

1. Can you describe the type of your organisation at regional (national) level?
2. Can you define the role played by your organisation in regional innovation?
3. Are you running any programmes related to innovation management in your organisation?
4. What are the most important factors in implementing innovation in your organisation?
5. Do you collaborate with other partners in the field?
6. What are the 5 main barriers to innovation in your organisation?
7. What percentage of your activity is dedicated to R&D?
8. How can we create better possibilities for an effective innovation system in our region?
9. Any other remarks or suggestions?

Interviewees were asked to define their role in their organisation. Question no. 1 was also intended to position their organisation in at least one of the sectors we proposed.

From the responses gathered in this survey process, we were able to evaluate the contributions collected from each question.

The most significant questions were nos. 4, 6 and 8, which referred to factors that drive innovation, the barriers that hinder it and some suggestions for further improvements. In these three sections we collected a great deal of qualitative information, offering us considerable scope for reflection and discussion.

Question no. 7 did not provide us with any significant value. Either respondents had no information to offer or they did not understand the wording of the question.

The responses to question no. 9 were not very helpful because few suggestions were collected. In some cases the answers we received simply reiterated information respondents had already offered.

Question no. 3, about ongoing programmes in the company, also proved to be of limited value. The information gathered about programmes, projects and methodologies can only be described as mixed.

For question no. 5, concerning cooperation with other organisations, the answers we collected were more significant and varied, depending on the region in which the interviews were conducted. Although the organisations we targeted varied slightly between regions – universities, other educational institutions, companies, innovation partnerships, etc. – we had to consider the variations between them in the percentage of responses denying any form of external cooperation.

In **Appendix 2** the results of the survey process in each region can be found, with a summary of the most significant contributions from the interviews.

**Profile of people interviewed**:

We can summarise the professional profiles of the people interviewed for this research using the following six terms:

1. Director 8
2. Manager 11
3. Area Manager/Director 15
4. Project Manager 6
5. Technician 3
6. Senior Researcher 3

**Profile of companies and organisations**:

According to the responses collected by means of the individual interviews, organisations whose members responded to our questions can be classified into the following five groups:

1. Company 44
2. Educational Organisation 10
3. Government 12
4. Association 7
5. Other (consultancy, research centre, etc.) 16

**3.2 Group interviews**

We were only able to collect four group interviews, one from the Basque Country, two from Sweden and one from Lower Silesia, Poland.

The **template for meetings with groups or organisations** was divided into two different sections.

In the first section the questions were:

* How long have you been employed with this company?
* What department of the company do you work in?
* What is your job classification?
* Do you agree with the following statements?
* The leadership encourages the process of innovation.
* The unit has a clear strategy and specific goals.
* Teamwork is conducted in a good spirit and atmosphere.
* There is real and efficient cooperation among all sectors of activity.
* The company has qualified staff in all its sectors.
* There is close contact between the research sector and other departments.
* There is clear evaluation of the employees’ activities.
* There are studies on market evolution and demands.
* There is close connection with customers.
* There is an innovation culture within the company.

These questions were meant to be answered individually before moving on to the second section of the interview.

This second section was designed to be answered as a group. A certain question was asked and, after a short time for reflection, the participating interviewees explained their ideas. These were the interviewer’s questions:

1. Please, can each member of the group describe at least one (important?) innovative practice that took place in your working environment? (Alternatively: please describe one successful and one failed case of innovation.)
2. Please describe the process of this innovative practice.
   1. What made this (these) particular practice(s) innovative, and why?
   2. What were the reasons for the innovation that was undertaken?
   3. Was this case successful? Why?
   4. What were the main obstacles and supporting circumstances/facilitators regarding this innovation?
3. Thinking of the innovation process/case you described, according to your opinion, what kind of environment is necessary for innovation?
4. Thinking of the innovation process/case you described, according to your opinion, what kind of atmosphere is necessary for innovation?
5. What role did learning play in the process of the described innovation? (i.e., are there any connections between learning in this working environment and its innovation processes, and what are these connections like?)
6. During the innovation process, what did you learn about the factors and conditions promoting creativity and innovation?

**Notes**: Other main points that come out from the interview (additional information, emotional aspects, etc.)

In **Appendix 3** of this report the summaries of these group interviews for both regions are available. We summarise the most interesting contributions of the participants in the meetings our partners organised to conduct these interviews.

*(Pending: Add a review)*

**3.3 Reports on each partner region**

To collect information about the innovation management systems in the regions, each partner provided reports previously published by prestigious organisations. We wanted to standardise the analysis of the information collected, so we designed a template – the **template for regional summary** – which highlighted the most relevant aspects of each region in relation to the innovation systems being used there.

Through this template we were able to gather the names of the most relevant actors in every regional innovation system, highlighting the profile of each actor and the role they play in their region. We also paid attention to the objectives of each agent, the services it provided and its target audience.

One aspect that we wanted to highlight in these templates was the degree of interaction between different regional stakeholders, focusing on the relationships between them and the type and level of any shared goals. This gave us a clear view of the level of activity, climate and innovative culture of each region.

We also collected a brief description of the regulations, programmes and support processes for innovation that exist in each region.

The result was a template that enabled us to provide a summary of the most crucial strengths and weaknesses of each region and conclude with a final reflection, which was intended to offer some suggestions to those responsible for designing the Innovation Management Model in Work Package 8.

A summary of the templates in each region is included in **Appendix 4** of this report.

**3.4 Case studies: previous project studies and proposals**

The first step was to review existing documentation about regional systems of innovation management. We found a host of information to develop our knowledge of the subject and to position our RAINOVA proposal within parameters that would give it the opportunity to add value to existing contributions from previous research and projects.

We found various existing approaches and proposals. We wanted, however, to develop our own model, and we realised we would need to classify the documents we reviewed into groups.

Some of the studies we came across were theoretical and very reflective. Others were more practical and oriented towards proposals for specific aspects of industrial and economic activity.

Others again focused on aspects that were more relevant to the innovation management processes at regional level. They discussed intermediary agents, the role of governments and educational institutions and their collaboration with companies. They highlighted factors that drive innovation in the regions, or contributed new proposals concerning indicators, etc.

For our own purposes we were most interested in the reports from this last group. We analysed them in greater depth, because they were much closer to the kind of proposal we were looking for. In fact they provided such an important contribution that we have dedicated a section to them in Chapter 3.

However, since we had to choose between several possibilities, we eventually picked out five reports which most interested us.

**3.5 Observations**

One other source of relevant and important qualitative information stood out, even though we did not acquire it from previous reports or from our own research. This source was our own direct observation of good practice and good examples.

In our professional activities, RAINOVA project members have had many opportunities to visit various companies, schools and organisations throughout Europe. In various cities and regions we have encountered initiatives and work dynamics that could provide excellent reference points for RAINOVA. We made time to remember and reflect upon good practices we had observed, for example in cooperation between schools and enterprises, effective entrepreneurship, business participation in training, innovative culture environments, and so on – in other words, topics of great relevance to RAINOVA, which we needed to consider before we started to design a new model of innovation management.

**4. Comments about research done and linked to the Observatory and Networks**

*(Pending)*

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**Chapter 3: Innovation management models: an overview**

1. **Introduction**
2. **Innovation Management: a summary (based on research by Ana Sarateanu)**
3. **An overview of different innovation management models (based on prior studies, reports and strategies from the partner countries)**
4. **An overview of observatories: presentation of a potential strategy for the project’s networking ambition (based on research by Kennet Lindquist)**
5. **Some existing observatories: good practices and examples**
6. **The RAINOVA Regional Innovation Observatory (based on proposals by David Townsend Jones)**
7. **An overview of regional innovation networks** **(based on a report by Jaroslaw Chrobot)**
8. **Conclusion and findings**

**Chapter 3: Innovation management models: an overview**

**1. Introduction**

The RAINOVA project gave us the opportunity, while trying to develop our own model, to review documents, reports and research from previous European projects, which had, as in our case, regional innovation systems as their object of study. For this chapter we have chosen some of those most directly related to our objectives in RAINOVA. They have a broader interest for us either because of what we learn through studying them or because of the conclusions they reached and the recommendations they made for future actions. Some of the recommendations fit well with our initial proposals when we decided to launch the RAINOVA project.

The learning we gained from reading these previous external reports has been significant because it helped us to understand better many essential concepts we needed to consider when designing an Innovation Management Model for the European regions. What we are talking about are issues that have a broad meaning and whose interpretation can differ widely from one expert to another. What is meant by “region”? What do we mean by “innovation”? What does “system” mean? To what do we refer when we talk about “management model”? And so on.

From this initial perspective, the conclusion might be that these are mostly concepts that have already been extensively studied, there is no need for us to reinvent them, and we just need to make an intuitive decision before choosing various meanings that are most relevant to our case and most closely match the aims set out by RAINOVA.

And yet it has been very interesting to observe, as we noted earlier in this report, that although many projects and studies before RAINOVA had regional innovation systems as their subject of interest, none matched exactly the RAINOVA objectives and proposals.

From this wider perspective, it is fascinating to note that previous studies analysed, *inter alia*, such aspects as the drivers for improving regional innovation systems, the role of the agents involved in the system, the table of indicators by which to analyse these systems, etc. But none specifically stopped to analyse the key aspects of coordination and collaboration between SMEs and education centres. And that is exactly what RAINOVA seeks to do – to the point of wanting to develop a specific model.

Warming to our theme, we note how some of these previous studies identified this as an area of work that needed further development. From this perspective, we can now say that RAINOVA exists to complete a gap in the analysis that has never been covered.

We were convinced from the beginning that RAINOVA’s results must be oriented towards SMEs and that they must be the main beneficiaries of our model and proposals. We are also convinced that VET colleges and learning communities have a critical role to perform in this context. They will play the leading role in disseminating our model and training and helping SMEs to implement the recommendations arising from it.

We will not present our model simply as a set of abstract concepts attached to vague recommendations aimed at unspecified recipients. On the contrary, it will have a practical nature, offering techniques, examples and tools directly applicable to business and clearly defining the role of VET and learning communities. All this will make RAINOVA a more advanced model than its predecessors and will advance the art of managing innovation in the European regions.

In this chapter, as well as our analysis of documents from previous projects, we also include the results of a study conducted by a researcher who is involved as a member in the RAINOVA project. The analysis is important because it positions RAINOVA clearly in the narrative of changing patterns of innovation management and helps us to better understand analyses and proposals from subsequent studies. In this chapter there is a summary of the full study, and it has also been included as an appendix to this report.

Beyond proposing a new **Innovation Management Model**, we are also proposing a network of organisations to promote further improvement of the model, and a **Regional** **Innovation Observatory** as the main tool of the network. We include in this chapter a set of analyses and proposals from RAINOVA members who have reflected on this element of the work and have reached various important conclusions, which we think deserve to be aired.

In this chapter we have also collected some thoughts about observatories we have had an opportunity to study and analyse, from which we have drawn some lessons of interest that should help us develop our proposed Observatory.

Finally, we devote some space to an analysis of significant features concerning the management of **regional innovation networks** (a summary of a study is also included as an appendix to this report). We aim to combine our collective experiences with everything we have learned to prepare a compelling case for launching an internationally collaborative network, which aims to drive improvements to the regional innovation systems. For instance: what kind of services and proposals do we want to promote through this collaborative network; or what is the best strategy (as in, for example, the Innovation Observatory) to make the network sustainable and long-lasting?

**2. Innovation Management: a summary (based on Ana Sarateanu’s research)**

**Can innovation be positively influenced?**

**2.1 External factors**

* **Competition**: a high level of competition determines a high level of innovation (both individuals and organisations are forced to innovate, as innovation becomes, to a certain extent, synonymous with “survival”).
* **Technology developments** offer SMEs the possibility to benefit from being able to use new technologies to innovate.
* **Diffusion of other innovations** determines a higher level of innovative outcomes: when SMEs are up to date about the innovations available on the market, they have an opportunity to join the “new wave” and develop their company by breaking new ground.
* **Political and legislative** factors can also influence the innovative capacities of firms: new laws and requirements can compel SMEs to innovate.
* **Financial triggers** can increase or decrease the level of innovation: new conditions for bank financing can exercise a deep impact on the decision of SMEs about whether to innovate.
* So-called **“positive deviations”** can also have a major impact: information about organisations that successfully innovate can offer new insights for similar organisations; a comparative analysis of one company’s “positive deviation” can offer clues for another’s successful innovation.
* **Innovations in other sectors or countries** can also impact upon learning, replicating, adapting and applying successful approaches from other sectors, or other regions and/or countries. It is clear that all this can act as a trigger for innovation inside a company.

This list, of course, is not exhaustive. A number of **other “incentives”** include:

1. Societal trends (e.g., changes of expectation)
2. Support from PA (e.g., incentives for innovation)
3. Environmental changes (for example, some form of crisis)

**2.2 Internal factors**

**Future-oriented** **strategic thinking** is among the more commonly indicated factors. Considering how different aspects impact on each other and interrelate can help organisations to innovate.

Another factor can be a **social audit**, which can help to identify potential or expected/required social impact.

* Understandably, keeping **technology** **up to date** and using technological innovations within the company, while keeping an eye open for its possible use in different sectors, can impact internally on innovation.
* The use of **data** – local data analysis (from information received from client feedback, the company’s staff, or qualitative and quantitative data about service effectiveness) and market data analysis (from knowledge of competitors’ products and services, marketing strategy, etc.) – helps SMEs towards a better understanding of their position and therefore towards innovation as part of their general strategy.
* **User-based research** (data to identify clients’ aspirations or needs, or to respond better to market demand) is another factor that helps organisations to adapt and respond to environmental changes they may face.

**2.3 The use of innovation methodologies**

A number of methodologies can help to generate and develop new ideas. These methodologies define various approaches, which can generate different levels of innovation:

* The **open innovation** methodology recommends partnering with external companies. Added to this there has to be internal support from management, which commits to supporting ideas beyond the scope of current strategy in order to generate breakthrough innovations.
* **Design thinking** is the term used for design methods and processes for investigating problems, using research outcomes that enable information to be analysed, and generating and prototyping new ideas. This distinctive approach has been described as “a way of thinking” for designers to empathise and focus on real experience.
* Another methodology is known as the **De Bono Six Thinking Hats**: this provides a structure for examining problems by identifying six different states for thinking, which can be used to generate ideas and build upon them.
* The **systems thinking** methodology considers problems within a wider (eco) system to enable an understanding of how elements interrelate and the impact of changes upon other parts of the system. Within an organisation the elements to be taken into account would be people, structures and processes.
* Last, but not least, the **futures thinking** methodology proposes a set of disparate tools to help individuals or groups of people explore future scenarios. Tools such as Causal Layered Analysis can be used to help uncover world views, which sometimes lead to radical innovations.

All these methodologies share a process of using **divergent and convergent thinking**, which commences either at the trigger or the idea stage and continues through to the implementation of the innovation. Most of these methodologies also have stages in the process, which allow some ideas to progress while others can be stopped.

**2.4 Various proposals for a best-practice model for managing innovation**

Over the years, various scholars have analysed innovation and the processes which, inside a company, enable an outcome to develop from an initial idea.

However, before proceeding, it is necessary to explain the inherent difficulty in having any such initial idea:

1. SMEs differ widely. They have different **sizes**, different forms of **ownership**, operate in various **sectors** and **markets**, and innovate in many different ways. They might also not have the scope to innovate, or they might not be interested in doing so, etc.
2. For each of these variables (in mentality, culture, form of ownership, form of management, type of business, sector, competition, type of clients, market knowledge, knowledge about competitors, etc.) one model might be more appropriate than another.
3. Another difficulty is that some models lack any application in real-life situations and therefore only provide a theoretical framework, which cannot successfully be implemented.

Moreover, innovation differs from company to company due to the varied scope of their activities and business environments. These variations, together with the diverse nature of innovation, are an obstacle to creating a simple best-practice model for all companies.

Most models are based on decision-making systems for groups or individuals, organisational planning, or change and development rather than the requirements of innovation systems. Often these models have a unitary process and are not sufficiently sophisticated to address the complex nature of innovation.

Some experts believe that the innovation-to-outcome process is inherently vague and chaotic. Any progression through an organisation is more likely to involve overlapping and mingling events, while innovation sub-processes can often happen concurrently.

We may therefore define a model as **a simplified representation of reality**. But the lack of any real consensus about the main characteristics of the innovation process has led to a variety of innovation management models. It is difficult to provide a complete overview of all of them, although there are some **classical models** we should consider.

When discussing different models, it is important to examine some of their **characteristics** so that we can better understand both their differences and similarities. It is also interesting to note when a model has an empirical or theoretical foundation, or indeed both.

Another significant factor can be the **sector** (private and/or public) and (significantly from the perspective of RAINOVA) the **size** of the actors under discussion (SMEs or multinationals, etc.).

It is also important to specify the **type** and **level** of the innovation.

Models have a certain number of features that have to be taken carefully into consideration when they are proposed. Some features are relevant exclusively to the **private** or **public** sector, while others encompass both **private and public organisations**.

In our case, we are especially interested in:

* Private companies.
* A wide (general) model that can be adapted to suit the variety of SMEs.
* A certain number of routines that can allow such adaptation, based on a contextual analysis.

From the guidelines outlined above, we can reduce the list to a few models, which use some kind of empirical evidence as their basis:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Author and year** | **Mainly based on** | **Innovation type** | **Innovation level** | **Organisation type** | **Organisation size** | **Environment** |
| **Rogers (1962)** |  |  |  |  |  |  |
| **Cooper and Kleinschmidt (1986)** | Recent theory and practice | Industrial manufacturing product innovation | Both, but leaning towards radical | Private | Fairly large with its own R&D department and a distinctive senior management | Considering it was just after the 1981–82 recession, this was probably a period of dynamic growth |
| **Van der Ven *et al.* (1999)** | Large empirical study | Product, processes, services | Not explicitly stated, but tendency to be radical | Private | Large | Turbulent economic environment |
| **Verloop (2004)** | Experience | Product, process | Radical | Private | Large | Both turbulent and stable considered |
| **Tidd *et al.* (2005)** | Empirical and theoretical research | Product, process, services | Both steady-state as well as discontinuous innovation | Private and public | Large and small | Both turbulent and stable considered |
| **Andrew and Sirkin (2006)** | Experience and empirical research | Product, process, services | Not very explicit, but leaning more towards radical | Private | Large |  |
| **Jacobs and Snijders (2008)** | Theoretical and empirical research | Product, services | Emphasises that most innovations are incremental | Private and public | Both large and small organisations | Mainly focus on stable time |

*Table 1 – Combining Everleens (2010). Innovation management; a literature review of innovation process models and their implications, p.6, with the constraints of the present research.*

It is notable that the above table does not contain information about Rogers, the first model proposed, which has a framework combining diffusion studies and innovation.

Over the years the author of the model, Everett Rogers, has focused mainly on communication of innovation: see, for instance, his “Diffusion of Innovations” theory. He is considered to be the leading specialist on diffusion studies (according to Nutley *et al.*, 2002). Rogers describes diffusion as “*the process by which an innovation is communicated through certain channels over time among the members of a social system*”. His “innovation-decision process”is a theoretical model containing five broad steps for an individual or a decision-making entity to consider and implement innovation. These steps are: 1) **Knowledge**; 2) **Persuasion**; 3) **Decision**; 4) **Implementation**; and 5) **Confirmation**.

In 2003 Rogers also proposed the “Five Stages in the Decision Innovation Process” model. However, this has some significant limitations because of the premise of the model: the specific situation of looking for innovations that fit with the company’s requirements. This premise is unlikely to fit well with situations involving unplanned, informal or radical innovation.

The Five Stages model does, though, include a step to reconfigure an innovation in order to fit a company’s strategic objectives. This is extremely relevant for our research, although it only provides a partial model for the reality we are interested in examining.

When considering the phases and stages described by the various authors, the table becomes the following:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Rogers (1962, 2003)** | **Cooper (1986)** | **Rothwell (1994) 3G** | **Van der Ven *et al.* (1999)** | **Nooteboom (2001)** | **Verloop (2004)** | **Tidd and Bessant (2005)** | **Andrew and Sirkin (2006)** | **Jacobs and Sniders (2008)** |
| Knowledge | Scoping | Idea generation | Initiation period | New combinations | Idea generation and crystallisation | Search | Idea generation | Variation |
| Persuasion |  |  |  |  |  |  |  |  |
| Decision | Build the business case | Research, design and development |  | Consolidation |  | Select | Commercialisation | (Internal) selection |
|  |  |  |  |  |  | Acquire |  |  |
|  | Development | Prototype production | Developmental period |  | Development and demonstration | Execute | Realisation | Realisation |
|  | Testing and validation | Manufacturing |  |  |  |  |  |  |
|  |  | Marketing and sales |  |  |  |  |  |  |
| Implementation | Launch | Marketing | Implementation / termination period |  | Investing and preparing for launch | Launch |  | (External) selection survival |
| Confirmation |  |  |  | Generalisation |  |  |  |  |
|  |  |  |  | Differentiation |  | Sustain |  | Multiplication |
|  |  |  |  | Reciprocation |  |  |  |  |
|  |  |  |  |  |  | Learning and re-innovation |  | Learning |

*Table 2 – From Everleens (2010). Innovation management; a literature review of innovation process models and their implications, p.7,* *taking away the models conceived in/for the public dimension.*

Some of the innovation management models outlined above are more complex than they appear here. For instance, Dr Robert G. Cooper indicates more stages in his “Stage-Gate” methodology, which demonstrates the most distinctive and orderly phases. According to this model, the next phase can only start if the project has complied with all the requirements of the preceding phase. It is claimed the methodology not only helps to determine if a project should proceed or not, but also to keep track of possible new occurrences during the process.

We can conclude that most of the authors indicate some **general steps** common to all innovation management models:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Idea generation** | **Decisional step** | **Development stage** | **Implementation / launch / marketing** | **Post-launch phase: multiplication** | **Post-launch phase: Learning re-innovation** |

*Table 3 – innovation management model – general steps indicated by literature*

Another aspect to be underlined is that, besides the **phases** / **stages** / **components** (in other words, the main activities) of the innovation process, there are also a series of **contextual factors:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Rothwell (1994) (3G)** | **Rothwell (1994) (5G)** | **Van der Ven *et al.* (1999)** | **Tidd and Bessant (2005)** | **Jacobs and Snijders (2008)** |
| Top management commitment and visible support for innovation. | Time-based strategy (faster, more efficient product development) | Institutional arrangements to legitimise, regulate and standardise a new technology | The strategic context for the innovation | Strategic profile |
| Long-term corporate strategy with associated technology strategy | Development focus on quality and other non-price factors | The innovativeness of the organisation | Implementing routines |
| Long-term commitment to major projects (patient money) | Emphasis on corporate flexibility and responsiveness | Public-resource endowments of basic scientific knowledge | The links of the organisation with its environment | Feedback about development of the innovation and learning culture |
| Corporate responsibility and responsiveness to change | Customer focus at the forefront of strategy | Development of markets, consumer education and demand |  |  |
| Top management acceptance of risk | Strategic integration with primary suppliers | Proprietary research and development, manufacturing, production and distribution functions by private entrepreneurial firms to commercialise innovation for profit |  |  |
| Innovation-accepting, entrepreneurship- accommodating culture | Strategies for horizontal technological collaboration |  |  |
|  | Electronic data processing strategies |  |  |  |
|  | Policy of total quality control |  |  |  |

*Table 4 – From Everleens (2010). Innovation management; a literature review of innovation process models and their implications, p.9, taking away the models conceived in/for the* ***public dimension****.*

**Legend of table 4**

|  |
| --- |
| **Strategy:** yellow |
| **Culture:** dark green |
| **Leadership:**  red |
| **Organisational structure:** dark blue |
| **Resources / skills:** purple |
| **(links with) outside the organisation:** blue |
| **Elements of leadership and strategy:** red |
| **Elements of culture and organisational structure:** green |

**2.5 Management routines and tools**

**A. Routines**

The abstract phases described above are often characterised by sets of **routines** and **tools** whose number varies from one author to another.

Of course, this depends also on the “environmental” or contextual factors faced by the company. We examine below each of the phases we have considered previously.

Idea generation:

* Market studies. Technical studies.
* **Inside the organisation**: encourage people to come up with ideas and express them; create cross-functional teams in order to increase the ability of people to have inter-disciplinary ideas.
* **Outside the organisation**: use the ideas generated by clients, society in general, competitors, etc.

Decisional:

* Analysis of the proposal (and kill/sustain decision) based upon the mission or goal of the firm, the existing portfolio of projects and the political or strategic planning of the company.
* Economic analysis of potential results (market potential, feasibility).

Development:

* Cross-sectional team working.
* Finding the best people.
* Creating incubating places for development.
* Concurrent working.
* Early involvement of users.
* Focus and commitment.
* IT support and design tools.
* In-house and external testing.

If testing is positive, the implementation phase follows. Although this is more the “logistical phase”, there are a number of routines to be associated with it:

* Pre-launch market exploration.
* Production start-up.
* Focus and commitment.
* Marketing activities.

Multiplication:

* Review.
* Re-development.
* Marketing strategies.

Learning:

* Real number analysis.
* Evaluation.

**B. Tools**

Since a certain number of routines are still too abstract to help organisations incorporate the innovation process, **a set of practical tools** have also been developed by various authors:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **IDEA GENERATION** | **DECISIONAL STEP** | **DEVELOPMENT STEP** | **IMPLEMENTATION** | **MULTIPLICATION** | **LEARNING PHASE** |
| Away-days | SWOT analysis | Operating tests | Financial analysis | Designate “idea evangelists” | Value analysis |
| Quality function deployment | Risk assessment matrix | Let users try the product and provide feedback |  | Organise meeting places for professionals | Brainstorming |
| Review of competitors' products | Portfolio management | Rapid prototyping technologies and approaches |  |  | Benchmarking |
| Invite artists or trend-spotters | Payback period and/or breakeven analysis | Use alpha, beta, gamma versions of products |  |  |  |
| Build cross-unit networks |  | Apply a Stage-Gate model |  |  |  |
| Role-playing |  |  |  |  |  |

*Table 5 – From Everleens (2010). Innovation management; a literature review of innovation process models and their implications, p.11: “An interesting grasp of available tools”.*

**2.6 Clarification of the distinction between “planned innovation” and “unexpected innovation”**

High levels of competition and other innovations force actors to innovate in order not to fall behind. This is a “planned innovation process”: one that is driven by **external factors**.

This type of innovation relies on adapting existing innovations and importing from other sectors or countries, etc. It is also important to point out that this type of innovation belongs to that (very much extended in Europe) pattern made up of regions which, even with a limited investment in R&D, are able to import, successfully implement and, if necessary, adapt innovation.

Another type of “planned innovation” is the process of adapting the product or service to the needs or **requirements of clients**.

