



**REGIONAL
INNOVATION
AND RESEARCH
POLICY OUTLOOK**
policy practices in
eight European regions



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Budapest, 2008

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Foreword

Findings and statements in the book are the results of interactive consultations within the ProAct consortium. Experts from eight countries – Austria, the Czech Republic, Denmark, Hungary, the Netherlands, Poland, Slovakia and the United Kingdom – joined forces to look for efficient innovation and research policy practices in eight regions of the European Union.

The consultations clarified that regional policy practices in very different regions could be analysed and addressed from three different aspects. These practices also form a policy learning cycle, which shows the possibility to recognise and learn from ‘good practices’. The elements of this cycle are:

- the practices of strategy formation;
- the practices of strategy implementation and policy flexibility;
- the practices at programme / project level.

The consortium participants elaborated a detailed benchmarking methodology to describe the practices in the above learning cycle (see Annex 1). In parallel with developing the methodology, case studies were written in the participating countries to see how the description of practices fit with the benchmarking. After an in-depth introduction to the theme, from Chapter 3 a detailed account of the work is given.

According to the ProAct experience there are substantial differences between the practices of regional innovation and research policy across Europe in regard to the three elements of the policy learning cycle. There are many examples when the representatives of the developed EU regions could also learn from the practices of one another. The regions in the New Member States can improve the performance of their regional policies by adopting some of the practices of the developed regions. Additionally, we could also see that the developed regions can also profit from the cooperation with the less developed, for which they have to understand how processes go in the Eastern skirts of the EU.

We believe that by initiating a policy debate on the different practices of innovation and research policy can help regional development in Europe. The project team hopes that this book is useful for everyone participating in envisioning, planning and ‘programming’ a region’s future, or implementing a sub-task in regional development or those teaching or learning these subjects... and of course to anyone interested in the future of his/her region. We also recommend some of our findings to those engaged in industrial development and the spatial structure of industrial development.

In order to accelerate the diffusion of the knowledge we accumulated and to inspire similar learning processes the project website www.proact-network.net contains not only the detailed case studies of the region, but a collection of the relevant literature and related websites as well. Additionally, there is also an interactive module, which helps regional policy analysts and professionals to compare the practices in their region and the ProAct regions. This is only an introduction to the benchmarking we did, but it purposefully helps to go more into the details, which is really the value of the exercise. We believe that the online exercise is a useful experience for the interested regional innovation and research policy professionals.

Budapest, December 2007

Gábor Papanek
project coordinator

1. Objectives and methods

Regional innovation and research policies can greatly support economic development and catching up (see for instance *EC* [1993]). However, European regions are rather different in terms of business power and dynamism. Therefore, upon EU initiation (see *EC* [1998]) the European regions started to develop their own regional innovation and research policies and in this book we look for some conclusions of the strategy development and implementation experience.

Learning is one of the effective ways to improve regional innovation and research policies and benchmarking is a useful method to contribute to the learning process. In this chapter we show why and how such learning was an important objective, what sort of benchmarking approach we took and which regions contributed to the exercise in the ProAct project.

1.1 Enhance regional policies by learning

Economists have developed a number of recommendations for policy that wants to contribute to the success of 'regions'. The frequent failure of policy practices show that the possibilities of spatial and regional¹ development are not clarified enough.

Regional development policy always had to take into account the geographical distribution of demand, the location of raw material and other natural resources, deployment of industrial plants etc. Nevertheless, the history of regions shows that similar policy standpoints often resulted in significant regional differences.

The economic theory discovered the topic towards the end of the 19th century, when Alfred Marshall showed that industrial districts have basic role in economic development. In the following decades authors underlined the significant role of regional centres, which offer services for their peripheries (e.g. *Christaller* [1966] etc.). Mainstream economics judges only since *Krugman* [1991] that the examination of the topic is reasonable. Research into regional economics has begun but even methods are barely settled. Today, despite the mentioned EU efforts, we have no commonly accepted concepts, which are justified by practical experience, on the role, effective aims and tools of regional development policies. Regional disparities within the Union decrease only very slowly (see the *Kok Report* [2004]).

Because of the mentioned lack of theoretical and practical knowledge, participants of the ProAct project (researchers, regional development experts and practitioners) turned their attention to the practices or tools of regional policy (more exactly innovation and research policy, which is considered by evolutionary literature's authors the key of development policies, see for instance *Hodgson* [2003]). We are convinced that those interested in regional development can best learn² for themselves by looking at how different regions rely on different practices. Throughout this book the *hows* are given much more importance than the *whats*. In this framework "policy" means (central, regional and local) government *behaviour and practices* (activities, actions, interventions, legislation, etc.) intended to influence the regional economy in a longer term.

In the policy learning process two objectives are considered to be particularly interesting:

- To identify the links between regional needs and regional research and innovation policy *formation*. There is no efficient regional policy if it is not in accordance with regional needs. This seems to be especially true for regional innovation and research policy, the subject of which is often rather complicated and abstract.
- To identify and disseminate benchmarks of regional research and innovation policy *implementation*. Making visible the elements of best practice (or appropriate practices) is the central aim of this book.

¹ The word 'space' has a general notion, which can mean towns, counties, NUTS 2 or other 'regions', countries, even continents. In this book sometimes the two words are used as synonyms.

² By now learning regions have had a rich body of literature. The first is *Florida* [1995].

The next point introduces how the above objectives were met with the help of an iterative benchmarking process and case study elaboration.

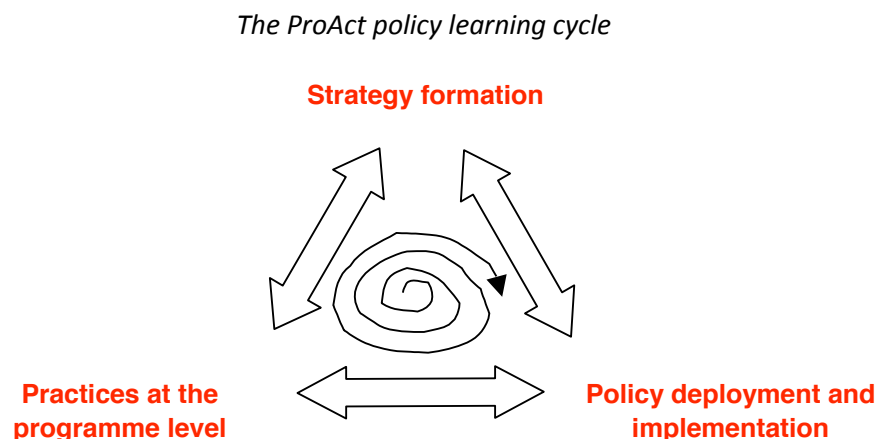
1.2 Benchmarking methodology to find good practices

The future is always uncertain and this is especially true in the longer term. As a consequence, reasonable regional innovation and research policy can only be implemented in a continuous cyclical process.

The success of concrete policy tools depends on a number of issues, which together form the regional context that is always individual and region-specific. Finding the efficient regional innovation and research policy tools and practices required the definition of the so-called 'ProAct policy learning cycle'. In this cycle, practices of regional innovation and research policy decisions have an impact on the selection of programmes through which the strategy is implemented, but also the experience and practice of implementation is fed back to programme design and strategy formation. The practices in the learning cycle characterise regional innovation and research policy and help the evolution of learning regions (see also Hudson [1999], Essletzbichler-Rigby [2007]).

It also needs to be noted that the policy learning cycle relies much on the theories of governance, specifically on new modes of coordination, whereby it is not based on command-and-control regulatory policy instruments or hierarchy but instead on processes through which non-governmental actors are gradually allowed to co-ordinate amongst themselves, increasing their role in policy-making (Jordan *et al.* [2005]). Such an approach is as well signified by the "Open Method of Coordination" (OMC), which guides coordination between national policies of the Member States and their relation to the European Commission.³

Fig.1



It seems that it is very difficult to distinguish tacit and explicit knowledge transfer in the ProAct policy learning cycle, however, the authors believe that the concepts of *Nonaka-Takeuchi* [1995] about the learning organisation are valid for learning policies as well. Until more developed concepts are formulated, the ProAct policy learning cycle seems to be an extension of a sophisticated double-loop learning process. As *Argyris-Schon* [1978] argue, in double-loop learning the concerned individuals, groups or organisations learn by questioning the values, assumptions and policies that led to the actions, and this is exactly what we would like the regional innovation and research policies to do: be able to learn from past action and behaviour by posing appropriate questions and studying practices.

Both our literature review and the case studies show that the existence of soft factors is outstandingly important when regional innovation and research policy wants to act effectively. These are: embeddedness of local actors in their environment (this can also be unfavourable, see for instance the literature on path dependency), entrepreneurship, creative liveability (attractive urban agglomerations), tolerance and diversity, innovative milieu, social or civic capital, magnet infrastructure, culture, history, traditions, lifestyle workshops

³ For short explanation cf. http://europa.eu/scadplus/glossary/open_method_coordination_en.htm

(fashion, the way people live). Soft factors are important contextual variables and make the selection of appropriate regional innovation and research policy tools difficult. This is why the ProAct policy learning cycle concept was defined as a practice-oriented framework to assist learning and networking.

To see how the above-introduced learning cycle works in practice, the *Benchmarking Framework* [2007] methodological guide was elaborated in an iterative process (see also in Annex 1). The guide groups the different benchmarks according to the learning cycle as the practices of strategy formation; policy deployment and implementation; and programme / project level were distinguished. Following the first draft of guidelines, regional experts worked out case studies about their own practice of regional economic development.

When analysing the practices above, the ProAct case studies provide information on:

- how regional innovation and research objectives are chosen;
- how a finished development programme results;
- how actions are designed to reach the chosen regional objectives;
- how innovation becomes embedded in society;
- how EU and national policies impact upon regional policy;
- how innovation policy is governed;
- how networking takes place;
- how financing is implemented;
- how evaluations, monitoring, audit and other practices help regional policy learning;
- how a typical programme, which is considered successful, is implemented.

Relying on the ProAct case studies (for a list see Annex 2) the Outlook summarises the 'good' techniques of regional innovation and research policy.

The benchmarking results show that *there is no ultimate success policy* which has only 'good' practices and which we could recommend to all regions. We cannot and do not want to advise the emerging regions to copy the practices of success regions'. However, to know about and learn from the regional innovation and research policy practice followed by others is useful for all regions, because the ProAct *benchmarks help develop strategic thinking and the improvement of own practices*.

Policy learning is enhanced if, using the online benchmarking tool on www.proact-network.net, regional policy analysts and professionals compare the practices in their own region with the ones experienced in the ProAct countries. We believe that conclusions for the regional innovation policy can also be drawn by using this simple online facility. It takes about 35-45 minutes to go through the benchmarks by selecting one answer to multiple choice questions. The questions and answers proposed make the user think about the own practices and specificities of the region. After the benchmarking exercise, the answers are compared with those in the ProAct regions, of which the one that has the closest pattern is also displayed beside the practices/benchmarks marked. The comparison helps to position the regional innovation and research policy in question.

2. Background and context

To contribute to the overarching aim of finding the good practices and efficient tools of regional innovation and research policy, we must possess an adequate level of understanding the most important theories behind regional competitiveness and innovation, the context in which regional innovation and research policies as well as their limitations are embedded. In this chapter the background and context for the whole ProAct approach is presented.

2.1 Theoretical foundations and history of thought

The economic role of 'knowledge' has been appreciating in our time. Technological development and knowledge became key sources of enterprise competitiveness and regional dynamism. Capital and labour are less and less important contributors of progress. 'Basic innovations', such as electricity, car production and recently the internet, as well as more social type of innovations, such as new management methods, ideas turned into reality change the world more and more rapidly (cf. *Mensch* [1975], *Nefiodow* [2006], <http://www.kondratieff.net/English1.htm>).

Today the literature acknowledges the importance of innovation and localized innovation systems in attaining regional competitiveness (for an early reference see (*Hägerstrand* [1967])). After a period in which National Systems of Innovation were considered to be the ideal unit of policy analysis, international organisations like the European Union and the OECD switched to the concept of Regional Systems of Innovation (*Cooke* [2001]).

The current policy approach to regional innovation and development is based on three relatively new waves of theory:

- Followers of *spatial economics* emphasise that regional relationships play more and more important role in economic development. After the spread of industrial technologies in the 19th Century the economies of scale were the key to competitiveness. Some new institutionalists, like J. K. Galbraith had similar opinion. The theory of growth poles has introduced spatial elements in this school of thought (see *Myrdal* [1957]). However, in the last third of the 20th Century flexibility had to be highlighted and the spatial networks (or clusters) of flexible SMEs became the engines of growth (*Krugman* [1991]). Small firms like Microsoft, Netscape, Cisco Systems, Amazon.Com, Yahoo became the main engine of the economic dynamism (*Loveman-Sengenberger* [1991]). The „small is beautiful“ slogan of the new approach is linked with the name of E.F. Schumacher. Economic and regional policy more and more acknowledges the role of SMEs in employment, in meeting local demand and contributing to technological and organisational development.
- According to the *evolutionary* concepts of economics, the driving force of regional development is innovation. Inventions and innovations generally appear in a centre, from where they reach peripheries and other centres (*Hägerstrand* [1967], *Friedmann* [1973]).
- In *institutional economics* the diffusion of knowledge is facilitated by a multi-faceted spatial relation system (see the centre-periphery model of *Friedmann* [1973]). Innovation can best be supported by accelerating the exchange of information between the neighbouring units. The pace of development depends on production, sale, R&D etc. co-operations through the evolution of networks and clusters.

This book uses the approaches of the theories above with attention to recent developments, which are not even adequately addressed by theory, because changes are extremely fast. Today innovation and new knowledge driven changes are expected to speed up in line with the development of the information society. In the real and virtual centres of innovation theoretical researchers, product and technology developers, managers as well as consumers and communities of common interest are collaborating in previously unimaginable cooperation towards implementing more and more product and social ideas. Newly emerging industries and social patterns increasingly offer new market opportunities and common places to interact. The

diffusion of innovative individual and business behaviour is gaining momentum not only among the most developed countries, or in Finland and Ireland and the Far Eastern little tigers, but also in less developed countries of which China and India are the first to mention (see e.g. the *Kok Report* [2004]). Modern technology gives new birth to traditional sectors (such as food or textile production, but also banking e.g. in Africa).

Explaining the way how to make innovation happen and facilitate the changes has also developed a lot. The starting-point for the current type of innovation theory can probably be found in the work of *Schumpeter* [1934, 1942]. After establishing at first that entrepreneurs are required for innovation, he shifted his trust to large R&D departments from the 1940's. The *linear model* of innovation was introduced in the United States after the WWII, and was institutionalised through a linked series of institutes for fundamental research, applied research and production. Institutes like Fraunhofer in Germany, VTT in Finland and TNO in the Netherlands are a result of this effort. Making innovation happen occurred by channelling as many ideas through this process as possible, and doing it efficiently. It can be imagined that there was a strong policy-involvement in such a rigid approach to innovation. Subsequently, the economic crisis of the 1970's put innovation on the map as a source of competitiveness. The main effort of this period was to facilitate the process of technology transfer from the earlier-mentioned knowledge institutes to companies and especially SMEs. It was quite common to found specific semi-public agencies for this task. The concept, however, was still based on linear logic: an idea was generated by knowledge institutes and could be processed in other sectors in the next phase.

The next real change occurred when awareness arose that this linear type of innovation had some fundamental shortcomings. In the wake of the battle for global competition, the next attempt was to adopt a *systems approach* to innovation (e.g. *Kline-Rosenberg* [1986]). The earlier-mentioned concepts like clusters, science and business parks stem from this period. Specifically when the focus was shifted from the national to the regional level the idea of spatial proximity was taken over as the key to success (*Krugman* [1991]). Competitiveness was sought in a strategic pooling of resources, leading to the so-called resource-based view on innovation.

New technologies like ICT enabled new types of collaboration in more recent years. Supported by international financing, increasingly large networks are collaborating on innovative projects. At the same time, it became clear that the resource-base of the established innovation systems was not the key to competitiveness after all: there were still great performance differences between seemingly similar clusters. The coming of so-called '*open innovation*' processes implied a greater flexibility in the organisation of innovation. On the basis of the almost random success of Silicon Valley, the importance of one overall strategy was downgraded, in favour of allowing multiple innovations to emerge simultaneously. New institutions like incubators, Living Labs, networking events, serial entrepreneurs, business angels and venture capitalists started collaborating in a manner that was no longer defined on traditional financial or contractual terms (the overview above is based on *Katzy* [2005]).

Competitiveness and innovation are closely related. *Porter* [1990] pointed to a number of important considerations. He emphasized the followings:

1. The key measures of regional competitiveness are considered to be the per-capita GDP and its growth rate (together with its determinants, the rate of employment and the productivity). This concept is a substantial addition to the traditional views of the importance of corporate profit, because it takes into account taxes and wages as well. We should also mention that companies also take into account the Corporate Social Responsibility (CSR) principles, which is rooted in the extended concept of competitiveness.
2. The capacities of individual regions (in education, labor, R&D, consulting) are sufficient only for the robust development of a handful of industries. It is necessary for the regions to be highly specialized.⁴

⁴ The history of economic thought highlights some different types of specialization. Ricardo described trade based on natural resources, Heckscher-Ohlin talked about labour and capital endowments, after the famous Leontieff-paradox specialization differences of technologically advanced and developing regions were described, others analysed the cooperation patterns between developed economies, which aim at increasing the economies of scale, etc.

3. The competitiveness of regions is (also) determined by their dominant corporate groups (value chains, i.e. the companies participating in the given productive activity and those supporting them). It is very important in any region whether high or low productivity elements of the value chains are present.
4. The most important sources of competitive advantage are the following: (1) the regional conditions of access to productive inputs (resources, engineering, informatics and research infrastructure, including high-tech), (2) the local and export demand of the region (3) the development of the local supporting and augmenting industries, (4) the competitive spirit of corporate strategies. But (5) chance (random opportunities) can also be a factor.
5. There are three types of development for regions: factor-driven, efficiency-driven and innovation-driven progress. The first type is exhibited by developing countries, which make use of the resources they have, the second is the road for moderately developed economies, which make efficient use of investments, and the third is for the developed countries, which take the innovation-driven road.

Despite the vast literature on regional competitiveness, there are authors who claim that at a territorial level, competitiveness becomes a chimera (see for instance *Budd–Hirmist [2004]*).

Although there is clearly a relative lack of up-to-date and sound theories behind the practical approach taken in the book, there are some common notions for the reader:

- A *region* is an intellectual concept without a general definition. A region exists only in terms of the criteria by which it is defined, of which four are the most commonly used: (i) it must not have a determinate size; (ii) it is homogeneous in terms of some specific criteria, (iii) it can be distinguished from bordering areas by a particular kind of association of related features, (iv) it possesses some kind of internal cohesion. The boundaries of regions are not fixed (see: *Cook-Memedovic [2003] p.3*).
- An *innovation* is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (*Oslo Manual [2005]*).
- In a *Regional Innovation System* the main elements are: /1/ the scientific system, which creates new knowledge, /2/ the enterprises, which implement innovation with the help of this new knowledge, /3/ and bridging institutions, which are the transmitters between the two (*Lundvall [1988]*). *Cooke [2001]* argues that the theory of regional innovation systems contains five key dimensions: region; innovation; network (trust and co-operation-based linkages among actors); learning; and interaction. These dimensions determine whether a region has an innovation system or not.
- *Research and development (R&D)* comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications. The term R&D covers three activities: basic research, applied research and experimental development (*OECD Frascati Manual [2002]*).
- An *economic network or cluster* is a group of people or institutions that have some kind of business relationship. Often it is a co-operating community that acts in order to gain strength and perform as a significant player in relation to the current market situation. In other cases it is only a group of neighbouring or virtually connected enterprises acting in the same branch and influencing each other by connections of their employees (see *Porter [1998]*).
- *Learning* is done in a continuous helix type interaction of the tacit and explicit knowledge of individuals. The four phases of the process are running in different areas and contexts. The first step is the birth of some new *tacit knowledge* (that exists only in practice), created in the common work, in the cooperation of the workers, which is followed by its *fixation* (transformation to explicit). Explicit knowledge then *diffuses* and becomes tacit knowledge again. Finally, cycle is restarts on a higher level (*Nonaka-Takeuchi [1998]*).
- *Innovation and research policy* (or strategy) is traditionally part of industrial and technology policy that aims at accelerating innovation (e.g. the development of new market products and services), economic growth and social development. It is often the most important element of the economic policy mix, which consists of the design and the implementation of modernisation efforts needed to create or keep a certain degree of competitiveness.

Due to the complex relationships between region, competitiveness and innovation, we highly recommend policy-makers take a complex, user-oriented view, especially of the innovation agenda. For instance, there are many examples of innovations that have failed upon implementation. The classic example of the battle between VHS and the superior Betamax video cassette (see e.g. *Rogers* [2003]) demonstrates that quality alone does not always lead to innovation. It is the task of a governance network to make sure that innovation is more than introducing new things: innovations should have an impact on society and should actually work. We also note that there are different arguments as to why the best technologies or technological standards do not always survive (see for instance the discussion on technological trajectories by *Howells* [2005] or on institutional trajectories by *North* [1993]). Also, the definition of the OECD is not suitable for discussing innovation in services, although European countries are usually service economies (*Gallouj* [2002]). In many policy areas, such as in public health care, the answer to increasing efficiency is to implement new technologies to facilitate organisational processes. However, the crisis in health care will not be solved by equipping every nurse with a Personal Digital Assistant (PDA) if they have no idea how to use it, or if the software of the hospital is not compatible with it. Policy-makers should collaborate with stakeholders in their region to make sure that innovation moves beyond implementing new artefacts.

In line with what was argued before, *innovation should be integrated in other facets of policy* as well, be it health care, education or the environment. We would like to stress to policy-makers in general to adopt an innovative mindset, and see how new technologies and processes could enhance their fields.

The next section introduces how today regions and the complex innovation phenomena as highlighted above can be described in Europe with the help of currently available statistics.

2.2 Towards a regional innovation map of Europe

With technological progress advances the regional centres of innovation change even on a global scale. For instance Manchester was the node at the start of the industrial revolution. Then, besides England, the Ruhr area in Germany became the centre of the next important wave of innovations, the steel, railway and shipbuilding industries of the 19th century. Taking a historical jump, in the wake of the 20th Century the automotive industry in the USA, near the Great Lakes, had been an engine of growth. The Tokyo area cluster was one of the starting points of the electronics development starting in the mid-20th century, etc. (*Brian* [1993]).

The best-known centres of innovation of our period are once again regions, such as the Silicon Valley and Route 128 near Boston, and the North-East in general in the USA, the Tokyo-area electronic cluster in Japan, and in Europe the industrial areas around Cambridge, Baden-Württemberg (*Piore-Sabel* [1984]), Northern Italy (*Brusco* [1990]) and the cross-border 'Blue Banana' connecting them (*Brunet* [1989]).

In line with the above and along theoretical considerations, the *Muller-Nauwelaers* [2005] report collected and developed 25 statistics for European regions in Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia. Five types of regions were distinguished:

- capital regions;
- regions with tertiary growth potential;
- skilled manufacturing platforms regions;
- lagging behind agricultural regions; and
- industrially challenged regions.

In 2007 and for the purposes of this book, we repeated the data collection exercise with the aim of doing a similar analysis but extending to all possible NUTS-2 regions.⁵ A total of 17 indicators could be obtained, of which finally 14 were used to determine the regional innovation landscape of Europe. These are:

- R&D expenditures (GERD) as a % of GDP;

⁵ "The Nomenclature of Territorial Units for Statistics (NUTS) was established by Eurostat more than 25 years ago in order to provide a single uniform breakdown of territorial units for the production of regional statistics for the European Union." Source: http://ec.europa.eu/eurostat/ramon/nuts/introduction_regions_en.html

- total R&D personnel (% of total employment);
- population with lifelong learning (% of 25-64 age class);
- BERD / GERD %;
- HERD / GERD %;
- employment in agriculture (%);
- employment in high-tech services (%);
- employment in manufacturing industries(%);
- population density (persons/ square km);
- unemployment rate (%);
- change in population density 2000-2005;
- patent applications to the EPO by priority year (per million of inhabitants);
- GDP in euro per capita (current prices); and
- cumulated growth of GDP 2000-2004 (at current prices).

Using the above 14 indicators, the European 196 NUTS-2 regions could be divided into eleven distinct groups:⁶

- densely populated top capital regions;
- the most R&D intensive business-industry regions;
- R&D intensive business-industry regions with many patents;
- average Western European regions with relatively high business R&D;
- average Western European regions with relatively high R&D in higher education and population growth;
- the least R&D intensive Western European regions with fairly high agricultural employment;
- densely populated, mostly capital regions (the second capital group) with moderate R&D;
- low-growth agricultural regions;
- higher growth agricultural regions;
- poor regions with some business R&D;
- the poorest regions, with some higher education R&D.

Analysing the principal components⁷ of the collected statistics, the following general tendencies can be noted at NUTS-2 level regions in Europe:

- The knowledge constituent of the statistics collected is strong: R&D expenditures (as a % of GDP), R&D personnel (per million inhabitants) and lifelong learning (% of 25-64 age class) contain about one-third of the total variance in the whole dataset.
- Business R&D (as a % of total R&D) and employment in manufacturing industries (as a % of total) go hand in hand but against higher education R&D (as a % of total R&D).
- Employment in high-tech services moves against employment in agriculture, so regions where agriculture is dominant have less high-tech service sectors. High-tech services also attract population, because population density is growing in those regions, where high-tech services are high in employment.
- The unemployment rate is in negative correlation with the change in population density.
- Some cohesion takes place, because higher per capita GDP regions exhibit the lowest growth rates.
- In high per-capita GDP regions more applications are filed to the EPO than in less well-off regions.

The empirical information about regional policy practices from Chapter 3 in the book comes from the ProAct pool of regions, which are rather different:

- *South East England* is the largest. It contains four NUTS 2 regions, of which two could be classified: Kent belongs to the group of densely populated top capital EU regions while Hampshire and the Isle of Wight reveal moderate rates of R&D (in group 7 of the above classification).

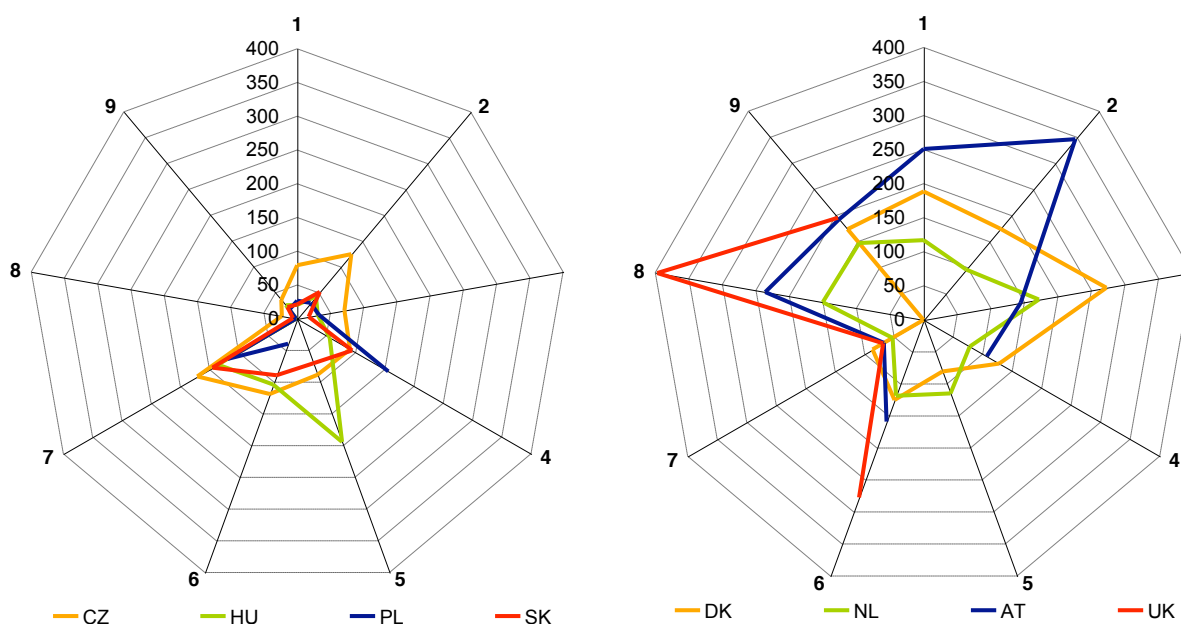
⁶ For another and more detailed statistical analysis see also the *Strategic evaluation ...* [2006] report.

⁷ The methodological details are found in Annex 3.

- Northern Hungary is a NUTS-2 region, from the poorest performing group.
- Podkarpackie (Poland) is also a NUTS-2 region. Although it could not be classified in the above analysis,⁸ the region also belongs to the poorest performers.
- North Denmark is a smaller territory than the whole NUTS-2 region of Denmark. Nevertheless, the whole of Denmark belongs to the best performer EU group.
- South Moravia (Czech Republic) is smaller than the NUTS-2 region of Jihovýchod. Although Jihovýchod belongs to the poor regions with some business R&D (group 10), but South Moravia is in a better position within the whole region.
- The Presov region (Slovakia) is part of the Východné Slovensko NUTS-2 region, which is in the poorest performing group of EU regions.
- Vienna is the capital city of Austria, from the top performer group.
- Leiden (the Netherlands) is a small town in the NUTS-2 region of Zuid Holland, which also belongs to the top EU regions.

Fig.2

Statistics in the ProAct regions (EU=100)



The NUTS-2 regions related to the wider or smaller ProAct regions are:

- CZ = Jihovýchod;
- HU = Northern Hungary;
- PL = Podkarpackie;
- SK = Východné Slovensko;
- DK = Denmark;
- NL = Zuid Holland;
- AT = Wien;
- UK = Berkshire, Bucks and Oxfordshire

The statistics depicted above are:

- 1 = R&D expenditures (% of GDP) 2003
- 2 = Total R&D personnel (% of total employment) 2004
- 3 = Population with lifelong learning (% of 25-64 age class) 2005
- 4 = BERD / GERD % 2003
- 5 = HERD / GERD % 2003
- 6 = Employment in high-tech services (%) 2006
- 7 = Employment in manufacturing industries (%) 2006
- 8 = Patent applications to the EPO by priority year (per million of inhabitants) 2003 (SK: 2003)
- 9 = GDP in Euro per capita 2004

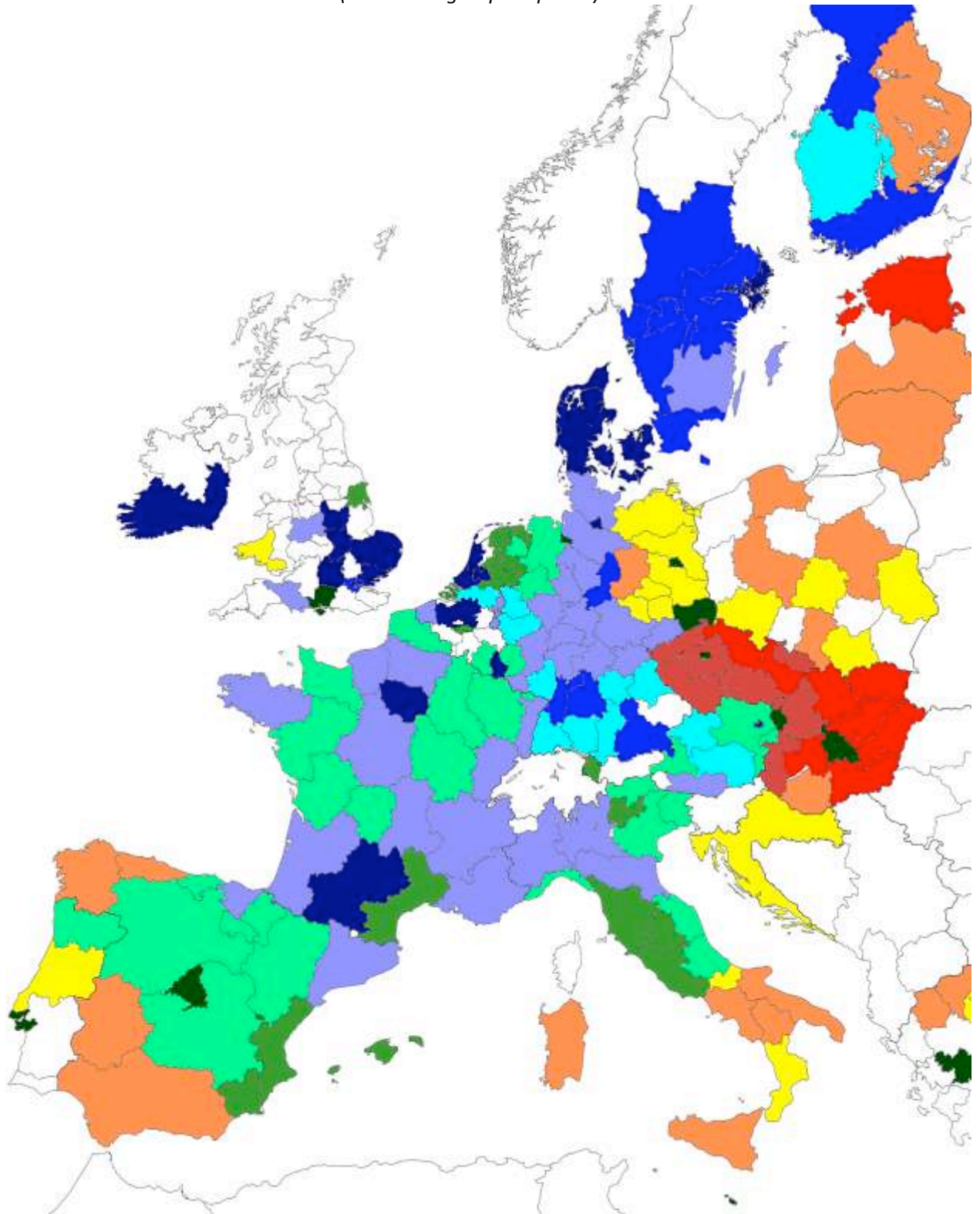
Source: computations from the Eurostat internet database. Data retrieved 23 November 2007

⁸ 13 statistics are available for Podkarpackie, but in two cases 6 of its indicators fell in the 9th and 10th group above, and in one case 7 indicators show that it is in the 8th group. This was considered to be not robust enough. For details on the methodology see Annex 3.

If we accept the argument by *Porter* [1990] that one of the key measures of regional competitiveness is the per-capita GDP, then the statistics clearly show the difference between the four Western and four Central European regions chosen for the ProAct analysis.

Fig.3

*The regional innovation map of Europe at NUTS-2 level
(the eleven groups depicted)*



© EuroGeographics for the administrative boundaries
Legend: see the next table

Table 1

Eleven groups of European NUTS-2 regions: average statistics (from the latest available Eurostat data, see also Annex 3)

	1	2	3	4	5	6	7	8	9	10	11
R&D expenditures (% of GDP)	2.4	4.6	2.6	1.6	1.2	0.8	1.9	0.8	0.7	0.9	0.6
Total R&D personnel (% of total employment)	2.3	3.5	2.0	1.4	1.1	0.9	2.3	0.9	1.1	0.8	0.9
Population with lifelong learning (% of 25-64 age class)	16	17	10	9	11	8	9	7	7	4	4
BERD / GERD %	61	76	77	69	42	57	42	26	28	71	52
HERD / GERD %	24	16	16	23	48	36	24	44	45	17	34
Employment in agriculture (%)	2.1	2.7	3.9	3.5	4.0	5.9	1.6	10.6	11.8	5.9	6.0
Employment in high-tech services (%)	6	6	5	4	4	3	6	3	3	5	4
Employment in manufacturing industries (%)	13	20	24	21	15	20	14	15	15	29	27
Population density (persons per square km)	1 180	462	295	206	204	120	1 430	127	112	125	92
Unemployment rate (%)	5.7	8.1	7.1	8.4	6.6	7.2	9.9	15.1	13.5	9.1	11.1
Change in population density (%., 2000-2005)	2.4	1.2	1.1	0.7	3.2	1.4	0.9	-0.1	-0.3	0.3	-0.9
Patent applications to the EPO* (per million inhabitants)	91	78	207	63	48	42	38	13	7	6	4
GDP in Euro per capita	36 000	29 500	27 700	24 700	24 900	22 400	20 600	13 400	12 300	7 400	6 100
Cumulated growth of GDP** (%., 2000-2004)	1	9	10	11	23	17	27	14	23	44	51