Some authors suggest that most companies, even without awareness of the fact, have some kind of process to manage “planned innovation”. The question regarding the management model, then, becomes more interesting when looking at the “unplanned innovation” that comes from one idea – or from collateral effects of that idea.

What is the process that transforms a good idea into an implemented innovation that produces measurable outcomes?

The distinction makes sense. We believe that human behaviour is very often simply archetypal and that sometimes even innovation goes through traditional management models. When looking at SMEs and talking to some of them, they recognise the theoretical distinction, but at the same time they remind us that they have neither the time nor the means to refine the model too much.

All the same, it is reasonable to suppose that completely new ideas need some additional “kill or support” decisional phases, and that they need more time to be implemented: analysis, development, testing, etc. all require more time when the innovation is “new to the world” or “new to everyone”, including its own developers.

**2.7 Conclusions**

1. All models include several phases or steps.

2. The main phases are the ones described above: **Idea generation**, **Decisional step**, **Development stage**, **Implementation**, **Multiplication**, and **Learning**.

3. The literature is not explicit about which management routines and tools should be used in which situation.

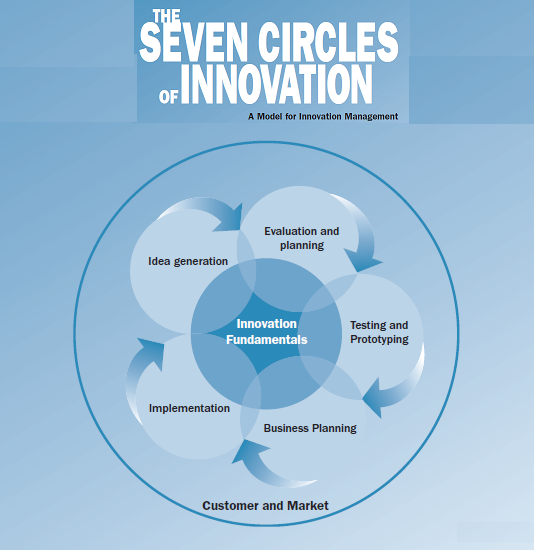
4. It is not clear how far implementing one routine or tool would generate innovation, or how much innovation this would generate.

**3. An overview of different innovation management models (based on prior studies, reports and strategies from the partner countries)**

Here we could have included a list of previous studies and reports we found useful. But as the twin aims of this chapter are to show (1) that we took previous investigations into consideration and (2) that we learned from them some interesting points for our own project, we decided instead to focus only on the three studies we most admired. Here we make brief reference to the main conclusions, findings and suggestions published by these projects. Those interested will find fuller details of all three in **Appendix 4**.

**3.1 The Seven Circles of Innovation** (Center for Ledelse og Fremtidstanken, Denmark, 2005)

**Key findings**



Highly successful companies distinguish themselves in the innovation process in a number of key ways:

* **Implementation**, the final execution of the innovation project, where the greatest gap is found between highly successful and less successful companies.
* **Involving employees** from the entire organisation throughout the innovation process and placing great emphasis on the availability of required competences.
* **Managing innovation projects** closely and using specific goals to measure progress and success.

The implementation phase is especially interesting, since this is where the greatest gap is found between highly successful and less successful companies. We can emphasise the following findings:

* Managers in highly successful companies do better than those in less successful ones in giving their full attention to the process and project – a characteristic repeated through all the subsequent processes but especially significant during the implementation phase.
* Not surprisingly, management responsibility is clearly defined and fixed in the highly successful companies. In the same way, clear objectives are established for each phase.
* Highly successful companies implement specific training in order to secure the necessary competences.

So, how do you ensure that your company becomes a highly successful actor in the field of innovation? Here are a few practical tips and pointers derived from the survey:

* It is important to give top priority to managing innovation. Make it part of your company’s strategic thinking and everyday behaviour.
* A well-defined innovation framework suitable for your company needs to be built using elements from the innovation management model.
* You should open up your company to its customers, suppliers, universities and other stakeholders. Allow them to become integrated in your development activities.
* Remember that innovation does not imply inventing a new wheel. It could just as easily be about changing your company’s methods for handling customer service calls or distribution channels.
* Innovation management is not just one more change-management project. Rather, it is a new way of thinking, which needs to be continuously practised if you want to achieve the best results.

Innovation is always about the unknown. Allocating resources to the unknown demands much more risk than, for example, allocating resources to production investments. This dilemma can be eased by well-managed innovation processes, but it can never be wholly eliminated. This is where quality of leadership becomes the defining, shaping factor in achieving success.

There is no silver bullet. One single model does not exist when it comes to managing innovation. A company’s ability and willingness to change, combined with its current and future competences, will determine its success in innovation management. J. Tidd, J. Bessant and K. Pavitt have tried to capture some of the main features of innovation management:

* Learning and adaptation are essential in an inherently uncertain future. Innovation is about the interaction between technology, market and organisation.
* Innovation can be linked to a generic *process*,which all organisations have to find their way through.
* Different companies use different routines with greater or lesser degrees of success. There are general recipes from which general suggestions for effective routines can be derived – but these have to be customised to particular organisations and related to particular technologies and settings.
* Routines are learned patterns of behaviour, which over time become embodied in structures and procedures. As such they are hard to replicate because they are highly company-specific.
* Innovation management is a search for effective routines – in other words, it is about managing the learning process towards more effective routines to deal with the challenges of the innovation process.

From this we can deduce that innovation management is about **good all-round performance**. There are four key factors for managing innovation successfully:

* Successful innovation is **strategy-based**.
* Successful innovation depends on effective **internal and external linkages**.
* Successful innovation requires **enabling mechanisms** for making change happen.
* Successful innovation only happens within a supporting **organisational context**.

**3.2 Innovating Regions in Europe** (Working Group of the IRE project)

**Recommendations**

Many practical recommendations have been proposed by the Working Group members regarding the strengthening of regional innovation systems. These recommendations are based on experiences and lessons learned from policies, programmes, projects and other initiatives carried out in the Working Group regions and reflect the diversity of internal systems of governance, dimension, economic development, cultural settings and other framework conditions within the Group member regions.



The list below is an attempt to briefly present all the proposals and advice that have been provided by the Working Group members. Further information about innovation policy recommendations suggested by the Group members can be found in presentations, papers and minutes available on the IRE website, <www.innovating-regions.org>.

1. **Consult the stakeholders*.*** One key task for ‘good governance’ is to ensure effective prioritisation and agenda- setting for innovation policy.

2. **Engage different regional actors** in boosting the innovation systems and strategies and empower them by providing them with specific roles and appropriate resources for action.

3. **Encourage cooperation** between the innovation system actors and promote trust among all of them. Create and maintain channels and processes for cooperation and information flow between the different stakeholders (e.g., innovation networks, innovation councils, steering groups, task forces, events, study visits, etc.).

4. **Avoid fragmentation.** When developing any innovation strategies/plans, try to bring together all the activities, however diverse, into a single unity. Do not allow the process to become fragmented.

5. **Improve regional coordination.** In responding to the growing complexity of innovation systems, regional innovation governance becomes the main vehicle to achieve enhanced coordination. Coordination mechanisms – addressing both the engagement of the various regional stakeholders and the synchronisation of different policy domains – may include, for example, policy councils/platforms, government committees, networks (including informal networks), task forces, steering/advisory groups, white papers, forums, sectoral strategies, action plans, communication plans, new executive bodies, monitoring programmes, etc. Designing mechanisms to coordinate all these takes time and requires financial support.

6. **Analyse, plan, finance, create and coordinate.** Undertake analysis working together with external professional experts. Develop plans for a number of years and provide funding and stability for the same time horizon. Create suitable, professional structures for implementing actions.

7. **Communicate your initiatives.** Continuous communication with the players in the regional innovation system improves the effectiveness and efficiency of the available innovation support services.

8. **Ensure strong and legitimate leadership**. The involvement of regional and local leaders (public and private, institutions and individuals) helps to promote strong innovation awareness and the ability to mobilise local/regional groups for innovation activities.

9. **Seek stability.** Effective innovation systems need stable policies, strategies and resources. Long-term objectives and core directions should not be put at risk by elections and new political cycles. Stability builds trust and stimulates the involvement of the players in regional innovation.

10. **Facilitate regional empowerment.** Involve regional stakeholders and share tasks with them, engage regional champions, create consensus, get political backing from politicians and stakeholders, boost governance by intensive communication/networking, and as far as possible deploy suitable financing and human resources.

11. **Promote client-oriented innovation systems**. The innovation support requirements of firms should be examined systematically to ensure timely mobilisation of the right actions and resources from regional authorities and innovation support organisations towards new or fine-tuned services.

12. **Develop a regional shared vision.** A regional vision statement can galvanise local stakeholders to achieve defined objectives.

13. **Link innovation policy to other policy domains.** Governments and regional authorities face the challenge of combining efforts for knowledge creation, diffusion and deployment in many policy domains. Essentially they do this with economic growth in mind. There is great potential for linking innovation policy with other policy areas.

14. **Create new bodies** to smooth the development of innovation systems. Governments may need to remedy structural deficits by creating new institutions to mediate between different government fields and priorities. For example, many regions and countries have been setting up innovation policy councils or agencies to facilitate the delivery of innovation policies.

15. **Prepare to be part of multilevel governance systems.** Regions should make an effort to establish long-term policies and strategies with demonstrable impact, which is a better way to communicate and interact with other levels of government. This is more important than undertaking lobbying and “marketing” activities in order to influence higher authoritative decision-making levels (e.g., European and national),

16. **Make good use of EU Structural Funds.** Structural Funds can be a major vehicle for promoting systemic regional innovation, particularly in less advanced regions.

17. **Adopt a “learning innovation policy” approach.** Learning, evaluation and accountability all become more important as governance structures change and decision-making becomes more complex.

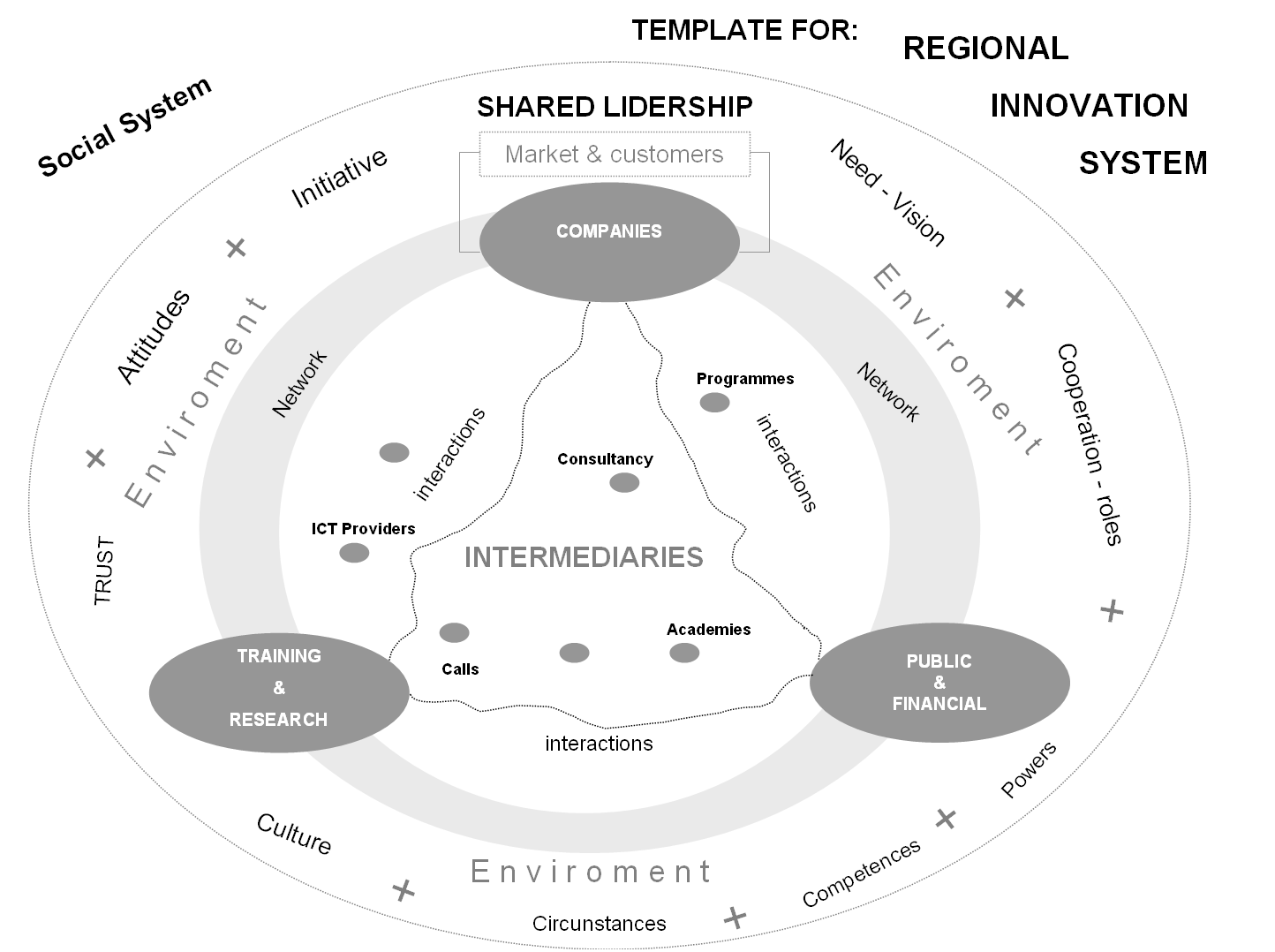
18. **Monitor and evaluate your achievements.** Innovation policies do not make sense without sound monitoring and evaluation.

19. **Benchmark.** While economic, institutional and historical context is very important, remember that it is possible to learn from other regions and countries.

**3. 3 TeRis Project Model** (Technical University of Kemi-Tornio, Finland)

The Template for Regional Innovation System (TeRis) is a tool designed to even out disparities in regional R&D investment.

Three key recommendations can be derived, based on the template and the identified regional innovation system weaknesses in the participating TeRIS regions:



1. Increase cooperation between SMEs and educational and research institutions by:

* Developing a more customer-oriented approach.
* Lowering the contact threshold of SMEs.
* Learning to speak the same language with SMEs.
* Marketing of R&D services to SMEs, thereby…
* Increasing R&D subcontracting by SMEs.

1. Strengthen and clarify the role of intermediaries:

* Internally and externally.
* By acknowledging that different organisations have different roles.

1. Develop the leadership of the regional innovation system:

* Based on the principle of shared leadership.
* By improving the functionality of the developer network: agree on roles, create trust, ensure the flow of information.
* Aim at shared strategies and objectives.
* Promote as a tool, for example, formal and informal forums and meetings.

**4. An overview of observatories: presentation of a potential strategy for the project’s networking ambition (based on research by Kennet Lindquist)**

In the next three sections of this chapter we examine the idea of establishing a Regional Innovation Observatory. This first section is a reflection by Kennet Lindquist, highlighting some aspects for the sustainability of an observatory and the mechanisms needed to achieve them. In section 5 we analyse some existing observatories in order to identify possible similarities with the one we propose to set up. Finally, in section 6 there is a summary by David Townsend Jones about how to develop an observatory, which can start to operate and then evolve as the project continues.

**4.1 A service ambition: what to contemplate about “before”**

**An interpretation of networked services: a set of models for contemplation**

A networked service is a product or service process, which comes and goes from supplier to user.

A networked service can be seen as an upside-down organisational pyramid (Jan Karlsson, SAS), which begins with enablers, contributors and users/members and finishes with visitors. They all take part in a chain with four links:

a) Generate value

b) Promote and attract:

* Attract – Commit – Deliver / use – Appreciate / value.

c) Participate and engage:

* Enlist – Engage – Empower.

d) Consume and contribute:

* Participate – Coordinate – Innovate.

The relationship between supplier and user gives way to a dynamic in different steps:

**Provide → Request → Available → Plans / Ideas → Tools / Framework → Partnership**

It is a journey from networked centralisation to user empowerment – from the “newness of the service” to the “maturity of the users”.

In this way it can evolve from being user-imposed to become user-adapted, and later, user-centred, user-refined and, finally, user-driven.

In this partnership-oriented relationship, the supplier plays the role of the process enabler and solution provider through a product / service provision process in which the user acts as the solution producer and solution consumer.

If we divide the delivery of products and services from the supplier to the user into three steps – the pre-, mid- and post-delivery stages – we can observe that a framework is developed whereby preparation and development by the supplier evolve into follow-up and refinement activities, which benefits the user and generates increased utilisation.

**Our perspectives on online services:**

In the user-centred service process we can identify several relevant phases:

* Awareness generation
* Access facilitation
* Acquisition handling
* Sales / contracting process
* Preparatory actions
* Usage / delivery
* Utilisation / application
* Valuing / evaluation
* Readiness generation

There are therefore some critical moments in the process: the market contacts, the assessment contacts, the delivery contacts and the close-the-deal contacts.

Following this line of argument, we can identify a two-sided target for this service relationship:

**On the supplier / provider side:**

* Market questions: where visibility and customer / market insight among suppliers are primary issues.
* Sales questions: where the process from customer curiosity to closing a deal are primary issues.
* Delivery questions: where quality, resource consumption and handling efficiency are primary issues.
* Outcomes questions: where value, service and continued customer / market relations are primary issues.

**On the customer / user / buyer side:**

* Awareness generation: where readiness for / awareness of opportunities / alternatives are primary issues.
* Access facilitation: where access to required / desired information, resources and sources are primary issues.
* Preparatory actions: where capacity to make use of / integrate acquired services are primary issues.
* Application / utilisation: where ability to integrate / utilise outcomes from services are primary issues.

**Our view on targets groups and targeting services:**

Specifically, who are the groups? How many are they? And for each group, what profiles / needs / preferences do we find?

There are some resulting questions we have to ask ourselves and our potential users:

* What do they expect from us?
* What do we have to offer them?
* How do we find and approach them?
* How do we respond to their requests?
* What values do we generate for them?
* What do we get out of serving them?
* What are the stages and lifetime of our relationship with them?

**4.2 A service constellation: what to decide on prior to “birth”, and some concerns when developing and delivering services**

**Some potential service components: preferences and priorities**

These are the typical network **environment** services:

* Information sharing.
* Link (and like) sharing.
* File repository / storage place.
* Calendar / event catalogue.
* Meeting / conferencing services.
* Information display / presentation services.
* Inquiry / dialogue services.
* Specialist / advisory services.

There could also be some personalised services:

* Handling of personalised language profiles.
* Accommodating personal preferences / interests.
* User-controlled settings for own service.
* Personal desktop and interaction services.
* Announcement and dissemination services.
* Membership upgrading / modification services.

The **collaborative** services could be:

* Collaborative website services.
* Collaborative work-space / interaction services.
* Collaborative actions / project services.
* Collaborative data collection services.
* Collaborative meeting / event services.
* Collaborative display / presentation services.
* Collaborative dispatch services.
* Collaborative design / production services.

With these potential services in mind, some network service priorities need to be set and decisions taken.

For each potential **service component** we need to:

* Define the potential application and its service structure.
* Define the preparatory work needed before delivery.
* Define the user support to be provided during initiation / delivery.
* The means and criteria used to determine our service success.

For each project network **partner / actor** each of us must ask what our role is:

* Development services?
* Content generation?
* Usage promotion?
* Interaction with end-users?
* Service usage (as an end-user)?
* Service review / quality assurance?
* And find the resource allocations and commitments for those roles.

**4.3 Service sustainability**

**Possible configuration of the project’s service package:**

In order to arrive at a cost-balance model, we have to guarantee the sustainability of the networked services. Sustainability will only be possible if **self-investments** by users, members, stakeholders and service providers are offset by **returns on investments** from one or several of the following: subsidies, expenses, contributors or services.

**A cost-focused perspective:**

What is rewarded? What does it compensate for?

**A cost-focused perspective:**

What is compensated for? What is rewarded?

**Proposed EU-level service package:**

* A potential project community:
  + 150+ full members, 1,000+ guest members.
  + Service duration: interest span (up to end of 2014).
  + Service continuation: post-project (beyond 2014).
* Initial service profile (for project partners).
* Catering for different service levels:
  + Visitors (no login / no identity).
  + Guest memberships (2,000+), auto-registration / login.
  + Full members on usage level, registration / profiling.
  + Full members on contribution level, group level, group memberships.
  + Service providing, during and post-project, free / reduced rate.

One possible **future formula** could be that during the project the services run with EU funding and that subsequently the post-project maintenance should be the responsibility of individual partners and self-financed.

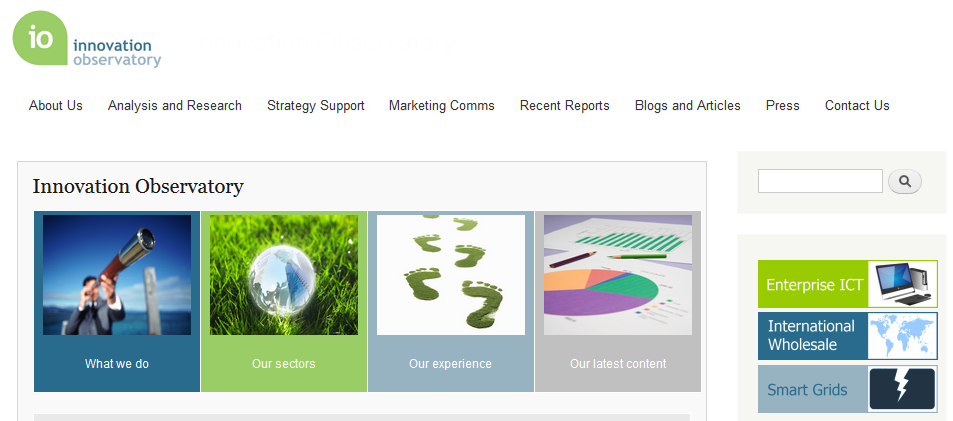
For this post-project period, there could be membership options for both individuals and organisations:

* Organisations: by means of a group subscription (possible group membership).
* Individuals: by means of individual subscription (possibly with reductions for contributors).

Network coordinators could be paid a fee or receive a percentage of the subscriptions.

**5. Some existing observatories: good practices and examples**

**5.1 Innovation Observatory**



[innovationobservatory.com](file:///C:\Company\Adastra%20Cymru\projects\current%20projects\RAINOVA\project%20work\research%20report\production\innovationobservatory.com)

**Aim of the Innovation Observatory**

The Innovation Observatory researches, analyses and interprets fast-moving technology markets to help its clients:

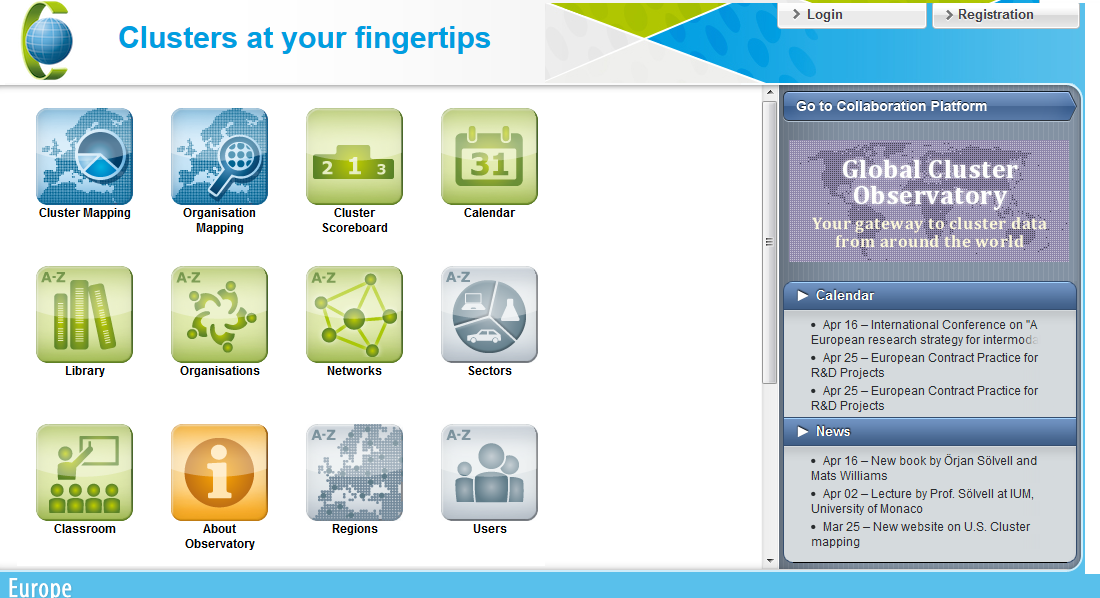
* To identify useful product or service investment opportunities.
* To avoid wasting time and money on the wrong products, services or markets.
* To change their competitive positioning and strategies.
* To find new customers.
* To create compelling marketing and sales messages and materials that resonate with their target audience.

It combines best-in-class research, analysis and consulting techniques with deep sector knowledge and a track record of demonstrating how technology markets evolve. Currently it is working in the telecoms, IT, media, health and environmental technology sectors.

**5.2 Cluster Observatory**

[www.clusterobservatory.eu](file:///C:\Company\Adastra%20Cymru\projects\current%20projects\RAINOVA\project%20work\research%20report\production\www.clusterobservatory.eu)

# Aim of the Cluster Observatory



The Cluster Observatory is an online platform, which provides a single access point to information and analysis of clusters and cluster policy in Europe. Originally launched in 2007, the Observatory now offers a range of services. It provides data and analysis on clusters and competitiveness, a cluster library, and a classroom for cluster education.

The Cluster Observatory also produces analysis and reports on the conditions for competitiveness in the European regions, transnational cluster networks, clusters in emerging industries and studies of better practices in cluster organisations.

The Observatory is aimed at three main target groups:

* Policy makers and government officials at the European, national, regional and local levels.
* Cluster management staff.
* Academics and researchers.