* by priority year
** at current prices

af13 Valen	de11 Stuttgart	de22 Steiermark	de21 Rheinland	de24 Prov. Brabant Wallon	de31 Prov. Brabant Wallon	de32 Prov. Brabant Wallon	de33 Prov. Liège	cy00 Cyprus	de03 Magdeburg	cz02 Strední Čechy	cz05 Severovýchod
be21 Prov. Antwerpen	de12 Karlsruhe	de31 Oberösterreich	de32 Oberbayern	de33 Prov. Walloon	de34 Prov. Walloon	de35 Comunidad Valenciana	cz01 Praha	de41 Brandenb.-Nordost	es11 Galicia	cz03 Jihovýchod	cz07 Strední Morava
be23 Prov. Ost-Vlaanderen	de21 Oberbayern	de13 Freiburg	de14 Tübingen	de36 Valencia	de37 Valencia	de38 Salzburg	cz02 Brno	de42 Brandenb.-Südwest	es12 Principado de Asturias	cz04 Severozápad	es05 Extremadura
be24 Prov. West-Vlaanderen	de26 Braunschweig	de15 Baden-Württemberg	de16 Bayern	de39 País Vasco	de40 País Vasco	de41 País Vasco	de42 Baden-Württemberg	de43 Brandenburg	es13 Principado de Asturias	cz06 Jihovýchod	es06 Castilla-La Mancha
de00 Hamburg	de16 Baden-Württemberg	de23 Oberpfalz	de24 Bayern	de42 País Vasco	de43 País Vasco	de44 País Vasco	de45 Brandenburg	de46 Brandenburg	es14 Principado de Asturias	cz08 Moravskoslezsko	es07 Castilla-La Mancha
de00 Denmark	de17 Baden-Württemberg	de25 Mittelrhein	de26 Bayern	de45 País Vasco	de46 País Vasco	de47 País Vasco	de48 Brandenburg	de49 Brandenburg	es15 Principado de Asturias	cz09 Moravskoslezsko	es08 Castilla-La Mancha
de01 Hamburg	de18 Baden-Württemberg	de26 Bayern	de27 Schwaben	de48 País Vasco	de49 País Vasco	de50 País Vasco	de51 Brandenburg	de52 Brandenburg	es16 Principado de Asturias	cz10 Moravskoslezsko	es09 Castilla-La Mancha
de02 Hamburg	de19 Baden-Württemberg	de27 Schwaben	de28 Schwaben	de49 País Vasco	de50 País Vasco	de51 País Vasco	de52 Brandenburg	de53 Brandenburg	es17 Principado de Asturias	cz11 Moravskoslezsko	es10 Castilla-La Mancha
de03 Hamburg	de20 Baden-Württemberg	de28 Schwaben	de29 Schwaben	de50 País Vasco	de51 País Vasco	de52 País Vasco	de53 Brandenburg	de54 Brandenburg	es18 Principado de Asturias	cz12 Moravskoslezsko	es11 Castilla-La Mancha
de04 Hamburg	de21 Baden-Württemberg	de29 Schwaben	de30 Schwaben	de51 País Vasco	de52 País Vasco	de53 País Vasco	de54 Brandenburg	de55 Brandenburg	es19 Principado de Asturias	cz13 Moravskoslezsko	es12 Castilla-La Mancha
de05 Hamburg	de22 Baden-Württemberg	de30 Schwaben	de31 Schwaben	de52 País Vasco	de53 País Vasco	de54 País Vasco	de55 Brandenburg	de56 Brandenburg	es20 Principado de Asturias	cz14 Moravskoslezsko	es13 Castilla-La Mancha
de06 Hamburg	de23 Baden-Württemberg	de31 Schwaben	de32 Schwaben	de53 País Vasco	de54 País Vasco	de55 País Vasco	de56 Brandenburg	de57 Brandenburg	es21 Principado de Asturias	cz15 Moravskoslezsko	es14 Castilla-La Mancha
de07 Hamburg	de24 Baden-Württemberg	de32 Schwaben	de33 Schwaben	de54 País Vasco	de55 País Vasco	de56 País Vasco	de57 Brandenburg	de58 Brandenburg	es22 Principado de Asturias	cz16 Moravskoslezsko	es15 Castilla-La Mancha
de08 Hamburg	de25 Baden-Württemberg	de33 Schwaben	de34 Schwaben	de55 País Vasco	de56 País Vasco	de57 País Vasco	de58 Brandenburg	de59 Brandenburg	es23 Principado de Asturias	cz17 Moravskoslezsko	es16 Castilla-La Mancha
de09 Hamburg	de26 Baden-Württemberg	de34 Schwaben	de35 Schwaben	de56 País Vasco	de57 País Vasco	de58 País Vasco	de59 Brandenburg	de60 Brandenburg	es24 Principado de Asturias	cz18 Moravskoslezsko	es17 Castilla-La Mancha
de10 Hamburg	de27 Baden-Württemberg	de35 Schwaben	de36 Schwaben	de57 País Vasco	de58 País Vasco	de59 País Vasco	de60 Brandenburg	de61 Brandenburg	es25 Principado de Asturias	cz19 Moravskoslezsko	es18 Castilla-La Mancha
de11 Hamburg	de28 Baden-Württemberg	de36 Schwaben	de37 Schwaben	de58 País Vasco	de59 País Vasco	de60 País Vasco	de61 Brandenburg	de62 Brandenburg	es26 Principado de Asturias	cz20 Moravskoslezsko	es19 Castilla-La Mancha
de12 Hamburg	de29 Baden-Württemberg	de37 Schwaben	de38 Schwaben	de59 País Vasco	de60 País Vasco	de61 País Vasco	de62 Brandenburg	de63 Brandenburg	es27 Principado de Asturias	cz21 Moravskoslezsko	es20 Castilla-La Mancha
de13 Hamburg	de30 Baden-Württemberg	de38 Schwaben	de39 Schwaben	de60 País Vasco	de61 País Vasco	de62 País Vasco	de63 Brandenburg	de64 Brandenburg	es28 Principado de Asturias	cz22 Moravskoslezsko	es21 Castilla-La Mancha
de14 Hamburg	de31 Baden-Württemberg	de39 Schwaben	de40 Schwaben	de61 País Vasco	de62 País Vasco	de63 País Vasco	de64 Brandenburg	de65 Brandenburg	es29 Principado de Asturias	cz23 Moravskoslezsko	es22 Castilla-La Mancha
de15 Hamburg	de32 Baden-Württemberg	de40 Schwaben	de41 Schwaben	de62 País Vasco	de63 País Vasco	de64 País Vasco	de65 Brandenburg	de66 Brandenburg	es30 Principado de Asturias	cz24 Moravskoslezsko	es23 Castilla-La Mancha
de16 Hamburg	de33 Baden-Württemberg	de41 Schwaben	de42 Schwaben	de63 País Vasco	de64 País Vasco	de65 País Vasco	de66 Brandenburg	de67 Brandenburg	es31 Principado de Asturias	cz25 Moravskoslezsko	es24 Castilla-La Mancha
de17 Hamburg	de34 Baden-Württemberg	de42 Schwaben	de43 Schwaben	de64 País Vasco	de65 País Vasco	de66 País Vasco	de67 Brandenburg	de68 Brandenburg	es32 Principado de Asturias	cz26 Moravskoslezsko	es25 Castilla-La Mancha
de18 Hamburg	de35 Baden-Württemberg	de43 Schwaben	de44 Schwaben	de65 País Vasco	de66 País Vasco	de67 País Vasco	de68 Brandenburg	de69 Brandenburg	es33 Principado de Asturias	cz27 Moravskoslezsko	es26 Castilla-La Mancha
de19 Hamburg	de36 Baden-Württemberg	de44 Schwaben	de45 Schwaben	de66 País Vasco	de67 País Vasco	de68 País Vasco	de69 Brandenburg	de70 Brandenburg	es34 Principado de Asturias	cz28 Moravskoslezsko	es27 Castilla-La Mancha
de20 Hamburg	de37 Baden-Württemberg	de45 Schwaben	de46 Schwaben	de67 País Vasco	de68 País Vasco	de69 País Vasco	de70 Brandenburg	de71 Brandenburg	es35 Principado de Asturias	cz29 Moravskoslezsko	es28 Castilla-La Mancha
de21 Hamburg	de38 Baden-Württemberg	de46 Schwaben	de47 Schwaben	de68 País Vasco	de69 País Vasco	de70 País Vasco	de71 Brandenburg	de72 Brandenburg	es36 Principado de Asturias	cz30 Moravskoslezsko	es29 Castilla-La Mancha
de22 Hamburg	de39 Baden-Württemberg	de47 Schwaben	de48 Schwaben	de69 País Vasco	de70 País Vasco	de71 País Vasco	de72 Brandenburg	de73 Brandenburg	es37 Principado de Asturias	cz31 Moravskoslezsko	es30 Castilla-La Mancha
de23 Hamburg	de40 Baden-Württemberg	de48 Schwaben	de49 Schwaben	de70 País Vasco	de71 País Vasco	de72 País Vasco	de73 Brandenburg	de74 Brandenburg	es38 Principado de Asturias	cz32 Moravskoslezsko	es31 Castilla-La Mancha
de24 Hamburg	de41 Baden-Württemberg	de49 Schwaben	de50 Schwaben	de71 País Vasco	de72 País Vasco	de73 País Vasco	de74 Brandenburg	de75 Brandenburg	es39 Principado de Asturias	cz33 Moravskoslezsko	es32 Castilla-La Mancha
de25 Hamburg	de42 Baden-Württemberg	de50 Schwaben	de51 Schwaben	de72 País Vasco	de73 País Vasco	de74 País Vasco	de75 Brandenburg	de76 Brandenburg	es40 Principado de Asturias	cz34 Moravskoslezsko	es33 Castilla-La Mancha
de26 Hamburg	de43 Baden-Württemberg	de51 Schwaben	de52 Schwaben	de73 País Vasco	de74 País Vasco	de75 País Vasco	de76 Brandenburg	de77 Brandenburg	es41 Principado de Asturias	cz35 Moravskoslezsko	es34 Castilla-La Mancha
de27 Hamburg	de44 Baden-Württemberg	de52 Schwaben	de53 Schwaben	de74 País Vasco	de75 País Vasco	de76 País Vasco	de77 Brandenburg	de78 Brandenburg	es42 Principado de Asturias	cz36 Moravskoslezsko	es35 Castilla-La Mancha
de28 Hamburg	de45 Baden-Württemberg	de53 Schwaben	de54 Schwaben	de75 País Vasco	de76 País Vasco	de77 País Vasco	de78 Brandenburg	de79 Brandenburg	es43 Principado de Asturias	cz37 Moravskoslezsko	es36 Castilla-La Mancha
de29 Hamburg	de46 Baden-Württemberg	de54 Schwaben	de55 Schwaben	de76 País Vasco	de77 País Vasco	de78 País Vasco	de79 Brandenburg	de80 Brandenburg	es44 Principado de Asturias	cz38 Moravskoslezsko	es37 Castilla-La Mancha
de30 Hamburg	de47 Baden-Württemberg	de55 Schwaben	de56 Schwaben	de77 País Vasco	de78 País Vasco	de79 País Vasco	de80 Brandenburg	de81 Brandenburg	es45 Principado de Asturias	cz39 Moravskoslezsko	es38 Castilla-La Mancha
de31 Hamburg	de48 Baden-Württemberg	de56 Schwaben	de57 Schwaben	de78 País Vasco	de79 País Vasco	de80 País Vasco	de81 Brandenburg	de82 Brandenburg	es46 Principado de Asturias	cz40 Moravskoslezsko	es39 Castilla-La Mancha
de32 Hamburg	de49 Baden-Württemberg	de57 Schwaben	de58 Schwaben	de79 País Vasco	de80 País Vasco	de81 País Vasco	de82 Brandenburg	de83 Brandenburg	es47 Principado de Asturias	cz41 Moravskoslezsko	es40 Castilla-La Mancha
de33 Hamburg	de50 Baden-Württemberg	de58 Schwaben	de59 Schwaben	de80 País Vasco	de81 País Vasco	de82 País Vasco	de83 Brandenburg	de84 Brandenburg	es48 Principado de Asturias	cz42 Moravskoslezsko	es41 Castilla-La Mancha
de34 Hamburg	de51 Baden-Württemberg	de59 Schwaben	de60 Schwaben	de81 País Vasco	de82 País Vasco	de83 País Vasco	de84 Brandenburg	de85 Brandenburg	es49 Principado de Asturias	cz43 Moravskoslezsko	es42 Castilla-La Mancha
de35 Hamburg	de52 Baden-Württemberg	de60 Schwaben	de61 Schwaben	de82 País Vasco	de83 País Vasco	de84 País Vasco	de85 Brandenburg	de86 Brandenburg	es50 Principado de Asturias	cz44 Moravskoslezsko	es43 Castilla-La Mancha
de36 Hamburg	de53 Baden-Württemberg	de61 Schwaben	de62 Schwaben	de83 País Vasco	de84 País Vasco	de85 País Vasco	de86 Brandenburg	de87 Brandenburg	es51 Principado de Asturias	cz45 Moravskoslezsko	es44 Castilla-La Mancha
de37 Hamburg	de54 Baden-Württemberg	de62 Schwaben	de63 Schwaben	de84 País Vasco	de85 País Vasco	de86 País Vasco	de87 Brandenburg	de88 Brandenburg	es52 Principado de Asturias	cz46 Moravskoslezsko	es45 Castilla-La Mancha
de38 Hamburg	de55 Baden-Württemberg	de63 Schwaben	de64 Schwaben	de85 País Vasco	de86 País Vasco	de87 País Vasco	de88 Brandenburg	de89 Brandenburg	es53 Principado de Asturias	cz47 Moravskoslezsko	es46 Castilla-La Mancha
de39 Hamburg	de56 Baden-Württemberg	de64 Schwaben	de65 Schwaben	de86 País Vasco	de87 País Vasco	de88 País Vasco	de89 Brandenburg	de90 Brandenburg	es54 Principado de Asturias	cz48 Moravskoslezsko	es47 Castilla-La Mancha
de40 Hamburg	de57 Baden-Württemberg	de65 Schwaben	de66 Schwaben	de87 País Vasco	de88 País Vasco	de89 País Vasco	de90 Brandenburg	de91 Brandenburg	es55 Principado de Asturias	cz49 Moravskoslezsko	es48 Castilla-La Mancha
de41 Hamburg	de58 Baden-Württemberg	de66 Schwaben	de67 Schwaben	de88 País Vasco	de89 País Vasco	de90 País Vasco	de91 Brandenburg	de92 Brandenburg	es56 Principado de Asturias	cz50 Moravskoslezsko	es49 Castilla-La Mancha
de42 Hamburg	de59 Baden-Württemberg	de67 Schwaben	de68 Schwaben	de89 País Vasco	de90 País Vasco	de91 País Vasco	de92 Brandenburg	de93 Brandenburg	es57 Principado de Asturias	cz51 Moravskoslezsko	es50 Castilla-La Mancha
de43 Hamburg	de60 Baden-Württemberg	de68 Schwaben	de69 Schwaben	de90 País Vasco	de91 País Vasco	de92 País Vasco	de93 Brandenburg	de94 Brandenburg	es58 Principado de Asturias	cz52 Moravskoslezsko	es51 Castilla-La Mancha
de44 Hamburg	de61 Baden-Württemberg	de69 Schwaben	de70 Schwaben	de91 País Vasco	de92 País Vasco	de93 País Vasco	de94 Brandenburg	de95 Brandenburg	es59 Principado de Asturias	cz53 Moravskoslezsko	es52 Castilla-La Mancha
de45 Hamburg	de62 Baden-Württemberg	de70 Schwaben	de71 Schwaben	de92 País Vasco	de93 País Vasco	de94 País Vasco	de95 Brandenburg	de96 Brandenburg	es60 Principado de Asturias	cz54 Moravskoslezsko	es53 Castilla-La Mancha
de46 Hamburg	de63 Baden-Württemberg	de71 Schwaben	de72 Schwaben	de93 País Vasco	de94 País Vasco	de95 País Vasco	de96 Brandenburg	de97 Brandenburg	es61 Principado de Asturias	cz55 Moravskoslezsko	es54 Castilla-La Mancha
de47 Hamburg	de64 Baden-Württemberg	de72 Schwaben	de73 Schwaben	de94 País Vasco	de95 País Vasco	de96 País Vasco	de97 Brandenburg	de98 Brandenburg	es62 Principado de Asturias	cz56 Moravskoslezsko	es55 Castilla-La Mancha
de48 Hamburg	de65 Baden-Württemberg	de73 Schwaben	de74 Schwaben	de95 País Vasco	de96 País Vasco	de97 País Vasco	de98 Brandenburg	de99 Brandenburg	es63 Principado de Asturias	cz57 Moravskoslezsko	es56 Castilla-La Mancha
de49 Hamburg	de66 Baden-Württemberg	de74 Schwaben	de75 Schwaben	de96 País Vasco	de97 País Vasco	de98 País Vasco	de99 Brandenburg	de100 Brandenburg	es64 Principado de Asturias	cz58 Moravskoslezsko	es57 Castilla-La Mancha
de50 Hamburg	de67 Baden-Württemberg	de75 Schwaben	de76 Schwaben	de97 País Vasco	de98 País Vasco	de99 País Vasco	de100 Brandenburg	de101 Brandenburg	es65 Principado de Asturias	cz59 Moravskoslezsko	es58 Castilla-La Mancha
de51 Hamburg	de68 Baden-Württemberg	de76 Schwaben	de77 Schwaben	de98 País Vasco	de99 País Vasco	de100 País Vasco	de101 Brandenburg	de102 Brandenburg	es66 Principado de Asturias	cz60 Moravskoslezsko	es59 Castilla-La Mancha
de52 Hamburg	de69 Baden-Württemberg	de77 Schwaben	de78 Schwaben	de99 País Vasco	de100 País Vasco	de101 País Vasco	de102 Brandenburg	de103 Brandenburg	es67 Principado de Asturias	cz61 Moravskoslezsko	es60 Castilla-La Mancha
de53 Hamburg	de70 Baden-Württemberg	de78 Schwaben	de79 Schwaben	de100 País Vasco	de101 País Vasco	de102 País Vasco	de103 Brandenburg	de104 Brandenburg	es68 Principado de Asturias	cz62 Moravskoslezsko	es61 Castilla-La Mancha
de54 Hamburg	de71 Baden-Württemberg	de79 Schwaben	de80 Schwaben	de101 País Vasco	de102 País Vasco	de103 País Vasco	de104 Brandenburg	de105 Brandenburg	es69 Principado de Asturias	cz63 Moravskoslezsko	es62 Castilla-La Mancha
de55 Hamburg	de72 Baden-Württemberg	de80 Schwaben	de81 Schwaben	de102 País Vasco	de103 País Vasco	de104 País Vasco	de105 Brandenburg	de106 Brandenburg	es70 Principado de Asturias	cz64 Moravskoslezsko	es63 Castilla-La Mancha
de56 Hamburg	de73 Baden-Württemberg	de81 Schwaben	de82 Schwaben	de103 País Vasco	de104 País Vasco	de105 País Vasco	de106 Brandenburg	de107 Brandenburg	es71 Principado de Asturias	cz65 Moravskoslezsko	es64 Castilla-La Mancha
de57 Hamburg	de74 Baden-Württemberg	de82 Schwaben	de83 Schwaben	de104 País Vasco	de105 País Vasco	de106 País Vasco	de107 Brandenburg	de108 Brandenburg	es72 Principado de Asturias	cz66 Moravskoslezsko	es65 Castilla-La Mancha
de58 Hamburg	de75 Baden-Württemberg	de83 Schwaben	de84 Schwaben	de105 País Vasco	de106 País Vasco	de107 País Vasco	de108 Brandenburg	de109 Brandenburg	es73 Principado de Asturias	cz67 Moravskoslezsko	es66 Castilla-La Mancha
de59 Hamburg	de76 Baden-Württemberg	de84 Schwaben	de85 Schwaben	de106 País Vasco	de107 País Vasco	de108 País Vasco	de109 Brandenburg	de110 Brandenburg	es74 Principado de Asturias	cz68 Moravskoslezsko	es67 Castilla-La Mancha
de60 Hamburg	de77 Baden-Württemberg	de85 Schwaben	de86 Schwaben	de107 País Vasco	de108 País Vasco	de109 País Vasco	de110 Brandenburg	de111 Brandenburg	es75 Principado de Asturias	cz69 Moravskoslezsko	es68 Castilla-La Mancha
de61 Hamburg	de78 Baden-Württemberg	de86 Schwaben	de87 Schwaben	de108 País Vasco	de109 País Vasco	de110 País Vasco	de111 Brandenburg	de112 Brandenburg	es76 Principado de Asturias	cz70 Moravskoslezsko	es69 Castilla-La Mancha
de62 Hamburg	de79 Baden-Württemberg	de87 Schwaben	de88 Schwaben	de109 País Vasco	de110 País Vasco	de111 País Vasco	de112 Brandenburg	de113 Brandenburg	es77 Principado de Asturias	cz71 Moravskoslezsko	es70 Castilla-La Mancha
de63 Hamburg	de80 Baden-Württemberg	de88 Schwaben	de89 Schwaben	de110 País Vasco	de111 País Vasco	de112 País Vasco	de113 Brandenburg	de114 Brandenburg	es78 Principado de Asturias	cz72 Moravskoslezsko	es71 Castilla-La Mancha
de64 Hamburg	de81 Baden-Württemberg	de89 Schwaben	de90 Schwaben	de111 País Vasco	de112 País Vasco	de113 País Vasco	de114 Brandenburg	de115 Brandenburg	es79 Principado de Asturias	cz73 Moravskoslezsko	es72 Castilla-La Mancha
de65 Hamburg	de82 Baden-Württemberg	de90 Schwaben	de91 Schwaben	de112 País Vasco	de113 País Vasco	de114 País Vasco	de115 Brandenburg	de116 Brandenburg	es80 Principado de Asturias	cz74 Moravskoslezsko	es73 Castilla-La Mancha
de66 Hamburg											

In the depicted administrative boundaries the European “Blue Banana” cannot be seen, which may also be due to the fact that the heavily populated and industrialised EU regions are not necessarily in accordance with the innovation activities. The Scandinavian leap frogging, the poor performing Southern areas and the even worse Eastern catching up zone is clearly visible.

There is also policy analysis evidence supporting the main lines of statistical analysis above. In the USA regions, where the number of inhabitants is above 3 million and the number of high-tech employees exceeds 150.000 economic development was observed to be faster (Varga [2004]).

2.3 Limitations of regional policy

Despite its increasing importance, regional innovation and research policy may not be successful for many reasons. The most important limitations are:

- The European Union regions were defined along administrative and not economic considerations. The coordination of regional policies is a challenge, because often one policy element is suitable for only one part of the region, whereby not needed in other parts. If projects cannot be supported because one of the partners is located in a neighbouring region, the regional concept may slow down innovation. Furthermore, there can be economic regions overlapping with administrative regions.⁹
- There is a clear limitation of regional innovation and research policies in the fact that innovation is an evolutionary process (Hodgson [2003]). The real effects of the processes and actions, which policy intends to influence, are always uncertain, and many times this uncertainty is substantial.
- Recommendation of regional policy tools, which are useful in all cases, is not possible. Regional innovation policies are region-specific and it is hard to find reasonable comparisons.
- The innovation policy of different areas could be also different. Where the multinational firms play important role, the R&D and innovation are centralised and international. Anywhere else a cluster is the engine of the development, and the innovation objectives are mainly regional ones. But there are also regions with modest innovation efforts, where the innovation policy is not a key element of the regional strategy.
- Last, but not least we should also note that implementation of regional research and innovation related strategies is possible only by regions that have some degree of autonomy over the resources available (Muller-Neuwelaers [2005], p. 9.).

The EU has long recognized many of the above limitations and tries to address them with its approach to regional policy. The next section is a brief overview of this process.

⁹ However, many companies have outsourced substantial parts of their value-chains to Asian countries, and “virtual enterprises” are producing globally leading products, so spatial proximity may no longer be a fundamental need for innovation. In such cases, social proximity seems to be more important. Still, geographical closeness can assist virtual collaboration in a globalised world and participation in regional clusters can help companies to meet their challenges on the global market. In Europe, the Airbus in aviation and GALILEO in satellite-navigation are probably the best examples in this respect.

2.4 Evolution of EU regional policy

Since the Delors reform package of 1988, the European Communities have devoted more attention than ever before to the promotion of regional development. This is reflected in the fact that over 30% of the EU budget expenditures are allocated to support regional development in Member States. The aim of this intervention is to increase economic and social cohesion in the Community, at both the national and regional level. Economic cohesion is measured by GDP per capita, adjusted for purchasing power parity (PPP), whereas social cohesion is measured with two indicators: unemployment rate and employment rate (EC [1992]). The so-called Reform Treaty practically establishing a Constitution for Europe also mentions territorial cohesion, giving the same importance as economic and social cohesion. The main idea is to eliminate situations where significant parts of Europe are geographically isolated, which has negative consequences for the economy and for the citizens. Territorial cohesion is measured as the region's accessibility by air, road and rail transport. Cohesion is considered a priority based on the assumption that excessive disparities between the countries and regions negatively influence the performance and competitiveness of the entire Union.

The European Union pursues its growth-promoting activities in regional policy through multi-annual programmes which, to date, have spread across in 1989-1993, then, following the Regional Innovation Strategy concept (EC [1998]), the EC reports (EC [1994, 1999]) and the recommendations of the Cohesion Reports in 1994-1999 and 2000-2006. The current programming period covers the years 2007-2013. Structural funds are the essential instruments of this policy (European Regional Development Fund accounting for nearly half of all resources in these funds) and so is the Cohesion Fund. Structural funds are available primarily for regions with low level of socio-economic development, measured by GDP per capita, at PPP not exceeding 75% of the EU average. Those values are measured at the level of NUTS 2 regions, within a universal regional subdivision into five levels, covering all Member States of the Community. The EU support is mobilised within sectoral and regional Operational Programmes for priority areas and their corresponding measures. Support is provided primarily through non-returnable subsidies (grants) where eligibility criteria include preparation of quality projects and provision of own contribution to match the EU funding.

In March 2000 EU leaders adopted a document known as the Lisbon Strategy. The Strategy targets that until 2010 the European Union will become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion. At the 2001 Göteborg Summit the original strategy was expanded by adding sustainable growth, i.e. one that respects natural values. Based on the Lisbon Strategy five operational goals were developed:

- quick transition to knowledge based economy;
- liberalisation and integration of markets and industries;
- growth of entrepreneurship;
- growth of employment and a change of social model;
- fostering sustainable growth and natural environment.

In 2005 the Community reviewed the implementation of the Lisbon Strategy. Based on the analysis of the negative experience of 2000-2005, a decision was made to modify the original strategy. The renewed Lisbon Strategy became the foundation of all policies pursued in the European Union, including its regional policy. The Lisbon Action Plan incorporating the renewed Lisbon Strategy defines the priorities which will help the Community become more competitive. The Plan includes actions in three priority areas.

1. Making Europe a more attractive place to invest and work. This is to be implemented through the following:

- extending and deepening the internal market,
- ensuring open and competitive markets inside and outside Europe,
- improving European and national regulation,
- expanding and improving European infrastructure;

2. Knowledge and innovation for growth. This is to be implemented through the following:

- increasing and improving investments in research and development,

- facilitating innovation, the uptake of information & communication technologies,
- contributing to a strong European industrial base;

3. Creating more and better jobs. This is to be implemented through the following:

- attracting more people into employment and modernising the social protection systems, (2)
- improving adaptability of workers and enterprises as well as the flexibility of labour markets,
- investing more in human capital through better education and skills.

The broad array of measures proposed under the second priority area plays a particularly important role for the development of regional research and innovation policy. Those measures include:

- realising a vision of knowledge-based society,
- adopting the new Seventh Framework Programme for research and technological development and a new programme for competitiveness and innovation,
- continuing reforms of public aid policy,
- creating opportunities for European universities to compete with the best universities worldwide (European Higher Education Area),
- setting up the European Institute of Technology,
- supporting and promoting of 'innovation poles',
- promoting eco-innovativeness, and
- partnering with industry fostered by European Technology Initiatives.

The adoption of the renewed Lisbon Strategy by the Council means that it serves as the foundation of all EU policies throughout 2007-2013. This means that all of the above actions (priorities) are to be incorporated into programming documents concerning regional policy, both at the Community level (Community Strategic Guidelines on Cohesion) and national level (National Strategic Reference Framework and Operational Programmes in each country). This also means that Member States with a low level of socio-economic development (covered by the convergence Objective) are obliged to spend min. 60% of the country's allocation on implementing the Lisbon priorities. In more affluent regions which are the beneficiaries of regional competitiveness & employment Objective there is a mandatory threshold of 75% of expenditures for implementation of the Lisbon Strategy. Therefore, an active innovation and science policy becomes a priority.

After the EU enlargement on 1 May 2004 the Czech Republic, Poland, Slovakia and Hungary, as new Member States, became important beneficiaries of the European regional policy. This was linked with the low level of socio-economic development in those countries. In order to become eligible for EU structural funds those countries were required to present relevant programming documents for 2004-2006, i.e. National Development Plans and Operational Programmes, and to build a framework for efficient management of EU funds. Given the very short programming period, underdeveloped transport and environment infrastructure and a very high unemployment rate, the EU funds in those years were directed mainly towards the infrastructure and towards traditional measures shaping the labour market and the quality of human capital. However, the European Union encouraged the development of Regional Innovation Strategies in the new Member States, with the innovation priorities being more extensively incorporated in the Operational Programmes. The European Union influenced the best practices in the new Member States in the following areas: programming, financing, governance, project selection, monitoring and evaluation. In many a case, such activities did not stop at the central level but were also pursued in the regions of the new Member States.

The changes in the European regional policy occurring in connection with the new programming period (2007-2013) are as follows:

- considerably greater scale of EU funding for regional policy mobilised in the new Member States,
- further decentralisation of the implementation model owing to a stronger role of Regional Operational Programmes and the scale of allocations under those Programmes,
- development of dedicated Operational Programmes to stimulate innovative economy,
- increased proportion of structural funding spent on priorities associated with applied research and innovativeness,
- considerable expansion of the set of implementation tools for research and innovation policy.

All four regions of the new Member States, which participate in the ProAct initiative, regardless of whether they are at the NUTS 2 or NUTS 3 level, have a very low GDP per capita, even with an advantageous PPP figure. As the poorest parts of the Czech Republic, Poland, Slovakia and Hungary, they will continue to *benefit from the European regional policy for many years to come*. The problem lies in their lower competitiveness relative to more affluent regions in those countries, which may obstruct efficient utilisation of the limited European funding. In particular, this concerns projects undertaken within the regional research and innovation policy priorities. For this reason, it is essential to embed an array of mechanisms and instruments into the European regional policy that would allow those regions to compete effectively for competitive-based funding against other areas. Regional Operational Programmes may be a good solution, since they incorporate, inter alia, priorities and measures associated with building a knowledge-based society.

The most recent EU Cohesion Report, dated June 2007, states that *consequences of globalisation* will most strongly affect weak regions with a lower level of socio-economic development, underdeveloped scientific research activity and low innovativeness, as such regions mostly compete in traditional industries. For this reason, a modern research & innovation policy, supported by structural funding, may and should, at least partly, immunise economic structures in those regions against the challenges of rapid growth of Chindia. Given the economic weakness of those four regions, the core proportion of funds for regional research and innovation policy in 2007-2013 in those regions will originate from structural funds of the European Union.

3. Regional innovation and research policy in the ProAct countries

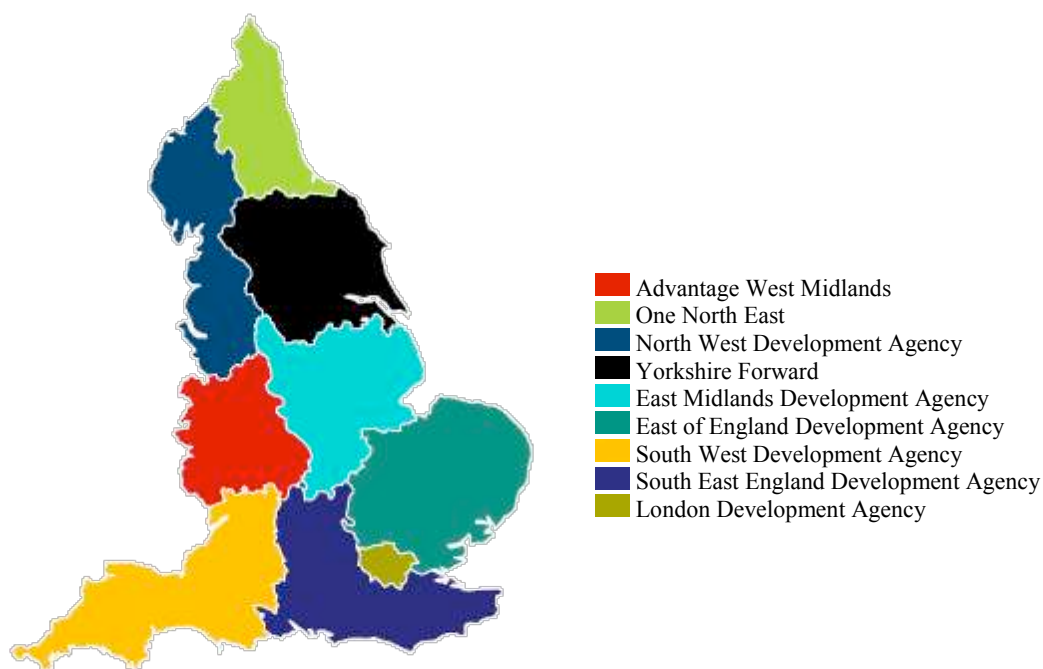
In this chapter we present the different contexts of the ProAct regions, which strongly influence regional innovation and research policy. In below it is shown that even developed EU regions largely differ in terms of delegating innovation policy responsibilities to the regions. Each country chapter was written by the ProAct partners from the respective countries.

3.1 South East England (United Kingdom)

England's Regional Development Agencies (RDAs) are non - departmental public bodies established under the Regional Development Agencies Act 1998. In 1999, eight RDAs were launched and include: Advantage West Midlands, East of England Development Agency, East Midlands Development Agency, North West Development Agency, One North East, South East England Development Agency, South West of England Development Agency and Yorkshire Forward. The London Development Agency was established in July 2000.

Fig.4

Regional Development Agencies in England



Source: England's Regional Development Agencies 2006

England's South East region encompasses 19 county and unitary authorities and 55 districts, stretching around London, from Thanet in the south-east to the New Forest in the south-west and to Aylesbury Vale and Milton Keynes in the north-west. The region is home to over 8 million people and encompasses more than three million households.

Economic specialisation in South East England

England's South East region compares favourably with other English regions on most economic performance indicators. For example, household disposable income is approximately nine percent above the national average (the South East, East of England and London are the only regions with incomes above the national average). From a European Union (EU) perspective, South East England ranks favourably among the EU regions.

Industrial sectors

The South East is an economically diverse region. Key industrial sectors include: aerospace and defence; environmental technologies; healthcare technologies; freight logistics and transport; marine industries; media technologies and telecommunications; construction; and tourism. This profile also includes several specialised industrial clusters. Examples include the motor sport and biotechnology clusters in Oxfordshire; new media and creative industries in East and West Sussex; marine technologies in Hampshire; aerospace in Kent and Hampshire; and software, telecommunications and network infrastructures along the M4 corridor (*Government Office for the South East 2007*).

Business services are the largest sector in the South East and contribute an aggregate total of £84 billion in 2003 to the Gross Value Added (GVA).

Table 2

Main Components of GVA (2003 residence based) in South East England

Sector	GVA	Share
Real Estate, Renting and Business Activities	£49.1 billion	31%
Wholesale and Retail Trade	£21.0 billion	13%
Manufacturing	£18.0 billion	11%
Transport, Storage and Communication	£14.0 billion	8.7%

Source: (Government Office for the South East 2007)

Economic performance and innovation indicators

South East England performs exceptionally well on a range of economic indicators. Highlights include (*Government Office for the South East 2007*):

- In 2005, South East England contributed £166.4 billion (residence based) or 15.3% of the UK Gross Value Added (GVA);
- Technology intensity in the South East, as measured by the share of employment in high and medium technology based employment, is the highest in the UK;
- Business start-up rates are the highest in the UK apart from London, while business survival rates are the highest in the country;
- In 2002, total R&D expenditure in South East England was the highest in the UK at £4,394 billion, accounting for 26.9% of UK business expenditure on R&D and 28.2% of government R&D expenditure;
- The region has the greatest percentage of all enterprises involved in product innovation in the country (22% of all enterprises);
- In 2002/3 the South East accounted for nearly 17% of all UK inward investment.

Higher education and R&D institutions

South East England has 11 universities and eight higher education colleges including the universities of Oxford, Sussex, Southampton, Surrey, Reading, Cranfield, Portsmouth and Brighton. There are more than 50 public and private research centres in the region covering medical research, biotechnology, environmental research, defence technologies, and horticulture. International companies that have research facilities in the South East include: Sharp, Hewlett Packard, IBM, Philips, Canon, Plessey, Zeneca, Merck, Pfizer, and Amersham International.

Research and innovation policy overview

Regional Development Agencies do not formulate strategic economic objectives. Rather, the RDAs adopt 'strategic responses' to the policies that arise from the Central Government. In the context of research and innovation, the strategic responses support the Government's 'Ten year Investment Framework for Science and Innovation'. While it is true that the RDAs are the implementing agent for the Government's strategy, in practice, RDAs are given a wide remit to design programmes and supportive actions. The RDAs are encouraged to be 'innovative' in the design of these processes (while striving to be cost effective) as long as the programmes contribute to meeting the Government's targets.

The strategic responses that support the UK Government's science and innovation goals are detailed in SEEDA's 'Regional Economic Strategy Paper' (RES). Innovation is directed under three themes: knowledge transfer, innovation and skills and these priorities are categorised under two objectives: Global Competitiveness (Objective 1) and Smart Growth (Objective 2) in SEEDA's Regional Economic Strategy (RES), 2006-2016 (SEEDA [2006/b]). The following targets in the most recent RES include an explicit focus on R&D and recognition of the importance of skills and capabilities:

- Increase knowledge transfer and business expenditures in R&D. (Objective 1, Target 2);
- Innovation and creativity from new products (Objective 1, Target 3);
- Skills upgrading (Objective 2 , Target 6);

Criteria for regional success and failures

SEEDA measures performance against four thematic criteria:

- i. Economic impact
- ii. Programme activities, outputs and strategic added value (SAV)
- iii. Financial management
- iv. Corporate and individual objectives

SEEDA reviews economic performance and monitors government activities with various reporting mechanisms. Policy and economic business briefs are produced which feed into a review process. SEEDA also publishes the, 'Economic and Business Bulletin' every six months (SEEDA [2006/a]).

Table 3

SEEDA's reporting outputs

Report	Description	Frequency
RES progress	Details regional progress against RES targets.	Biannually
Annual Report of Accounts	Reports SEEDA's annual accounts, output outturn, staffing, and activity progress.	Annually
Full Performance Report	Documents SEEDA's performance in terms of outputs, activities and strategic added value.	Half Yearly
Board Financial Reports	Updates SEEDA Board on financial forecasts and actuals with variance analysis.	Board Meetings
Operational Output Report	Gives all staff a view of output progress against target with variance analysis.	Quarterly

Source: SEEDA [2006/a]

The consequences of interventions introduced by governments cannot always be correlated. SEEDA is required to include numerical measures, which are directly related to the work undertaken by a project, and these targets are used as surrogates for any real impact. SEEDA also produces half year and full year performance reports, which are a statutory requirement for all RDAs. Projects and programmes are monitored and evaluated using the following measurement tools:

- i. Expected versus realised targets
- ii. Number of people/ firms in collaborations and networks
- iii. Number of new businesses started
- iv. How many new learning opportunities were initiated
- v. How many jobs were created
- vi. Case studies used in evaluation reports

Economic value added and direct impact from SEEDA's programmes are more difficult to measure. Quantitative metrics are used to relate to SEEDA's base line profile but there is widespread agreement among SEEDA staff that any positive (or negative) changes cannot always be associated to a SEEDA intervention. A more holistic view attempts to conceptualise how the different programmes and projects fit together and meet the Central Government's strategic responses.

SEEDA has just completed the final year of a three-year 'Innovation Action Plan'. This plan was the RDA's response to the UK Government's 10 year Science and Innovation Investment Framework (2004 to 2014). During the first year of this plan, SEEDA expanded existing programmes handed-over from central Government (e.g. Manufacturing Advisory Service and Enterprise Hubs). SEEDA also supported several new initiatives (e.g. Innovation Advisory Service and Sector Consortia). These services are designed to deliver a wide array of innovation service products to firms (SEEDA [2006/a]). Other achievements are noted in the table below.

Table 4

SEEDA core targets for 2002 to 2006

Output	Unit	Cumulative Target	Cumulative Actuals
Employment Opportunities	Jobs created / safeguarded	13,566	16,906
Business Performance	New businesses created	2,593	3,092
Education and Skills	Training Opportunities	58,785	83,901
Brownfield Land	Brownfield land remediated	243	281

Source: SEEDA [2006/a]

3.2 Presov region (Slovakia)

The concept of regional innovation

Innovations on the regional level are driven in bottom-up approach. It is caused by absence of systematic innovation regional policy, which is developed now. Innovation comes individually from companies, especially those, where innovation is part of their company's strategy. These companies initiate building of formal or informal networks in both ways - horizontal and vertical. The networks are important for them to support their cooperation, common market position towards their competitors and to annotate regional (and national) policy.

Also university is a source of innovation, but there is missing systematic interconnection with entrepreneurs. Some effort to link these subjects is registered, but it is an individual initiative of companies and projects, not a systematic approach of regional government.

At this point we have to remind, that approach of the region has changed and Regional innovation strategy is in the process of development now.

Regional RTDI policy

On the regional level there are identified 3 the most significant strategic documents. Each of this documents deals with innovation, but only as a part of other topics (education, economic development etc.) But integrated regional policy for the development of research and innovation processes – Regional innovation strategy - is only in the process of development.

The above mentioned strategic documents are as follows:

- *ROP*: Regional Operation Plan - the oldest of the documents and it was developed before the establishment of the PSGR. It is the “ideological” base of PHSR.
- *PHSR*: Plan of the PSGR Economic and Social Development - the most important document because it has strategic significance in the regional policy of the self-governing region. There is a legal duty of each region to have its own PHSR stated also in law. The document consists of 7 thematic areas: Technical infrastructure; Tourism, Culture and external relations; Social area and health, Environment; Business support and development; Education, schools and science. Last two include measures with direct impact on support of innovation.
- *POKER*: Communication, partnerships, common starting points and aims for NUTS II strategy (POKER – Prešov-Košice Region), common development strategy on the NUTS II level (Slovakia – East) - the common initiative of two neighbouring regions Prešov and Košice. The two regions create NUTS II Slovakia – East. Also from the historical point of view it was the region Eastern Slovakia and thus there are many of natural links within the region. Developing of common strategy is a logical fostering of cooperation the two neighbouring regions. Main areas of the project orientation are economy; social area and education; living environment; rural areas; communication and partnerships; role of institutions.
- *RIS PSGR*: Development and implementation of Regional innovation strategy in the Presov Self-Governing Region (will be finished in 2008) it has specific position because it will develop the specific part of the regional policy – innovation and knowledge-based economy. It would be oriented mostly on qualitative aspects of the regional economy to support the industries producing the products and services with higher added value.

The situation is rather similar in other regions of Slovakia. In the near pastness (3 year ago) only 2 regions has developed own regional innovation strategy (Bratislava and Nitra). Since 2005 situation has changed and all regions started to prepare their own innovation strategies.

Also national innovation strategy for 2007 – 2013 (approved in March 2007) is approved by government and it counts with regional innovation strategies.

Measures and practices

Considering the above mentioned we can identify some needed measures and practice in the Presov region for possible improving of the situation in the future

- Further building of systematic relations between regional authorities, top regional representatives of companies and entrepreneurial areas, universities and SME intermediaries as has been started by RIS PSGR
- Try to build and implement a long-term dynamic regional consensus based on the communication of stakeholders mentioned in Point 1
- Open the region for dynamic relations and co-operation to the other regions (EU, national)
- Effective linking of the prepared regional innovation strategy to the national and EU innovation schemes for its implementation in 2008-2013 and further
- Build a common regional policy with other Slovak regions in their co-ordinated policy towards national government

At regional level there will be very important to integrate all existing regional bodies who are able to participate and help in the implementation of the RIS PSGR as well as all similar strategies in the future.. This is very important in order to overcome the existing deep fragmentation caused by geographical, historical, thematic and political reasons.

For this there is important to prepare a regional study of main existing subjects, networks and their competences which can be used in realisation of the RIS PSGR and other strategies of Presov region (including web platform, etc.)

In case of effective realization of the above mentioned steps in Presov region there is real chance for regional government to work effectively on regional development in all areas including innovations at all levels.

Useful tools

There is identified no supporting scheme for innovation administrated on the regional level. All tools and programmes used by the regions so far were / are managed and administrated on national level. Talking about national tools we can mention:

- *Scheme for technology transfer (financed by state budget):* It is destined for SMEs to strengthen their competitiveness through purchase of new innovative technology.
- *Industrial development grant scheme:* The intent of the scheme financed from Phare was to increase the level of competitiveness and production added value through innovations of products and production processes or technologies. Eligible activities were: development of new products, increasing of production efficiency, implementation of new technologies and processes and increasing of research, development and quality management.
- *Supporting of innovation of SMEs (financed from Phare):* The aim of the grant scheme was to support the design and development of a wide range of innovative products and processes with the intent of increasing output added value, increasing industrial productivity and reducing overall costs. Eligible activities were the development of new products, increasing of technology level, implementing of new technologies and production processes and increasing of research, development and quality management
- *Grant scheme for industry and services:* The main aims of the scheme were to support the establishment of new enterprises and development of existing SMEs, increasing of SME competitiveness based on technology transfer, increasing of labour productivity, development of cooperation between SMEs and larger companies etc.
- *Scheme for support of research and development, implementation of quality management systems, protection of industrial rights and implementation of technical standards into practice (state support scheme financed from structural funds and state budget):* the aim of the scheme was to increase the competitiveness of the enterprises through industrial research and development. Eligible activities are in the field of industry, especially industrial research, pre-competitive development, IPR management, accreditation of laboratories, implementation of technical standards into practice etc.
- *Scheme for support of industrial research and pre-competitive development (Structural funds and state budget):* The aim of the scheme was to increase the competitiveness of the enterprises through industrial research and development. Eligible activities are in the field of industry, especially industrial research, pre-competitive development and technical feasibility studies.

Topics for research and further developing knowledge regions

At the present there is no research or specific industrial orientation of the region. Neither first proposal of the Regional Innovation Strategy indicates its regional orientation. But of course there are some regional pre-conditions and experiences with some industries in the region, especially renewable energy sources (biomass, geothermal energy), robotics, electrotechnics, tourism, genetics.

Criteria (preconditions) for success and failures

It is very difficult to discuss about preconditions of success of innovation policy not only because the RIS is not developed yet. The Prešov region is one of the less developed regions in Slovakia and from this aspect it solves many other economical problems, as lack of investments, high rate of unemployment, but also brain-

drain, insufficient infrastructure and others. But generally we can say, that very important step for success of the policy is to define the importance of the innovation in the frame of other priorities and policies and to set-up the mechanisms for its monitoring. It is also necessary so that all relevant authorities (president of region, regional parliament and others) would realise the importance of the issue and see the innovation strategy as an important part of regional policy helping to increase regional competitiveness on the national as well as international level.

Relationship between regions / nation states / EU

Each region in Slovakia has its own president of self-governing region as well as regional parliament, who are responsible to regional electors. Relationship among regions has cooperative even competitive character. Cooperative means that regions coordinate their activities mainly toward national government, but in such activities as e.g. attracting of investments, supporting schemes etc. regional authorities feel the responsibility to its inhabitants and they act as competitors.

Regional policy still depends on national and EU policy, especially from the financial point of view. Because of this the regional policy has to be in accordance with these policies.

There are active contacts of the regional authorities with the European parliament through members of EU parliament, official regional representation in Brussels and other paths. Also other standard links to other regions (not only neighbouring) are established and fostered by cooperation on many common projects and initiatives (Interreg, FP, etc.).

3.3 Podkarpackie (Poland)

Economic profile and innovation and R&D policies

The Podkarpackie voivodship (province) is situated in south-eastern Poland. With 17,844 square kilometres it accounts for 5.7% of Poland's total area. The voivodship has 2.1 million inhabitants, which represents 5.4% of the country's total population. The region's capital, Rzeszów (163,000 inhabitants), is a regional centre of business, research, academic life (50,000 students) and culture. Podkarpackie is situated along the Polish border: in the east it marks the EU border with Ukraine, with Slovakia neighbouring it in the south.

The Podkarpackie voivodship is an agricultural and industrial region with the lowest urbanisation level in Poland (40.5% is the share of the urban population). High fragmentation of farms and high latent unemployment in agriculture are problems in the region. In 2003 as many as 25% of total workforce worked in agriculture, producing merely 2.3% of gross value added generated by the entire economy. The share of market services (43.7%) in the structure of gross value added (GVA) was the lowest of all Polish regions. The weakness of Podkarpackie's economy is reflected in the lowest average pre-tax pay in the country and the lowest number of corporations and partnerships per 1,000 inhabitants.

A relatively strong industrial sector is a positive characteristic of the region's economy. In 2003 this sector employed 28% of all workforce and generated 33% of GVA in the regional economy. The voivodship's industry is dominated by traditional sectors. The following sectors offered the highest number of jobs in Podkarpackie's industrial sector in 2005: manufacture of food products and beverages (10.4%¹⁰), manufacture of machinery and equipment (9.4%) and manufacture of rubber and plastic products (9.4%). In terms of output sold, the following sectors play the greatest role: manufacture of rubber and plastic products (13.1%¹¹), manufacture of motor vehicles, trailers and semi-trailers (9.9%) and manufacture of food products and beverages (8.8%). The region represented 4% of the country's exports and 1.8% of its imports. In 2004 direct foreign investments in Podkarpackie represented only 2.3% of all foreign investments coming to Poland (11th position in the country, see *Pasterz* [2006/b] pages 192-193).