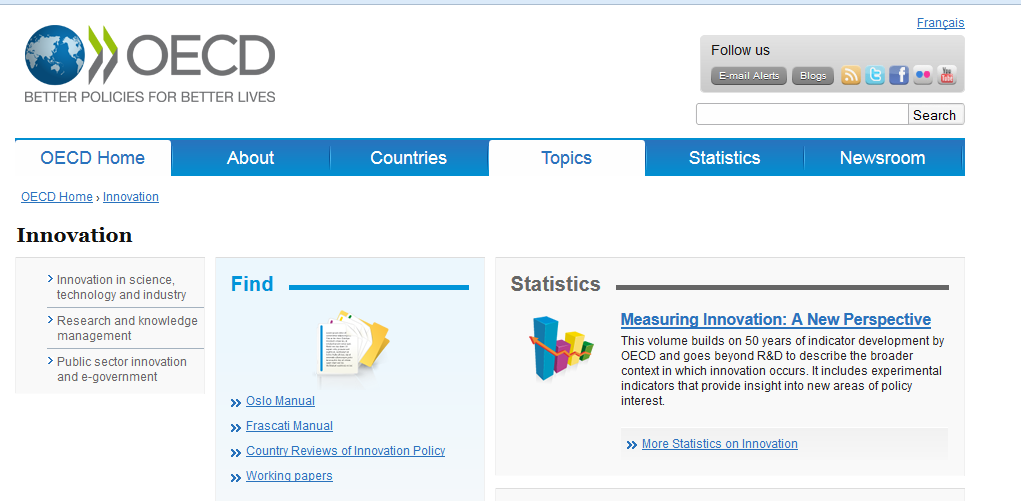
 The Cluster Observatory offers a user-driven toolbox to facilitate analysis and support fact-based policy and learning:

* Cluster Mapping: a tool that gives access to an advanced data set about clusters and regions in Europe.
* Cluster Calendar: users can post information about events they want to promote to the cluster community, such as conferences, seminars and workshops.
* Cluster Classroom: offers videos and other educational materials, which give an introduction to clusters and cluster policy.
* Cluster Wiki: the wiki pages present information about regions, sectors, organisations and networks, all of which can be linked to each other and to documents and events.
* Cluster Library: a European depository for all kinds of cluster-related documents.

The Cluster Observatory is managed by the [Center for Strategy and Competitiveness (CSC)](http://www.hhs.se/EFI/CSC) at the [Stockholm School of Economics](http://www.hhs.se/) (Sweden), in collaboration with [Orkestra](http://www.orkestra.deusto.es/) (Basque Institute of Competitiveness, Basque Country, Spain).

**5.3 Observatory of Public Sector Innovation**

[www.oecd.org/governance/oecdobservatoryofpublicsectorinnovation.htm](file:///C:\Company\Adastra%20Cymru\projects\current%20projects\RAINOVA\project%20work\research%20report\production\www.oecd.org\governance\oecdobservatoryofpublicsectorinnovation.htm)



**Aim of the Observatory of Public Sector Innovation**

The OECD developed the Observatory of Public Sector Innovation, which aims to systematically collect, categorise, analyse and share innovative practices from across the public sector via an online interactive database.

Today, the public sector in many countries faces a dual challenge: tight fiscal constraints, and more diverse and increasing demands on public services. The Observatory responds to these challenges by helping countries achieve the potential that innovation offers in improving public sector performance and delivering better outcomes. Innovation's role in fostering efficiency and effectiveness in the public sector was at the heart of the [Public Governance Ministerial Meeting](http://www.oecd.org/governance/ministerial/), held in Venice in 2010.

Countries are already introducing innovative practices to their public services, to differing degrees. However, the conceptual understanding of what innovation means for the public sector, and what its impacts are, remains limited.

The Observatory aims to address these knowledge gaps by collecting, categorising, analysing and sharing practices in different countries to create a common definition of public sector innovation, and to produce analysis so that countries can understand the benefits that innovation can provide and the factors that are important to its success.

**5.4 Observatory for Responsible Innovation**

# [www.debatinginnovation.org](file:///C:\Company\Adastra%20Cymru\projects\current%20projects\RAINOVA\project%20work\research%20report\production\www.debatinginnovation.org)

# Aim of the Observatory for Responsible Innovation

The Observatory for Responsible Innovation is an independent international think tank, created with the purpose of thinking about and debating new measures, concepts and methods to foster responsibility in innovation. They hold the view that, today, innovation develops at a very fast pace and generates unforeseen and sometimes problematic consequences, which must be taken into account. They also assert that the value of innovation is a complex, controversial and, above all, collective issue.



**A yearly topic to identify emerging issues**: The Observatory seeks to accompany a move towards a culture of responsibility in the following sectors facing today’s great challenges: finance and the financial services industry (in 2011), renewable energy in architecture (in 2012), and information and communication technologies (in 2013).

## Promoting the debate: The Observatory encourages debate through its online publication, *Debating Innovation*. Its weblog, as the key interactive space for discussion, regularly organises special events, prizes and encounters and a yearly international conference.

## Informing policy decisions: The Observatory is attentive to responsible innovation in multiple areas, and develops policy initiatives through dedicated working groups, in order to collectively build new and outstanding proposals.

**5.5 Science and Innovation Observatory**

*pending*

**5.6 Eco-Innovation Observatory**

*pending*

**6. The RAINOVA Regional Innovation Observatory (based on proposals by David Townsend Jones)**

**6.1 Role and concept**

The Regional Innovation Observatory has been one of the key outputs planned for the RAINOVA project since its very earliest days. We have always believed that a major role should be played by a new regional observatory with a clear focus on serving three distinct audiences who share common overlapping interests in the area of innovation:

* **European SMEs**: the key actors in regional innovation.
* **VET training providers**: the skills trainers and R&D support providers for SMEs.
* **Regional governments and agencies**: who set the innovation agendas and provide strategic support frameworks for regional innovation.

By providing an observatory service specifically tailored to the worlds of these three closely linked groups, the RAINOVA Regional Innovation Observatory will provide an essential specialised service, addressing needs not adequately served by more broadly based existing observatories such as the examples reviewed in the previous section of this chapter.

RAINOVA has adopted a radical, even revolutionary, approach to developing a regional observatory service in the form of a **fully devolved solution**. We believe this approach fits perfectly into the true spirit of European regionalism. The RAINOVA Regional Innovation Observatory will not be a single centralised observatory but a constellation of Regional Observatories from 47 countries, all sharing a common design and methodology and gathered into a single freely available web space.

Much of the published content will be specific to individual regions, but transnational and pan-European content will be shared between many or all of them. Also common to all will be a single extranet through which the Regional Networks will inter-communicate and work collaboratively in a Europe-wide community of regions.

**6.2 Structure and technical character**

The RAINOVA Regional Innovation Observatory will not be a separate entity but a fully scalable resource integrated into the public RAINOVA website. Therefore everything associated with the Observatory will be supported by Joomla, the open-source content management system (CMS) for the website.

All the functions of the Observatory will be based on Joomla extensions rather than any external applications. This open-standards approach is intended to ensure the Observatory will be widely accessible across multiple hardware platforms and operating systems. It will also help to make the Observatory as ‘future-proof’ as possible.

The RAINOVA Regional Innovation Observatory, as explained above, will be a cluster of Regional Observatories, based initially on the regions represented by partners in the RAINOVA Consortium – including, due to the structure of the consortium within the Leonardo Thematic Networks programme, non-European partners from Tianjin in China and Outaouais (Quebec) in Canada. The post-project Observatory will be incrementally expanded by adding observatories for regions from any/all of the 47 countries of Europe.

Access from the main website to the Observatory will be through a distinctive visual Regional Innovation Observatory ‘branding’ feature at the top of the home page, as well as from the main menu bar. Regional Observatories will have individual visual identities, based on variations of the RAINOVA website design and incorporating colours taken from their national or regional flag.

All content will be presented within a consistent framework in every observatory. The exact titles of the topics are still to be finally determined and the following is a draft list:

|  |  |
| --- | --- |
| **Topic** | **Fly-out information about each topic when users move their mouse over the topic on the menu**  **\*** The network (i.e., extranet) will use the VCP Virtual Community Platform, which is already used internally by the RAINOVA Consortium. |
| Regional News | Innovation news from [name of region] |
| European News | Innovation news from other regions |
| Case Studies | A selection of innovation case studies |
| Support | Technical and financial support available in [name of region] |
| Organisations | Agents supporting innovation in [name of region] |
| Innovation Systems | Innovation systems in [name of region] |
| Events | Innovation events and opportunities |
| Networking | The RAINOVA European Regional Innovation Network **\*** |

Users will access these topics through a simple navigation system. Once a topic has been chosen, content choices will be offered in a conveniently browsable format, working within the natural publishing parameters of the Joomla environment by using a simple text-based navigation system based on topical hyperlinks, with short summaries/ explanations appearing below them. At this level, in other words, the navigation will resemble a set of search engine listings.

In the Joomla CMS, categories form the backbone of all data entered into the website. When handling organised data, Joomla’s structure is based on the following hierarchy: sections, then categories, and finally articles, web links or any other singular piece of collective data that Joomla can handle. For the RAINOVA website there will be a section in the CMS called ‘Innovation Observatory’, which will then be divided into a separate category for each and every regional observatory.

**6.3 Regional data**

The limited budget and timeframe available for the RAINOVA project mean that the partner responsible for its design and development must concentrate on creating the prototype of the Observatory during the second year of the project, allowing sufficient time in the final year for the other partners to populate their Regional Observatory with topical examples of relevant content, in order to collectively provide a convincingly immersive demonstration of the entire prototype.

**6.4 European data**

Common to all the Regional Observatories will be a ‘European news’ topic providing European-level analysis, commentary and links to external stories and features concerning innovation work and innovation systems. This topic will handle the ‘big picture’ about new developments, analysis and opinion concerning innovation across the whole of Europe. In effect this will be an online news service and, in general, identical content on this topic will be published in every Regional Observatory.

**6.5 Post-project planning**

The Observatory will be designed to expand exponentially as Regional Networks come on-stream after registering as new members on the system. Adding new observatories in the CMS backend should be a simple process of replicating the fully functioning Joomla categories already set up in the prototype. A modest budget will be needed to fund some additional development work for the fully live iteration.

For example, a differently branded top-level navigation system, capable of handling potentially very large numbers of regions, will be needed to replace the 11-region system used for demonstration purposes in the prototype. This will not necessarily be a complex job, but some budget will be required to design and implement it. A training manual will need to be written for the administrators appointed by the new Regional Observatories. Also, to protect the system from any accidental risk of damage caused by inexperienced users, a protocol will need to be developed when setting up newly registered members to switch off all CMS functionality for them except for the basic services they will need to add and edit new articles.

As suggested in section 4 of this chapter, some form of financing arrangement will be needed to provide continuing overall support for the system. For example, someone should be responsible for setting up each new Regional Observatory registered on the system: applying a distinctive design based on a template model and palette of colours, and setting up Joomla categories and access permissions.

**6.6 Conclusion**

The RAINOVA Innovation Observatory will have two primary functions.

Above all, it will be a practical tool bringing up-to-date topical and useful information to help makers, inventors and innovators in SMEs do their work and pursue practical results as efficiently and effectively as possible.

Its other function will be to provide an interactive channel based on communication and information exchange among SMEs and between them and the VET institutions and learning communities in their region, which provide their training and technical support. In this community-driven spirit, collaboration and community working will be actively encouraged and supported across the entire Observatory and its supporting extranet.

**7. An overview of regional innovation networks (based on a report by Jaroslaw Chrobot)**

**7.1 Summary**

Innovation networks are a major source for acquiring new information and knowledge and thus for supporting innovation processes.

Innovative capability is a crucial factor in building regional competitive advantage under the present techno-economic paradigm. It is essential to define and promote the multi-actor innovation networks that form a regional innovation system. Essentially the main conclusion is that the success of any core process in the system is based on collective learning and knowledge creation among the region’s actors.

In sum, networks perform three important general functions in support of innovation. First, they are a coordinating device enabling and facilitating inter-firm learning and the diffusion of new technological knowledge. Second, they facilitate the exploitation of and access to complementary technological assets. Third, they provide an organisational platform for combining different technological competences – an important feature, because mastering technological complexity and multiple knowledge fields are important necessities in modern innovation processes.

**7.2 General meaning and advantages of regional networking**

It is increasingly important to have good access to qualified specialists and centres of expertise, and equally important that regional customers should be open to the idea of engaging with the process of innovation. One aspect that motivates investors in a region is the existence of clusters of enterprises, universities and scientific institutions, whose knowledge and experience can directly be transferred to increase the region’s competitive advantage. When it comes to the competitiveness of regions in the fight for global investors, the ability to adapt flexibly to regional innovation systems can be a deciding factor.

In the light of this it can be concluded that **key factors** for the development of regional innovation include: co-creating value with customers and gaining knowledge from users; global sourcing and knowledge networking; effectively protecting intellectual property rights; and responsiveness to global challenges.

**Regional innovation networks** consist of various actors involved in innovation processes and the sum of the relationships that exist between them. They are a system of interactions between the spheres of R&D (research institutions, laboratories, the educational system), the economy (firms, clusters), organisations within the business environment, and financial organisations and public authorities, which combine to promote innovation and the necessarily adaptive processes of collective learning.

The basic requirement for efficient operation is the presence of a network in the region and an environment that is conducive to innovation. This system is the key to building competitive regions in the global economy, where innovation, learning and knowledge are essential components of economic success.

Currently countries as much as regions not only influence each other but are also mutually dependent – or, as the OECD pointed out in 2007, they overlap. Mutual interactions and relations between countries and regions have been evident for a long time now, although today these phenomena have vastly increased in size and scope, while the development of network structures and relationships has become one of the most striking new processes. There is broad agreement that a strong, broadly developed network of internal and external relationships within a region is one of the most important factors determining its international competitiveness.

Therefore the shaping of network structures in the regional economy is an especially significant matter. The systems supporting these inter-company relationships are also used by European national governments as a channel for supporting regional economic development.

Traditional allocation effectiveness is no longer the fundamental component of competitiveness in the structures of the global system. Its place has been taken by adaptation effectiveness, determined by various forms of indirect action coordination between the market and the hierarchy. Examples of such network connections include joint ventures, financial engineering, public/private partnerships, industrial districts, research consortiums and franchising.

Networks have a logic of their own and consist of two elements: **nodes** and the **relations** between them. Among these elements we can single out the so-called network core, i.e., a node, which is usually created by big spatial units characterised by high intensification and accumulation of modern socio-economic activities.

A network consists of **nodes** and **edges**. Nodes can be individuals, institutions, projects or events. Network nodes can be universities or other R&D facilities, educational and training systems, workers and management, and knowledge producers in the companies. Edges are the relationships between nodes.

Regional policy can support regional innovation networking in at least two ways. Firstly, regional policy makers can create the basic conditions required beforehand for successful networks. Secondly, policy networks and public/private partnerships can promote regional networking between firms and improve the stability and governance of the networks. In this way regional innovation networks and regional networking can be combined to produce results that emerge in the long run, so that a regional policy that promotes networks and networking is, by its very nature, strategic. Today, then, regional innovation networks are important tools in bidding to strengthen a region’s international competitiveness.

**7.3 Key elements of and reasons for networking**

With networks becoming the key to regional economic development, an emerging set of developmental practices has been commonly described as “networking”,or “the network paradigm”.

The **key elements** of networking can be itemised asfollows:

* **Reciprocity:** willingness to exchange information, know-how, proprietary knowledge and goods.
* **Trust:** willingness to risk placing your faith in the reliability of others.
* **Learning:** recognition that knowledge develops and best practice should be learned.
* **Partnership:** readiness to solidify reciprocal relationships.
* **Decentralisation:** recognition that it is inefficient to centralise information and decision-processing.

There is another general set of reasons for forming inter-organisational networks and relationships:

* **Necessity:** linkages are established to meet compulsory legal or regulatory requirements or to compensate for internal resource deficits.
* **Reciprocity:** the formation of close ties is motivated by reciprocity.
* **Efficiency:** organisations link with other organisations to improve their internal input-to-output ratios.
* **Stability:** in responding adaptively to uncertainty, organisations establish relationships to achieve stable and predictable resource flows and exchanges.
* **Legitimacy:** links with other specific organisations can improve an organisation’s reputation or image.

**7.4 Key conditions for mobilising innovation networks**

A number of key conditions need to be present in order to successfully mobilise the essential components of an innovation network:

**Identification**

It is vital that the base upon which an innovation network is built should have a strong self-identity, based on political coherence, a clear set of policy commitments and the capacity to deliver results.

**Intelligence**

In the twin senses of information and learning capacity, this condition is a key source of advantage. The characteristics of “intelligent regions” are “good antennae”, quality of information, a capacity to self-monitor and self-evaluate, a disposition towards learning, and the will to implement lessons that have been learned.

**Institutions**

Innovation architecture consists of institutions and the people who work in them. Innovation is an interactive process. The denser the mass of institutions, the greater the likelihood is that business will gain access to the intelligence required for innovation. Examples of key institutions are strong chambers of commerce, business associations, innovation centres, training agencies, development agencies, higher education institutions and, of course, companies themselves. In more advanced regions, the public sector institutions tend to be in the background. In weaker ones they are in the foreground.

**Integration**

The key to successful innovation architecture is that all these institutions act as a network. In other words, they must organise a division of responsibilities between each other so that a firm or customer approaching any point on the network can successfully and accurately be directed to the optimal information point on the regional network. The integration of a network must, for the sake of efficiency, be animated or facilitated by a *primus inter pares* such as a major business or development agency, chamber of commerce, and so on.

Stakeholders are a vital source of identification. It is not enough to have their verbal support: they must also commit both financial and human resources. Thus the first task of the animator will be to identify and bring together into the network those organisations, institutions and firms that will be the main stakeholders in the innovation architecture. These will include large firms, SMEs, higher education institutes, training organisations, economic development agencies, regional governments and chambers of commerce. These and others will be both partners and mentors in the network.

There are crucial **skill considerations** involved in adopting an Innovation Network Architecture.

* First, emphasis must be given to **policy skills**. An Innovative Network Architecture, at least at the outset, is neither a state nor a market institution. Neither a public administration nor a competition-based model of policy implementation is called for, but something between the two.

Questions regarding the identity of the animator or facilitator, the appointees of the regional group, those to whom they are accountable, those who appoint the staff, to whom they are accountable, all need to be clarified.

In general a public/private board would seem most appropriate, although a preferable longer term aim would be to establish a private firm to manage the Innovation Network.

* Second**,** attention must be paid to **networking skills**. Some people have these, but most do not. Generally, those who will work in the Innovation Network require training. Good networking is about five key skills:

1. **Reciprocity:** an exchange relationship.
2. **Trust:** being prepared to take a risk on the reliability of others.
3. **Learning:** being prepared to change.
4. **Partnership:** preferential reciprocity.
5. **Decentralism:** a very flat hierarchy.

Such practices are not commonly found in the regions and have to be learned.

* Third, and of paramount importance, are **innovation skills**. Whichever personnel take on the core roles at the “heart” of the network, they must:

1. Have the five key networking skills listed above.
2. Be psychologically open, enthusiastic and “fanatical”.
3. Combine technology/business management with marketing skills.
4. Be able to convince firms to become members/associates/subscribers/supporters/users of the network.
5. Be both innovative and decisive themselves about taking initiatives.
6. Be well networked, within their country and beyond, to innovation centres and systems in the EU, Japan and North America.

**7.5 Recommendations for establishing and strengthening Regional Innovation Networks**

**Support business environment institutions**

This action encompasses supporting regional development of the company environment and aims to eliminate formal and non-formal barriers and increase competitiveness.

**Cooperate economically in the region**

This action encompasses cooperation between companies in creating associations to promote manufacturing, cooperatives, distribution networks, capital finance groupings, enterprise associations and self-governing entities – for example, by creating or joining network structures or clusters.

**Build a network of regional business environment institutions**

A network of regional business environment institutions should be developed to offer services for innovation. Both regional and local governments should start a large-scale regional promotion campaign to raise awareness among businesses and other entities in the region about the need to change the nature of innovation.

Creating a cooperative network between regional pro-innovation institutions will bring measurable economic benefits associated with the expansion of the distribution network of individual services. As a result, this will contribute indirectly to reducing costs for end customers.

**Establish a single umbrella organisation**

A single umbrella organisation can be established, which has the following functions:

1. Facility to raise awareness of innovation.
2. Collecting and disseminating information about innovation.
3. Services for training and providing consultation on innovation.
4. Services supporting innovation for partnerships and corporations, bringing together all the stakeholders.
5. Setting up a sustainable structure.

It is necessary to organise introductory activities for these innovation systems through:

1. Panel and symposium activities.
2. Meetings.
3. Clustering facilities.
4. Media campaign.

**Analyse the current state of interconnections within the region**

Start by reflecting on a new innovation management model by considering the interconnections between the different players involved in the regional innovation system, most specifically the educational institutions and the local labour market. It is important to study training and research policies and their relationship with the labour market in order to understand how these policies can promote knowledge and innovation from one place to another. As part of this process, it is useful to examine the role that public authorities (local, regional or central) can play in networking among the various players.

This reflection should answer some questions about the connections between educational institutions and the labour market, about how to make good the absence or inadequacy of a networking culture among players in the economic and social life of the region, and how to improve the distribution of knowledge in the region.

**Establish good cooperation to create innovation**

It is important to establish good cooperation for innovation among customers, suppliers, competitors and education providers. Entrepreneurs in the region need a good framework of conditions, such as:

* Qualified advice and guidance.
* Education in entrepreneurship.
* Access to capital.
* A culture for entrepreneurship.

Companies need to do more to network and focus on the potential for their region. They need to educate more trainees in the company. Most of all, they need to develop their own employees.

**Make networking a natural part of activities in the region**

For an effective innovation system, building external networks is important. Cooperation with universities and research centres has to become a normal part of the company’s activities, alongside cooperation with customers and the other parts of the market. There is a necessity to play a proactive role in the interval between school and on-the-job training. There is a necessity for closer collaboration between research institutes and industrial units. There is a necessity to encourage creativity and professional attitudes among young people towards innovation. And there is a necessity for greater levels of cooperation within the network at local, regional and national level.

**7.6 Some examples of existing networks**

Pending…

**8. Conclusion and findings**

In the context of the results of our investigations and recommendations from previous studies, we now need to summarise our findings to include them in the final summary of recommendations and suggestions in Chapter 6, which, along with the findings from Chapters 4 and 5 (the results and analysis of our interviews with experts and groups) will provide guidance and reference for the RAINOVA partners in charge of designing the IMM.

**8.1 Innovation Management Model**

*From research by Ana*

* A model with some general steps: 1 – 2 – 3 – 4 – 5.
* A model with some basic routines.
* Contextual and cultural factors will be part of this model.
* A model that offers tools for management.

*From previous models*

* Priority must be given to innovation management.
* The model should be distributed inside a general framework.
* The first message of the model to practitioners should be: open up your organisation!
* It needs to combine the willingness and competences of both leaders and employees.

1. Focus on implementation, which is the most difficult step:

* Having clear objectives is essential for any organisation.
* Some routines need to be clearly defined.

2. Encourage cooperation among organisations:

* Improve regional coordination among different actors.
* The role of intermediary agents is very important for the whole system.

3. Improve leadership and competences of leaders.

**8.2 The Observatory**

*From Kennet and David’s contributions*

* There must be very good reasons for starting an Observatory.
* It has to be a practical tool for collaboration and community working.
* Sustainability must be well analysed: future formulas need to be investigated.
* Self-investment must be balanced by a return on investment.
* We have to identify the target groups.
* We have to be aware of the critical phases in the development of the Observatory.
* The Observatory should be well integrated into the RAINOVA website.
* It should be based on open standards.
* There should be a top-level navigation with degrees of scalability.

**8.3 The Network**

*From Jaroslaw’s contributions*

* Support regional development of the company environment.
* Support cooperation between companies.
* Build a network of regional business environment institutions.
* Establish an umbrella organisation.
* Analyse the current state of interconnections in the region.
* Establish good cooperation for innovation.
* Make networking a natural part of activities in the region.

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**Chapter 4: Summary of the research work done in each region**

1. **Introduction**
2. **Basque Country**
3. **Sønderjylland**
4. **Aegean Region, Izmir**
5. **Lower Silesia**
6. **Tuscany**
7. **Wales**
8. **Västra Götaland**
9. **Dalarna**
10. **South Muntenia Region**
11. **Quebec**
12. **Summary of conclusions and suggestions for WP08: IMM, Observatory and Networks**

**Chapter 4: Summary of the research work done in each region**

**1. Introduction**

In this chapter we offer an overview of the status of each RAINOVA project partner region in the light of the **regional reports** (see *Appendix 4: Regional innovation in the RAINOVA partner regions*) presented by the members of the project and based, in turn, on previous studies, reports and documents from these same regions.

In addition, we also reflect upon the surveys conducted by the RAINOVA partners: the **individual interviews** (see *Appendix 2: Individual interviews: a summary*) and the **group interviews** (see *Appendix 3: Group interviews: a summary*).

Our review of the regional reports examines those aspects most closely linked to the theme of our project. So we start by looking at the institutional **policies and programmes** in each region. We also ask what **available resources** exist and who are the **agents and stakeholders** involved in the region.

We comment on the state of **learning** in the region: its universities, vocational and educational training systems and other available learning opportunities. We also review the state of **cooperation** between the agents of innovation, networks and associations established to promote its regional innovation system, before finishing with a review of the **strengths and weaknesses** of the region.

For the **individual interviews** and (where available) **group interviews**, we focus on those aspects we consider most relevant, based on the quality of information collected and how well it relates to our objectives in this project.

Using this step-by-step approach we present information about the **internal culture** in the companies where the experts we interviewed work.

We also offer hints about the role of **learning** in their organisations and include their comments about the **degree of cooperation** they have with other organisations. We can then compare these points of view with the information contained in the regional reports concerning the same issues.

Where relevant we include brief comments about any **programmes** or **management models** referred to as guidance or inspiration for these companies. We then note the **barriers to innovation** and the **factors** that promote it, based on our respondents’ comments in the interviews.

Finally, based on suggestions and proposals we have collected, we present a brief **conclusion** about the situation of each region. Where appropriate, the idea here is to provide some suggestions to those responsible in Work Package No. 8 for designing the Innovation Management Model, Regional Innovation Observatory and RAINOVA Network.

**2. Basque Country**

**2.1 Regional report**

Research, development and innovation activity in the Basque Country is strongly supported by governmental policies and private organisations promoting close contacts, collaboration and coordination in the fields of science, technology and innovation. There are centres of excellence in research and innovation and a number of companies that implement or are interested in implementing innovation in their activities.

**Regional policies and programmes**

Several policies and programmes support innovation. The most important is the **Science, Technology and Innovation Plan 2015**.

**Ikertu**, **Etorgai**, **Hedatu** and **Emaitek** are the names of some other relevant Basque programmes that support innovation in the region.

Other relevant resources, plans and programmes in the Basque Country are the **Sustainable Economy Act** and the **EcoEuskadi Sustainable Development Strategy 2020**.

**Resources available**

In the Basque Country there is a network of technological parks (**Zamudio**, **Miramon**, **Miñano** and **Polo Garaia**) promoting cooperation between businesses, as well as between businesses, universities and technology centres.

There is a specific organisation called **SPRILUR**, under the Department of Economic Development and Competitiveness, which promotes industrial areas within the region.

**Agents and stakeholders**

The main stakeholders involved in the Basque research, development and innovation system are:

* The **Basque Council for Science, Technology and Innovation**, which is responsible for the strategic orientation of STI policy.
* The **SPRI** **Group**, supporting and driving forward the Basque business fabric, as well as promoting its productivity and position within the global market.
* **Ikerbasque**, reinforcing the Basque Science System to promote the image of the Basque Country.
* **Innobasque**, fostering effective co-ordination and collaboration between all agents in the fields of science, technology and innovation.
* **Euskalit**, promoting improvements and innovation in management.
* **Garapen**, a professional association that brings together development agencies made up of local institutions in the Basque Country.