¹⁰ The sector's share in the total employment in the industrial sector of the Podkarpackie voivodship; Source: *Statistical Yearbook* [2005] pages 309-310 and own analysis.

¹¹ The sector's share in total industrial output sold in the Podkarpackie voivodship. Source: *Statistical Yearbook* [2005] pages 306-308.

Table 5

Podkarpackie voivodship in figures

Podkarpackie	2004			2004/1999	
	Value	Poland =100%	Position among 16 Polish regions	Change in percentage points vs. the country's average	Change of position
Population density (inhabitants per 1 sq.km.)	118	96.3	7	0.0	0
Urbanisation factor (urban population to total population)	40.5	65.8	16	-0.7	0
GDP per capita in PLN '000*	15436	69.8	15	0.0	1
Gross value added (GVA) in agriculture (%)	2.3	79.3	12	-35.3	-4
GVA in industry and construction (%)	33.2	110	4	0.0	-1
GVA in market services (%)	43.7	87	16	0.6	-2
GVA in non-market services (%)	20.8	126.8	4	5.0	0
R&D expenditures per capita, in PLN	49.6	36.7	10	-19.8	0
Corporations and partnerships operating under the commercial law, per 1,000 inhabitants	2.7	46.0	16	6.7	0
Active workforce per 1,000 inhabitants**	303.0	93.2	10	-20.3	-8
Economic activity coefficient***	53.8	98.4	10	-5.2	-7
Registered unemployment (as in Dec.)****	19.1	101	10	-10.2	-3
Average monthly pay, pre-tax, in PLN	1941	85.4	16	-0.4	-1
Areas protected by law (%)	47.5	146.2	3	-0.3	1

* changes for 2000-2004, own calculations

** the changes do not take account of modifications in methodology applied to calculate employment in the agricultural sector (since 2002)

*** changes in 2001-2004

**** the higher the position, the worse is the situation in the voivodship (indicators reflecting negative phenomena), there are 16 voivodships

Source: Pasterz [2006/a], p. 17

Table 6

Innovation indicators for the Podkarpackie voivodship.

Name of indicator	Value	Position occupied by Podkarpackie among Poland's regions
Employment in medium and high tech industrial processing (% of total workforce) in 2003	11.68	1
Business expenditure on R&D (% GDP) in 2002	0.33	1
Innovation expenditure in industrial processing (% of revenues from total activities in this section) in 2003	3.48	3
Sale of new and upgraded products in industrial processing section (% of revenues from total activities in this section) in 2003	12.23	10
Population with tertiary education (% of 25-64 years age classes) in 2002 (national census)	14.08	11
Employment in high tech services (% of total workforce) in 2003	1.90	15
Public expenditures on R&D (% GDP) in 2002	0.06	15

Source: Pasterz [2006/a] p. 17

The region's share in total national domestic R&D expenditures was a mere 2%. A positive feature is a high share of the private sector in R&D expenditure: 61.9% versus 35.5% from government funds. Total expenditure

on R&D per capita in Podkarpackie reached PLN 49.6 in 2004, which gave it the 10th position among Polish regions (the figure for the country as a whole was PLN 135 per capita). Podkarpackie had only one researcher per 1,000 economically active people (3.5 for Poland as a whole, see *Science and Technology in 2003* p. 31.). In general the economy of the Podkarpackie voivodship is characterised by a low level of innovativeness.

An opportunity for Podkarpackie lies in the growth of the aviation industry. With its 70 years of tradition, the aviation sector has been turning into the region's main specialisation. 90% of Poland's output in aviation is produced here. This sector employs 16,000 of skilled workers. The Podkarpackie voivodship is home to large companies such as WSK PZL – Rzeszów SA, PZL Mielec SA and many small and medium-size high-tech companies, which act as partners or suppliers of big players. Privatisation of major aviation companies and the sale thereof to foreign investors-industry leaders (Pratt & Whitney, Sikorski) facilitated the transfer of state-of-the-art modern technologies and innovation to the regional economy and helped to establish close collaboration in research with the Rzeszów University of Technology.

Other sectors which may develop into regional specialisations in future include: food processing, pharmaceuticals, IT and tourism, electrical engineering (household appliances), construction machinery. They are identified as high-opportunity sectors in the 2005-2013 Regional Operational Strategy of the Podkarpackie voivodship (*Sobkowiak et al.* [2004] p. 20-21).

Factors of regional successes and failures

The following should be viewed as weaknesses of the regional innovation policy:

- most elements of the regional RIS implementing structure are based on temporary funding sources under specific projects;
- the number of partnership-based projects (partnerships between business, research, administration and government) is insufficient;
- the regional financial support for innovation is weak.

The most important preconditions for success in regional innovation and R&D policy in the Podkarpackie voivodship include:

- responsibility of the authorities of the Podkarpackie voivodship as the leader for developing the regional innovation and R&D policy as well as supervision over its implementation;
- satisfactory awareness and innovation culture in the local community;
- continuous regional consensus building between the economy, science, research, and policy for the creation of an innovative and learning region;
- development of a regional innovation system by developing systemic mechanisms of collaboration with entrepreneurs and scientists on introducing innovation in firms;
- effective regional financial system to support innovation which, by definition, bear a high risk;
- development of education to meet the needs of knowledge-based economy;
- stimulation of innovation clusters;
- support for export activity undertaken by enterprises;
- successful capturing of direct foreign investments from the high-tech sector.

Main innovation and research policy tools

The Podkarpackie voivodship, much as all other Polish regions, has no system in place that could be viewed as an innovation policy support and development system. Naturally, some elements of a regional innovation system have existed for a long time (e.g. universities, industrial R&D centres). However, only now can we see some visible steps to build a coherent and efficient system where various innovation support tools could be applied.

The need to apply policy tools stems, in particular, from two external factors:

- *global competition*: Podkarpackie experienced the strength of this competition particularly after 1989, when the region had to undergo very profound restructuring. Podkarpackie was the location of the first ever Special Economic Zone in Poland, foreign investments began to flow into the

region, regional firms started to look for new markets and new technological solutions to improve their chances in the discerning markets of developed economies;

- *EU policies and, in particular, available public funds*: access to those funds is turning into one of the most important goals of governments at all levels (central and local). Podkarpackie has also become a beneficiary of multiple programmes implemented in the 1990s. This gave the voivodship the necessary experience in competing for external aid and stimulated the development of business support organisations which have been successfully operating since then. The EU's strong focus on innovativeness has a powerful impact on regions, particularly when funds available for absorption are very substantial.

The *2005-2013 Regional Innovation Strategy (RIS)* of the Podkarpackie voivodship is the most important innovation support instrument at the regional level. The mission of the RIS is the growth of an innovative and competitive economy in the voivodship with a community focus. The overarching objective is to build an effective and efficient regional innovation system to achieve sustainable and balanced growth of the region. The RIS sets three priorities:

- building an open, efficient network to create and support innovativeness;
- increasing the innovative capacity of educational, scientific and R&D institutions in the region;
- strengthening innovative companies in the region and creating new ones.

The following goals of the regional innovation and scientific policy have been set (see *Sobkowiak et al. [2004]*):

- enhancing and developing the regional innovation system in Podkarpackie;
- creating a funding infrastructure to support innovation;
- increasing utilisation of the region's R&D capacities to enhance innovation in the voivodship's economy;
- building and developing innovation-oriented culture among the region's inhabitants – building an innovating society, as well as information society;
- creating good atmosphere and setting to support the creation of new innovative companies and support existing ones;
- developing inter-regional and international networking, particularly with neighbouring countries, to promote innovative economy.

The particular value of RIS lies in the fact that numerous people from various institutions and communities became involved. Enterprises also demonstrated high commitment. While the process encountered various problems (e.g. difficulty in identifying the singularities of the region, uncertain funding for proposed measures), yet the document evolved into the most important innovation tool for the regional authorities and can be used as a starting point for entrepreneurs who articulate their expectations associated with implementation of innovation policy.

The RIS has already produced numerous initiatives, some of which were signalled during the RIS development process (Innovative Projects Database). The Technology Foresight project, currently under way, is expected to help to define developmental paths for the region. As many actors located in the region strived to acquire funds, this stimulated networking between research institutions, the business sector and the environment. The main barrier against successful implementation of the regional innovation and research policy lied in low awareness and low innovation culture at the level of firms, administration and the research community. Notably, the development of the RIS was initiated by the central government of Poland. In 2002 the Polish Committee for Scientific Research (KBN) committed to provide theoretical, organisational and financial support for the preparation of Regional Innovation Strategies which would be in line with the national government's priorities and with voivodship-level development programmes. The aim of those strategies was to increase the share of science and high technologies in regional development programmes and to improve the opportunities of utilising EU funding to implement the Lisbon Strategy. One problem that needs to be solved at present is the need to improve co-ordination of the national and regional innovation policies.

During the years 2004-2006 the following instruments were used in the Podkarpackie voivodship to implement the regional innovation and science policy in order to execute the RIS and improve competitiveness and innovativeness of Podkarpackie's economy:

- intangible instruments, among them training programmes and advisory services in protection of intellectual and industrial property;
- the Regional Innovation System, including clusters, technology incubators, science and technology parks, technology transfer centres;
- Integrated Regional Operational Programme (IROP) for 2004-2006, the Podkarpackie voivodship component;
- Sectoral Operational Programme – Improvement of the Competitiveness of Enterprises for 2004-2006;
- Sectoral Operational Programme – Human Resources Development for 2004-2006.

During the 2007-2013 programming period the following operational programmes will be used as instruments to implement the regional innovation and R&D policy: Regional Operational Programme for the Podkarpackie Voivodship for 2007-2013, Operational Programme 'Human Resources Development' for 2007-2013, Operational Programme 'Development of Eastern Poland' for 2007-2013, Operational Programme 'Innovative Economy' for 2007-2013, The Seventh Framework Programme of the European Union, Competitiveness and Innovation Framework Programme (CIP).

Key outcomes of innovation and research support policy

One success is the initiation of efforts leading to the creation of a Science and Technology Park in Podkarpacie (Podkarpacki Park Naukowo-Technologiczny, PPNT). As a result, an area of 123 ha around the regional Rzeszów–Jasionka airport will be furnished with technical infrastructure by mid-2008 and earmarked for innovative high tech firms. In 2006 an academic business pre-incubator (Preinkubator Akademicki Przedsiębiorczości) was built within the PPNT. Innovative business activity within the pre-incubator was undertaken by graduates of technical universities, notably those from the Rzeszów University of Technology. At subsequent stages of PPNT development construction of experimental research laboratories is planned by 2013 so that researchers could conduct experimental development for the benefit of the region's economy. A technology incubator will also be set up. Ultimately, the area of PPNT is to be expanded to cover 360 ha of land with technical infrastructure.

The example of Podkarpackie shows that efforts and ambitions of enterprises often go ahead of initiatives which are subsequently born at the EU, central and local government levels. The Aviation Valley (an innovative cluster which has been gradually turning into the region's showpiece) was produced not as much by the (regional) innovation policy but, rather, by business policies and growth vision at the firm level, and then at the group level. The Aviation Valley is based on the traditional aerospace industry, which has concentrated in south-eastern Poland for many years. It seems that the crucial moment for the cluster was not when the WSK Rzeszów, the aerospace enterprise, was privatised by sale to a foreign investor but when the investor adopted a strategy of strong regional anchorage and entrusted the role of the network builder to the right person (leader of the initiative). It is important to stress that initial activities to enhance the collaborative network of companies under the (informal) label of Aviation Valley were met with indifference at the regional government level and lack of understanding among central authorities (willingness to create a nation-wide cluster). The leader's determination and his actions to promote trust-based collaboration lead to the creation of an informal group which then gained an increasing popularity in the region, stimulating an increasing interest among researchers analysing the 'hot topic' of industrial clusters. Promotion of effective collaboration did not only motivate enterprises and government to join the networking efforts but also promoted the Aviation Valley as a real entity, playing an increasingly important role in growth, particularly in the context of innovation-based growth. In 2003 the 'Aviation Valley' Association was founded, initially grouping 18 members (aviation enterprises). Large innovative enterprises continue to play an important role in the Association until today, among them makers of finished goods such as airplanes and helicopters (WSK PZL Mielec Sp. z o.o. and PZL Świdnik S.A.) as well as producers of finished components, i.e. aircraft engines (WSK PZL Rzeszów S.A.). The Association now groups ca. 60 companies employing a total of 16,000 people and selling products to the

most demanding markets in the world. Activities undertaken by the Association directly improve competitiveness of firms and improve the relations with regional and local authorities. Objectives of the Association include: supporting the regional aviation industry, developing the value chain to reduce business costs, networking with universities, influencing education profiles of future workforce, attracting new investors, promoting international networking.

Undoubtedly, the Aviation Valley is currently the most recognisable element of Podkarpackie's economy. The following may be included among the most important outcomes of the existence of Aviation Valley:

- participation in conferences and road shows promoting the region and networking in the aviation industry;
- membership in international organisations of the aviation industry (European Aerospace Clusters Network, establishing collaboration with Hungarian and Ukrainian counterparts);
- development of a project for Centre of Advanced Technology 'AERONET-Aviation Valley' which will lead to the construction of Europe's leading materials research laboratory for the aviation industry; the project is being implemented by a syndicate of the Association and a few universities;
- creation of an expert panel on aviation;
- creation of the Polish Technology Platform for the aviation industry (aeronautics).

The two years of implementation of the regional innovation and R&D policy in the Podkarpackie voivodship are too short to draw any far-reaching conclusions. However, some economic and social outcomes following the implementation of the RIS are already noticeable. The following should be counted as the main positive outcomes:

- reaching a regional consensus aimed to build the innovative capacity of the Podkarpackie voivodship;
- increased awareness of innovation and its role for regional development within the business sector, research institutions and public administration;
- institutional structure for implementation of regional innovation and R&D policy;
- initiatives aimed at adjusting education structure to the needs of the region's economy;
- creation of new, sustainable jobs in the regional economy.

It is important to stress that the implementation of the RIS is possible mostly via the EU structural funds and the cohesion policy that Poland benefits from.

3.4 Leiden (Netherlands)

Leiden is a bustling, friendly medium-sized city, an urban community full of life with an outward-looking, international character, particularly with its world famous university, more than 400 years old (foundation 1575). Leiden with suburbs has a population of 329,000 and with that it is the ninth largest urban region in the Netherlands.

Leiden is the place of fundamental discoveries: refraction of light (Snellius), electrical capacitor (the "Leyden Jar" (Van Musschenbroek), molecular basis of thermodynamics (Van der Waals), electron theory (Lorentz), superconductivity (Kamerlingh Onnes), electro-cardiography (Einthoven), structure of the galaxy and the origin of comets (Oort). Einstein held a special Chair in Leiden, cooperating with De Sitter on the Expanding Universe. Eleven Nobel laureates have been affiliated with Leiden University as faculty members, students, or obtaining their Ph.D.

Despite this centuries-old cultural tradition, Leiden is in front of the most modern scientific and high-tech developments. The Leiden Bioscience Park is the largest in Europe. According to a recent investigation by the European Commission, Leiden University ranks alongside Oxford and Cambridge at the academic top of the European Union. In the Leiden urban region, ESTEC is Europe's largest space centre, collaborating intensively with the university's astronomy department and spacecraft industry (Dutch Space) based closely to the Leiden university campus.

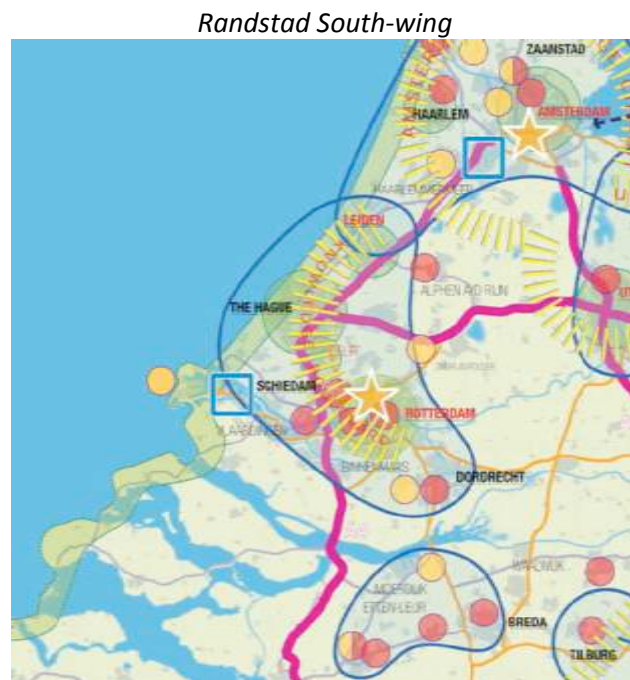
Leiden's kick-off for innovation policy can be traced back to the initiation of the Bio Science park, approximately 20 years ago. In co-operation with a spin-off (Centocor) of an American pharmaceutical

company, a visionary alderman of the municipality reserved a terrain for the construction of such a park. By now, it has been turned into a flourishing cluster of life science.

Leiden's economy

Leiden is doing very well economically. This statement holds in comparison to the province and region in which they are located, and to the country as a whole. Employment increased with 5.3% between 2001 and 2005, whereas unemployment stabilised around 5.7% after 2003 (Gemeente Leiden, 2005, p. 60). In comparison to the Netherlands as a whole, the 1.9% growth of employment between 2004-2005 is also considerable compared to national 0.4%.

Fig. 5



Source: Ministry of Economic Affairs, 2004, p. 60

Considering the earlier statement about the flourishing of the life science cluster, this can be traced back to economic developments as well. While the 1.9% regional growth of employment can already be called strong, this number is still pale in comparison to the 9.2% growth that was measured in the area of the science park.

The municipality of Leiden's role in the regional innovation network

Broadly, the role of the local authorities can be described as 'creating a breeding place for enhancing the development of a regional knowledge economy, by maintaining and developing the parameters of the framework in which this can happen'. In other words, their role is to establish a positive climate for keeping and attracting innovators. Specific activities are:

- spatial development, allowing space for innovation;
- forming and supporting of clusters and networks;
- offering housing for start-up companies;
- supporting a competent Center for Life Science;
- account management: supporting companies in science park with procedures;
- marketing and acquisition: attracting knowledge-intensive companies;
- measures for creating a better fit of education and market (attracting more technical students, e.g.).

It is quite clear that the life science is the zenith of Leiden's knowledge economy. In this respect, the forming of the action programme and steering group 'Leiden – Life meets Science' is a relevant development.

The steering group forms the most important network for developments in the knowledge economy and innovation, in which the municipality of Leiden, the University and College of Leiden, the Leiden University Medical Center, the companies in the Bio Science Park, the Chamber of Commerce, the province of Zuid-Holland, the Netherlands Institute of Applied Technology and other stakeholders have joined forces to further fortify this cluster of knowledge. It is believed that the presence of “education, research, government and entrepreneurs’ (in Dutch these form 4 o’s) is the basis of the success of the science park. The main topics of the action programme ‘Leiden – Life meets Science’ are:

- i. knowledge development, new business activity and (advancing of) start-ups;
- ii. education and labour market;
- iii. marketing and communication
- iv. international alliances;
- v. urban development, infrastructure and facilities;
- vi. strategic developments: Life Sciences Development Board (Gemeente Leiden, Economische Zaken, 2004, p. 2).

In the wider region of the province of Zuid-Holland, the city of Leiden is still involved with the ‘kennisalliantie’ (alliance of knowledge), an organisation that is co-financed by the Province of Zuid-Holland and the European Fund for Regional Development of the European Commission. In general, co-operation between the provincial and municipal government is positive, considering the amount of energy and financing that is put into the growth of the science park. In contrast to this, some difficulties should also be mentioned. First of all, the province is too limited as a region: the province offers interesting opportunities for collaborating with larger cities like The Hague and Rotterdam, but leaves Amsterdam “out of bounds”, because of its location in the province Noord-Holland. Second, a previously accepted request for a large subsidy by the municipality to the province was strongly delayed and possibly cancelled because of a lack of knowledge of European regulations within the province.

Extending the step from the local level to the national level, the municipality of Leiden has not yet noticed the promised effects of being a “peak in the delta”. First of all, the science park could not be included in a large national subsidy scheme for business and science park, because of its size in terms of geography. The fact that the Ministry of Economic Affairs noted ‘Leiden is building one of Europe’s largest business science parks’ (Gemeente Leiden, 2004, p. 58) is apparently less relevant when it comes to financing.

Governance vs. government: policy strategies

The main strategy of the department for economic affairs of the municipality of Leiden is based on the philosophy that innovation enhances the regional economy, which in turn attracts innovation to the region. Considering that the municipality operates on a sub-regional level, the local authorities do not have specific budgets for innovation. However, considering that there is a responsibility for local economy, many programmes that are related to enhancing the knowledge economy do focus on innovation.

Considering the municipalities role in shaping the conditions for the further development of the knowledge economy, some main investments need to be performed. First of all, the approachability of the science park should be enhanced by connecting roads to local freeways. Second, a large building should be renovated, in order to inhabit two incubator companies. Financing, however, is too limited to achieve these investments. The reasons for this are multiple: 1. government financing is limited, 2. R&D companies have difficulties with obtaining financing due to complex procedures, 3. private financing is not used for enhancing general conditions, etc.

Concerning the science park, the general aim is a five-fold enlargement in spatial respect and in terms of employment in the next 20 years. At the moment, there are 2300 positions in about 40 companies, which should grow to 2800 in 46 companies by 2008, according to the current programme (Gemeente Leiden, 2005, p. 73).

- The ongoing project of restructuring the science park is the most relevant issue, in which the municipality is try to join forces with neighbouring localities and the larger surrounding region;
- Collaboration with involved partners, in order to improve facilities. This specifically involved improving the Academic Companies Centre and the Biopartner Centre Leiden, in a common

incubator building. High priority is given to seeking market applications for scientific knowledge in collaboration with the Competence Center Life Sciences.

- The continuation of the Leiden-Life meets Science programme. Priority is given to a common marketing plan for the science park, amongst others by appointing a director for this specific task. This marketing also applies to strengthening international relations, creating a website and entering a multifunctional building in the area. The relationship between education and labour market is to be further developed, in order to train potential employees.
- Taking part in the West-Holland Foreign Investment Agency (WFIA) adds up to the active marketing and acquisition of companies in the science park (Gemeente Leiden, 2005, p. 66).

Concerning clustering, the following strategies can be noticed within the municipality:

- *strengthening the life science cluster*: by adding space to the existing terrain;
- *searching for new clusters*: there are ongoing activities of forming clusters like 1. 'Wireless Leiden' (connected by a glass-fibre network, 2. a creative cluster (many Dutch cities have such activities) and 3. ICT cluster (based on the 'Leiden-internet social drink');
- *financing research for setting up new clusters 'bottom-up'*: 1. CeTIM applied for funding to research the possibilities of a SatNav cluster (Aerospace and Satellite-Navigation Technology) and 2. a private initiative was financed for researching the option of a cluster in sensitive engineering. Interesting in this respect is that the municipality acknowledges that they have a lack of capabilities in finding such new clusters. However, they do give bottom-up initiatives the opportunities for further elaboration;
- *integration of clusters*: attempting to increase dynamics in Leiden, which might eventually lead to the forming of a broadband lab, a test-environment for several clusters. This should not be confused with the Living Lab Leiden, a similar initiative, that focuses on applying location-based services to difference domains, such as culture, health and building services.

Specifically in relation to clustering policy, CeTIM plays an important role in the construction of the municipality's policy. Considering their expertise in the fields of virtual organisations, technopreneurship and innovation management, it can bring certain capabilities to the policy definition. Mostly, CeTIM functions as a knowledge intensive institute that tries to build structures upon trends that are recognised in the region. The aim is to deliver thorough theoretical studies in the mentioned fields, and to apply these do international platforms like VE-forum (www.ve-forum.org) and the CeTIM living lab. This way, knowledge generation, utilisation and diffusion are united.

From the above, it can be read that the municipality's role in the regional innovation network and in the policy process should rather be described as governance than government. However, in certain respects the traditional government can still be felt: companies still have to meet certain requirements and regulations that have traditionally been set. Specifically, in the creation of the zoning schemes, local government can sometimes re-claim its thrown. In this respect, many things have changed over the passed couple of years, for instance, the collaboration between the University and the municipality has only recently become a positive factor. The fact that an informal event like the 'Leiden-internet social drink' is taken seriously as a possibility for clustering, is a sign that the local authorities believe in the strength of interacting in social networks. The same applies to the important role that is given to the previously discussed "4 O's", and to the acknowledgement that capabilities of other organisations in the field form a valid addition to those of the municipality in finding new possibilities for clustering. Taking the opposite point of view as well, it has to be noted as a positive development that bottom-up initiatives seek the municipality out as a partner for desired developments.

From Bioscience towards a Living Lab

At the start of the ProAct project, a movement could be noticed in the governance network in Leiden to move away from an innovation system that was almost purely based on bio- and life science to an open innovation system around a Living Lab. The open innovation is system is understood as a creative environment in which innovators rely not only on one (or few) particular types of knowledge, but on the entire spectrum of

knowledge that becomes available for, within and around the innovators. A Living Lab is an open innovation system, in which companies, governments and non-profit organisations interact around complex projects in different societal domains. Living Labs bring innovation as a new policy task to local policy makers who generally are not regarded as being involved in the design or execution of innovation policies. Innovation used to be policies on the national level. Living Labs, however, are operative networks that need be governed on sub-regional level where especially small and medium sized firms cooperate with entrepreneurs and inventors. For a detailed analysis of the development of this network, please refer to Katzy et al. (2007).

3.5 Northern Hungary

Northern Hungary is situated in the north-east part of Hungary and is the fourth largest region of the country (its surface area is 13500 square kilometres). Its inhabitants are distributed in the three regional counties as follows: 54% live in Borsod-Abaúj-Zemplén, 27% in Heves, and 19% in Nógrád. By global measures the region's economy is moderately developed. In the 2005 EU figures, Northern Hungary was among the 10 least developed EU regions. The unemployment rate is the highest among the regions and its basic infrastructure is moderate. Its current centre is Miskolc (but in the EU it can potentially build up an economic region together with the Slovak Republic, and in this case Kosice (Kassa) can also be the economic centre of an enlarged cross-border region).

Table 7

*Hungarian regions in figures**

	Western	Central	South- ern	Cent- ral	Northern	Northern	Southern	Total
	Transdanubia			Hungary		Great Plain		
Population (1000 people)	1 000	1.107	966	2.871	1.253	1.526	1.341	10.064
GDP per Capita (1000 HUF)**	2.169	2.055	1.517	3.568	1.441	1.391	1.482	2.186
Investment (1000 HUF/capita**)	280	455	261	397	228	225	178	305
Foreign capital per Capita, (1000 HUF)**	1.288	1.069	182	2.724	378	296	165	1.171
Unemployment rate (%)	5,7	6,1	9,0	5,1	11,0	10,9	7,8	.
Share of industry in value added (%)	38	42	20	19	34	24	21	25
R&D employees (persons)	966	1.158	1.342	14.740	961	1.964	2.126	23.239

* The figures of population and unemployment are as of the 1st January 2007, the others are of the 2005.

** 1 EUR = 250 HUF

Source: Hungarian Statistical Yearbook 2006. CSO. 2007.

It has to be mentioned that the most developed Hungarian space is the *Central Hungary Region*. It contains Budapest, the capital of Hungary, and Pest County. Its area is the smallest, but almost one-fourth of the population lives there. According to the 2005 figures, 46% of the country's GDP is generated in this region. 31% of the active enterprises and 66% of the foreign owned companies is located there. Economic activities are dominated by services. Central Hungary employs about two thirds of the researchers, accounts for nearly 67% of all R&D spending and almost every government institution is centred in and around Budapest.

Economy and RTDI

In Northern Hungary the economy formerly based on heavy industry that collapsed after the political changes of the 90s. Today the economy is dominated by the presence of SMEs who employ most of the labour force. The strengths of the region lie in its potential for recreation, health and wine-tourism, its cultural heritage and the centres for education and science. Regional weaknesses include unemployment (11% in 2005), underdeveloped traffic infrastructure and insufficient tourism-related marketing. Employment figures are also meagre, only 44% of the population is working either full-time or part-time. The share of skilled people and those with tertiary education is low. In the peripheral areas of the region poverty is prevalent, young people move out of the region and ageing is a problem.

The share of high-technology is low in the economy (measured by output, exports and employment). The chemical industry is a regional characteristic (the two largest chemical conglomerates of the country are based in Northern Hungary). The role of metallurgy, metal processing, mechanical engineering, electricity and food industries is also important. The share of industry in the region's economy is well above the national average both in terms of GDP and employment. With the help of FDI, larger manufacturers of motor vehicle parts settled in the areas closer to Budapest and the southern areas, where the highway construction was completed. The following companies are important in the region: Borsodchem (headquartered in Kazincbarcika), TVK (Tisza Chemical Works; Tiszaújváros), Robert Bosch Electronics (Hatvan, Eger and Miskolc), TDK Electronics (Rétság). Many of these multinationals are not integrated with the local businesses and have limited cooperation with local SMEs. The growth of the industrial sector surpassed the national average in 2004; on the other hand this growth was only partly accompanied by an increase in export sales. Nevertheless, the region's hills, the Tisza-lake, the 3 UNESCO World Heritage Sites (the ancient village of Hollókő, the Aggtelek carstic caves, the vineyards of Tokaj-Hegyalja) offer good opportunities for tourism development.

One of the greatest regional assets is the relative abundance of educational and research institutions, such as the University of Miskolc (with 20,000 students); the Károly Róbert College in Gyöngyös; the Károly Esterházy College in Eger; and the College for Finance and Public Accountancy in Salgótarján. The University of Miskolc plays an important role in R&D and innovation activities while the other institutions intend to be active players as well.

As far as the expenditure on research and development is concerned, in 2005 the region allocated 0.32% of its GDP to this area, which comes mainly from public sources. Out of 10,000 employees, 29 are researchers, which is a very low number.

Development and RTDI policy overview

Although building regional institutions at the NUTS-II level has started, most of them are small and have *not enough power*. They could not accumulate enough knowledge for regional planning, their capacities are negligible for real regional governance and the financial resources available for them are not sufficient. Big issues are decided in Budapest and the institutions that actually implement policies are located in the county centres and in the towns (and not in regional institutions). The political map of the country hinders the development of appropriate regional institutions: at the end of 2007 the central and the regional administration is in the hands of the relatively weak government (left wing) whereas at county and town level, the institutions are governed by the strong opposition (right wing) party. Fiery debates about political power and the scope of actions are persistent.

Innovation is not in the centre of Hungarian economic policy and the related regional policies. Although after the political changes of 1989-90 there was substantial modernisation in many industries and service branches, it was mostly the result of Foreign Direct Investment of multinational companies. Hungarian small and medium sized companies are not innovative. The government R&D spending is significant, but inefficient: the establishment of an institutional structure which is more in line with the aims of the Innovation Fund (and the EU) is still under way.

In the first decade of the 1990s transition there was only *one weak attempt* to draft a regional strategy (after 1994) with PHARE support. The experimental strategy drafted had no major impact. Independently of this strategy, however, some money was spent on programmes to update the basic infrastructure (gas-pipes, drainage systems) of the most disadvantaged settlements of Northern Hungary. Other, often more substantial

government sources were spent on keeping obsolete industries with the hope to save jobs. These latter efforts were not successful. Then the process went on a new way after the Parliament Decree No. 35/1998.

First, in 2004-2006, the so called *first National Development Plan* (NDP-I) set a frame for regional development, but not much progress could be seen. This plan was drafted by the central government authorities. Its realisation was served by 5 Operational Programmes, namely the Agricultural and Rural Development Operational Programme, the Economic Competitiveness Programme, the Human Resources Operational Programme, the Environment Protection and Infrastructure Operational Programme and the Regional Operational Programme (ROP I). The supervision and control of the ROP I remained the competence of the Office of the Prime Minister, while the actual management, decision-making and administration was at the hands of the region. The main intervention areas of the ROP I were: tourism, road reconstruction, town rehabilitation, redecoration of kindergartens and primary schools, training and employment. The NDP-I was needed to access the Structural Funds of the European Union, but as it was not discussed widely, the regional stakeholders did not agree with many objectives.

In 2005 the elaboration of the second *National Development Plan* (NDP-II) started. The *National Development Concept* (NDC) and the *Hungarian Territorial Development Concept* (HTDC) were elaborated by the Hungarian Office for Regional and Territorial Development and the National Development Office. These two strategically important documents designated the framework for territorial development at national and to some extent at regional level. Parallel to these, regional priorities and concepts were elaborated and discussions, dialogues started with the ministries in order to facilitate the shaping of the Second Regional Operational Programme. Then the National Development Office elaborated the National Strategic Reference Framework (in essence the NDP-II), to which the New Hungary Development Plan was adapted. This plan has two main priorities: to raise employment and to set the conditions for sustained growth. Out of its 15 Operational Programmes 7 are regional development programmes for the 7 NUTS-2 regions. The five priorities for Northern Hungary are:

- setting the conditions for a competitive local economy;
- strengthening the tourism potential (sustainable development of touristic attractions and products, support to hotels and related services, the establishment of regional destination-management, clusters and a regional tourism research and investment services centre);
- revitalisation of settlements;
- developing the human community infrastructure;
- developing regional transport.

The Regional Development Agency of Northern Hungary (NORDA) focused also on the elaboration of a regional development strategy rather than just identifying key sectors, intervention areas indispensable for territorial development. To underpin this, a strategic document distinct from the Regional Operational Programme was elaborated which covers much broader areas than the ones in the Regional Operational Programme (ROP). The document entitled „*The mid-term development priorities of the region of Northern Hungary*” aimed at defining the key development areas well beyond 2013 (*The mid-term... [2006]*). This document was adopted by the Regional Development Council in February 2005. Their mid-term development priority stands on three legs, of which the first has a direct innovation focus:

1. improving the competitiveness of traditional sectors in the region (especially mechatronics and chemical industry) and developing the environmental industry;
2. tourism development;
3. strengthening social cohesion and job creation.

In 2006 the National Development Office elaborate the *National Strategic Reference Framework* (NSRF), which could be considered as the second National Development Plan (NDP-II). The current Regional Operational Programme of Northern Hungary (ROP [2006]) is part of it. *The NDP-II and the related ROP should be considered as the currently valid strategy for Northern Hungary*, although in 2007 the implementation of the NDP-I is still going on.

In addition, in 2004 a *Regional Innovation Strategy* was drafted which set out the main innovation priorities of the region and can be considered to be the currently valid innovation strategy of the region. The RIS was renewed in 2007. Its main priorities are:

- developing the innovation, service and financial infrastructure;
- developing the environmental relationships and conditions;
- technology and knowledge-intensive support to the development of business innovation capabilities, networking abilities

Apparently, from 2005 *an odd planning structure* started to evolve featured by parallel supervision of different central government authorities and confusing priorities.

Innovation and research policy tools and results

In Hungary, regional innovation policy development from 1990 to date can be divided into three not too distinct periods:

- Up to 2003 hardly anything happened.
- 2003-2005 was a period of spontaneous governance of innovation policy: there was no regional policy authority to coordinate regional initiatives and the new institutions had been operating more on a temporary basis.
- From 2006 regional innovation policy started to become an everyday practice: the Regional Innovation Agency started networking in the region (including companies and education and research institutions), regional projects have started and the RIA can also represent regional needs in the different national planning processes.

Not surprisingly, in the case of Northern Hungary we cannot talk about the success of programmes, because the relevant NDP-I actions still need some time to be concluded. Nevertheless, there are four elements of the innovation policy, which are viewed as successful by regional policy makers:

- i. the Regional Innovation Agency was set up and started to operate;
- ii. the region now has a Regional Innovation Strategy (*RIS* [2004]), which is widely accepted and the *RIS* is used as a baseline reference document;
- iii. a common innovation strategy oriented programme has started with the neighbouring Slovak region. The NORRIS project receives funding from FP6;
- iv. a survey of corporate needs and the technological (innovation) infrastructure has been realised in 2003 and 2006, and the results will widely be used by policy makers.

There are three important factors of success in achieving the above. First, the National Office for Research and Technology (NKTH), as a central authority, pushed the Hungarian regions to set up local innovation agencies. Further, NKTH has also allocated substantial resources for developing the knowledge bases of the region. From 2004, innovation is fashionable as a topic. The so-called Innovation Act passed the Parliament and the Innovation Fund started to operate under the auspices of NKTH. Last, but not least personal dedication of some regional policy makers should also be mentioned.

In the same time the central government is postponing the process of regionalisation by its centralising endeavours and by favouring solutions which are not region specific. The innovation-related documents elaborated by the central government are not accorded neither with one another nor with the regional interests. The documents elaborated by the region try to reflect the real local economic needs, nevertheless, there are delays and distortions when these are put into practice. The Baross programme itself did not initiate a major breakthrough in the field of innovation, nevertheless combined with other programmes aiming at creating regional knowledge centres the funds dedicated to innovation are increasing.

3.6 North Denmark

Denmarks Regional Development Agencies – Growth Houses (GH) are public bodies established under the Ministry of Economics but own by the counties since 1. January 2007. In 2007, five GNs were launched and include: Growth House North Jutland, Mid Jutland, South Denmark, Seeland and Capital region.

Fig.6

Regional Development Agencies (5 Growth houses) in Denmark



Source: Danish Enterprise and Construction Authority 2007

The Growth houses helps entrepreneurs and small companies to development and growth. At the Growth Houses companies can receive free of charge guidance and methoring in connecton with financing, marketdevelopment, internationalization, management, strategy, organization, employees, innovation, products and processes.

The Growth Houses has a close cooperation with the local business offices all over denamrk. This means that in Denmark there is one connected development and growth public consultancy to help entrepreneurs and small and medium sized companies.

Denmark's North region encompasses 11 county and 1 municipality. The region is home to over 0,6 million people and encompasses more than 50.000 households.

Fig.7

Region North (Councils)



Source: Danish Enterprise and Construction Authority 2007

Economic specialisation in North Denmark

Denmarks North region compares favourably with other Danish regions on most economic performance indicators. The Capital Region - Copenhagen are the only regions with incomes above the national average. From a European Union (EU) perspective, North Denmark ranks generally favourably among the EU regions and in some of the councils in North Denmark the unemployment rate is down to 1,7 % (Thisted Council 2007).

Industrial sectors

The North Denmark region is however an economically diverse region. Key industrial sectors include: food industry, bio technology, healthcare technologies; building industry and construction; mobile technology, ict technology and tourism. This profile also includes several specialised industrial clusters. Examples include the energy and environment cluster in Ålborg; marine technologies in Frederikshavn; Fishindustry in Hanstholm, Hirtshals and Skagen; and mobile and ict software, telecommunications in Ålborg.

Food industry is the largest sector in the Region North Denmark and contribute an aggregate total of 21,5% of work places. Furniture industri represent 8,3%, machine industry 7,2%, teleindustry 6,9% of workplaces in 2004 (Copenhagen Economics 2007). There is still not number of the economic performance of sectors for Region North Denmark due to the restructuring of regions in 2007.

Economic performance and innovation indicators

Region North Denmark performed as number 4 on a range of economic indicators for the 5 regions in Denmark in 2003. Region North Denmarks income is about 10% under the average income in Denmark (Copenhagen Economics and Danish Statistics 2007) and the unemployment rate was in 2003 above the average of Denmark.

Higher education and R&D institutions

North Denmark has 1 university and 26 higher education colleges. There are more than 20 public and private research centres in the region covering mobile research, biotechnology, fishindustry research, buildingindustry research. International companies that have research facilities in the North Denmark include: Nokia, Siemens, Vestas, Danfoss, Grundfoss, xxx.

Research and innovation policy overview

Regional Development Agencies (GH) do not formulate strategic economic objectives. Rather, the GHs adopt 'strategic responses' to the policies that arise from the Central Government and the Growth forum – which is the Region Norths growth strategy organ. In the context of research and innovation, the strategic responses support the Government's 2015 Growth and Globalisation strategy (Ministry of Economics 2006). While it is true that the GHs are the implementing agent for the Government's strategy, in practice, GHs are not given a wide remit to design programmes and supportive actions. This is the responsible of the Regional Growth forum and the individual councils. The Growth Forum and the individual councils are encouraged to be 'innovative' in the design of these processes (while striving to be innovative and cost effective) as long as the programmes contribute to meeting the Government's and the individual Growth Forum's targets and strategy.

The strategic responses that support the DK Government's science and innovation and Ministry of Economics goals are detailed in the Growth Forum's 'Regional Strategy Paper' (RES). The Strategy paper focus on 4 themes related to the North Denmark Region. These four themes are: Human Ressources, entrepreneurship and information and communication technology. The following targets in the most recent strategy include an explicit focus on these themes and a recognition of the importance of skills and capabilities:

- Increase knowledge transfer from universities to companies.
- Innovation and creativity from new products to new business models
- Skills upgrading

Criteria for regional success and failures

The Growth forum measures The North Denmark Regions performance against more thematic criteria:

- i. Economic impact
- ii. Programme activities, outputs and strategic added value
- iii. Financial management
- iv. Corporate and individual objectives

The Growth forum reviews economic performance and monitors government activities with various reporting mechanisms. A more detail analysys and messurement is also done at the Ministry and Economics. The Ministry of Economics publish through their organisation – Danish Entreprise and Construction Authority (DEACA) analysis and economic business briefs which feed into the review process. DEACA is broadly responsible for enterprise and construction policy. DEACA seeks to develop a competitive, market-based growth environment for companies. DEACA seeks to accomplies this in cooperation with the corporate sector, business associations and other public sector actors. DEACA has special focus on three interdependent fields:

- efficient markets and market-based services and products.
- develop uncomplicated administration and intelligible regulations.
- develop digitalisation of services and products.

Danish Enterprise and Construction Authority changed its name from The National Agency for Enterprise and Housing in accordance with ministerial order in August 2004. Activities associated with urban renewal and social housing were subsequently transferred to the Ministry of Social Affairs.

Table 8

Danish Entreprise and Constructions reports

Report	Description	Frequency
DEACA progress	Details regional progress against GH targets.	Annually
Annual Report of Accounts	Reports GH annual accounts, output outturn, staffing, and activity progress.	Annually (not available yet)

Source: DEACA [2007]

The consequences of interventions introduced by governments cannot always be correlated. DEACA is required to include numerical measures, which are directly related to the work undertaken by a project, and these targets are used as surrogates for any real impact. DEACA also produces half year and full year performance reports, which are a statutory requirement for all GHs. Projects and programmes are monitored and evaluated using the following measurement tools:

- i. Expected versus realised targets
- ii. Number of people/ firms in work/growth
- iii. Number of new businesses started
- iv. Case studies used in evaluation reports

3.7 South Moravia (the Czech Republic)

South Moravia Region is NUTS 3 region (a part of NUTS 2 region Jihovýchod) with Brno, the second largest town in the Czech Republic, being its capital. Around 11% of the population of the Czech Republic lives in the South Moravia Region. A problem of the regional structure of the Czech Republic is that NUTS 2 regions function largely as statistical (formal) units – they have no administrative/political representation. These are, in fact, rather ‘artificial’ units from the Czech point of view. It cannot be said that NUTS 3 regions were established according to the natural economic flows, however, experience shows that they are close to it, in any case much closer than NUTS 2 regions.