**Learning in the region**

The Basque university system comprises three universities, which form the core of the scientific sub-system:

* **The University of the Basque Country**, the only public university, is an internationally recognised research university, which attracts talented resources.
* **Deusto University**.
* **Mondragon University.**

The Basque Country also has **TECNUN**, which is part of the University of Navarra.

In vocational training and lifelong learning, a network of **vocational training centres** enables students to access medium and higher levels of education and provides training for workers and unemployed people:

* **Tknika**, the Centre for Innovation in Vocational Training. Its mission is to drive advances in new learning environments and processes by adapting new ideas or technologies and transferring them to students in small and medium enterprises.
* **IVAC**, the Basque Institute of Vocational Qualifications. It designs and implements qualifications and curricular development within vocational training, responding to the needs of the business sector.

**Cooperation: networks**

* Among technological corporations, **IK4** pursues technological excellence based on specialisation and cooperation, undertaking joint R+D+i projects and establishing coordination mechanisms between members of the corporation.
* **Tecnalia** focuses its activities on applied research, with the aim of interacting and co-generating knowledge.
* **Innobasque** fosters effective co-ordination and collaboration between all agents in the fields of science, technology and innovation.
* The **business clusters** identify strategic challenges and potential synergies.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Basque Country** | **WEAKNESSES: Basque Country** |
| Powerful institutional support system.  Widely available and competitive vocational training.  Highly developed network of technology centres.  Public and private collaboration (good networking).  Operative quality and efficiency of Basque business.  Social awareness of global challenges. | Confusing methods of governing the system.  Small company size.  Low percentage of GDP invested in university R&D&i spending.  Scientific system lacks dynamism and connectivity.  Current economic crisis. |

**2.2 Surveys (individual and group interviews)**

**Internal culture**

Our respondents tell us that to be sustainable, innovation must be like the air you breathe. There must be an open culture inside the organisations and easy access to top managers. Employees should be trusted to compromise and meet customer demands and the needs of society. Better, they say, if this is done in a systematic way based on teamwork, aligning activity with business strategy and investing to make all necessary resources available.

**Role of learning**

Respondents tell us that training is important and that the attitude of employees is significant for their organisations.

They also note the importance of learning from experience and the need to learn about specific methodologies, new capacities and communication.

**Degree of cooperation**

Most of the companies are used to cooperating with different entities: companies, VET centres, technological centres and universities. Some also belong to networks or take part in forums.

**Programmes and models**

Many respondents say they do not use a specific model of innovation within their organisation, although a number of them say that some programmes related to innovation are being implemented. Important investment is being made in organising the way they work. Some say that they work against measurable objectives. Creative techniques and brainstorming are described as the most familiar ways of teamworking.

**Obstacles**

The obstacles mentioned by respondents are mainly a shortage of time and resources. They emphasise the current economic crisis and link this to any lack of an innovation strategy in their company. They also talk about low skill levels and poorly motivated staff. Coupled with a perceived failure of leadership, these indicate that in some companies there is not a well-established culture of innovation.

Other obstacles also mentioned are the complexity of implementing innovations and some technological and methodological difficulties, coupled with the lack of previous reference from which to learn.

**Factors**

Consistently with all of the above, our respondents think that one of the most important factors in implementing innovation is the need to define a clear innovation strategy to create a culture of innovation and participation in the company, so that people feel motivated and interested in acquiring new skills, enabling them to work together and collaborate with other departments of the company, be aware of what happens in their environment and evolve with the needs of the markets.

**2.3 Conclusions and suggestions for WP08**

Although respondents talk about risk-taking and tolerating failure, the reality, in most situations, is that the priority is to succeed by gaining external recognition and prestige and building strong brand recognition.

They think institutions should encourage entrepreneurship and develop a clear strategy, designed and shared by all actors, producing synergies and involving a learning process in how to communicate and sell.

They think that there are too many initiatives, agents and overlaps and that better coordination is needed between existing innovation agents. They think that relationships between educational organisations and SMEs should be strengthened and that it is important to have a powerful model of innovation management, one that is simple to use and can be measured and agreed at international level.

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

* Lack of models to follow.
* Lack of awareness that innovation, above all, is about management having a promotion and management model.
* Need for good leadership.
* Need to promote a culture of innovation within the company.
* Need to educate people in the values of innovation and creativity.
* Need for creativity techniques, brainstorming and creative routines in organisations.
* Importance of passion.
* Difficulty of implementing innovation.
* Lack of a culture for sharing knowledge.
* Need to clarify and agree about innovation.

**Observatory**

* Need to disseminate good practice, copy best practice and diffuse innovation results.
* Need to respond to customers’ demands.
* Need to detect new opportunities.
* Need for subventions.

**Networks**

* Need to work in networks to promote innovation.
* How difficult it is to meet people from other countries.
* Need for better coordination of existing agents.

*Lehiberri, Forum for Competitiveness and Innovation, Basque Country*



**3. Sønderjylland**

**3.1 Regional report**

Denmark, on an international scale, ranks roughly in the middle in its share of innovative companies, as well as the level of new products measured by turnover. Lack of innovation and self-renewal are offered as standard explanations for lower productivity levels in Denmark compared with other OECD countries.

The labour force in all Danish regions is significantly higher than the average in OECD countries. Unemployment is therefore lower than in other OECD countries. Denmark’s employment system provides support to unemployed people to take on new jobs or join a programme known as on-the-job training, which leads them back into the job market.

**Regional policies and initiatives**

Southern Denmark (Sønderjylland) faces a number of serious new challenges in the future. Growth and productivity are low, and fewer workers will have to support more people.

If this trend is to be reversed there needs to be a comprehensive shared effort to secure the foundation for growth, based on the human resources available in the region. A policy framework needs to be agreed and supported both by the electorate and the business community. Any public initiatives need to supplement strategic efforts by the regional business community to generate increased economic growth.

Current initiatives encompass the following areas:

* Knowledge
* Education
* Infrastructure and mobility
* Climate

For further information: <http://detgodeliv.regionsyddanmark.dk/images/Media/Regional-udviklingsplan/The%20Regional%20Development%20Plan%202012-15.pdf>

* **RESEARCH 2020**: in the context of the significant challenges facing Danish society, which are particular to the country, this initiative identifies promising Danish research areas relating to growth, employment and welfare.
* **UNIK**: this initiative is part of the Danish government’s strategy to meet the opportunities and challenges of globalisation.
* **INNO+** is part of the work on the Danish government’s innovation.
* Political agreements about Erasmus Mundus Master programs .

**Programmes**

Programmes and other resources related to innovation in Sønderjylland are:

* **Vækstforum** (Growth Forum), in the region of Sønderjylland. It selects and decides which projects to finance and support in the region.
* **UNIK** (University Investment/Funding). It provides funding for research and the platform for FORSK2020, a discussion forum for researchers.
* **The Danish Foundation for Entrepreneurship**. “Young Enterprise” education at all levels: primary, vocational (VET), secondary schools and higher education institutions.
* **Growth Houses** (Væksthus) in all regions of Denmark. The EU’s Lifelong Learning Programme is delivered through the adult education system and financed by government and companies (through the AMU System: see below).

**Agents and stakeholders**

The main actors in the field of innovation are:

* **Tonder Municipal**, a public organisation with a brief to attract new businesses, sustain employment in the region and develop new markets and activities for existing and new companies.
* **I-factory**, supporting entrepreneurs, innovators and developers of new ideas and projects.
* The regional trade centre, **Aabenraa**, providing consulting, support and activities for new and existing companies, with the aim of developing entrepreneurs and innovators and sustaining employment in the region.
* The **research parks** in Southern Denmark, providing support for new business ideas and networking.
* The **Lean Energy Cluster**, encouraging research, education and training in technologies and solutions to promote efficient energy consumption.
* **EUC Syd** (Higher Technical Gymnasium), supporting the development of innovators and entrepreneurs.
* **IDEA**, an entrepreneurship, research and education centre.
* **SDU** (Southern Danish University), offering university programmes in innovation and development.

**Learning in the region**

In Sønderjylland about 20 percent have taken part in courses or school lessons about entrepreneurship and starting a new business, which is above the average in other regions of Denmark except for Midde Jytland and North Jytland.

The adult education system is financed by the Danish government and companies through the **AMU System**. This is a reimbursement system, enabling companies with cashflow problems to hold on to their employees by sending them on training courses. During training the companies pay a proportion of the employees’ salaries, which is reimbursed by the scheme. The AMU System supports the EU’s Lifelong Learning Programme so that employees of all ages have an opportunity to continue their education, keep abreast of new technologies and developments and maintain their employability.

**Cooperation: networks**

Statistics show that the region of Sønderjylland has average levels of cooperation between suppliers, customers, companies and universities. In general, though, the interaction among stakeholders in innovation is rather weaker in Denmark than in other countries.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Sønderjylland region** | **WEAKNESSES: Sønderjylland region** |
| Cluster of electronic companies.  Cluster of windmills and offshore industry (in south-west Denmark).  Cluster of companies in health and social innovation (in Odense).  Cluster of sustainable energy companies (in Sønderborg).  Cluster of experienced economy (tourism and design).  Economic system organised in clusters.  Good environment for innovations and entrepreneurs.  Funding from government.  Growing number of patents awarded.  Assurance that R&D stays in Danish companies. | Weak connections between companies and education providers.  Shortage of highly qualified staff.  Lack of collaboration between education providers.  Lack of collaboration between universities and companies.  Shortage of venture capital (since financial crisis in 2008).  Loss of jobs in bigger companies (due to outsourcing).  Taxes too high to attract foreign employees and researchers. |

**3.2 Surveys (individual and group interviews)**

**Internal culture**

Both individual and group interviews with companies reveal a weak internal culture of innovation mainly due to lack of time and competences. No special training is offered by companies to employees to become better educated about innovation and create new products or services. In most SMEs there is no time to provide training in innovation, because the emphasis is generally on survival. Some SMEs even outsource their R&D to external service suppliers.

**Degree of cooperation**

According to our interviews, cooperation with other companies is common via networking through educational organisations and suppliers. Sønderjylland, though, has a lower level of education. Traditionally its economy is based on small companies and agriculture, and production tends to be outsourced to larger companies. It can be difficult for companies in the region to attract highly skilled engineers or other skilled personnel.

**Programmes and models**

In Sønderjylland approximately one innovative company out of three uses technically advanced models to find out about the known and unknown needs of their customers.

Teamwork and dialogue are rather more widely used than in other regions. Some respondents mentioned using business planning as a management tool. One company also mentioned the Blue Ocean Strategy as a tool for creating innovation in the company. This is an analytical tool for creating innovative value by “*successfully creating and capturing blue oceans*”, a synonym for finding new opportunities and markets and setting your company on a path for growth.

**Obstacles**

As is often the case, lack of time, resources and competences are the main obstacles to creating innovation and an innovative culture. Various other factors have already been mentioned. It appears from our interviews that the hierarchy within companies tends to hinder communication between employees and managers and prevent ownership of tasks by employees. Another barrier can be the lack of a processes structure. And, when the going gets difficult, SMEs are prone to concentrate on survival instead of innovation.

**Factors**

When it comes to creating an innovative culture, the most frequently mentioned factor is the human one.

On the one hand respondents say that companies should open themselves to the world in order to better foster innovation, but on the other they ask for a good working environment to secure the commitment of employees. Entrepreneurs, they say, should receive stronger support, meaning regional and national government need to provide more funds for education and support for entrepreneurship, and the finance sector needs to offer start-up business capital for entrepreneurs. Clearly the right financing for innovation activities is a highly relevant factor.

**3.3 Conclusions and suggestion for WP08**

Financial support should come from research parks, national government and local regions.

There is a clear demand for support by lowering taxes and providing good services to entrepreneurs through education and training, administrative and other practical forms of support, as well as project management. There is also a call for entrepreneurship to be promoted all the way through from early education, and for modules in entrepreneurship to be introduced at all levels of education, fostering an entrepreneurial spirit among the general public and initiating and developing it particularly among young people.

Another recommendation is to further boost creativity by applying good design to product development.

Greater involvement of employees in implementing innovation in organisations should be achieved through education, salary initiatives and other rewards and by introducing an organisational culture based on dialogue, shared experience and space for reflection (inspired by Peter Senge’s theories of organisational learning).

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

* Lack of specific models and structured processes.
* No empowerment of employees.
* Need for better communication.
* Cultural factors and human behaviours.
* Entrepreneurial minds.

**Observatory**

* There are some agents already working to promote innovation, but there is not a specific observatory.
* Need for space for discussion and exchange between involved stakeholders.

**Networks**

* Lack of cooperation between companies, education centres and universities leads to lack of knowledge about what is really possible.
* In order to create a better transfer of knowledge from education to the world of work (and vice versa), decrease the time span between the need of SMEs for innovative solutions to real-life challenges.

**4. Aegean Region, Izmir**

**4.1 Regional report**

From a development perspective the Aegean region is second among all the regions of Turkey. The city of Izmir ranks third among 81 cities. It has 17 organised industrial zones, the highest number in the country. The Ministry of Science, Industry and Technology ranks the city fifth in resource allocation for R&D, with eight R&D centres in the municipal area. Izmir has 50 industrial enterprises ranked among the top 500 in Turkey.

**Regional policies and programmes**

**Resources available**

In the Izmir region the following institutions provide financial support for R&D and innovation:

* The **Ministry of Science, Industry and Technology**.
* The **Scientific and Technological Research Council of Turkey (TÜBITAK)** is the leading agency for managing and supporting research in Turkey. TÜBITAK funds research projects carried out in universities and other public and private organizations.
* The **SMEs Development Organisation** **(KOSGEB)** supports R&D through its Innovation and Industrial Application Support Programme.
* The **Izmir Development Agency (IZKA)** started the “Formation of Izmir Regional Innovation Strategy” project with the Ege University Research and Application Center of Science and Technology (EBİLTEM) in May 2011. The aim of this project is to determine the potential for innovation in Izmir and develop an action plan for improving any identified potential.

**Agents and stakeholders**

Numerous organisations in the Izmir region provide services for entrepreneurs. However, only a few provide services for research, development and innovation:

* The **Ege University Research and Application Center of Science and Technology** **(EBİLTEM)** is an interface organisation, which aims to provide an institutional structure for industry. It has close ties with other national and regional organisations and industry. EBİLTEM provides an institutional structure for the organisation and coordinates research and development activities at Ege University. Currently it is the coordinator of the Ege Business and Innovation Centre, which is an active member of the Enterprise Europe Network (EEN).
* The **Izmir Institute of Technology** (IYTE) was founded in 1992 with a brief to do more research and less teaching than other universities. On the IYTE campus there are four centres for research in information technology, environmental, geothermal and materials sciences. The Centre for Materials Research
* **IZTEKGEB** is an agency established by the IYTE in 2004 in the Izmir Technology Development Zone.

**Learning in the region**

*Pending*

**Cooperation: networks**

There is a project for developing a clustering strategy for Izmir, with a Clustering Committee consisting of representatives of agencies, organisations and institutions with expertise and experience of clustering activity in this region.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Aegean Region, Izmir** | **WEAKNESSES: Aegean Region, Izmir** |
| Competence to act, political will to aim for increased innovation, and a clear idea of the strengths and weaknesses of the region.  The region has allocated resources and placed a focus on defined action areas.  Regional actors have been identified and mobilised.  Good, transparent communication between innovation agents in the system. | Inadequate communication and information concerning innovation management models.  Regional and national stakeholders are identified with proposed changes in the business environment and adjustments to the comprehensive innovation strategy for the Izmir region. |

**4.2 Surveys (individual and group interviews)**

**Internal culture**

In general the interviews revealed quite a weak understanding of what is meant by a culture of innovation.

**Role of learning**

More efficient responses to training requirements in the area and the need for more training centres are mentioned.

**Degree of cooperation**

In general there is a fair level of effective cooperation between companies in the region and universities, other producers and customers.

**Programmes and models**

No innovation methodologies were mentioned in the interviews.

**Obstacles**

The familiar obstacles of lack of time, resources and strategy were discussed during the interviews. Other problems mentioned were a general lack of competences and managerial skills.

**Factors**

The two most important factors reported by interviewees were the need to design a clear innovation strategy and provide more appropriate solutions to the needs of the market. Also mentioned were the need to drive down production costs and improve human resources management.

**4.3 Conclusions and suggestions for WP08**

There is an obvious conclusion, from an innovation indicators perspective, that Izmir has an insufficient level of innovation activity to provide any useful suggestions. In general, current innovative activities in the region are conducted only through the individual efforts of certain enterprises.

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

* Need for a model of innovation management.
* Basic elements need to be explained.
* Culture of innovation needs to be promoted from the outset.

**Observatory**

*Pending?*

**Networks**

* Need for networks and sharing resources.

**5. Lower Silesia**

**5.1 Regional report**

**Regional policies and programmes**

* **2020 Development Strategy for Lower Silesia**: initiated by the Voivodship.
* **Regional Innovation Strategy for Lower Silesia**: initiated by the Voivodship for 2011–2020.
* **Regional Operational Programme for Lower Silesia**: initiated by the Voivodship for 2007–2013. The programme provides direct financial support for investments by companies, as well as strengthening the infrastructure for the business environment and research institutions in the Lower Silesia region.
* **Cluster Development Programme**: initiated in 2010 by the Marshal’s Office of Lower Silesia (UMWD) and financed from its own funds. It offers support for cluster initiatives and related activities such as the development of partnerships and activation of economic links between members of clusters, as well as grants and planning advice.

**Resources available**

* **Lower Silesian Innovation and Science Park (DPIN)**: the main goal of DPIN is to generate wealth and employment by establishing collaborations between the commercial sector and academia, thereby applying market knowledge to the research base of Lower Silesia. Its main purpose is the commercialisation of scientific research.
* **Wroclaw Industrial Park**: the main aim is to support legal entities in running their start-up businesses, providing a good location and helpful infrastructure, including office space and a special hall for laboratories.
* **KGHM LETIA Legnica Technology Park**: a joint project of KGHM Polska Miedź S.A., the Marshall’s Office of Lower Silesia and the Wrocław University of Technology.

**Agents and stakeholders**

The main stakeholders operating in Lower Silesia are:

* The **Marshal's Office of Lower Silesia**, a separate organisation with its own team of people and resources, established to implement the powers of the Regional Board.
* The **Wroclaw Regional Development Agency** (WARR), a non-profit institution and an excellent source of information for potential investors, which provides assistance on several levels.
* The **Lower Silesian Regional Development Agency**, established in 1991, with the objective of providing support for the social and economic transformation of the Wałbrzych region, restructuring its economy and developing businesses.
* The **Lower Silesian Agency for Economic Cooperation** (DAWG), a company 100% owned by the provincial government. The aim is to promote entrepreneurship and innovation in Lower Silesia.
* The **Wroclaw Centre of Technology Transfer**, whose mission is to improve efficiency and competitiveness through innovation.

**Learning in the region**

The **Wroclaw University of Technology** aims to shape the creative and critical personalities of students and define the direction of developments in science and technology.

The **University of Wrocław**, established in 1702, today has scientific research as its main focus.

**Cooperation: networks**

There is close interconnection between stakeholders in Lower Silesia. Technological parks, universities, clusters, innovation and science parks, centres of technology, chambers of commerce and regional agencies form a very dense network in the fields of research and development.

**Clusters in Lower Silesia:**

* **SIDE cluster**: building networks between local firms, the local business community and local government, scientific research units, business service institutions and foreign partners.
* **Eco-Energy Cluster** (EEI – Energy, Environment, Innovation): the EEI cluster focuses on the theoretical and practical aspects of developing renewable energy sources in the Lower Silesian region.
* **Lower Silesian Cluster of Renewable Energy**.
* **Foundation for Silesian Commodities Cluster**: the foundation is active in establishing and expanding connections between businesses, academic institutions and local government units, encouraging better use of existing potential industrial, scientific and social support to implement the economic development of Lower Silesia.
* **CINNOMATECH** **cluster**: its mission is to support the economic development of the region and strengthen the competitiveness of companies in the manufacturing sector.
* **NUTRIBIOMED** **cluster**: the cluster’s main idea is to create a positive environment for strengthening the position of Poland in the market for dietary supplements and biomedical products, developing production know-how based on natural agricultural resources.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Lower Silesia** | **WEAKNESSES: Lower Silesia** |
| High rate of investment attractiveness in the region – in particular in the field of advanced technology.  Diversified economic structure.  Readiness of innovative SMEs to make changes.  Relatively high levels of innovative activity among Lower Silesian enterprises.  Growing cooperation within clusters.  Industry diversity makes stable and sustainable development possible.  High percentage of companies introducing new solutions in the scope of products, production or organisation methods.  Development of special economic zones.  Large number of SMEs in the structure of the economy. | Low investment in research and development (R&D)  Limited willingness of SMEs to make changes and take risks.  Lack of openness to new technologies.  Lack of effective creative collaboration within enterprise supply chains.  Lack of long-term planning for SME development.  Inadequate human resource capacity.  Limited cooperation between business and technical colleges and universities to adapt educational programmes to market needs.  High unemployment caused by economic recession.  Lack of networking and cooperation between enterprises.  Low usage of information and telecommunication technologies in services. |

**5.2 Surveys (individual and group interviews)**

**Internal culture**

The lack of a culture of innovation in the companies interviewed for our project is plain to see. It seems that a culture of complaint is more the rule in these Lower Silesian companies.

**Role of learning**

There seem to be no effective links with the universities in the region when it comes to responding to the real needs of the markets.There is also a low rate of investment in the acquisition of knowledge.

**Degree of cooperation**

Cooperation is not a well-established practice in Lower Silesia, although some companies collaborate with the universities, the Lower Silesia Innovation and Science Park and other research and development institutions.

**Programmes and models**

The companies are introducing new tools, mainly to support the flow of information. They have adopted tools to manage their customer relations and are familiar with platforms, portals and web technologies.

Some confirm that standard project management methods are used in their companies.

**Obstacles**

As in other regions, our respondents report a lot of barriers to innovation. Above all they regret the lack of resources, time and competences. They also regret the general lack of institutional procedures. Other obstacles are a lack of strategy and routes to market. Large fiscal burdens on SMEs are another impediment to innovation in Lower Silesia.

**Factors**

In spite of the obstacles listed above, there are some factors that help to drive innovation. The most relevant are the motivation and good skills of employees: give them any research funds that might come to hand and what you get amounts to an innovation strategy for the company. Another priority on the path to innovation is to meet market demands, and here it is important to monitor what workers are doing and build effective teamwork.

**5.3 Conclusions and suggestions for WP08**

Interviewees say they long for a forward-looking programme of innovation for Lower Silesia. They talk about funding, loans, grants and instruments. They want support for the entire process of innovation, from conception to commercialisation. They plead with the universities to be more open to cooperation, more proactive.

They are convinced there should be less bureaucracy. They urge local government to accept more responsibility, they want more regionalisation, and they are willing to organise and take part in meetings, festivals and workshops around the theme of innovation.

They regret the general reluctance to share resources and knowledge in the region, and think that well-motivated employees and a positive internal environment in companies, together with smart leadership, are critical factors if innovation is to stay on track.

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

* Need to facilitate organisational work.
* Use of ICTs to support practices.
* Culture of sharing doesn’t exist.

**Observatory**

* Information about meetings, seminars, festivals, lectures.
* Development of innovation exchange, where innovation is organised thematically.
* Database of buyers.

**Networks**

* Lack of culture for sharing knowledge.
* Difficulties in finding the right partners.
* No networking and cooperation.
* Developing cooperation between R&D units.
* No creative collaboration.

**6. Tuscany**

**6.1 Regional report**

Measured against the national average, Tuscany is doing relatively well and shows quite intense patenting activity. In relation to the RDTI (Research, Technological Development and Innovation) inputs, Tuscany’s innovation level is close to the national level although well below the average level of EU countries.

Like other Italian regions, Tuscany is characterised by a prevalence of traditional SMEs, organised in districts, in which innovation is mostly informal and is linked to continuous interaction between suppliers and producers. Indeed, the whole Italian industry system is dominated by micro-firms (with less than 9 employees), whose share of the total is almost 95%.

**Regional policies and programmes**

* **Law no. 20/2009**, which includes “Regulations on the Subject of Research”, governs the regional development programme.
* **Multi-year Action Plan for Innovation and Research**.
* **Regional Programme of Innovation Activities**, co-financed by the European Regional Development Fund (ERDF).
* **DOCUP-OBIETTIVO 2**; **Programmi Regionali di Azioni Innovative**; **INTERREG. PRIN**: these are regional projects of national interest, providing funds for universities and research institutions, grants, plans and other forms of support.

**Resources available**

In 2001, the Sant’Anna School of Advanced Studies in Pisa created the **Observatory of Tuscan high-tech firms**, which, since 2009, has been jointly coordinated with **Unioncamere,** the regional union of chambers of commerce.

The **MAIN (Management & Innovation) Laboratory** at the **Sant’Anna School of Advanced Studies** (Pisa)specialises in research into “Open Innovation” and R&D management.

**Agents and stakeholders**

The main stakeholders in the region are:

* **Regione Toscana Regional Government**. The regional government is the most important and influential after the national government and has jurisdiction to set laws within the state.
* The **National Research Council** has a duty to carry out, promote, spread, transfer and improve research activities in the main sectors of knowledge growth and its applications for the scientific, technological, economic and social development of the country.
* **Regional Conference for Research and Innovation.** A permanent board structure with consultation functions.
* **Promozione Toscana Economic**. The Promotion Agency of Tuscany, established in 2000 by local government.
* **SICI Manager of “Fondo Toscana Innovazione”**. Investments in innovative activities and products. Proposals from applicant firms are evaluated by a scientific committee.

**Learning in the region**

Research, which is usually done in universities, tends to have new knowledge as an outcome rather than new production techniques. This outcome then has to be translated into different routines and prototypes to enable it to meet different production realities. This sort of conversion process requires an interaction between research types, production units and competences coming from different field.

**Cooperation: networks**

There is a dense interactive network, which includes clusters, universities and research institutes.

**Innovation clusters** represent a network of excellence, with members from three different categories:

* **Companies**, including large, medium and small organisations for the sector and territory, all of them demonstrating innovative dynamism and interest in investing in development paths.
* **Universities and research institutes**, with the direct participation of all the Tuscan universities and private research institutes.
* **Key players in supporting innovation in the sector**, such as infrastructural enterprises from the data transfer and processing sector.

There is a **Research Association of Professors and Researchers** at the University of Firenze, which aims to strengthen and develop systems of technology transfer from university departments and research organisations to private firms.

Supplementing the innovation clusters, **incubators** support technology transfer and entrepreneurship.