Economic potential of the region is largely concentrated in Brno that has long tradition of industrial production, especially engineering. The region may also boast with an advanced level of agriculture with leading position in Czech winegrowing.

Table 9

Main R&D indicators - Region South Moravia – 2005 – in million EUR (1 EUR = 29 CZK)

GDP	10.475
Regional R&D	160,5 (1,5 % GDP)
Regional BERD	78,9 (0,8 % GDP)

Source: Czech Statistical Office 2006

The fact that the region and its capital Brno were traditionally highly profiled in engineering and manufacturing industry became a problem in the process of transformation when these branches suffered considerably. It is a merit of political and administrative authorities of both the South Moravian Region and the city of Brno that these realities have been reflected – and that they found a consensus. They conceived the new situation as a new chance and decided to form a new economic strategy based on support of R&D and innovations. In the time when the regions themselves were in the process of establishing, it was a bottom-up initiative. Neither innovation strategy nor innovation policy on national scale existed at that time.

South Moravia and Brno have favourable conditions for such an economic policy. In the Czech context Brno has very strong knowledge potential (universities, research institutes). Brno is the second most important university centre in the Czech Republic. About 64.000 university students at 9 universities were enrolled in the South Moravian Region in 2004/2005. The comparison among the Czech cities and regions shows that the highest proportion of university students per 1 000 habitants is in Brno (127 students).

The regional economic strategy focused on innovations has already brought the first fruits. Some analysts argue that nowadays Brno is becoming the very centre of Czech RTDI because Prague still largely relies on low knowledge intensive economic branches and is not eligible for the EU Structural Funds in RTDI (too high GDP per capita). In some aspects Brno is becoming a key place of Central European RTDI.

Brno has for the second time come out on top in the Visegrad category of the European Cities and Regions of the Future 2006/2007 competition organised by the prestigious magazine fDi. As in 2004/2005, Brno beat out Budapest, Warsaw and Bratislava for the honour. Locations were ranked according to 28 individual criteria in seven main categories (economic potential, cost effectiveness, human resources, IT and telecommunications, transport, quality of life and investment promotion). Brno owes its remarkable success to a wide range of factors. In addition to the economic results – especially the city’s rapid economic growth and high per capita GDP – a significant role was played by Brno’s economic development strategy, investment promotion, clear incentives and public investment projects. The city also ranked at the top for IT and telecommunications (see www.fdimagazine.com)

It is obvious that there is unbalance between the economic performance of Brno - that is slowly becoming high-tech hotspot - and that of other territories in the region, namely large rural areas. However, it does not seem to be wise to set an objective to level out the differences via investing primarily into less competitive rural areas. For the present the support to a sustainable high quality innovative infrastructure of places with high R&D density brings benefit to the whole region. Later, of course, a specific strategy should be elaborated as to how to make non-industrial areas more competitive and more knowledge-intensive.

Current specialisation of the region is a mixture of continuity and novelty. It is linked to tradition of engineering, however, upgraded to advanced engineering in the form of ecology and energy engineering,

production of new materials, medical and laboratory instruments, etc. However, the most dynamic – and at present already dominant – is the field of life sciences and biotechnology, e.g. bioinformatics. After all, it is not quite new in this region: in the 19th century J.G. Mendel, a pioneer of modern genetics, was living and working in Brno.

The first articulate economic strategy of the region was formulated in 2001 (in the year when NUTS-2 regions were established in the Czech Republic). One year later the first version of the Regional Innovation Strategy was formulated. The elaboration of this strategy was part of the InterPRISe EU project. The main stakeholders of RIS I were South Moravian Region, City of Brno and universities in Brno. The same actors became the founders of South Moravian Innovation Centre (Jihomoravske inovacni centrum – South Moravian Innovation Centre, established in 2003), the mission of which is to generate and support the complex infrastructure for innovative entrepreneurship in the South Moravia region. The foundation of JIC was the direct result of RIS I implementation.

In 2005 the Regional Innovation Strategy II of South Moravia was developed with the lead of the South Moravian Innovation Centre. The strategy is to be upgraded every 3 year (the next version is to be launched in 2008).

In general, South Moravian strategy is strongly focused on support of SME innovative entrepreneurship with incubation and networking (intermediating/facilitating/clustering) as most preferred tools. At a more specific level, a robust innovation infrastructure is to be built – both in its “soft” (people, competences, financial institutes, networking tools) and “hard” (incubators, technological parks, etc.) version. This is why the established companies do not appear among the main stakeholders of the strategy: the idea is to build a breeding ground for starting and nourishing phase of the innovative SME business.

A key objective of the RIS II is to improve the innovation environment in the South Moravia region and by 2013 to become the most innovative Czech region while ranking among 50 most innovative European regions. These strategic objectives are associated with measures, sub-measures and tools that should be implemented. Each measure/programme has a defined target to be reached. The following nine areas have been formulated for measurement:

- finance for small and medium-sized enterprises (SME)
- premises for SMEs
- protection of Intellectual Property
- networking
- transfer of know-how between universities and the commercial sector (technology transfer)
- consultancy
- implementation of RIS
- monitoring RIS
- communication

A key actor in both forming and implementing the RIS II is JIC, which was established in 2003 in reflection to the RIS I recommendations. Its mission is to generate and support the complex infrastructure for innovative entrepreneurship in the South Moravia region, more specifically:

- to provide money and assistance for the promising projects;
- to provide consultancy and mentoring to innovative firms, science, research and development and students with original ideas;
- to find investors and cooperate with partners and sponsors;
- to link research and development with business with the view of technology transfer;
- to provide space for promising innovative projects in its technology incubator.

JIC is, in fact, liable for running virtually all major measures/programmes (while not being necessarily the only accountable institution) and for applying the specific innovation policy tools. The most relevant and in the Czech Republic often unique tools are the following.

Microloans Fund: medium term 9.000-26.000 euros loan for SMEs in the technological incubator to finance innovative ideas. The tool addresses the problem of inaccessibility of finances for starting innovative entrepreneurs.

Patent and License Fund: offers financial support (advantageous loan) for the protection of property rights to the inventors as well as legal and management consultancy to enter the market with the patent.

Technological Incubator at the Technical University (VUT): offers a protected environment for starting innovative firms. The firms enjoy an attractive rent rate, may use the office services and request consultancy. For the present, there are 30 firms in the incubator. Two new incubators are being built (the Technological Incubator II and the first Biotechnological Incubator called INBIT), which will be launched at the beginning of 2008.

Clusters: JIC facilitated the establishment of three regional clusters which connects companies and science institutions:

- WTA (Water Treatment Alliance): 15 companies and the Faculty of Civil Engineering at the Brno University of Technology are involved.
- CAIC (Czech Aircraft Industry Cluster): 18 companies and the Faculty of Mechanical Engineering at the Brno University of Technology are involved.
- CETI Cluster (life-science cluster) 16 companies and the Faculty of Science at the Masaryk University are involved.

JIC co-operates with the Technology Transfer Offices at the universities in Brno.

Consultancy and education: 50% subsidies on marketing, technological, legal, HR or IPR consultancy for the SMEs in the Technology Incubator. 80% subsidies on training in the education program 'Competitiveness' for managers and employees in innovative SMEs. The project 'Innovator' organizes training for university students in innovation business.

Communicating innovations on web portals: JIC operates www.gate2biotech.com – Central European biotechnological web portal for companies and scientists - and www.inovace.cz as a general innovation portal facilitating contacts and information.

In the strategy no quantitative indicators are set as criteria for success and this practice has good reasons. Regional innovation policy has been evolving in South Moravia only for several years and it would be unrealistic to set some indicators prior to real experience and ex ante practical activities. Nevertheless, JIC has developed an own system of metrics and indicators for internal assessment. Some data have even been published.

Table 10

The growth of JIC and Technological Incubator VUT

	2003	2006
JIC		
Number of employees	2	18
Budget (mill. CZK)	3,5	36,5
Tech. Incubator VUT		
Number of firms	7	28
Number of employees	16	118
Patents	15	21
Utility designs	6	16
Trade-marks	3	15

Source: <http://www.jic.cz/o-nas/oficialni-cisla.html>

Software companies eTrium and Y Soft have already left the incubator and are successful on the market. One of the best eTrium achievements is the construction of a Universal Information Robot able to analyse data from oncology. Y Soft has developed a successful product SmartQ focused on processing the agenda of printing on network printers.

In the near future the ambitions of Brno and the whole region is to become one of the most relevant (Central) European centres of science. To make these ambitions be reality, two large projects are supported not only by the region and the city of Brno, but also by the Czech government.

The project *Central European Institute of Technology* (CEITEC) is being prepared by the universities and research institutes situated in Brno. The task of the project is to build a modern centre of excellent research, which shall integrate life sciences, ICT and material science. The construction of synchrotron is also being considered. Over 1.000 researchers are expected to work in the centre. A part of the planned costs (50 million euros) should be covered by the EU Structural Funds.

The project *International Clinical Research Center* (ICRC) is a strategic project approved by the Czech government. It is based on the co-operation of Czech institutions with international academic institutions, the US-based Mayo Clinic first of all. ICRC Brno represents a new generation multifunctional concept integrating the activities of:

- an excellent research center;
- a top medical institution providing health care in cardiology, transplantation surgery, and oncology;
- an international education center; and
- a technological park.

When these projects are on full gear, the research and innovation potential of Brno and the South Moravia Region will be upgraded substantially. In any case, South Moravia has good innovation potential (higher education and research, industrial tradition), for which the political representatives captured a unique chance (transformation, accession to EU) to make research and innovations a regional competitive advantage. In the next stages of strategy development regional innovation policy should also address the rural areas where a broad space for non-technological (organizational, social, cultural) innovation is open. It is possible to make agro- and eco- services knowledge-intensive. Tourism may be based on ICT logistics, more tightly linked with cultural activities and eco- values.

3.8 Vienna (Austria)

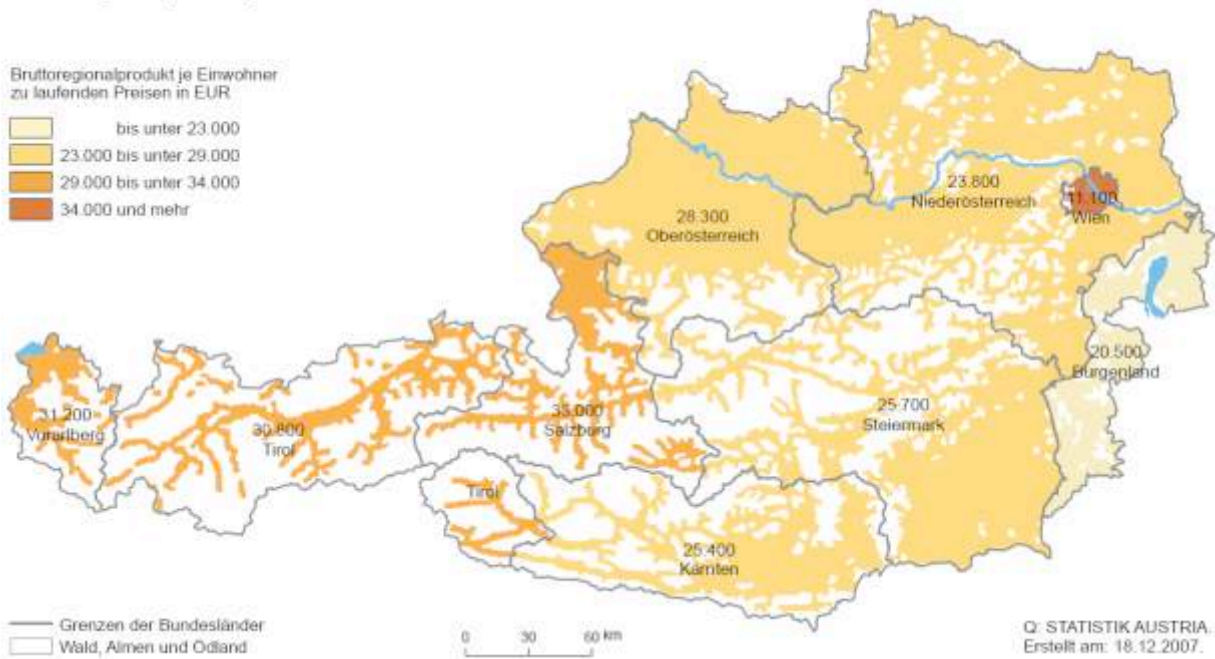
According to the traditional concept of the term “region”, the Vienna region is represented by the city of Vienna, which at the same time is one of the nine Austrian provinces – and in EUROSTAT-terms a NUTS 2 region (as well as all provinces). Actually Vienna is very dominant in terms of population and even more so regarding the economy. On 415 square kilometres live about 1,7 mio. inhabitants (ca. 20% of the total population of Austria), producing 28% of the total GDP. In the closer Vienna vicinity – Vienna plus the urban and sub-urban areas connected with Vienna, yet beyond administrative city limits – live close to 2 mio. people, little less than 25 % of Austria’s total population . The significant economic, social and cultural position of Vienna is reflected in the particular use of the term “Vienna region” for the entire area of the three provinces Vienna (“Wien”), Lower Austria (“Niederösterreich”) and “Burgenland”, in certain regional development discourses and policy contexts. Moreover, the case of Vienna demonstrates that in future “regions” on NUTS 2 and more so on NUTS 1 level will tend to range across inherited administrative boundaries within and between nation states. The proximity between Vienna and Bratislava, further on to Brno and Győr, is considered very important for regional development policies in Vienna.

Economy and RTDI

In spite of Vienna’s renown image as a centre of culture and tourism, high technology has become an important asset of the city of Vienna in particular, yet also in the wider perception of the “Vienna region”. After a tendency towards de-industrialisation during the late 1980s and early 1990s the turning point was reached around the year 2000. Special emphasis is placed on life sciences, information and communication technologies, creative industries, environmental industries including energy generation, nano-technology, and opto-electronics. Recent data of 2007 reveals a GDP/Capita or Gross Regional Product (GRP/c) for Vienna at 41.100 €.

Fig. 8

Gross Regional Product in € per capita 2005 in the Austrian provinces (“Bundesländer”)
 Bruttoregionalprodukt je Einwohner 2005 nach Bundesländern



□ Forests, mountain pasture, wasteland

Based on its Government Statement (regularly after a five year election period) the regional government of Vienna provides general strategic frameworks for RTDI. Additionally there are a “Strategy Plan Vienna” and an “Urban Development Plan” adopted by the Viennese parliament. Operational approaches and funding for research, technology development and innovation (RTDI) are developed and realised by specialised agencies. It is not common to all provinces (“Bundesländer”), that every federal province finances an agency specialised on technology support. Vienna has three such agencies that carry out a number of particular programmes. Together with a large pool of nine Universities, five Universities of Applied science, and research capacities of major companies Vienna has a leading position concerning knowledge and human resources for RTDI-supporting measures.

Considering regional innovation policy development on Vienna in comparison to other regions (provinces), it is important to note that the Austrian R&D spending appears extremely concentrated in three regions: Namely in the provinces (*Bundesländer*) Vienna (“Wien”), Styria (“Steiermark”, and Upper Austria (“Oberösterreich”. These three comprise 51,5% of Austria’s population, produce together about 56% of the total GDP, yet they provide for about 74% of all R&D expenditures.

Fig. 9

Concentration of R&D-expenditures in few populated areas

Austria consists of nine provinces = nine NUTS-2 regions	Population (May 2007)		Area		GRP (2004)	GRP spent for R&D	Share of total expenditure for R&D in Austria (2004):	
	mio	%	km ²	%	Mio €	%	Mio €	%
Vienna	1,7	20,1	415	0,5	64.965	3,10	2.184	42
Styria	1,2	14,5	16.392	19,5	29.684	3,60	949	18
Upper Austria	1,4	16,9	11.982	14,3	37.555	2,00	714	14
Other six provinces	4,0	48,5	55.082	65,7	103.615	[1,34] [average]	1.403	26
Total	8,3	100	83.872	100	235.819	2,23	5.250	100

Sources: Statistik Austria <http://www.statistik.at>; BMWF/BMVI, ed., Österreichischer Forschungs- und Technologiebericht 2007, http://www.bmwf.gv.at/uploads/tx_bmwfcontent/ftb_2007_01.pdf; own calculations

Development and RTDI policy

Concerning public awareness the government statement provides the broadest impact: Since the declaration by the mayor of Vienna in his government statement of 2005, that Vienna should become a “European capital of science and research”, this ambition is often referred to in the public. It thus provides a reference benchmark for critical investigations concerning achievements and malfunctions when noticed.

Decision making in the field of RTD policy in Vienna is differs when compared with other regions in Austria. There is a higher degree of independence in decision making, making use of the topical potential concerning financial and human resources. the situation in other Austrian federal provinces. In Vienna institutional players in the field of regional development as well as in RTDI dispose of comparably high budgets for strategic and operational activities. However, at the same time most of the players at federal level are located in Vienna too, additionally fostering efficient flows of information and resources. As a matter of fact, compared to other regions RTDI-activities in Vienna are to a lesser degree dependent on resources and support from federal RTDI promotion and funding institutions.

The latest Urban Development Plan for Vienna (STEP05) places to the fore the development and positioning of Vienna as a leading metropolitan area within South-Central Europe. It does not concentrate on the development of Vienna in respect to the economy alone, but also on the improvement of quality of life for all citizens, additionally introducing measures that aim to enhance employment opportunities, leisure activities, mobility, consumption and communication. As a consequence, it lays aims at the integration of economic, functional and spatial areas in the “Vienna Region”, adhering to the following principles:

- Quality of life
- Sustainability
- Participation
- Gender mainstreaming
- Diversity

The most recent initiative most explicitly aims towards strategic improvements concerning knowledge generation and innovation: Starting 2006 and ongoing in 2007 a one year public discussion process was initiated by the city government to establish a coherent Strategy for Research, Technology and Innovation (*“Forschungs-, Technologie- und Innovationsstrategie Wien”*, in short *FTI-Strategie*). Major promoters were city councillors of relevant departments, eminent figures representing business, universities, research organisations and media.

In concluding, the following topical objectives (until 2015) concerning Research, Technology Development and Innovation (RTDI) policies, have been formulated:

- To increase R&D expenditures in Vienna from currently 3,13% beyond 4%
- To increase the percentage of employees with academic degrees from 16,4 to 20%.
- To increase the number of researchers by 25%
- To double the number of enterprises engaged in R&D (Research & Development)
- To exceed the target number of 200 companies participating in FP 7 projects

Factors of success and failure

Experience from the case of Vienna highlights the significance and necessity of RTDI policies to be embedded in the greater context of social and economic policies. Innovation is not only about money, technology, and industry. Starting from motivation and reasoning for innovation, the socio-cultural environment seems as important as economic and technological pre-conditions. Drafting strategies, making decisions, implementing and realising strategies are likely or even deemed to fail if trust (based on reliability, credibility, and monitoring), in innovation policies is at stake. Therefore, e.g. education and training of personnel in many institutions is indispensable. Stakeholder involvement, monitoring and control processes are challenges to regional innovation policies that should never be underestimated or above all neglected.

Phrased in positive notion, six crucial factors for success may shortly be indicated as most important for recent improvements of the Viennese RTDI system:

- Priority setting and focus of investments on existing strengths

- Investment in the development of research and innovation infrastructure
- Advancement of new Polytechnics (Universities of Applied Science)
- Public funding through new and additional programmes to promote private sector innovation (particularly in SMEs)
- Alignment of RTDI with industrial needs and overall socio-economic trends
- Promotion of science-industry relations, yet also considering science-technology-society interactions and (potential) repercussions

Main innovation and policy tools

Most important are direct financial grants, from funds supplied by the City of Vienna. Thereby the mission of funding is multifaceted:

- To promote the know-how transfer between the business and scientific communities
- To create innovative cooperation structures
- To tap the full potential of Vienna's universities and their graduates
- To raise overall public awareness for the fundamental importance of research and development as a basis for maintaining employment and prosperity

The core target groups of research promotion programmes are:

- Existing Vienna-based companies
- Start-up companies
- Other potential recipients (e.g. research institutions)

Grants are awarded on a competitive basis only, following specific Calls for proposals in various categories, namely:

- *Competence Centres*: The total of funding granted to existing Competence Centres in Vienna amounts to € 182 mio., of which the contribution from Vienna is about € 26,6 mio.
- *Calls for company R&D*: Calls are actually competitions. Each call has a specific thematic focus (e.g. ICT) or a structural focal point (e.g. the cooperation of the business and scientific communities).
- *Vienna Spots of Excellence*: "VSE" represent multi-year research partnerships between companies and research institutions, initiated by Vienna-based companies. There are no pre-defined thematic guidelines limiting the technological areas in which a VSE may be created.
- *R&D – Public*: Acceptance of new ideas and technologies by the public (or special target groups) are key to the success of innovations. Thus the programme "R&D Public" provides support to projects that increase the exchange of information between the science and business communities.
- *Innovation Support*: This programme does not offer support to research and development as such. The rationale here is that the implementation of RTDI is an important component in the innovation system, but not the only one. Actually RTDI or the commercial exploitation of research findings in the market require complementary activities to turn "research" into "innovation".
- *Technology Networks*: "TN" stimulate cooperation between business and scientific communities, educational facilities and other players in a particular technological area. Promotion of the preparation and start-up phase (three years) encompasses all network activities which contribute to its success (e.g. information services, events, publications).
- *Start Up*: The Start Up programme promotes the founding of companies applying research-intensive domains of technology. Viennese start-ups and young high-tech companies (max. three years after establishment) receive support to implement research and development projects.