Sometimes within a specific cluster there can be a network among SMEs to exchange information and share experience. The network can, for example, help to define and apply common solutions to shared environmental, technical and/or organisational problems, or to share management resources.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Tuscany** | **WEAKNESSES: Tuscany** |
| Good concentration of research institutes and units.  Funding opportunities.  Tourism as a main economic resource.  Encouraging environment for innovation. | The connection between firms and the education sector appears to be weak.  The regional strategy should be better defined and implemented.  Research should be more business-oriented and market-driven.  Access to credit is difficult, especially for small firms.  Fiscal support for innovating firms would be widely welcomed. |

**6.2 Surveys (individual and group interviews)**

*Pending*

**6.3 Conclusions and suggestions for WP08**

*Pending*

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

*Pending*

**Observatory**

* In 2001, Sant’Anna School of Advanced Studies in Pisa created the **Observatory of Tuscan high-tech firms**, and since 2009 it has been jointly coordinated with **Unioncamere**, the regional union of **Chambers of Commerce**.

**Networks**

* There is a very dense interaction network

**7. Wales**

**7.1 Regional report**

Wales is one of the four countries of the United Kingdom. The Welsh Government has areas of responsibility devolved to it by the UK government including health, education, housing, agriculture, culture, tourism and local government. The UK government retains responsibility for defence, taxation, immigration, pensions and benefits.

**Regional policies and programmes**

In 2012, the Welsh Government produced ‘**Science for Wales**: **A strategic agenda for science and innovation in Wales**’, which set out its intention to build a strong and dynamic science base to support the economic and national development of Wales and the aspiration for Wales to win a greater share of UK Research Council funding. One of its key aims was to illustrate the potential to boost the economy through advanced ideas and skills and an effective translation through innovation to more high-quality jobs.

‘Science for Wales’ also called for a complementary strategy to deal with the commercial exploitation of R&D and the promotion of innovation. The Welsh Government launched its initial consultation on “**An Innovation Strategy for Wales**” in April 2012, highlighting innovation as one of the key drivers of economic growth and job creation. After reviewing the evidence submitted to this call, the Welsh Government outlined its initial proposals in November 2012. A review version was published in early 2013, which identified five key themes for action on innovation:

* Improving collaboration.
* Promoting a culture of innovation.
* Providing flexible support for innovation.
* Innovation by government.
* Prioritising and creating critical mass.

The Welsh Government has adopted the Smart Specialisation methodology to deliver “Innovation Wales” and is committed to keeping an open dialogue with its stakeholders. There is a will to generate a culture of innovation by laying the emphasis on the social and educational environment, which values enterprise and entrepreneurship.

**Resources available**

**Academia for Business** (A4B) is a six-year programme of support aimed at unlocking the commercial potential of Wales’ higher and FE (further education, i.e., VET) institutions. The programme will end in 2014.

The Welsh Government-sponsored **Heads of the Valleys Innovation Programme** was an example of a large-scale collaborative project involving many partners, which has borne fruit in terms of innovation priorities. One element of this project was the **Dragon’s Den**-style competition for learners in the Heads of the Valleys (an area in south-east Wales) called ‘The Big Pitch’, run by the region’s FE colleges in partnership with local SMEs. The project ended in March 2011.

The **Dragon Innovation Partnership Project** (<http://www.dragonip.ac.uk/is>), a collaboration between University of Wales Trinity St David and Swansea University, aims to maximise opportunities for transferring knowledge and expertise between the universities and external companies and organisations.

**Agents and stakeholders**

The main agents acting in the region are the Welsh Government, universities and FE colleges, the Wales Quality Centre, chambers of commerce and private training providers.

* The **Welsh Government** provides funds for innovation projects, hi-tech companies and university spin-outs.
* **Technium** is a network of business incubators, where science and technology businesses can turn their potential for high growth into reality.
* The **Wales Quality Centre** has been campaigning through the Wales Innovation Award to raise the profile of innovation in Wales. Welsh organisations across all business sectors are encouraged to tell the Wales Quality Centre what they have done that was innovative over the previous 18–24 months.

**Learning in the region**

**Universities**

Wales has 11 universities, all of whom are involved to some extent in research and development. Some examples of the promotion of innovation by universities in Wales include Cardiff University, which has an **Innovation Network** founded in 1996 with the mission to “*develop a stronger network of links between industry and academia in order to enhance innovation – the successful commercial implementation of ideas.*” The Institute of Life Sciences at Swansea University has developed a cluster of 30 members comprising companies and individuals, nearly all of them involved in research and innovation.

The Welsh Government published ‘**For our future; the 21st Century Higher Education Strategy and Plan for Wales**’ in 2009. It is a vision that sees higher education providers in Wales “*contributing to the future renewal of the Welsh economy by raising the skill level of the Welsh workforce and by supporting businesses to be become increasingly innovative and competitive.*”

**Further Education**

There are 15 Further Education Institutions (FEIs) in Wales offering vocational education and training to full-time and part-time learners; most also offer academic qualifications too. FE colleges work closely with SMEs in their own geographical areas to ensure appropriate work-based learning as well as providing tailored training for the existing workforce of employers within their area.

FE colleges in Wales are committed to entrepreneurship education for their learners. Some excellent examples of this can be found across the FE sector in Wales.

**Cooperation: networks**

The **Knowledge Transfer Partnership** (KTP) model has proved to be one of the most effective ways whereby knowledge exchange between colleges and companies can be encouraged. KTPs across sectors in Wales have been sponsored directly by the Welsh Government (Academia for Business – A4B), the UK government and the UK’s **Technology Strategy Board** (TSB). A number of colleges have made the **KTP model** work well in Wales, bringing demonstrable benefits to the partner company and the local economy.

As an economic region Wales benefits from the strong connections that exist between its educational system, social enterprises and the business sector.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Wales** | **WEAKNESSES: Wales** |
| Wales has pockets of world-class expertise in academia in areas with commercial potential but lacking in global scale.  Wales has clusters of smaller companies in niche areas such as optoelectronics and medical instrumentation.  Wales has recently introduced a new strategy for science.  Wales has many aspects deemed important by the OECD for a successful innovation system such as access to a first-class knowledge base, good labour flexibility etc.  Students at colleges in Wales lead the UK in enterprise education. | Low investment in R&D by Welsh business and academia.  Little evidence of a culture of innovation in Wales.  Little evidence of an investment culture and an over-dependence on grants.  Lack of high-level skills and innovation management skills in many areas.  Weak external perception of Wales as a base for knowledge-based companies, resulting in an international image as a leisure destination.  Lack of international trade. |

**7.2 Surveys (individual and group interviews)**

**Internal culture**

There is a clear idea of what an innovation culture is about: passion, creativity, sustainability, risk, team culture ...

**Role of learning**

Two main points were mentioned in interviews:

* Improving training and mentoring.
* Learning creativity and entrepreneurship.

**Degree of cooperation**

A good culture of cooperation seems evident among Welsh organisations. Companies usually cooperate with each other and frequently also with educational institutions, local or regional authorities and even other organisations that provide public services.

**Programmes and models**

Even when only one specific model or programme is mentioned in the interviews, other innovative ways of working have already been introduced into Welsh working culture. Interviewees talk, for instance, about their innovative processes or the system they use to provide support to industry, and about innovations in methods and delivery.

**Obstacles**

In addition to the classic complaints about lack of time and funding, interviewees refer to people’s attitude, in relation to their work, as one of the most important barriers. They say that a positive approach from employees is necessary to make the company work innovatively.

In relation to leadership, the individuals note that weak or dogmatic leadership can cause great damage to the culture of innovation in organisations.

**Factors**

As a logical response to these obstacles, the individuals interviewed feel that good leadership and the passionate attitude of people about doing new things and being creative are the main factors required to drive innovation – but also that the leaders of companies need to be receptive to their customers’ ideas and ready to evolve with the demands of the marketplace.

**7.3 Conclusions and suggestions for WP08**

Interviewees think that a culture of change, innovation and leadership in Wales should be reinforced. They advance several suggestions:

* To increase relevant support and resources in order to attract more entrepreneurs to Wales.
* That collaboration between organisations should be better – and, most of all, that collaboration should be enhanced between businesses and the education sector.
* That companies need to improve their products, be more efficient and implement new business models and production methods.

To support these changes, they suggest that more financial support is needed from both European and Welsh organisations.

*Other points of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

* The Knowledge Transfer Partnership
* Knowledge transfer strategies
* Partnership: knowledge exchange between colleges and companies
* Workshops to generate ideas, techniques and tools
* Learning from others: indicators, standard models

**Observatory**

* Sharing good practices
* Learning from others

**Networks**

* Good networking of educational institutions, businesses, social enterprises and local employers

**8. Västra Götaland**

**8.1 Regional report**

The county of Västra Götaland (West Sweden) has always been noted for openness and international contacts. Today its trade and industry are among the leaders in Europe when it comes to investment in research and development in environmental engineering, biomedicine and IT. With its strong company clusters, Västra Götaland is one of the 20 fastest growing European economic regions.

**Regional policies and programmes**

In 2012 the Swedish government launched a new innovation strategy intended to contribute to a climate of innovation, provide the best possible conditions for innovation in Sweden, and set as a target the year 2020.

To replace the current growth programme, a new growth and development strategy is now being developed for Västra Götaland for the period 2014–2020.

**Resources available**

As well as the national innovation strategy, national and regional programmes cover the following areas: competence platforms, vocational education and regional growth. SMEs in Västra Götaland can apply for funds (R&D checks) for research work done by the companies in collaboration with a university. This support is available for projects and development activities, which can include strengthening the company’s international competitiveness and contributing to more efficient energy production and consumption, regional growth strategy, studies and research from universities and private research companies.

**Agents and stakeholders**

The main stakeholders active in the field of innovation are:

* The **Västra Götaland Regional Council**, the democratically elected organisation in West Sweden charged with promoting growth and sustainable development and providing the country’s inhabitants with good healthcare.
* The **Göteborg Region Association of Local Authorities** (GR), which focuses on such issues as regional planning, the environment, traffic management, the job market, welfare and social services, competence development, education and research. GR works closely with:
* **Business Region Göteborg**, a sub-region of Fyrbodal, with responsibilities for health and social services, infrastructure, culture, enterprise and education.
* **Innovatum**, which carries out research projects and stimulating activities.
* The **Swedish Federation of Business Owners** promotes better conditions for starting, running, developing and owning a business in Sweden. Its mission is to promote entrepreneurship, safeguard the rights of business owners and contribute to conditions that make running a business easy and attractive.

**Learning in the region**

Learning policy in the Swedish regions lays an emphasis on the importance of validation and lifelong learning. Value is applied both to practical and theoretical skills, and there is commensurate openness towards flexible and alternative methods of teaching. Attention is paid to careful analysis of supply and demand in the employment market.

Västra Götaland is one of Europe’s leading regions for trade and industry investment in research and development. Much of the research is done by large corporations, often collaborating with research at leading universities and institutes. Key fields include biomedicine and health, IT, the maritime sector, vehicles and sustainable transport, energy and the environment, and smart textiles.

**Cooperation: networks**

Västra Götaland supports a number of platforms, which are described as “collaborative” and promote innovation, business development and research. They function as neutral forums intended to facilitate partnership between large and small companies, institutes, academies and social actors. Five strong clusters in West Sweden are active in the following sectors: urban planning, the marine environment and maritime sector, transport solutions, green chemistry and bioproducts.

Interactions within the region are strong. There is close cooperation and collaboration both within and between companies, organisations, municipalities, universities and government agencies. The 49 different municipalities in Västra Götaland collaborate with the Göteborg Region Association of Local Authorities. There is also active collaboration with stakeholders in the adult education sector.

Collaboration with the National Employment Service and with the West Sweden Region concerning competence platforms. Strong position within the region. Clear role as coordinator within the education sector for adults.

Close cooperation with municipalities and educational organisations within the sub-region, national agencies and organisations like Swedish Association of Local Authorities and Regions.

Close cooperation within Region Västra Götaland, Innovatum, and the local private enterprises, with universities and research, sub-regions, Region Västra Götaland and Swedish Federation of Business Owners.

Close cooperation within small and medium sized enterprises in the region

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Västra Götaland** | **WEAKNESSES: Västra Götaland** |
| Finding right people to work with innovation and collaboration  Network with the outside world (market, customers, partners),  Experience, creativity and a creative working climate.  Adaptability, Pragmatism.  Good understanding of the markets needs,  Long term financing of the organisation.  Well trained staff, good collaboration in the network, the sharing of knowledge,  To be able to change, quickly, challenging the system and the methods,  Having a neutral stakeholder for work with coordination and innovation  Consensus in the collaboration. Long term cooperation.  Listening to others | Lack of innovative thinking.  Lack of time for innovation.  Lack of formal strategy for innovation  Lack of will to change.  Lack of finance for innovation.  Difficulty keeping up with goals that change all the time.  Old/set traditions.  Old/set routines and company cultures.  Many students taught in traditional ways must learn how to adapt to changes in the market.  Difficulties understanding the value of collaboration. |

**8.2 Surveys (individual and group interviews)**

**Internal culture**

* A culture of collaboration within and between different stakeholders.
* A long tradition of knowledge sharing within the region.

**Role of learning**

* Education is a priority.
* A platform for competence is being developed in the county, based on a national initiative.

**Degree of cooperation**

* There is strong collaboration at regional level and between regional and local levels.
* Educational organisations (both formal and non-formal) collaborate extensively.
* Common goals for the county’s development promote collaboration between stakeholders.
* Less collaboration takes place between SMEs and larger companies.
* Many stakeholders have a regional role.

**Programmes and models**

* Strategies and plans provide a guiding light.
* National funding is available for regional development.

**Obstacles**

* There are still deficits in strategy, structure, time, competence, will to change and leadership.
* Tradition and culture tend to bar the way to innovation.
* Entrepreneurs are getting older.

**Factors**

Prioritise innovation

Competence

Strong network

Experience

Creativity, adaptation

Leadership

Access to information

Clear mandate

**8.3 Conclusions and suggestions for WP08**

* Do more formal work with Innovation Management Models.
* Long-term financing for key stakeholders.
* Increase collaboration between civil servants and politicians.
* Increase dialogue and cooperation between local and regional levels.

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

* Large investment made in education.
* Creative working climate.
* Culture of innovation and ability to change quickly.
* Old routine.
* Collaboration between civil servants and politicians and between regional and local levels.
* Trust, stability.

**Observatory**

* No coherent work with delivering knowledge and competence development to the SMEs in the region.
* Stakeholders have different methods and key objectives than working with platforms related to information observatories.

**Networks**

* Strong networking at institutional level and at educational organisation level.
* International contacts.

**9. Dalarna**

**9.1 Regional report**

Dalarna (North Central Sweden) is a county characterised by its history, culture and entrepreneurial spirit. It offers a high quality of life and a wide range of sports, musical and cultural activities, making it easy for people to enjoy living there. [The county](http://en.wikipedia.org/wiki/Dalarna) is roughly the same size as Belgium, so there is plenty of space for both body and mind. Almost everyone can reach their workplace within a short travel time.

Dalarna is a partner in the SLIM project – System Management for Innovative Platforms and Cluster Organisations, in North Central Sweden – which helps to add knowledge to and take advantage of cluster organisations as a tool for enhancing regional development. The SLIM project has contributed to several new innovative environments and test laboratories, as well as new businesses, innovations and jobs – all according to evaluations among the 70-odd companies within the 15 cluster organisations involved in SLIM, which have a combined workforce of 60,000, and the four universities also involved, which have about 55,000 students and researchers. SLIM was nominated for the **RegioStars Award 2013**.

There are 13,500 companies in Dalarna, of which 14 have more than 250 employees and the rest are SMEs, working in various industries. 70% of the SMEs are solo entrepreneurs.

**Regional policies and programmes**

* Swedish National Law
* National Strategy on Innovation
* EU Structural Funds and grants
* The **Dala Strategy**, now being revised as Dalarna 2020
* Regional innovation strategy under development

**Resources available**

Based in the city of Borlänge, the **Teknikdalen Foundation** initiates, runs and participates in regional, national and international projects. It also supports new business concepts and innovations from concept through to market.

These activities generate increased growth and development. They have strong connections to business, university and public sector organisations. They work on a daily basis to provide SMEs with innovative services to help them grow in a sustainable and innovative way.

The Teknikdalen Foundation is a partner in the Enterprise Europe Network. The network offers support and advice to businesses across Europe and helps them make the most of opportunities within the European Union. The services are specifically tailored for SMEs but are also available to businesses, research centres and universities throughout Europe.

**Agents and stakeholders**

The main stakeholders active in the region are:

* **Region Dalarna** is responsible for promoting and coordinating regional development in the county. It is also involved in European and international issues, tourism development, coordinating the county’s public transport and implementing the regional development programme known as the **Dala Strategy**. It has a mandate to decide on the allocation of public funds. Region Dalarna’s work is funded through membership fees from the municipalities and the county council, as well as other resources transferred from the Swedish government.
* **FalunBorlänge-regionen**: the objective of the agency is to increase the attractiveness of the region. It produces guidelines, sets up and runs development projects and coordinates various kinds of business venture.
* **Yrkesakademin** offers competence development to companies from various industries, mainly in transport, contractual and industrial processes. It also provides labour market training, adult training and post-secondary education.
* **The Game Cubator** **Network** supports new companies in both national and international markets.
* **Destination Dalarna** is a business organisation that conducts business and development projects within tourism in partnership with players from both the private and public sectors. The objective is to encourage increased entrepreneurship and business enterprise.

**Learning in the region**

Vocational education is provided by the municipalities, with 11 of the 15 municipalities having formed a non-profit organisation, **Gysam**, to coordinate education at secondary school level.

All 15 municipalities have also formed a non-profit organisation, **DalaWux**, to coordinate adult education and training in Dalarna. They offer **Komvux** (education at secondary school level for adults), **SFI** (Swedish for immigrants) and **Särvux** (for people with special needs).Teaching is provided in-house or by companies offering vocational education and training. Because education is mostly free of cost for students and tax-supported individuals in Sweden, the programme is financed by public bodies such as the municipalities.

There are also colleges and a university in the county, which provide education adapted to the needs of the various industries. Their courses are based on teaching both theory and practice in the workplace. There are also private and public teaching organisations, all approved and reviewed regularly by the Authority for Universities of Applied Sciences. Courses are run in close cooperation with business partners.

**Cooperation: networks**

* **Dalawux** aims to develop VET cooperation by providing skills training through sustainable learning environments.
* The **Dalarna County Council** is developing a Competence Forum involving all relevant actors.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Dalarna** | **WEAKNESSES: Dalarna** |
| Well-developed cooperation at regional and local level.  Established organisation of adult training through DalaWux.  Strong focus on technical R&D.  Relatively substantial funds available through the regional innovation system.  Municipalities support growth. | Lack of understanding of the role of VET as a strategic tool to enhance work opportunities.  Lack of research on SME and regional development.  Lack of time for development activities.  Lack of leadership and competencies  Traditions and culture are obstacles to innovation.  Poor supply/demand matches. |

**9.2 Surveys (individual and group interviews)**

**Internal culture**

* Strong focus on technical R&D. Lack of R&D in social studies and human resource knowledge is gradually improving.
* Research on SME and regional development is missing or not analysed/used. Stakeholders and decision makers have a low understanding of the needs of SME companies: great risks, insecure environment and working conditions, great responsibility towards employees.

**Role of learning**

* Education is one of the four most important factors in successful innovation.

**Degree of cooperation**

* Cooperation is well developed at regional and local level.
* Established organisation of adult training through **DalaWux**.
* **Dalalyft** training programme for micro-SMEs.
* **Företagarna**, an initiative whose aim is to promote entrepreneurs and entrepreneurship, is well established in Dalarna. Företagarna is a regional member of UEAPME, the European Association of Craft, Small and Medium-sized Enterprises.
* Many SMEs are involved in six cluster organisations.

**Programmes and models**

* No formal innovation management system was identified.
* Most projects are supported by the European Regional Development Fund.
* A competence platform is being developed.

**Obstacles**

* Lack of time for development activities.
* Lack of leadership and competence.
* Traditions and culture, public procurement, conflicting goals.

**Factors**

* Much effort to support innovation.
* Relatively substantial financial funds available through the regional innovation system.
* Fourth largest export region in Sweden.
* Focus on regional clusters.
* Municipalities support growth.

**9.3 Conclusions and suggestions for WP08**

* Develop regional leadership.
* Develop formal Innovation Management Models.
* Long-term financing is needed: projects are too short.
* Increase collaboration between public and private sectors.
* Entrepreneurial spirit needed.

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

* Increase collaboration between private and public sectors.
* Municipalities and administrations support innovation.
* Adult education system is an important actor.

**Observatory**

* Good practices for other regions in education, entrepreneurship and collaboration culture.

**Networks**

* Culture of networking for SMEs, adult education and entrepreneurs.

**10. South Muntenia Region**

**10.1 Regional report**

This report mainly focuses on the Argeş district, part of the South Muntenia region, which includes seven districts. The northern districts, Argeş, Prahova and Dâmboviţa, are more industrialised, while the southern districts, Teleorman, Giurgiu, Ialomiţa and Călăraşi, are mostly agricultural.

**Regional policies and programmes**

The main body that coordinates and operates the implementation of the national strategy on R&D&i in South Muntenia is the **Regional Agency for Research and Development**. This is in charge of regional planning (development and innovation strategy), managing EU Structural Funds (it is the intermediate body for the Regional Operational Programme) and developing regional projects.

As an intermediate body for the Ministry of Regional Development and Tourism, the agency manages the funds allocated for the region for transport infrastructure, tourism, business support infrastructure and services, social services and urban development. For regional projects the agency acts as leader or partner in large-scale projects aimed at the socio-economic development of the region as a whole.

**Other policies:**

* *The National Strategy for Research, Development and Innovation*, 2007–2013.
* The National Authority of Scientific Research – analysis and approval of funding.
* *The Regional Development Strategy.*
* *Horizon 2020* (2014–2020), an EU framework programme for research and innovation.
* Various other programmes, grants and plans.

**Resources available**

* The **Research and Viti-Vinicultural Production Centre, Ştefăneşti**. Its main activities are in-vitro multiplication of important horticultural species, efficient methods of conservation for vegetable tissues, ecological methods against diseases of vines and other plants, improving superior varieties, obtaining valuable genotypes, etc.
* The **Research Institute for Fruit Growing** undertakes production and research and provides technical assistance in its sphere.
* The **Institute of Nuclear Research** was founded to support research and activities related to the peaceful use of nuclear energy through research, design, manufacture and operation.

**Agents and stakeholders**

The main stakeholders operating in the district are:

* **Argeş County Council**. The main coordinator of social, economic and cultural activity in the district, which applies the laws in force relating to the economic domain. Its mission also includes preserving the natural and cultural environment and monitoring interaction between the business and research sectors.
* **Argeş Businessmen’s Association**. Its main activities are representing its members, organising various forms of business meetings, stimulating investment in the county, and undertaking promotion campaigns for local products through fairs, exhibitions and other similar projects. The organisation plans to become a centre for information and consulting services for its member companies, in addition to supporting entrepreneurs and innovative firms.
* The **Chamber of Trade and Industry**. An autonomous non-governmental and non-political organisation set up to represent, defend and support the interests of its members in the Argeş business community. It handles relations with the public authorities and national and foreign organisations.
* The **City Agency for the Workforce**. Responsible for creating new jobs and managing the employment system, implementing regional programmes for the labour market, and increasing employment. It has good connections within the wider South Muntenia region.

**Learning in the region**

The **University of Piteşti** is the major provider of university education in the region, together with a small branch of the C Brâncoveanu private university. The University of Piteşti has a business incubator and a research institute, **ICUPit**, which was founded to create a coherent and unified environment for collaboration through the whole area of scientific research. It manages research activities and all research development projects in the university.



**Cooperation: networks**

There are good interactions between stakeholders in the district (Regional Agency for Research and Development, City Council, mayor’s hall), the university and the industrial units (various enterprises and the Mioveni cluster). The Chamber of Trade and Industry has good connections with all the companies and enterprises in the region.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: South Muntenia Region** | **WEAKNESSES: South Muntenia Region** |
| Diversified economic structure in the area.  Efficient economic results in Argeş and South Muntenia.  Well-developed automotive, chemical, construction materials and food processing sectors.  A large category of personnel with good professional training.  Readiness and flexibility of SMEs to make changes.  Large potential for the agricultural environment to bring positive benefits to the economy.  Considerable interest in innovation among SMEs.  Innovation is not only seen in terms of technological progress. | Difficulties in employing technical personnel due to government policies, laws and procedures.  Lack of private sector grants for research activity.  Poor participation by researchers in joint research programmes with other researchers from similar institutions.  The present system of regulations regarding researcher promotion is not very encouraging.  Slow adaptation to global requirements and changing research priorities, visions and directions.  Poor strategies for stimulating creativity.  No real connection to the labour market.  The volume of everyday work is a barrier to creativity.  Poor interaction among the districts of South Muntenia. |

**10.2 Surveys (individual and group interviews)**

**Internal culture**

There is no clear idea about what innovation culture refers to. Generally, SMEs in South Muntenia follow different models taken from major companies working in their respective field.

**Role of learning**

No study has been developed and therefore training in South Muntenia is a random process.

**Degree of cooperation**

The University of Pitesti cooperates with different companies in research and student practice.

**Programmes and models**

Companies in South Muntenia generally develop market researches in order to identify the needs and requests of their customers.

**Obstacles**

* Lack of funding.
* Lack of time.
* Lack of competence (guidance, directions).

**Factors**

* The lack of funding for innovation is generally acknowledged to be a consequence of managers’ poor competence. Workers/employees think that a more receptive attitude from their leaders would improve the chances for innovation to be considered and implemented.
* Need for better regional leadership.
* Need for long-term funding for and awareness of implementing innovation strategies.
* Need for better collaboration between companies sharing similar domains of interest.

**10.3 Conclusions and suggestions for WP08**

* Better regional leadership.
* Long-term funding for and awareness of implementing innovation strategies.
* Better collaboration between companies sharing similar domains of interest.

*Other comments of interest collected from the surveys in relation to the objectives of the project that should be taken into consideration at the time of designing the IMM are the following:*

**Innovation Management Model**

The IMM is expected to improve both the educational and specific approaches to innovation. The ideas contained in the IMM should first be introduced in school practice (and research) and then implemented inside companies. However, managers are not expected to be ready to implement such an IMM without specialised support.

**Observatory**

An observatory is generally perceived as a database tool used both by customers and producers. Forum discussions should be a good source of information for everyone.

**Networks**

The culture of networking is not widespread in this region. Therefore the need for information is not well met because seminars and workshops are scarce. This deficit is a barrier to innovation.

**11. Quebec**

**11.1 Regional report**

Quebec is the largest province in Canada with a land area of 1,356,547 square kilometres. It is the second most populous province, after Ontario. In 2011, the population of Quebec was 7,903,001, which represents 23.61% of the Canadian population. Quebec has 244,490 businesses; 73.1% of them have from 1–9 employees, 25.1% from 10–99 employees and 1.9% more than 100 employees.

**Regional policies and programmes**

In 2001, the Quebec government launched its first science and innovation policy, *Savoir changer le monde*. Later it published the Quebec Research and Innovation Strategy 2007–2010 (QRIS). A second edition of QRIS was published covering the period 2010–2013. In August 2013, the new National Policy for Research and Innovation was launched.

Quebec also has specific sectoral strategies to promote innovation:

* The Quebec Aeronautical Industry Development Strategy.
* The Quebec Biopharmaceutical Strategy.
* The Development Strategy for Quebec’s Environmental and Green Technology Industry.

At regional level there are the Cooperative Actions for Regional Development (known as the ACCORD initiatives), which aim to promote economic development through specialisation based on each region’s individual competitive advantages. There are 14 regions with ACCORD initiatives and seven organised cluster initiatives in the Montréal metropolitan region.

**Resources available**

The Quebec government has three research funds, which promote and financially support research, knowledge dissemination and researcher training in Quebec. Titled *Nature and Technology*, *Health* and *Society and Culture*, they are grouped together under the heading of *Fonds de recherche du Québec*.

The Quebec government has also developed different training programmes geared towards best business practices and innovation such as:

* The Lean Approach: based on both the Toyota production system (tools) and the “Toyota Way” (culture).
* Défi InnovationTM: training for business leaders based on a seven-step process.
* InnovaXion NetworkTM: training and guidance through all the innovation steps, offered to groups of 4–6 businesses from the same region to help grow their innovation potential.

The Canadian federal government also funds and supports research and innovation through the following organisations:

* The Social Sciences and Humanities Research Council (SSHRC).
* The Natural Sciences and Engineering Research Council (NSERC).
* The Canadian Institutes of Health Research (CIHR).
* The Canada Foundation for Innovation (CFI).
* The National Research Council Canada (NRC).

**Agents and stakeholders**

The main stakeholders in the region are:

* The Quebec Ministry of Higher Education, Research, Science and Technology.
* The Quebec Ministry of Finance and Economy.
* College Centres for Technology Transfer (CCTT): there are 46 of these, of which six are engaged in innovative social practices. Technological CCTTs support companies to innovate through three strands: technical support, technological development, and information and training. CCTTs are affiliated to a college and are represented by the Trans-Tech network.
* Five Liaison and Transfer Centres (CLT). They link universities and businesses.
* Four Research Enhancement Corporations. They market technologies resulting from conclusive research findings performed by affiliated universities and research centres.
* Some 1,300 research units (centres, networks, institutions, groups, consortiums, chairs, etc.) in Quebec’s universities.
* Eighteen hospital-based research centres.
* Three organisations created to strengthen the research and innovation network in specific fields: the *Centre de recherche industrielle du Québec* (CRIQ), the *Génome Québec* and the *Institut national d'optique* (INO).
* Eight research consortiums. They are non-profit organisations created and funded by private companies to perform precompetitive research in Quebec.

**Learning in the region**

**Universities** educate the highly skilled workforce, perform fundamental and applied research and sustain the transfer of results from research. There are nine universities in the province of Quebec, including the Université du Québec, which is actually a network of ten public institutions.

**Colleges** provide general, technical and continuing education. They ensure knowledge and professional expertise transfer and support regional development. There are 48 public general and vocational colleges (CEGEP). The presence of a large network of CEGEPs and CCTTs throughout the province is an important and defining characteristic of the Quebec Innovation System at both national and international level.

**Cooperation: networks**

There is a lack of a highly performing and widespread networking culture among the actors in the region and an asymmetric distribution of new knowledge between the territories. The complexity and multiplicity of programmes and measures to support research and innovation, as well as the large number of actors, form a barrier to the full effectiveness of actions.

**Strengths and weaknesses**

|  |  |
| --- | --- |
| **STRENGTHS: Quebec** | **WEAKNESSES: Quebec** |
| Private and public sector support.  Multiplicity of research and innovation strategies in various fields: social sciences, natural sciences and engineering, genomics, etc.  Well-established, periodically reviewed regional innovation plan.  Use of public resources to support research and innovation.  Creation and development of educational and research infrastructure to support the labour market and innovation.  Major funding for research and innovation. | Several actors are involved in the innovation process with little (or no) coordinated actions at different levels.  Low level of correspondence between educational institutions and market needs.  Low competition in some economic sectors.  Inadequate innovation culture.  Low rates of regional transfer of innovation.  Uneven distribution of new knowledge among regions.  Policies driven more by research and invention than innovation. |

**11.2 Surveys (individual interviews)**

**Internal culture**

Most businesses interviewed indicate a desire to develop a culture of innovation within their company.

**Role of learning**

Most businesses interviewed particularly appreciate the technical expertise of college students in supporting the process of developing new products.

**Degree of cooperation**

The businesses interviewed said they collaborate with universities, municipalities, government agencies and even with competitors. Most SMEs interviewed deal with universities and colleges that are located near to them, even if they are outside the province. Collaboration with colleges allowed one SME we interviewed to have access to facilities and equipment they needed to complete a research and development activity.

**Programmes and models**

The **Stage-Gate**® methodology is used by one SME we interviewed. And according to the public servants we interviewed from the Quebec government, the following seven-step innovation process is widely used and accepted in the province:

Step 01: Create the conditions for innovation, because people are the ones who innovate; the company either supports or blocks them.

Step 02: Define the innovation targets for working on the real issues.

Step 03: Increase the knowledge of issues to avoid finding a great solution to the wrong problem.

Step 04: Generate ideas to go beyond the known solutions.

Step 05: Choose a portfolio of projects to devote resources to the right projects.

Step 06: Develop successful projects to make them feasible.

Step 07: Implement developed projects to take full advantage of them.

**Obstacles**

The SMEs we interviewed indicated the following obstacles to innovation:

* Lack of funding and grants: a major obstacle to research and development.
* Difficulties in accessing the necessary equipment.
* Lack of innovation culture, entrepreneurship and initiatives.
* Lack of leadership in industry.
* Lack of expertise and qualified personnel.
* Imbalance between training and innovation needs.
* Limited share of revenues invested in innovation.

**Factors**

The SMEs we interviewed indicated the following factors that stimulate innovation:

* Financial incentives (a factor underlined by most of the interviewed businesses).
* Expertise and qualified personnel.
* Will and open-mindedness of the business directors.
* Openness towards experiments conducted in other regions.
* The dynamics of the industry in which the business operates.
* Access to equipment and robust, reliable technology.
* Encouragement of innovative initiatives.
* Ability to identify clients’ needs.
* Ability to choose the most relevant innovation process.
* Ability to progress from research mode to product development mode (often researchers are reluctant).
* Technical training to help understand the tools and techniques needed to develop new products.

**11.3 Conclusions and suggestions for WP08**

According to our interviewees, the best way to create an efficient innovation system is to encourage and train people to launch businesses, make entrepreneurs aware of the importance of research and innovation, and provide them with the necessary resources (lawyers, accountants, teachers, facilities, etc.) to help them innovate. Innovation also involves a lead organisation in each industry, which develops and promotes a culture of innovation and also promotes collaboration among various stakeholders. Innovation also implies simpler and more flexible financial incentives.

**Innovation Management Model**

* Interaction is at the heart of the innovation process: SMEs do not innovate in isolation.
* Knowledge transfer is an important factor in stimulating innovation.
* There is a need to improve the training available through VET so that it becomes much more responsive to the rapidly changing needs of the labour market.
* There is a need to clarify the role of VET institutions in the innovation process.
* There is a need to support and train businesses, particularly SMEs, to initiate, manage and ensure the success of innovative projects.
* There is a need to develop training in innovation that could be adapted by territory and sector.
* There is a need to facilitate access to expertise, technology and equipment to help SMEs innovate.

**Observatory**

* Interactions are facilitated and intensified by the proximity and presence of a local organisation that supports innovation.
* Because of the location of Cégep de l’Outaouais, we decided that the primary market for our region’s observatory will be the Outaouais region, which is one of the 17 regions of the province of Quebec. The secondary market of the observatory will be the border regionsof Outaouais (including territories in the province of Ontario).
* The observatory should allow SMEs to have access to knowledge and resources to innovate. It should also allow SMEs to keep up with developments in innovation in other regions.

**Network**

* There are too few interconnections between education organisations and SMEs.
* There is an absence of networking culture among some players and in some regions.
* There is a need to develop a networking culture to share knowledge across all regions and sectors.
* There is a need to create learning communities that share ideas, successes and failures.

**12. Summary of conclusions and suggestions for WP08**

|  |  |  |
| --- | --- | --- |
| **Innovation Management Model** | **Observatory** | **Networks** |
| * Lack of models to follow * Lack of awareness that, above all, innovation is about management * Need to have a promotion and management model * Need for good leadership * Need to promote culture of innovation as part of the culture of the company * Educate people in the values of innovation and creativity * Creativity techniques. Brainstorming. Creative routines within organisations * Importance of passion * Difficulty of implementation * Lack of culture for sharing knowledge * Clarify and agree about innovation * Lack of specific models and structured processes * No empowerment of employees * Need for better communication * Cultural factors and human behaviours * Entrepreneurial mindset * Need for a model of innovation management: basic elements need to be explained and a culture of innovation needs to be promoted from the outset * Facilitate organisational work * Use of ICT to support good practice * Culture of sharing doesn’t exist * Partnership for knowledge exchange between colleges and companies * Workshops to generate ideas, techniques and tools * Knowledge transfer strategies * Need for right tools * Learning from others: indicators, standard models * Increase collaboration between private and public sectors * Support essential from local authorities * Make better use of the adult education system * Interconnections between educational organisations and companies * Training and research policies in relation to the labour market * Role of public authorities * Networking culture to distribute knowledge in the region * Resources and results * How to keep costs low? * How to share benefits? * Importance of competition as an incentive for innovation * Technological innovation and social practices * Ability of regions to achieve innovative results in health, education, workforce education and regional economic development * Need to keep things simple * Need to measure results of policies | * To disseminate good practice, copy best practice, diffuse innovation results * To answer customers’ needs * To detect new opportunities * Information about subventions * Some agents work to promote innovation, but not a specific observatory * Need for information about meetings, seminars, festivals and lectures * Development of innovation exchange, where you can call and where innovation is grouped thematically * Database of buyers * In 2001, Sant’Anna School of Advanced Studies in Pisa created the Observatory of Tuscan high-tech firms, which, since 2009, has been jointly coordinated with the regional union of Chambers of Commerce (Unioncamere) * Sharing good practice * Learning from others * Large investment made in education * Creative working climate * Culture of innovation and ability to change quickly * Old routines * Collaboration between civil servants and politicians, and between regional and local levels * Trust, stability * Good practices for other regions in education, entrepreneurship and collaboration culture. * To see what is being done somewhere else | * To work in networks to promote innovation * Difficult to meet people from other countries * Better coordination of existing agents * Lack of cooperation between companies and education centres leads to lack of knowledge about real possibilities: who with? * Need for networks and sharing resources * Lack of culture for sharing knowledge * Difficult to find right partners * No networking and cooperation * Developing cooperation between R&D units * No creative collaboration * There is a very dense interaction network * Good networking of education centres, companies, social enterprises and local employers * Strong networking at institutional level and educational organisation level * International contacts * Culture of networking for SMEs, adult education and entrepreneurs * Falu kommun * Network in specific fields: genomes, optics * Absence of networking culture among players |

|  |  |  |  |
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|  |  |  |  |

**Chapter 5: Overall summary of the research work in the project**

1. **Introduction**
2. **Regional report**
   1. **Regional policies and programmes**
      1. **Innovation strategies as a guide to the society’s development**
   2. **Resources available**
   3. **Agents and stakeholders**
   4. **Learning in the region**
      1. **Relationship between VET institutions and SMEs**
   5. **Cooperation: networks**
   6. **Strengths and weaknesses according to the reports**
3. **Surveys (individual and group interviews)**
   1. **Internal culture**
   2. **Role of learning**
   3. **Degree of cooperation**
   4. **Programmes and models**
   5. **Obstacles**
   6. **Factors**
4. **Conclusions and general strengths and weaknesses**
5. **Suggestions for the IMM, Observatory and Networks**

**Chapter 5: Overall summary of the research work in the project**

**1. Introduction**

In the previous chapter we provided information about each of the project members’ regions regarding the status of their innovation systems and the opinions of the experts and groups we interviewed for our project.

In this chapter we reflect on these reports in order to get a general overview of the state of innovation in our regions. When identifying any similarities or differences between them, our aim is not to establish ranking or hierarchy among the regions. We are well aware of the considerable differences between them, not just in the status of their innovation systems but also in their levels of economic development, living standards, etc.

What we seek to have at our disposal is a valuable set of information towards our goal of designing a model of innovation management, an observatory and an international network.

Our regions have different innovation systems and different levels of development because of many variations in geography, history, culture and socio-economic circumstances. It would be impossible to move management models willy-nilly across our different regions; unmanageable because of their different political systems, regulations, structures and degrees of political autonomy.

But we do believe that in our regions we can find many good organisational and innovation management practices, which can be used as points of reference and examples to show to other regions.

Therefore, in Chapters 4 and 5, we see ourselves behaving in the manner of an Innovation Observatory: detecting best practices, methodologies and tools, and then displaying them to organisations elsewhere who want to learn and improve their own innovation systems.

We start by looking at the **regional reports**. They provide rich and diversified information about each region. Some reports focus on VET centres and the regional education system. Others give more general information about the innovation strategies and the role of the different actors in the region.

We follow the same scheme as in Chapter 4, but delving a little deeper into two of these sections: the **innovation strategies and learning in the region**, and (following on from the latter) insights into the **relationship between VET institutions and SMEs**.

We also offer some insights into the **strengths** and **weaknesses** of these regional systems as evidenced by the reports.

From the regional reports we also acquire a general, or **macro**, overview of the regions. This helps to build our awareness of the state of the art and also enables us to assemble proposals and suggestions, which might interest regional policy makers and those responsible for delivering programmes to support innovation.

Next, we examine the information gathered from the **individual** and **group interviews**, in which experts offer their opinions about the innovation environment in our regions. Our focus, though, is particularly on the **micro** level – the internal situation of the organisations. So, just as we did in Chapter 4, we analyse their responses in different sections: the culture of innovation, role of learning, types of programmes, and both obstacles against and factors for innovation.

We also offer a list of **overall strengths and weaknesses**, taking into account not just the regional reports but also the responses from our surveys.

Finally, we provide a summary, as we did in Chapters 3 and 4, with a set of proposals for the three areas in which we are most interested: the **IMM**,the **Observatory** andthe **RAINOVA Network**.

**2. Regional report**

**2.1 Regional policies and programmes**

The degree of political autonomy in a region influences the policy documentation we can draw upon for research. In some cases national policies are a prevailing influence and national documents are the main reference. However, we also found a few specific regional innovation policies in some of our own regions. We also found roughly equal numbers of national and regional strategies for innovation.

**2.2 Innovation strategies as a guide to the society’s development**

Innovation strategies can have many different purposes. They can have a national or regional approach and different focus areas. In our comparison we will try to show both differences and similarities between existing (formal) innovation strategies in the regions we researched.

Our analysis was based on information given in each regional report from the partner regions. A search was made in these documents for the keywords “strategy”, “plan” and “vision”. Each description in the text containing these keywords was analysed. Based on this analysis, a number of strategies (or visions and plans) was found. We categorised the strategies into national/superregional or regional strategies, and a comparison was then done regarding the focus of each strategy. The categorisation of strategies into national/superregional and regional was done by analysing the description of each strategy, although in reality a strategy can sometimes be both superregional and regional.

A strategy for developing the society is important for different reasons. The American researcher Dr Robert Kozma states that national policies for ICT serve a number of important functions. Strategic policies can simultaneously provide a rationale, set of goals and vision for the direction of the society’s development. These strategic policies can motivate change and coordinate disparate efforts in order to advance the nation’s overall goals. Companion operational policies can set up programmes and provide resources that enable these changes.

The Swedish government stated that the purpose of the Swedish Innovation Strategy was “*to contribute to a climate with the best possible conditions for innovation in Sweden with [the] year 2020 in sight*”. The point of the strategy is that people and organisations in industry, the public sector and civil society should be able to develop and more effectively contribute to new or improved solutions that meet both needs and demand. In common with the rest of the world, the challenges faced by Swedish society are big and complex in nature. Consequently no single actor or area of society has sufficient knowledge or resources to act alone to meet these challenges. It is important to continuously develop coordination between different actors in order to create the best possible conditions for innovation.

*Table 1: Overview of the different (formal) innovation strategies in the researched regions:*

| **Country / region** | **National / superregional strategy** | **Regional strategy** | **Keywords** |
| --- | --- | --- | --- |
| **The Basque Country / region** | Science, Technology and Innovation Plan, 2015 |  | 1. Innovation 2. Science 3. Technology |
| **The Basque Country / region** |  | The Basque Government’s Public Innovation Plan (PIP) | 1. Innovation 2. Knowledge 3. Management 4. Public services |
| **Canada / Quebec / Outaouais** | Quebec Research and Innovation Strategy (QRIS), 2010–2013 |  | 1. Innovation 2. Research 3. Science 4. Technology |
| **Canada / Quebec / Outaouais** |  | ACCORD: Cooperative Actions for Regional Development | 1. Economic growth 2. Regional development 3. Specialisation of regions |
| **Denmark / Southern Denmark (Sønderjylland)** | Action plans for research, innovation and further education |  | 1. Collaboration/networks 2. Competence/companies 3. Innovation 4. Research 5. Technology |
| **Italy / Tuscany** | Multi-year Action Plan for Innovation and Research |  | 1. Higher education 2. Innovation 3. Research 4. Technology |
| **Italy / Tuscany** |  | Regional Programme of Innovation Activities | 1. Innovation 2. Regional development |
| **Poland / Lower Silesia** |  | Regional Innovation Strategy for Lower Silesia, 2011–2020 | 1. Companies 2. Clusters (for business) 3. Innovation 4. Research |
| **Romania / South Muntenia Region** | The National Strategy for Research, Development and Innovation, 2007–2013 |  | 1. Research 2. R&D (development) 3. Innovation |
| **Sweden / West Sweden (Dalarna)** | The Swedish Innovation Strategy |  | 1. Companies 2. Higher education 3. Innovation 4. Regions 5. Research |
| **Sweden / West Sweden (Dalarna)** |  | Strategy for Growth and Development: programme for R&D in SMEs | 1. Global market 2. New products/services 3. Research 4. R&D 5. SME |
| **Sweden / Northern Central Sweden (Västra Götaland)** |  | The Dala Strategy, 2016 | 1. Competence 2. Entrepreneurship 3. Innovation 4. Regional development 5. R&D |
| **Turkey / Izmir** |  | Regional innovation research strategy for Izmir | 1. Companies 2. Innovation 3. Regional development 4. Research 5. R&D |
| **United Kingdom / Wales** |  | Science for Wales, a strategic agenda for science and innovation in Wales | 1. Competence 2. High-quality jobs 3. Innovation 4. New ideas 5. Science |

**2.3 Analysis of the different innovation strategies**

The strategies are differently labelled in some countries/regions, most often as “strategies” but sometimes as “action plans”, “agendas” or “programmes”. It seems that although all the researched regions have a formal strategy for innovation, there are differences in focus. When we compared the keywords for describing the strategies we saw that most have a focus on innovation in relation to science, research and technology. Some of the strategies include the development of knowledge and competence (e.g., the Basque Government’s Public Innovation Plan; the Danish action plan for research, innovation and further education; and Science for Wales, a strategic agenda for science and innovation). Some of the strategies include the development of further or higher education (Tuscany’s Multi-year Action Plan for Innovation and Research; and The Swedish Innovation Strategy). Some of the strategies include collaboration between stakeholders (Southern Denmark’s action plan for research, innovation and further education) and clusters for business development/entrepreneurship (the Regional Innovation Strategy for Lower Silesia; North Central Sweden’s Dala Strategy; and, in Quebec, Montréal’s metropolitan clusters). Other strategies include regional development (Tuscany’s Regional Programme of Innovation Activities; North Central Sweden’s Dala Strategy; Izmir’s regional innovation research strategy; and, in Quebec, the Cooperative Actions for Regional Development (ACCORD).

Finally, some of the strategies include R&D within companies (in South Muntenia, The National Strategy for Research, Development and Innovation; in West Sweden, the Strategy for Growth and Development; in Izmir, the regional innovation research strategy; and the Quebec Research and Innovation Strategy). Several of the strategies focus on specific sectors, such as The Quebec Aeronautical Industry Development Strategy, The Development Strategy for Quebec’s Environmental and Green Technology Industry, The Quebec Biopharmaceutical Strategy, the Regional Innovation Strategy for Lower Silesia, and West Sweden’s Strategy for Growth and Development, a programme to promote R&D in SMEs.

**Some reflections**

* Between the partner countries and regions the innovation strategies are rather different in their labelling, content and scope, making them difficult to compare and analyse more deeply.
* The innovation strategies seem to have different purposes. Some are guidelines, whereas others, in the form of action plans or programmes, are much more prescriptive in scope.
* Most of the strategies focus on innovation that is tied to research (within universities and publicly funded research institutions) and technological development.
* We found only a few strategies that focus on the development of companies and SMEs.
* A frequent reflection from interviews with stakeholders in each region is that these strategies tend to be of more practical use to the regional and local governments, universities and research institutions than to the SMEs.
* None of the strategies focus very clearly on collaboration and relationships between VET/adult learning and SMEs.

**2.4 Resources available**

Different programmes, grants and resources support technological parks for companies in the process of developing innovation strategies. Examples include the research parks in Southern Denmark, the Technological Park (KGHM LETIA) in Lower Silesia and the network of technological parks in the Basque Country.

**2.5 Agents and stakeholders**

Several types and levels of agents are innovation leaders. Examples are diverse and include the Tønder Municipality in Denmark, the EBİLTEM science and technology centre in Turkey, the Basque Council for Science, Technology and Innovation, the Marshal’s Office of Lower Silesia in Poland, the region of Västra Gotäland in Sweden, or the city council of Argeş in Romania. And in fact, although not specifically mentioned in the regional reports, associations of SMEs are fairly common. Sometimes there are even too many agents with overlapping roles, leading to complaints from SMEs.

**2.6 Learning in the regions**

Quite a few mentions of universities are offered in the reports; it seems that our regions are well served for higher education. Some examples of good practice can be found in further education in Wales, or in secondary education in the Gysam collaboration between 11 municipalities in West Sweden. Adult education systems also demonstrate good practice in Southern Denmark. Universities are out of touch with business reality, according to some opinions (e.g., in Lower Silesia), whereas in other regions they support SMEs even to the point of acting as incubators of new business.

Other resources for acquiring knowledge can be found in the College Centres for Technology Transfer (CCTT) scheme in Quebec or the technological centres in the Basque Country such as Tecnalia or IK4.

**2.7 Relationship between VET institutions and SMEs**

The role of VET institutions continues to evolve. Gradually their mission has expanded beyond providing initial and continuing education. Nowadays, with more flexible programmes and strengthened research and transfer capacities, growing numbers of VET centres provide measured responses to the increasing demand for new skills in the labour market. This novel status allows them to stimulate innovation and improve the dissemination of R&D results to micro, small and medium enterprises, which otherwise struggle to acquire new knowledge.

VET colleges can play an important role in regional economic development. Rosenfeld says that the most entrepreneurial and innovative colleges have at least the following characteristics:

* An economic development mission statement.
* A focus on their region, including cluster specialisation.
* Being a repository of know-how and start-up advice for SMEs.
* The capacity to relate technological adaptability to skill requirements, offering suitable training courses when companies are involved in technology investments.
* Demonstrating flexibility and adaptability (responsiveness) in their training supply.
* Facilitating interaction and common learning activities among people in different organisations.

## The goal of the following section is to compare the relationship between VET institutions and SMEs in each RAINOVA region in order to identify similarities and differences. For this study, we analysed the information in the regional reports prepared ​​by each partner in order to:

* Identify the role of VET colleges in each regional innovation system we studied so that we can understand how they interact with SMEs.
* Understand the level of involvement of SMEs in developing VET programmes.
* Evaluate the level of support that VET institutions offer to SMEs intending to innovate.
* Evaluate the density and dynamics of the network of regional actors involved in innovation.

## This analysis enabled us to identify particular characteristics for each region concerning their public policies and, to some degree, local cultural factors. Some trends emerged and allowed us to determine three different groups of regions, based on the relationship between SMEs and VET centres.

**2.7.1 Comparative analysis**

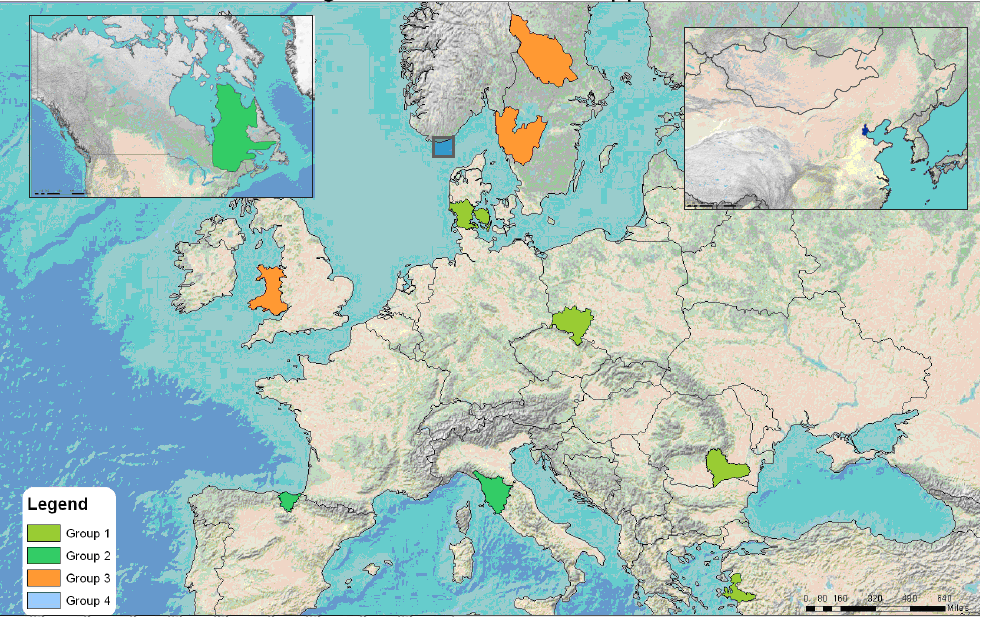
All regions have VET institutions, but their programmes and missions differ. In some regions, VET centres focus only on education, which is their traditional activity. Some of these have developed strategies to integrate entrepreneurship into their programmes. In other regions, VET institutions are more enterprising and have put in place many activities that channel them towards innovation and research. In so doing they have become increasingly involved as agents of change in the local economic and social scene. In yet other cases, the existence and development of a network of actors seem to be associated with the level of involvement of the local authorities. Their participation appears to help different actors to become closer, share knowledge and become involved in innovative projects.

By analysing the relationship between VET centres and SMEs we were able to classify the different regions into three broad groups (see the map on the following page), based on two criteria:

1. The level of involvement of economic actors in VET programmes.
2. The support that VET institutions provide to SMEs in the innovation process.

The first group includes regions where VET colleges are focused on their traditional activities, namely initial and continuing education. The second group includes regions with VET institutions that support SMEs with innovation but do not much involve economic actors in developing VET programmes. The third group of regions includes VET institutions that provide support to SMEs in the innovation process and where SMEs are actively involved in VET programmes.

**Classification of the regions based on the relationship between VET and SME**



**Group 1: Regions with traditional VET institutions**

This group includes Southern Denmark (Sønderjylland), South Muntenia, Izmir and Lower Silesia. In some of these regions the promotion of innovation is done in the educational institutions and knowledge is stored there, without serving SMEs. In other territories, however, research tends to be dominated by universities, VET institutions play little role in addressing the needs of SMEs, and consequently many SMEs do not take advantage of their local VET colleges. When that happens, the colleges’ contributions to the exchange of knowledge are insignificant and they generally have difficulty in keeping up with the wave of innovation.

*Key observations about VET–SME relationships in group 1:*

|  |  |
| --- | --- |
| **Territory** | **Observations** |
| **South Muntenia Region, Romania** | * Low involvement (globally) of the private sector in research funding. * Gap between training supply and market needs. * Collective lack of knowledge about innovation in general (its definition, identification and management). * Low-density networks of actors. * Low level of information sharing and exchange of experiences. |
| **Izmir, Turkey** | * Training programmes offered in institutions are not related to innovation. * The VET–SME link is weak. * Low-density network of actors. * The actors are not well aware of the importance of innovation, despite government efforts to fund R&D. |
| **Lower Silesia, Poland** | * Weak link between VET institutions and SMEs. * Much research is done in universities but less in colleges. * The involvement of VET centres is less developed. |
| **Southern Denmark (Sonderjylland)** | * Lack of interaction between actors for exchanging information, knowledge and experiences. * Innovation policy is primarily based on stimulating entrepreneurship among young students. * No support or close relationship between VET and SMEs. |

**Group 2: Regions with VET colleges supporting SMEs in the innovation process**

This group includes three regions, the Basque Country, Quebec and Tuscany, where the VET centres provide support to SMEs in the innovation process. In these regions, programmes are defined either by the VET centres themselves or by a higher authority, without or with little involvement by SMEs. The VET institutions are responsible for implementing the programmes and making some adjustments to suit the needs of SMEs. The VET training in these regions can adapt to challenges in order to keep up with innovation occurring in SMEs.

*Key observations about VET–SME relationships in group 2:*

|  |  |
| --- | --- |
| **Territory** | **Observations** |
| **Basque Country, Spain** | * Good educational policy based on skills development and mechanisms to recognise worker competency. * Existence of a unique training programme, which serves as a reference for all VET institutions. * Existence of a dynamic network between actors involved in skills development. * VET centres participate in skills training for SMEs. * SMEs are not involved in the definition of VET programmes. * Existence of Tknika, a centre for innovation in vocational training. |
| **Tuscany, Italy** | * A variety of actors operating in different sectors. * An economy dominated by traditional firms that innovate, although informally. * A link between VET institutions and enterprises, but dominated by high-tech companies. * Companies have a highly skilled workforce, trained in universities, particularly in schools of advanced studies. |
| **Quebec, Canada** | * Relationships between VET colleges and SMEs exist but could be improved. * SMEs need to be more involved in programme development to ensure their adaptability. * There is a network of 46 College Technology Transfer Centres (CCTT), which assist SMEs with innovation (6 of them specialising in innovative social practices). |

**Group 3: Regions with VET offering co-constructed programme and innovation support activities**

The regions included in this group are: West Sweden (Dalarna), North Central Sweden (Västra Götaland) and Wales. In this group, VET programmes are co-constructed with multiple stakeholders – in particular, public authorities and economic actors. This synergistic approach helps to make these programmes more flexible and adaptable. VET institutions, in the regions belonging to this group, benefit from environmental flexibility and maintain continuous exchanges with local actors. This helps them to understand SMEs’ needs and consequently update their training programmes. VET centres play an active role in these regions to consolidate and galvanise the networks of actors and stimulate them to innovate.

Sharing characteristics with this group is Tianjin, the Chinese partner in RAINOVA. In Tianjin the VET–SME relationship is based on co-governance of VET programmes, involving SMEs and public authorities. SMEs there are not only consumers of services provided by VET colleges: they also participate in designing and implementing these programmes.

## *Key observations about VET–SME relationships in group 3:*

|  |  |
| --- | --- |
| **Territory** | **Observations** |
| **West Sweden (Dalarna) and North Central Sweden (Västra Götaland)** | * Networks of actors are important and dynamic. * Educational programmes are influenced by the municipal authorities in favour of consolidating a corporate culture at all levels of the educational cycle. * Innovative SMEs are supported by the authorities in their relationships with university research units. * The education sector must, though, be proactive to adapt to the changing needs of the labour market. |
| **Wales, United Kingdom** | * Very close links between VET institutions and SMEs. * Presence of a dynamic and interactive network of actors. * VET programmes are established to promote local economic and social development. * Involvement of public authorities in encouraging innovation and promoting exchanges between partners. |
| **Tianjin, China** | * High level of interaction between private/public actors and VET institutions. * VET objectives are inspired by the needs of businesses. * Continuing search for optimal combination of theoretical and practical training, such as the dual status of teachers (teacher and practitioner). * Greater business involvement in the management of VET centres. * Variety of intervention sectors for VET institutions. * An amalgamation of working and learning is at the heart of the system. |

The involvement of economic actors in VET programmes provides more flexible and adaptable training. It helps VET institutions understand the needs of SMEs so that they can continuously update their training programmes. VET centres can also play an important role in their region’s economic development by stimulating networks, creating learning communities and helping SMEs to innovate.

One aspect that we did not analyse in this section is the role of central versus regional government in establishing a network of actors. For example, in Tianjin, the central government seems to play a more active role in orienting relationships between VET centres and SMEs. This aspect could be further analysed in future researches.

**2.7.2 Conclusions**

Other research projects have provided comparative assessments of how well European regions perform in supporting innovation. The Regional Innovation Scoreboard 2012 and the KIT (Knowledge, Innovation, Territory) project are two examples of such studies. In this chapter, we want to compare the different regional innovation systems to provide useful information for our other RAINOVA work packages. We therefore focus our analysis on the innovation strategies of each region, the relationship between VET centres and SMEs and the strengths and weaknesses of each system.

Our analysis of innovation strategies indicates that most of them focus on innovation related to research and technological development. Rather few of the strategies focus on competency development. Our analysis also shows that none of the strategies focus clearly on developing collaboration and relationships between VET institutions and SMEs.

All the same, VET centres seem to play a significant role both in regional economic development and in increasing the capacity of SMEs to innovate. By allowing companies (SMEs in particular) access to expertise, technology and equipment, the colleges can enhance companies’ ability to become more innovative.

Equally important is the expanding role of VET institutions in innovation. This trend restores the interactive model of the innovation process, making it once again a process of learning by doing, involving both new and tacit knowledge to overcome a particular problem. Tacit knowledge is specific to the company, while new knowledge is either created inside the organisation or imported from outside and combined with internal knowledge to produce innovation. The capacity of SMEs to produce internal knowledge is restricted. It is important therefore to encourage them to open themselves externally to enhance their opportunity to embed external knowledge.

**2.8 Cooperation: networks**

Clusters are now well established as a form of good practice. There are good examples of clusters in Poland, the Basque Country and Sweden, and research consortia in Quebec. Clusters are also being developed in Turkey.

**2.9 Weaknesses and strengths according to the reports**

*Pending*

**2.10 Suggestions for WP08**

From reading and subsequently reflecting on our regional reports we were able to identify some examples of good practice, which deserve to be widely disseminated. Below we mention a few of them.

**Innovation Management Model**

* Several good practices of management and examples of models.
* No measurement of plans and guidelines.
* Information about access to programmes is required by companies.
* Relevance of internationalisation also mentioned.
* Relevance of training and qualified staff.
* Diffusion of model of innovation is necessary.

**Observatories**

* Some examples of regional observatories tasked with managing innovation indicators.
* *Pending*

**Networks**

* Some examples of SMEs networking in the regions.
* VET centres working as networks in the Basque Country.
* Adult Organisation or Further Education Systems as good references for others.
* Examples of intermediary agents, such as Innobasque, networking for companies.

**3. Surveys (individual and group interviews)**

**3.1 Internal culture**

There is a considerable gap between the culture of complaint, which seems to predominate in SMEs’ environments in many of the regions, and the open culture of innovation that is actively implemented in other places.

This culture of complaint may be the consequence of a lack of leadership and awareness of the importance of innovation.

The culture of innovation, by comparison, was often attractively portrayed as providing a good climate for passionate, creative people to work in teams. Some actors, though, reminded us that innovation also involves being prepared to accept not only great risks and responsibilities but also insecure working conditions.

**3.2 Role of learning**

For SMEs in some regions, such as West Sweden, learning is the key factor. Other SMEs are not yet investing sufficiently in learning. Although in some SMEs learning is considered important, it still comes second behind the attitude of employees.

Some interviewees told us that learning processes should focus on specific methodologies, capacities or communication methods. They saw learning as the first step to acquiring knowledge about entrepreneurship and creativity. In places where learning has not yet been well implemented there was a call for more training centres and stronger links with universities in trying to serve the real needs of the market.

**3.3 Degree of cooperation**

Plenty of cooperation takes place between all kinds of entities and at all levels: local, regional, sectoral, etc. In most regions, cooperation seems to the normal way to get things done. SMEs are often involved in clusters, networks and forums. But generally collaboration between SMEs is depicted as weak.

**3.4 Programmes and models**

Generally no specific programmes or models were mentioned to us. There were a number of references to innovations in management, but few to the management of innovation. Only once was there a reference to the Stage-Gate methodology. But even when interviewees showed little awareness of the kind of programmes or models being run in their organisations, they still made abstract references to new ways of doing things, different tools and models: creative techniques, brainstorming, measurable objectives, customer management, innovative processes in delivery, and so on.

**3.5 Obstacles**

We noticed two types of obstacles: those involving external factors, and those associated with the internal environment of the organisation. Some mentioned a lack of institutional procedures. Other complained about fiscal burdens and lack of previous references.

But most interesting for us were internal obstacles, among them a lack of time, resources, strategy and competences.

Internally the pattern seemed to combine poor leadership with lack of competences for leadership. Where such a combination occurs there is often very little culture of innovation. In some firms no one seems willing to accept change. Often there is a problem of attitude in employees because of some simple factor such as fear.

Another specific obstacle frequently mentioned mentioned was the lack of a route to market.

**3.6 Factors**

Factors driving innovation among the answers to our surveys could be classified into four groups.

One group focused on specific internal drivers, for example the need to:

* Be part of a strong network
* Bring production costs down
* Improve access to information
* Open up export possibilities

A second group referred to particular qualities needed for innovation, such as:

* Skill
* Motivation
* Commitment
* Being creative
* Flexibility
* Being open-minded

A third group concerned the internal culture of innovation, such as the opportunity to:

* Allow (and learn from) mistakes
* Collaborate with others

And a fourth group related to external factors such as:

* Support from local authorities
* Regional clusters
* Support for entrepreneurs

What all of them had in common was a focus on innovation, good innovation strategies and adapting to the needs of the markets.

**4. Conclusions and general strengths and weaknesses**

**4.1 Strengths and weaknesses of the regional innovation systems**

In this section we provide an overview of the different strengths and weaknesses identified in the regions we researched. We also analyse the most common strengths and weaknesses across all the regional innovation systems. As a method for analysing the different strengths and weaknesses we have chosen to categorise them into themes, allowing us to provide some general reflections about the types of issues facing each region.

Our chosen themes are:

* Clusters
* Collaboration
* Companies
* Culture
* Economic growth
* Education/higher education
* Financing/funding
* Matching of competences
* Regional economy
* Research
* R&D
* Strategies/plans
* Support systems

For each theme we provide some examples of the most common strengths and weaknesses. In the previous chapter we looked at each region’s strengths and weaknesses separately. In this chapter we set out the strengths and weaknesses we found, in the form of a summary.

**4.2 Themes with examples of weaknesses**

**Support system**

* + Confusing methods of governing the system, with weak evaluation.
  + Low level of fiscal support or tax credit for innovating firms.
  + Difficulty of employing technical personnel due to government policies, laws and procedures.
  + Lack of monitoring to ensure that needs are fulfilled, communication flows are maintained between innovation agents, and the system is transparent.

**Economic growth**

* + Company structure based on small companies, who find it difficult to expand.
  + Technological system with limited use of IP, creation of new companies and international status.
  + Salary levels too high in the country.
  + Taxes too high to attract foreign employees and researchers.

**Strategies**

* + The regional strategy is unclear and not properly implemented.
  + Periodic variations in investments on innovative activities by industrial enterprises.
  + Slow adaptation to global requirements and frequently changing research priorities, visions and directions.
  + Poor strategies for stimulating creativity.
  + Lack of formal regional strategy for innovation.
  + Lack of prioritising.
  + Lack of understanding of the role of VET as a strategic tool to ensure work opportunities.
  + Lack of understanding of the importance of cooperation in a region.
  + Lack of understanding of the needs of SMEs.
  + Lack of leadership, which leads to problems with: lack of competence, traditions and culture, procurement, conflicting goals, political support, possibility of having influence, poor supply/demand match.
  + Lack of resources to achieve concrete results through action plans.
  + The culture of innovation is not (yet) embedded in the region, and innovation is not part of most spheres of activity.
  + Focus on projects rather than systems, and lack of awareness among stakeholders regarding their roles and responsibilities.
  + Improving the business environment and adjusting the innovation strategy is in the hands of regional players, regional and sometimes also national.
  + Lack of clarity in the proposed innovation strategy about how innovation is to be measured.
  + Lack of clarity about how to build upon initiatives that have previously been successful.
  + Lack of clarity about how to encourage innovation at personal and organisational levels.

**Financing/funding**

* + Lack of venture capital.
  + Lack of information about funding opportunities.
  + Access to credit is difficult, especially for small firms.
  + Insufficient access to capital to finance investment in research, development and modernisation.
  + Lack of mechanisms to support business-making processes and facilitate access to finance for firms in the early stages of the development cycle.
  + Inadequate financial resources (often due to inadequate government funding), resulting in the impossibility of adopting an efficient research management plan.
  + Lack of private sector grants for research activity.
  + Insufficient funds for implementing innovation.
  + Poor investments in the agricultural area.
  + Cashflow difficulties for SMEs.

**Culture of innovation**

* + Relatively low levels of company innovation.
  + Underdeveloped and inward-looking innovative processes within companies.
  + Innovation system with limited external openings.
  + Relative indifference among the general public towards science, technology and innovation.
  + Low competition levels in some economic sectors, restricting the spread of knowledge and skills.
  + Low levels of transfer of innovation in the region.
  + Regional conditions have a real effect on the level of innovation in regional companies.
  + Often SMEs do not realise what the concrete benefits of innovation are.
  + Limited willingness to embrace change in SMEs.
  + Limited willingness to take risks: focusing only on proven solutions for SMEs, which are not sufficiently open to new technologies.
  + No networking and cooperation between enterprises.
  + High volume of everyday work, which deters creativity.
  + Lack of innovative thinking.
  + Lack of will to change/develop.
  + Old/set traditions.

**Education and market needs**

* + Low level of contact between educational institutions and market needs.
  + The connection between companies and education providers could be better.
  + Lack of highly qualified staff.
  + Weak connection between companies and education; mismatch between education and companies’ needs.
  + Limited cooperation between business and technical colleges and universities in adapting educational programmes to the needs of the market.
  + No real connection to the labour market.
  + Different sectors have specific demands for staff: they should be looking for the right types of people rather than just for specific skills.
  + Many students have a traditional attitude to learning: they need to be able to adapt and change as the market changes.
  + Local authorities must be able to work more flexibly with adult learning.
  + Unclear whether more can be done to introduce ‘innovation education’ into schools and colleges.

**Research**

* + Low percentage of GDP invested in university R&D spending.
  + Scientific system lacks dynamism and connectivity to the outside world.
  + Lack of effective collaboration with research units.
  + Research is insufficiently business-oriented and market-driven.
  + Insufficient diversity of scientific specialties – a direct consequence not only of the level of financial support from government but also staff policies in the institutions.
  + Poor participation levels by researchers in joint research programmes with other researchers from similar institutions.
  + The present system of regulations concerning the promotion of researchers does not offer good incentives.
  + Lack of incentives for results obtained through research activities.
  + Lack of research into the part played by SMEs in regional development.

**Research and development (R&D)**

* + Low investment in R&D and low level of acquisition of knowledge from external sources.
  + No figures available for SME budget expenditures on R&D.
  + Lack of R&D in social and human resource knowledge.

**Collaboration**

* + Variety of stakeholders who are more or less well connected, leading to more of less identical actions being repeated.
  + Absence or inadequacy of a working culture and a generalised networking culture among stakeholders.
  + Uneven distribution of new knowledge among regions.
  + Focus on smaller projects in different areas of the region, rather than larger projects.
  + Lack of collaboration between education providers.
  + Lack of collaboration between universities and companies.
  + Lack of effective creative collaboration within enterprise supply chains.
  + Inadequate cross-border exchange of experience.
  + Collaboration is only an option but is not mandatory.

**4.3 Themes with examples of strengths**

**Efficient support system**

* + Powerful institutional support system, including financing, instruments and organisations.
  + Support from private and public sectors.
  + Good opportunities in the region for entrepreneurs and innovators to start a business.
  + Good possibilities for start-ups.
  + Much effort to support innovation.
  + A region which has the competence to act.

**Strong economy**

* + Tourism as a fundamental economic resource.
  + A large share of companies in the medium-to-high and high technology sectors in the economic structure.
  + High rate of investment attractiveness in the region – in particular in the field of advanced technology.
  + Diversified economic structure in the area.
  + Strong possibilities for the agricultural environment to bring positive results to the economy.

**Sufficient financing/funding**

* + Major funding for research and innovation.
  + Funding from government.
  + Several different funding opportunities.
  + A relatively high concentration of foreign investments.
  + Relatively substantial funding in the regional innovation system.

**Strategies/plans**

* + Multiplicity of research and innovation strategies in various fields.
  + Well-established and periodically reviewed regional innovation plan.
  + Shared view of the region’s development, with a long-term strategy for growth.
  + Local authorities support the strategy for growth.
  + A region with the political will to aim for increased innovation.
  + A clear view of the strengths and weaknesses of the region.
  + The political will to cultivate a more innovative culture in order to build a secure economic future for the region.
  + An innovation strategy that is not just about R&D and products.

**Higher education excellence**

* + Member of the high-ranking University SUV (USA).
  + Cultural change is delivered in colleges’ own activities on enterprise and entrepreneurship.
  + Several colleges within the region.
  + High attainment levels for key deliverables in relation to entrepreneurship.

**Culture of innovation**

* + Good environment for innovators/innovations.
  + Small country means more flexible response towards changes in society.
  + Our country is a good test market for new products.
  + Encouraging environment for innovation and innovators.
  + There are many people who participate in courses, seminars or other activities about innovation.
  + Getting inspiration from others.
  + Multidisciplinary collaboration and work.
  + Openness and dialogue.
  + Trying to see the bigger picture.

**Efficiency and innovation in companies**

* + A favourable business culture that operates efficiently.
  + Cost-effective supply chains in strong industries.
  + Readiness of small and medium-sized innovative companies to make changes.
  + Use by companies of business partners and customers in the process of innovation.
  + Readiness and flexibility of small and medium enterprises to make changes.
  + Network with the outside world (market, customers and partners).

**Matching VET with market needs and companies’ needs**

* + Network of engineering schools linked to companies.
  + Widely available, competitive vocational training, close to the heart of the business fabric.
  + Creation and development of educational and research infrastructure to support the labour market and innovation.
  + The existence of a large category of personnel with good professional training.
  + Knowledge of the needs of the population.
  + Knowledge of the needs of the labour market.
  + Established organisation of adult training.

**Research excellence**

* + Groups of scientific excellence.
  + Activities to attract research talent.
  + Use of public resources to support research and innovation.
  + Maintaining research and development within our own country.
  + High concentration of research institutes and units.
  + Increasing cooperation between research and development units and national and foreign centres.

**Well-developed R&D within companies**

* + Groups of competitive companies, with increasing focus on R&D.
  + Number of patent and trademark applications has increased in the region.
  + Strong focus on technical R&D.

**Good collaboration between stakeholders**

* + Public and private collaboration.
  + Increasing co-operation between enterprises and research units within clusters.
  + Extensive inter-regional and international cooperation (within the European Union).
  + A collaborative environment in the region.
  + Knowledge shared between different stakeholders.
  + Regional collaboration with all municipalities and local administrations for adult learning.
  + Cooperation well developed at regional and local level.

**Strong clusters**

* + Internationally successful network of technology centres.
  + The region is well known for its electronic cluster of companies.
  + Science and technology parks and incubators.
  + Existing industrial centres in industries with a long tradition.
  + Strong industrial and scientific centres.
  + Well-developed economies in specific sectors.
  + Many SMEs taking part in cluster organisations.
  + The region has allocated resources focused on specific business sectors, in dialogue with regional stakeholders.

**5. Suggestions for the IMM, Observatory and Networks**

**5.1 The Innovation Management Model**

* Help to provide access to resources and programmes in the region.
* Methods to develop clear strategies.
* Training leaders.
* Clarify role of leaders.
* Flat organisations: less hierarchy, more communication.
* Production, marketing, distribution, sales: teaching techniques.
* Encourage the use of ICTs: management programmes, platforms.
* Clarify what “innovation” is: spread the concept, its relevance and characteristics (unknown to many SMEs).
* Work on factors that promote an innovative culture.
* Preventive measures: choose workers who are enterprising and creative.

**5.2 The Observatory**

* A simple tool and not too expensive.
* Have a clear goal and strategy.
* Useful for identifying good practice in several areas: planning, management tools, distribution techniques, skills.
* To disseminate existing collaborative networks.
* To inform about support programmes, grants and resources for SMEs.

**5.3 The Network**

* To avoid adding more duplication, partner with existing networks?
* Identify possible partners and stakeholders: institutions, VET centres, SMEs?
* Clarify key elements of networking: facilitators, partners, financing, activities?
* Disseminate the benefits of cooperation in the innovation environment.
* Learn to network.

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**Chapter 6: Characteristics of an effective Innovation Management Model**

1. **Introduction**
2. **Contributions and suggestions from Chapter 3: Innovation management models: an overview**
3. **Conclusions and suggestions from Chapter 4: Summary of the research work done in each region**
4. **Conclusions and suggestions from Chapter 5: Overall summary of the research work in the project**
   1. **Previous considerations**
5. **Final conclusions and suggestions**
   1. **The RAINOVA Innovation Management Model**
      1. **The macro level**
      2. **The micro level**
      3. **Some other proposals**
   2. **The RAINOVA Regional Innovation Observatory**
   3. **The RAINOVA Network**
6. **Summary of conclusions and suggestions**

**Chapter 6: Characteristics of an effective innovation management model**

**1. Introduction**

In this chapter we present a set of recommendations and suggestions to the partners responsible for designing the RAINOVA Innovation Management Model, Regional Innovation Observatory and Network. These proposals are taken from the earlier chapters of this report.

From **Chapter 3** we collect contributions from the research conducted by RAINOVA project members in the topics mentioned: the IMM, Observatory and Network. We also incorporate proposals from past projects and some good practices we identified at European level.

From **Chapter 4** we take the best practices and observations of each region and classify them into different sections. One section focuses on the climate for innovation in each region as described in the regional reports prepared by each project partner. Building upon this foundation, this chapter sets out proposals for European, national and regional policy makers.

From **Chapter 4** we also collect, from the respondents in the individual and group interviews, their observations about the scenarios portrayed in the regional reports. By doing this we take account of local experts’ opinions about the influence and effect of all these strategies, innovation agents, resources and programmes on the daily lives of SMEs who are trying to achieve success through innovation.

We also take note of best practices and proposals mentioned in the context of these companies and their internal innovation management systems

**2. Contributions from Chapter 3: Innovation management models: an overview**

**A. Innovation Management Model**

*From research by Ana*

* A model with some general steps: 1 – 2 – 3 – 4 – 5.
* A model with some basic routines.
* Contextual and cultural factors will be part of this model.
* A model that offers tools for management.

*From previous models*

* Priority must be given to innovation management.
* The model should be distributed inside a general framework.
* The first message of the model to practitioners should be: open up your organisation!
* It needs to combine the willingness and competences of both leaders and employees.

1. Focus on implementation, which is the most difficult step:

* Having clear objectives is essential for any organisation.
* Some routines need to be clearly defined.

2. Encourage cooperation among organisations:

* Improve regional coordination among different actors.
* The role of intermediary agents is very important for the whole system.

3. Improve leadership and competences of leaders.

**B. The Observatory**

*From Kennet and David’s contributions*

* There must be very good reasons for starting an Observatory.
* It has to be a practical tool for collaboration and community working.
* Sustainability must be well analysed: future formulas need to be investigated.
* Self-investment must be balanced by a return on investment.
* We have to identify the target groups.
* We have to be aware of the critical phases in the development of the Observatory.
* The Observatory should be well integrated into the RAINOVA website.
* It should be based on open standards.
* There should be a top-level navigation with degrees of scalability.

**C. The Network**

*From Jaroslaw’s contributions*

* Support regional development of the company environment.
* Support cooperation between companies.
* Build a network of regional business environment institutions.
* Establish an umbrella organisation.
* Analyse the current state of interconnections in the region.
* Establish good cooperation for innovation.
* Make networking a natural part of activities in the region.

**3. Conclusions and suggestions from Chapter 4: Summary of the research work done in each region**

**Opinions from Chapter 4: classified into sections**

|  |  |  |
| --- | --- | --- |
| **Innovation Management Model** | **Innovation Observatory** | **Networks** |
| External climate of innovation   * Support essential from local authorities * Role of public authorities * Importance of competition as an incentive for innovation * Ability of regions to achieve innovative results in health, education, workforce education and regional economic development * Culture of innovation and ability to change quickly   Institutional strategies   * *Pending*   Leadership   * Need for good leadership * Difficulty of implementation * Need for better communication * Need to facilitate organisational work   Internal strategies   * Knowledge transfer strategies   Models or programmes in the company   * Lack of models to follow * Lack of awareness that, above all, innovation is about management * Lack of structured processes * Need for right tools   Culture of innovation in the company   * Clarify and agree about innovation * Need for a model of innovation management: basic elements need to be explained and a culture of innovation needs to be promoted from the outset * Need to promote culture of innovation as part of the culture of the company * Brainstorming: creative routines in the organisations * Use of ICT to support good practice * Workshops to generate ideas, techniques and tools * Technological innovation and social practices * Need to keep things simple * Need to measure results of policies   Employees’ attitude and competences   * Educate people in the values of innovation and creativity * Importance of passion * Empower employees * Cultural factors and human behaviours * Entrepreneurial mindset   Learning   * Training and research policies in relation to the labour market * Make better use of the adult education system   Cooperation   * Lack of culture for sharing knowledge * Culture of sharing doesn’t exist * Partnership for knowledge exchange between colleges and companies * Learning from others: indicators, standard models * Increase collaboration between private and public sectors * Interconnections between education organisations and companies * Networking culture to distribute knowledge in the region   Others   * How to keep costs low? * How to share benefits? * Resources and results | General   * Development of innovation information, which you can consult and where innovation is grouped thematically * Sharing good practice * Learning from others * Seeing what is being done somewhere else   Activities   * To disseminate good practice, copy best practice, diffuse innovation results * Good practice for other regions in education, entrepreneurship and collaboration culture * To answer customers’ needs * To detect new opportunities * Information about subventions * Need for information about meetings, seminars, festivals and lectures * Database of buyers * Large investment made in education * Creative working climate | General   * Work in networks to promote innovation * Difficult to meet people from other countries * Better coordination of existing agents * Need for networks and sharing resources * Difficult to find right partners * No networking and cooperation * No creative collaboration * There is a very dense interaction network * Network in specific fields, e.g., genomes, optics * Collaboration between civil servants and politicians, and between regional and local levels   Culture of networking   * Lack of culture for sharing knowledge * Absence of networking culture among actors * *Pending*   Education   * Lack of cooperation between companies and education centres leads to lack of knowledge about real possibilities: who with? * Good networking of education Centres, companies, social enterprises and local employers * Strong networking at institutional level and educational organisation level * Culture of networking for SMEs, adult education and entrepreneurs * Falu kommun * *Pending*   R&D cooperation   * Developing cooperation between R&D units * *Pending*   Internationalisation   * International contacts |

**4. Conclusions and suggestions from Chapter 5: Overall summary of the research work in the project**

**4.1 Previous considerations**

Here we bring together some reflections arising from reading the proposals we collected. They may be useful both for regional policy makers and the designers of the RAINOVA IMM:

* From the regional reports we can draw some recommendations for policy makers regarding the climate of innovation in the regions.
* It is very important to adopt a cohesive structure when seeking to transfer models, techniques and management practice across regions.
* It is important to successfully diffuse institutional policies in order to get the attention of SMEs. Be transparent and accountable; demonstrate visible results; set out clear, simple priorities.
* It is important to build up resources and programmes and get them out to SMEs. Some existing programmes will not be well known, or they may be too complex. You need to help SMEs find the resources and programmes that are right for them.
* Institutions and agents must properly clarify their roles in order to avoid confusion in the business community.
* All the stages of learning are important when creating a culture of innovation. In basic education you should foster entrepreneurship. In vocational training you should disseminate technical knowledge and collaborate with SMEs. Universities should undertake research not just in technologies but also market trends, methodologies and communication systems. Adult education should promote lifelong learning for people and workers.
* Collaboration is one of the keys to successful innovation, which works best in areas and regions where there are local and international networks of cooperation or partnership.

**The Innovation Management Model**

* Help to provide access to resources and programmes in the region.
* Methods to develop clear strategies.
* Training leaders.
* Clarify role of leaders.
* Flat organisations: less hierarchy, more communication.
* Production, marketing, distribution, sales: teaching techniques.
* Encourage the use of ICT: management programmes, platforms.
* Clarify what “innovation” is: spread the concept, its relevance and characteristics (unknown to many SMEs).
* Work on factors that promote an innovative culture.
* Preventive measures: choose workers who are enterprising and creative.

**The Observatory**

* A simple tool and not too expensive.
* Have a clear goal and strategy.
* Useful for identifying good practice in several areas: planning, management tools, distribution techniques, skills.
* To disseminate existing collaborative networks.
* To inform about support programmes, grants and resources for SMEs.

**The Network**

* To avoid adding more confusion, partner with existing networks?
* Identify possible partners and stakeholders: institutions, VET centres, SMEs?
* Clarify key elements of networking: facilitators, partners, financing, activities?
* Disseminate the benefits of cooperation in the innovation environment.
* Learn to network.

**5. Final conclusions and suggestions**

**5.1 The model of innovation management**

Essentially, when we first presented the RAINOVA project proposal and its objectives and expected results, what we were setting up was an **initial working hypothesis**, which we wanted to confirm during the lifetime of the project.

We might now argue that the central idea of ​​this hypothesis was that if we want to enhance regional innovation systems we need to design an Innovation Management Model. Then, with the intervention, help and support of VET centres and other learning communities, whose intermediary role we intend to reinforce, we need to deploy the IMM in SMEs to help them manage innovation as a core priority in their business.

When talking about a **model** (in other words, the **IMM**), we have always assumed that it should not just be a template or graph with some concepts more or less creatively woven in for companies to use as a reference or guide. We were looking for a set of technical recommendations, examples and best practices to be at our disposal to implement gradually in companies. In other words, we were after a useful, practical, simple tool, which, when combined with other tools, would allow us to really help and support the business community.

Similarly we understood the **Observatory** would be another instrument to support the implementation of the IMM, complementing it, providing a space to exchange ideas and gather information and knowledge, and keeping track of developments in other organisations and regions.

Finally, the **Network** would be our mechanism to keep on improving the IMM as it evolved in response to new knowledge, possibilities and capabilities, with the participation of our partners, collaborators and stakeholders. The Network would thus be responsible for managing the growth of the Observatory, analysing the results of its activities and proposing new strategies for future changes.

Now that our research work in the regions and analysis of its results are nearly complete, we realise that the approach we took to conducting the research – the individual and group surveys, collection of case studies and evidence from previous projects, and the analysis of the regional reports – implicitly led to a **second working hypothesis**, which will determine all our results and the decisions that emerge from them.

When we read and analysed the surveys and regional innovation reports, we reached a decision to choose some and reject others. We were identifying what really interested us among all the information, opinions and experiences we had gathered. Now at last we could start to define the elements that a future IMM should take into account.

We were fascinated, when reviewing the **regional reports**, to highlight **policies and strategies** at regional level, identify the **resources** at the disposal of SMEs, find out about the **agents and stakeholders** who lead regional innovation systems, realise the role that **learning** plays in the SME environment, and clarify the lines or levels of **collaboration and cooperation** among organisations. In short, we were assembling evidence for our second hypothesis, namely the **strengths and weaknesses** of each region.

In the **individual** and **group** **surveys** we highlighted issues relating to the internal culture of organisations, the relevance given to **learning** activities and the **degree of cooperation** developed with other organisations. We did the same for the type of **programmes** or innovation management **models** being used by organisations. And finally we pulled it all together by listing the **obstacles** that hinder innovation and the **factors** that drive it.

Now, starting with what we have learned during the research process, the time has come to evaluate the overall position of our approach – the one we referred to as our initial hypothesis. Has it been confirmed or reaffirmed? Has it emerged stronger or weaker as a result of our collaborative efforts and reflections?

It is also time to decide on another issue. How relevant now are those elements that seemed so fundamental during our surveys and analyses and our research into previous projects? It is time to decide whether there are too many or too few elements. Above all, what has our research taught us about the fundamental parts of the future Innovation Management Model, which we set out to design at the very start of our project?

The Commission’s acceptance of the proposal we submitted seemed to confer a first approval, an official acceptance that we should run with our initial hypothesis, and a form of moral support for us to continue working on the IMM, the Observatory and the Network. Then, from the results of our research process, we encountered a positive reception to our approach. We can now summarise our results as follows:

* From the surveys, we can conclude that inmost SMEs it is not normal practice to use an **innovation management model**. We have already commented on this point at the beginning of this chapter. When SMEs refer to models, they are talking about templates, graphics or theoretical models. That is not what we in RAINOVA mean by Innovation Management Model. However, SMEs also talk about the need for models, practical programmes and simple, useful applications. That is where they line up in complete agreement with us about what an innovation management model should be and do.
* Regarding the **Observatory**, our reading of SMEs’ comments is that while they agree with its existence, they see it mainly as a place where they can make inquiries. They perceive the Observatory mainly as a tool for information.
* Regarding the **Network**, favourable opinions have been expressed, but they emphasise that we need to clarify roles within the network, and that it will need to make their lives simpler, not more confusing.

It has been gratifying to see the initial RAINOVA project proposal validated during these initial stages, spurring us on to explore this line of work more deeply. Even though we always felt this was the right approach, it is much better to see it confirmed in practice by business experts from all of our regions.

Having successfully got over this first hurdle, we now turn to the following question: what are the key elements that will shape the Innovation Management Model?

As we observed at the beginning of this report, the end users of the IMM should be SMEs. First and foremost the elements of the IMM must be directly relevant to their internal lives. This is what we can call the **micro level model**. We need to distinguish the micro level from other aspects and concepts that the model must also take on board, but which are related to the external environment and the institutions that shape it – what we can call the **macro level model**.

**5.1.1 The macro level**

So, if VET institutions and learning communities are the agents we have identified to implement the model we will design, we realise that only by acting in a network can we hope to influence decision makers and have our suggestions noticed.

We are also aware that we need to design a model that is relevant and attractive to SMEs. We need to hear their assessment of what it could contribute to their work. And we need their support to influence decision makers in the policy bodies and institutions that shape the business environment in which, as companies, they operate and trade.

At this macro level, from first impressions of our surveys and regional reports, we can already identify a number of points we must start to consider as fundamental elements of the model. These relate to areas where the model can offer some useful ideas to improve the current situation.

As we already did in Chapter 4, where we analysed data region by region, and then in Chapter 5, where we compared the regions and summarised their similarities and differences, we can now identify the different aspects we want to highlight, prompted by opinions communicated to us during the data collection process.

These are, first, **policies** and **strategies**; second, **resources**, **agents and stakeholders**, and the role of **learning**; and finally, **cooperation**. It will be evident that these are the selfsame elements that comprised what we referred to earlier as “the second working hypothesis” of the RAINOVA project.

**Policies and strategies**

Our first assessment is very general. According to suggestions and advice we received, the RAINOVA model (the IMM) should be a permanent and dynamic tool for communicating to regional, national and European decision makers the paramount need for greater **cohesion** among the regions – cohesion at political, legal and economic levels.

The aim is to transfer what is learned in some regions to other regions, and to make best practice and business know-how more easily transferable from one region to another. Without some effective form of cohesion, it is difficult to transfer innovative practices or models and strategies that have proved positive from one region to another. It may even be easier for countries outside Europe, including those with regions bordering on Europe, to take advantage of such practices than for neighbouring European regions to do so.

The second idea communicated to us is that the **diffusion** of policies and programmes to support and assist SMEs in various European regions is not particularly efficient. Governments need to raise their game to ensure that strategic programmes and support actually succeed in reaching SMEs. Among various proposals to optimise the diffusion process, some emphasise that strategies need to be clearer, simpler and more understandable to the small and medium enterprises that are supposed to be their target group.

The same commentators also argue that many of the policies and strategies published by governments, usually with a lot of noise and expensive deployment of resources, miss the point because they fail to reach their intended audience: the companies.

They offer some constructive comments: that the policies and strategies should be **measurable** and **appropriate**; that governments should properly **account** for their effectiveness; and that their **results** should be properly presented. It is clear that regions that may have very well-defined and structured strategies to boost innovation but lack proper deployment methods – whether it be, say, efficient tracking processes or adequate organisational capacity and resources – do not really provide good value. Despite all their efforts, they fail to push forward the implementation of innovation in their region.

**Coordination**, therefore, between different governmental levels is essential, and where powers are distributed between different levels of government, whether national, regional, local or municipal, **well-defined roles** have to be established to avoid confusion.

Institutions should be encouraged to take advantage of the results of innovative activities in the regions for improving health systems, education and worker training if they want to promote regional economic development and ultimately produce an impact that will benefit everyone.

**Resources**

**More resources** and support programmes for SMEs are requested. The current ones have proved to be insufficient in the eyes of many respondents (this is a constant complaint). They are also **complex to manage**. In fact complexity is far too common. There is a huge need for advice and help from other actors such as development agencies, but here again the available support is often not adequate.

**Agents**

Companies are often baffled by the number of organisations, associations and institutions active in the world of innovation. They cannot understand so much proliferation, they consider it superfluous, and they do not see any benefits from it. This highlights the importance of **clarifying the roles** of public and private organisations working to support innovation. There needs to be much greater clarity about the value and function of each agency.

**Role of learning**

To create a culture of innovation in the business environment, all stages of education are considered to be relevant. Each one plays a different role. **Basic education** should foster a culture of entrepreneurship. **VET systems should** serve, among other things, to transfer knowledge and technology to companies and to collaborate with SMEs. **Adult education** schools should promote lifelong learning for adult people and workers. **Universities** should focus mostly on research.

In those regions where any of these parts are missing or they are working inefficiently, a deficit will soon be apparent, which in due course will cause malfunctions in other areas: lack of entrepreneurial culture, inappropriate worker skills, not enough collaborative culture, etc.

**Cooperation**

Innovation management works better in regions where there are **collaborative networks** and where interaction among communities of companies, agencies and public/private partnerships is an established practice. It works even better where these networks function also at **international** level.

Cooperation should be at **different levels** and should involve **different actors**, and the role of **intermediary agents** is very important.

**Strengths and weaknesses**

As we observed in Chapter 4, strengths and weaknesses can be grouped into different areas. First there are the institutional support systems, then the economic and financial systems and regional strategies, and finally the culture of innovation, the financial system and condition of the educational system, the market requirements, and so on.

To summarise briefly, a situation of weakness is ... *pending*

On the other hand, having outstanding strengths means ... *pending*

**5.1.2 The micro level**

At a **micro level**, we remain committed to the idea of continuing to improve the IMM and its elements – the ones we chose when we collected and analysed information during the research process. These elements are: the **culture of innovation**; the **programmes** and internal management **models;** the importance given to **learning** and **cooperation**; and, finally, the **obstacles** to innovation and the **success factors** for enhancing it.

**Introduction**

The RAINOVA IMM, as well as providing the elements we will examine below, should be organised, according to the suggestions we have received, in a set of **steps** or stages, very much like some of the models analysed in the report.

Interviewees asked for a set of **basic routines** for innovation management to be included, as well as a section for working on the **contextual factors** and, just as essential, the **cultural factors**.

The practicality of the model should come from a set of **management tools** to be implemented by SMEs.

They suggested that the model and its elements should be disseminated within a broader **framework**. They were aware that there are many factors and agents that will condition the success or failure of the model’s implementation, and also that it will be a **long process** and we will have to be patient about expecting immediately good results.

Certainly the first message for companies and their managers has to be: “Open up your organisation! Look outside and see what is being done elsewhere! Look at what you can usefully do to improve yourself!”

**Culture of innovation**

For many SMEs, the initial recommendation is that the first step towards innovation management – and this is not intended as a pun – is to start with **management innovation**.

Many SMEs use traditional management systems, unsupported by any modern management techniques, which holds them back when they try to deal with innovation management. How can they expect to keep abreast of new technological developments, current methods of communication, strategic planning, competency management or effective marketing without any access to modern group-work techniques, creativity and problem-solving techniques, or support from up-to-date ICT systems?

Well aware of this, they request a further boost of **ICT** resources and the introduction of more **management programmes**. They also anticipate doing more work through **platforms**.

Some say that innovation is primarily about **management**, and that it needs to be prioritised. Even more say that, since “innovation” is still not a clear concept for many companies, it is important to be clear about what it means.

They want to foster a general **culture of innovation** within their companies, while also expecting to find a unique culture of innovation in every one.

They correctly suggest that the organisation of work in many SMEs will have to go through a thinning process to make them **flatter organisations** with fewer managers, better distributed responsibilities and enhanced communication systems with their employees.

**Leadership**

The function of **leadership** is a key issue within this micro section. Lots of employees commented on this, suggesting that **training** **leaders** and **upgrading their skills** are dual aspects needing improvement in most companies. There also needs to be **clarification of roles and responsibilities** within the management structure.

Employees also commented on the lack of **good leadership** in business. They expected their leaders to display more **constancy of purpose** and awareness that implementing innovation is a long, complex affair. Being a good communicator is recognised as a key issue for leaders when facilitating **organisational work** towards innovation. And they say that reorienting a company towards implementation requires **clear objectives** and an unambiguous definition of core **management routines**.

**Employees**

Another section at this micro level focuses on the employees of the company. We received suggestions about the need to educate employees in the **values ​​of innovation** and **creativity**. They referred to the need to include **passion** as an important factor for involving employees in achieving the company’s objectives. But in this respect it is necessary to implement **empowerment practices**, allowing employees more power of decision and encouraging **entrepreneurship**. In this context, proactive measures need to be taken from the outset by selecting creative and entrepreneurial employees during hiring.

This means that technological innovation in companies should also be coupled with good **social practices**. To this end, a better **distribution of benefits** is suggested.

Clearly the **need for leaders** and the **skills of** **employees** are two of the most significant keys to innovation.

Finally, there were calls to adopt the practice of **measuring the results** of policies adopted by the company, in a form that is easy for everyone to understand.

**Programmes and** **models**

It is often remarked that while there is a need for good innovation management models, existing models are not put into practice and are therefore unused. Before implementing the IMM it will be important, if we want companies to adopt it, to explain its **basic elements** and the fundamentals upon which it is based.

Companies need **well-structured processes**. As a rule, **creative tools** are not widely used. Nor are exercises for generating ideas or design techniques much in use.

More management **tools** are required internally – tools that must be appropriate, according to our interviewees. The applicability of these models will be very important. And, as the process of implementing the IMM will take a long time, the transference of models, programmes and tools will be critical.

**Internal learning**

The often mentioned message that companies should be more open reminds us of the **need for learning** in the organisations and an accompanying set of recommendations and techniques. It is also a reminder about the usefulness of learning **best practice** from other companies and regions concerning methods of production, marketing, sales or distribution techniques, and other issues.

Internal learning means defining **training and research strategies**, and connecting them to policies to meet the requirements of the **labour market**.

The need for a strategy for **knowledge transference** inside organisations is another point that was emphasised by our respondents.

**Level of cooperation**

We have to promote, within organisations that are not yet practising it, a **culture of sharing** knowledge with other people, both inside and outside the company. We can and should learn from others in areas such as managing indicators and using standard management models.

Therefore a **culture of networking** to spread knowledge throughout the regions should be more strongly promoted.

We need to promote partnerships between businesses and educational establishments and respond to the fact that there are not enough public/private partnerships.

**Conclusion**

To sum up, then, the RAINOVA Innovation Management Model should be a guide to help companies reduce **barriers** towards innovation and enhance **success factors**.

The following recommendations are taken from **Chapter 5:**

**Obstacles**

We noticed two types of obstacles: those involving external factors, and those associated with the internal environment of the organisation. Some mentioned a lack of institutional procedures. Other complained about fiscal burdens and lack of previous references.

But most interesting for us were internal obstacles, among them a lack of time, resources, strategy and competences.

Internally the pattern seemed to combine poor leadership with lack of competences for leadership. Where such a combination occurs there is often very little culture of innovation. In some firms no one seems willing to accept change. Often there is a problem of attitude in employees because of some simple factor such as fear.

Another specific obstacle frequently mentioned mentioned was the lack of a route to market.

**Success factors**

Factors driving innovation among the answers to our surveys could be classified into four groups.

One group focused on specific internal drivers, for example the need to:

* Be part of a strong network
* Bring production costs down
* Improve access to information
* Open up export possibilities

A second group referred to particular qualities needed for innovation, such as:

* Skill
* Motivation
* Commitment
* Being creative
* Flexibility
* Being open-minded

A third group concerned the internal culture of innovation, such as the opportunity to:

* Allow (and learn from) mistakes
* Collaborate with others

And a fourth group related to external factors such as:

* Support from local authorities
* Regional clusters
* Support for entrepreneurs

What all of them had in common was a focus on innovation, good innovation strategies and adapting to the needs of the markets.

**5.1.3 Some other proposals**

To help companies analyse the situation in order to get a clear picture of their strengths and weaknesses, we propose a model with a **Panel of** **Indicators** to monitor performance and a **self-assessment questionnaire** tohelp companies when they are reflecting or taking strategic decisions.

From the descriptions given to us of the situation of innovation management in companies, we were able to identify different groups, as we did in Chapter 5 when analysing the relationship between companies and VET institutions.

Different types of groups could be established, depending on the focus adopted in the analysis. However, we prefer to start from a holistic approach and take as our starting point the **state of innovation in companies,** based on the data collected in our research process.

From this premise and looking back to the analysis of the data we collected, we are inclined to establish three groups. At first these groups will only include companies in our RAINOVA project partner regions, but later companies from other regions will be added.

**Group 1**

Companies in regions that are starting out with an emerging innovation system, designing policies, allocating resources, building structures, etc.

**Group 2**

Companies that already have an established innovation system, with strategies, agents and experience, but which face a difficult situation because of financial problems, poor prospects or lack of resources, leadership, etc.

**Group 3**

Companies that have a well-based innovation system and good prospects as a result of well-defined policies, good cooperation at all levels, access to a good education system, etc.

**5.2 The Innovation Observatory**

Moving on from the Innovation Management Model, interviewees supported the need for an Observatory through which they could learn from others’ experience and discover what is going on beyond their own company. An Observatory is also needed, they thought, to detect, collect and introduce best practices from other organisations, and as a place for sharing innovation where any information they need can easily be found.

First we talked to the **target groups** for whom the Observatory is intended.

They want it to be a simple, practical tool, with a clear goal and a well-defined strategy.

The **areas** in which good practice could be identified are: Planning, Management Tools, Distribution Techniques, Management Skills, Entrepreneurship and Collaborative Culture.

The specific **activities** to be developed by the Observatory could be to:

* Disseminate results of innovation
* Spread good practice
* Respond to customers’ demands
* Discover new opportunities
* Provide information about meetings, seminars, exhibitions, lectures etc.

They also want the Observatory to disseminate the existence of actively cooperative networks and report on support programmes, scholarships and resources for SMEs.

Activities inside the Observatory should be collaborative and should resemble a community in which a culture of creativity rules.

We need to investigate proposals for the Observatory’s current and future sustainability. It should be inexpensive and capable of providing a return on any investment. We will have to be very careful about the critical phases of setting it up. It should also be integrated into the existing RAINOVA website and based on open standards.

**5.3 The RAINOVA Network**

To foster cooperation among VET institutions, learning communities and SMEs, it is important to create a network to support this cooperation. To avoid duplication, it has been suggested that perhaps the RAINOVA Network could be associated with some other existing network(s). We therefore need to investigate more fully the existing networks in each of the partner regions.

Post-project, the Network should **spread** the main resources developed by RAINOVA: the Innovation Management Model and the Observatory. It should act as an umbrella organisation to disseminate and enhance these resources.

Its **purpose** should be to promote innovation, support the development of the business environment, disseminate the benefits of cooperation, teach networking competences, and make networking a standard practice in the economic activity of all European regions.

**Roles** should be clarified from the outset, and the functions of the facilitators (the RAINOVA partners) should be outlined clearly.

We need to define the **activities** to be performed by the Network and establish ways to finance them.

**6. Summary of conclusions and suggestions**

* To be able to manage innovation later, many SMEs first need to innovate in management.
* No Innovation Management Models are applied generally. Our Innovation Management Model has to be more than just a model: it also has to be an innovation management tool that is easy to apply.
* Its applicability is more important than the steps or phases of the model.
* Implementation is the key factor. Rather than creating a perfect model, its dissemination is what really matters.
* Equally as relevant as the IMM are an Observatory and a Network as tools for learning and cooperation.
* To extend the IMM, it is important to include good examples, management tools and best practices. It is also important for the model to include usable tools and to develop an Observatory that detects, collects and displays them, as well as a Network to disseminate these resources.
* Need to design a **micro** model for businesses but with some **macro** recommendations for policy makers too.
* Need to recommend strategies, tools, learning activities, agents and collaborations.
* Need to remember all the factors of an innovative culture, leadership characteristics and the skills they require, the need for learning, the need for the right skills, the importance of the entrepreneurial mindset, etc.
* The IMM as a guide on our journey from weaknesses to strengths.
* Other factors such as institutional momentum also encourage innovation.
* Set three levels to measure the state of companies’ innovation:
  + Those that are starting out with an emerging innovation system, designing policies, allocating resources, building structures, etc.
  + Those that already have an established innovation system, with strategies, agents and experience, but which face a difficult situation because of financial problems, poor prospects or lack of resources, leadership, etc.
  + Those that have a well-based innovation system and good prospects as a result of well-defined policies, good cooperation at all levels, access to a good education system, etc.

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**Chapter 7: Bibliography / Other sources**

1. **Bibliography**
2. **Glossary: some concepts of innovation**

**Chapter 7: Bibliography / Other sources**

**1. Bibliography**

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**2. Glossary: some concepts of innovation**

**Innovation**: “Innovation can be defined in several ways, depending on the background, role and experience of the definer. We opted for a wider definition including not only new technological innovations but also new services, processes, methods etc. and their implementation. In this broader approach innovations do not necessarily have (immediate) economic or commercial value; nevertheless implementation of some level is a requisite. This type of innovation can take place also in the public sector, e.g., in social services.

“As a conclusion, innovation can be defined as being the reformation which is related to production, services and other economic and societal activities. Innovation includes always some kind of action from new idea to its fulfilment and producing new value for this idea.” (Ståhle, Sotarauta and Pöyhönen, 2004. TeRis Project)

**An innovation project** “in this paper is used as being the innovation process of one particular innovation. Andrew and Sirkin (2006) argue that the management of an innovation project is essentially like any other business project, though it comes with more risk and uncertainty.” (Everleens, 2010)

**The innovation process** is defined as “the development and selection of ideas for innovation and the transformation of these ideas into the innovation.” (Jacobs and Snijders, 2008) “To emphasise the uncertain character of this innovation process, other authors use ‘the innovation journey’.” (Van der Ven, 1999)

**Regional Innovation Systems**: A regional innovation system was defined as “the set of economic, political and institutional relationships occurring in a given geographical area which generates a collective learning process leading to the rapid diffusion of knowledge and best practice.” (Nauwelaers, C. and Reid A., 1995) “Consequently, we comprehend RIS in its broader sense, as part of surrounding innovation environment focusing on RIS actors and their interactions.” (TeRis Project)