The new Research, Technology and Innovation Strategy (“*FTI-Strategie*”) was consolidated and made public in November 2007. It results in measures and specific projects that were introduced, established and endowed with respective budgets, in five different areas of activity – incorporating an integrated guideline for the RTDI Strategy:

- Human Resources: Masterminds for Vienna
- Thematic Focus: Visible and relevant
- Research meets the City: Communication, Learning, and the Public
- Forcing House for Research and Innovation: Reaching out for new horizons
- Location for Research and Innovation in Europe: Vienna as an international node

Key outcomes of RTDI support

Notably due to the economic integration of Europe, yet partially also because of increasing high-tech production, exports from Vienna to foreign markets are rising remarkably. This holds true not only for big multi-national companies. Increasingly also SMEs deliver their products and services to neighbouring countries, and most recently also to more distant markets.

Overall, and particularly influenced by public RTDI support, Vienna is very well positioned as one of the regions in Europe capable to meet the objectives of the Lisbon process, in particular high investment in RTDI (surpassing the level of 3% of GDP already in 2004) and high employment rates. However, the employment rate in Vienna (among the population between 15-64 years of age) regularly is below the Austrian average. In the third quarter of 2007 the respective figures were 72,5% in Austria, 67,7% in Vienna.

Analysts and evaluators of innovation and RTD processes widely agree that impact of RTDI-funding on employment most usual appear as secondary effects. These follow primary effects comprising increased turnover and value added in enterprises with research and innovation activities above average in their respective economic sectors. Even though direct proof of causality seems complicated, one can at least hypothesise with high probability that such impact chains exist: When comparing less and more innovative companies in the same economic sector the most innovative regularly also show better concerning employment performance. Regarding the leverage effect generating the creation of additional value added, a multiplier of 2,12 has been identified.

In Vienna, impact assessment of the variants of funding mechanisms clarifies that some leverage effects may be distinguished:

- Direct funding stimulates more own expenses of firms for RTDI than indirect incentives (such as tax reductions).
- Recoverable loans deliver significantly better impact than lost endowments.
- RTDI support geared towards enhancement of collaboration provide slightly more effect than support for single companies – dependent on the degree of collaboration required.

* * *

In the coming three chapters practices linked with the policy learning cycle are shown in depth and across the different ProAct regions. The benchmarking techniques that were used to map practices of strategy formation, strategy implementation and project level practices are summarised along the guidelines and in the order they appear in the *Benchmarking Framework* (see Annex 1).

4. Strategy formation: good policy practices

Regional innovation and research policy is the strategy for the economic development of the regions. Strategy refers to the main principles actually guiding the actions of an institution or region and in this book we use the word in this sense. After World War II the formation of corporate strategy was in focus and authors often referred to it as 'strategic planning'. Implementation became an issue several decades later, under the name 'strategic management' (Mintzberg [1994]).

There is no agreement concerning the right elements of performance-oriented regional development policy planning. If a formal planning approach is adopted, the main steps can be the followings:

- making or building the planning institutions,
- mapping regional strengths, weaknesses, and possibilities and threats (so-called SWOT analysis), and the analysis of personal interests of the responsible persons and social expectations (see Porter [1980]),
- defining a vision (adequate long-term foresight),
- compiling mid-term objectives (among these research and innovation objectives),
- identification of the main shorter-term programmes, projects or key actions, which in the following period help the implementation of the objectives (and the definition of success criteria (indices, benchmarks) with the aim of evaluating implementation),
- organising the social debate of the concept,
- ex-ante evaluation (to see that the implementation of the programmes, projects envisaged enable attainment of the strategic objectives and the realisation of the adequate vision).

However, *formal planning is not a must*.¹² In many cases effective social debates and legitimate policy makers are much more important. Based on social interactions, the strategic management of regional development 'should feel' how much weight is assigned to the classical management functions of organisation, command, co-ordination and control. There are many successful regions, which formally do not coordinate their objectives, or development actions, yet important informal actions, which ensure common thinking and co-opetition,¹³ take place underneath.

First we go through the processes and practices linked with strategy formation.

4.1 Analysis for finding a vision / strategic objectives

Regional resource endowment might point to innovation or to the possibility of becoming innovative. The resource-based view argues that clusters and regions can compete on the basis of resources. However, research has shown significant performance differences between clusters with a comparable resource base (see e.g. Saxenian [1994]). It is worthwhile to begin with making an assessment of regional resources and 'innovation infrastructure' in order to have a starting-point for analysing the competences that might be connected to this infrastructure. In this sense, a two-step identification of regional specialisation should be made: (i) examine resource endowment, (ii) determine whether the resources are connected to good practice. There can be excellent resources without good practice, or the other way around.

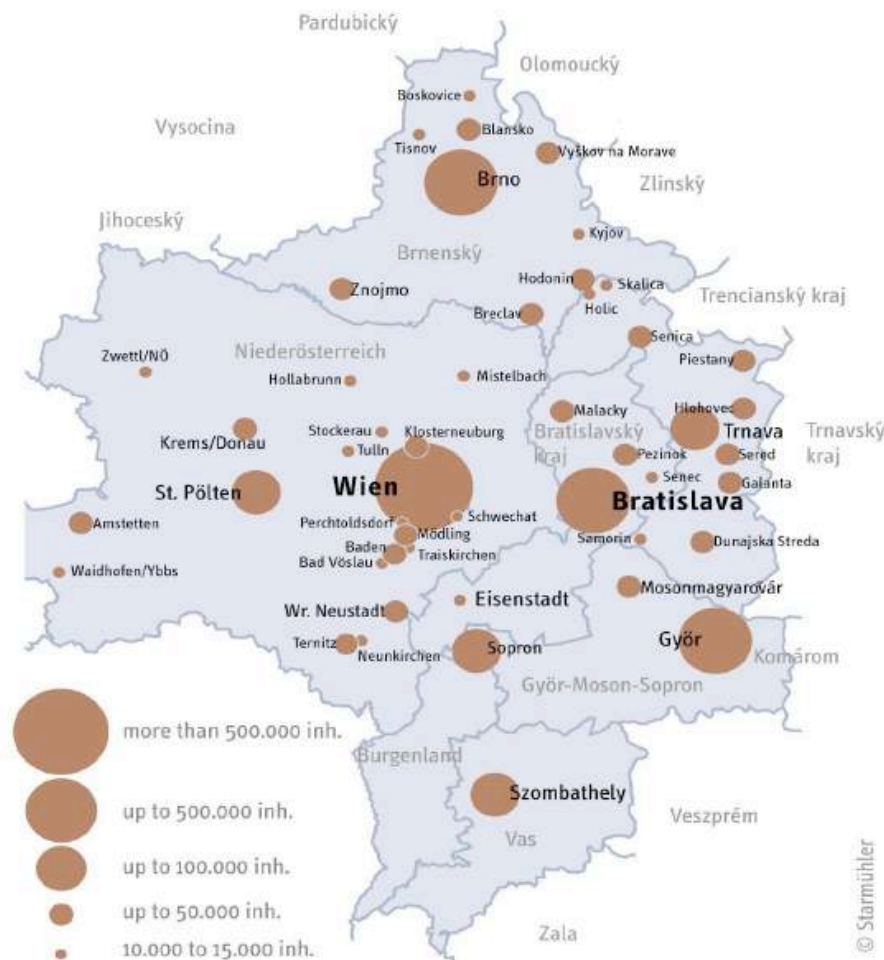
¹² The reasonability of economic policy intervention has been continuously in the centre of attention since the invisible hand theory of Adam Smith. Precise spatial planning is also strongly influenced by random incidents as shown by Porter [1998]. Followers of evolutionary economics underline the self-regulatory ability of the economy. Nevertheless, these theoretical developments are not arguments against monitoring or economic policy interventions to deal with externalities etc.

¹³ A term used to describe cooperative competition.

A task for public policy is to consider economic boundaries of the region, because they are also boundaries for the resources available. In ProAct Vienna is probably the best example how this type of awareness may appear in the strategy formation process. As EU integration proceeds, the still existing borders between Austria, Slovakia, the Czech Republic and Hungary are expected to become merely administrative limits separating very closely related regions. The new situation sees Vienna in the position of a major urban centre in a very large region with more dynamic centres in a trans-national region cutting across the national borders. This vision of a trans-border region, which links together several NUTS regions of levels 2 and 3, to form a region in the size of NUTS 1, is more and more considered when it comes to issues of future developments and strategies. Only an in-depth analysis beyond the city and even the country borders can state with sufficient robustness the actual future demand for commercial, education, cultural, scientific etc. services and the job to be done to meet this demand.

Fig.10

“CENTROPE” – A trans-border region across four countries in Central Europe: the current extension of Vienna’s inherited areas of co-operation



Source: “Vision Centrope 2015”: We grow together together we grow, p.6

Certainly, there are only a few regions in Europe, which needs to take the approach used in Vienna. Smaller regions or regions with less influential centres face more vague economic boundaries, shaped by globalisation. North Jutland (Denmark) is generally conscious about its being a small region in a small country, which has to specialize to be able to compete in a globalised world. As the Danish case study highlights, not even Denmark has the budgets to participate in a general technology race, so North Denmark seeks to position itself within the global economy. Although twice the size of Denmark, but South East England is also very cautious about global market forces.

In South Moravia (Czech Republic) linkages to the external economic spaces are taken into consideration only partially in the strategy: in the context of changes in the economic structure of global economy and changes resulting from the membership of the country in EU (but, interestingly, regardless of the Centrope development, which renders the region as its economic sphere of influence, see the figure above). The NUTS 2 region for South Moravia is Jihovýchod and it consists of NUTS 3 regions South Moravia and Vysočina, while the latter region may be characterized as a rural area with no bigger town and only a little industry. The economic power of Brno is totally dissolved and hidden in regional statistics. NUTS-2 regions were similarly designed in Hungary.

In Northern Hungary the strategy does not deal with the situation and the perspectives of the regional centres and their peripheries. Neighbouring regions, their development trends and the possibilities of cooperation with other regions are often neglected in the strategic documents, although the region is largely influenced by the neighbouring regions, especially in Slovakia. In the Podkarpackie region (Poland) the differences between the administrative and economic boundaries of the region were also given scanty attention during developing the regional vision.

Table 11

Benchmarks for finding a regional vision

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Economic boundaries of the region are considered in the main strategic directions								
The main regional strategic documents deal with economic spaces beyond the immediate region (also, if necessary, including global market forces); and the anticipated development in all parts of the region is also considered.	●	●		●				
The main regional strategic documents consider only some parts of the economic space, i.e. there are important neighbouring region(s) that were left out when the region's vision and / or the main strategic directions was / were developed.			●		●	●		●
The main regional strategic documents deal only with anticipated development within the region's administrative borders.							●	
Rigorous analysis is performed before the main strategic directions are found								
The regional strategy is based on studies developed by internal experts and/ or with the help of external experts. Both internal and external experts have experience in the topic; and studies include elements which are relevant to the future development of the region.	●	●		●		●		●
the regional strategy relies on studies developed with the help of experts, who have proven experience in the topic they were contracted for, but these studies do not cover all the topics that are important for the future development of the region.			●		●		●	
Expert studies are not conducted before the regional strategy is drafted.								

Source: The ProAct case studies

In the Czech Republic, Hungary, Poland and Slovakia the actual economic boundaries should be taken into account during forthcoming strategy updates. As EU regions are usually determined by administrative and not economic considerations, there is a danger that only some parts of the economic region or the elements of some other economic regions are considered and this may also mean the negligence, the over- or under-estimation of actual possibilities. This is likely to have an influence on the future competitiveness of the regions concerned.

If we get rid of the administrative boundaries of regions and think in terms of regional innovation systems, it is also worth considering if the strategy aims at extending the boundaries of successful regional innovation systems to other key regions or peripheries. Involving peripheral regions in innovation systems is difficult because they are under strong external pressures and their poor internal capabilities pose difficulties in successfully absorbing external support (see *Dziemianowicz et al.* [2006]).

The regional development policy may define several *general objectives*. Development agencies may support (adapting to the local conditions) the attainment of regional goals in the following areas (*DTI* [2006], addendum "A"):

- regional economic performance,
- sustainable development,
- entrepreneurship,

- productivity / rural productivity,
- employment,
- international trade and investment,
- brown fields renewal,
- science and innovation,
- skills,
- sustainable communities,
- sustainable farming and food,
- voluntariness and community sector.

While *more concrete strategic objectives* are developed, different processes can lead to a clear vision and related objectives. The related practices also give an indication of the soundness and acceptance of the strategy.

4.2. Coordination and responsibilities in strategy development

The ProAct case studies show that in general the regional policy makers are satisfied with the preparatory phase, also as long as its depth and coverage is concerned. In all cases wide scale and in-depth analytical work took place, but there are also some differences, which seem to have substantial influence on the chance of future success of the strategy.

In Presov (Slovakia) surveys to define the needs for regional programmes are done only sporadically as desk research from accessible national and regional statistics but also by direct surveys in SMEs and institutions. The feedback on the surveys remains very limited. Nevertheless, regional surveys, expert consultations, demand and supply analyses, SWOT analyses are performed within the process. Regional specialisation would be defined in accordance with the results of these analyses and other regional preconditions. All policy makers and significant organisations are involved in the process.

In North Jutland (Denmark) the national analysis unit FORA cooperates with the regional Growth Forum. FORA has made a survey among the companies in the North Jutland region. The intention was to figure out how the companies evaluate the regional framework for innovation. The survey indicates three areas that the innovation policy needs to address. These areas will play a more important role in the future. FORA's regional and national comparative studies constitute the foundation for the decision-making process. The regional studies are being performed in cooperation with regional knowledge-agencies. Surveys, analysis, experts and international comparisons are being performed to obtain as thorough and relevant information concerning innovation performance and framework. Meetings with local companies and other stakeholders are continuously arranged.

At a much more local scale the Leiden municipality (the Netherlands) does not organise a great deal of surveys that deal with research and/or innovation. There are more activities in terms of the general monitoring of economic performance, and specifically in terms of the confirmation of entrepreneurs with local business developments.

In Northern Hungary assessments about strategic options are ad-hoc and cyclical as funding usually depends on the central government. Regional policy makers feel the necessity of a stable organisation that could regularly survey and follow regional needs. In the future many other topics that were not studied before (due to the lack of capacities) will be on the plate.

It is worth mentioning that during the compilation of the latest regional strategy, the development agency (NORDA) relied on external experts, similarly to the South East England region, where the work was subcontracted.

In the strategy design process not only the depth and quality of the underlying studies is important, but the reach of the process. Although subsidiarity is a fundamental EU principle,¹⁴ unnecessary centralisation of regional planning and indifference of stakeholders are a problem in many European countries.

At regional level it is important to get as many stakeholders involved in the strategic management as possible keeping in mind, of course that the networks ought to remain manageable. This is due to the region not being a company; the identification of competitors is not straightforward and; making a region competitive is essentially different from making a company or product competitive.¹⁵ As a result, in a concerted action complicated interests have to be consolidated with social responsibility, so, it becomes more of an art than in the case of companies. However, these actions can be managed and facilitated. Involving stakeholders is important for two reasons:

- policy makers get access to information that they lack themselves,
- by involving others, a basic support could be assured.

People are more likely to comply with plans to which they have contributed themselves. On the other hand, policy makers have to be aware of the downsides of public involvement as well:

- it slows down the process,
- it can create an image of lots of talk, while doing little.

Policy makers have to find the right balance and the right form of consultation with the stakeholders as well as opposing parties.

According to the practices examined, while the strategy is being developed there are social debates with the inclusion of numerous stakeholders. Nevertheless, it is not the number of stakeholders involved in the discussion process that have an impact on developing a successful strategy but rather the type and culture of the debate.

In Vienna (Austria) involving the stakeholders from all areas of politics and different working areas of administration, as well as the NGO's and the public is a structured effort. In a recent (2006/07) effort to establish a new "Research, Technology and Innovation Strategy" the City of Vienna invited from the beginning some 100 relevant stakeholders to participate (universities, major business corporations, research centres, politics, also including social partners organisations) and experts from Europe and abroad (USA). Very similar regional practices are prevalent in the UK, although initiated at a higher (government) policy level. In North Jutland (Denmark) the Growth Forum and more than 100 business leaders, researchers and politicians have participated in a two-day workshop process and identified four clusters that the region ought to focus on in the future. If a stakeholder or a group of companies disagree with the actual policies, their objections will be heard. The users are definitely listened too, and initiatives are very welcome. In Denmark this process of identification is quite typical for the setting of regional innovation strategy and policies. Even though the focus was on stakeholder discussions from the start of building regional visions in the city of Leiden (the Netherlands), there has also been a strong increase of capabilities in terms of managing the process. With the involvement of regional consultants, a structured approach was applied for developing 'scenarios' and 'city dialogues'.

The inclusion of stakeholders in the visionary processes has started on the Eastern skirts of the EU as well. Although workshops, dedicated websites and the circulation of documents are organised, *the acceptance and reach of the strategy among the major stakeholders is much smaller* in Presov (Slovakia), Northern Hungary and Podkarpackie (Poland). In more developed EU regions stakeholders could be sure that policy makers take their views seriously. In Northern Hungary, for instance, stakeholders view social dialogue rather as a task for

¹⁴ Aristotle already knew the principle of subsidiarity, which underlines the importance of individual and local initiatives. The traditional concept is about decision making at the level where most of the related information is available. The definition in Article 3b of the Treaty of Maastricht is: „ In areas which do not fall within its exclusive competence, the Community shall take action, in accordance with the principle of subsidiarity, only if and insofar as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the Community.”

¹⁵ As we have mentioned, the main criterion of competitiveness is not profit, but the per-capita GDP. Nevertheless, sustainable development etc. should also be considered.

policy makers without major consequences to future strategic actions, which are dominated by the central government anyway. Yet there is also some policy learning as well: poor regional involvement and motivation in strategy formation has been continuously changing: regional policy makers started to be more active and the central government also learned that the involvement of regions in regional plans is indispensable. Thus the elaboration of newer strategies will most probably reveal slightly different and improved practices.

In Hungary the national political struggles have a disadvantageous influence on regional processes (fiery debates about political power and the scope of actions are persistent), which clearly contrasts the practice in Denmark.

In South Moravia (the Czech Republic) the efforts seem to pay off better: the General Meeting of the South Moravia Innovation Agency (JIC) is a widely accepted forum where a basis where stakeholders (South Moravian Region, City of Brno and 4 universities) discuss, evaluate, and monitor the regional strategy implementation and collects information and experience for a regular upgrading of the Regional Innovation Strategy. Podkarpackie (Poland) may step on similar roads: representatives of the business sector and economic self-governments participate in quarterly conferences of the PFI (Podkarpackie Innovation Forum), as well as in sub-regional seminars that are organized in the region with the aim of learning the opinions of the broadest circles of stakeholders and achieving consensus and support in the RIS implementation process.

We must also note that the reach of the regional strategy and vision was considered to be wide enough among the concerned public only in the case of Denmark. *So stakeholder involvement and strategy dissemination probably have to be approved across the EU regions in general.*

Involving stakeholders can take place through representatives like branch organisations, professional associations, cluster bodies or even regional development agencies. On the one hand, this can be a positive addition to the process, as it might speed up consultation and as representative bodies might be more experienced with governance issues than individual companies. On the other hand, it implies an additional 'hierarchical' layer between policy-makers and innovators, implying that the impetus for innovations may decrease. In any case, more influential groups will have more influence and therefore recommendations to guide the discussions may include:

- manage the strategy development as a project, with responsible people and organisations;
- transparent monitoring of official and unofficial channels of communication;
- availability of enough time to discuss proposals in detail;
- enable debates and presentations in small groups and in variably composed large settings.

Table 12

Participation of stakeholders in strategy development

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Major stakeholders are involved in finding the main strategic focus								
All the important stakeholders take part in the strategy design process; and their views have been taken into account in the regional strategic documents developed; and the main elements of the consolidated strategy are accepted by these stakeholders.	●	●	●	●	●			
There are some important stakeholders, whose views are not taken into account; or some stakeholders were asked, but their views were not adequately taken into account.						●	●	●
Stakeholders were not consulted, when the region's vision / strategy was drafted.								
The vision / strategy is disseminated widely								
All regional stakeholders and the general public are aware of the regional vision / strategy (e.g. it is accessible on the Internet or the strategy appears in the written and electronic media, etc.).	●							
Only some stakeholders in the region are aware of the regional vision / strategy.		●	●	●	●	●	●	●
The majority of stakeholders are not informed about the reach of the strategy; or the strategy is not available to the public.								
Discussions on strategic options are effectively facilitated								
There were public forums where all different strategic options were discussed.	●	●	●					
During the strategy design process, several strategic options emerged, but only a select number of the options were discussed.				●	●	●		●
The different strategic options were not discussed.							●	

Source: The ProAct case studies

According to the ProAct case studies *reaching consensus and compromise about the regional development directions seems to be a more important goal* of these debates than to discuss alternative scenarios and strategic variants. The developers of the regional strategy usually drafted options for the future. However, some regions effectively discussed the possible ways of development and others did not.

In Vienna (Austria) the Strategy Plan and the Urban Development Plan (2 of the 4 most important papers) were created in perennial processes and the stakeholders were aware of the options. In Northern Hungary developers of the Northern Hungarian strategy had organised large scale social dialogues of the strategic documents, but the regional stakeholders think that after all, their expectations and efforts do not appear in the strategy: among others, development options of the region were not discussed (the different interest groups simply managed to add many of their preferences to the strategic plan and thus lengthen ‘the wish-list’).

Objectives and the tools used to achieve the objectives are key elements of any strategy. Nevertheless, recent management practice has shown that it is also important to verify if the tools chosen are actually suitable for achieving the strategic objectives (see for instance *Kaplan–Norton [1996]*). This is why it is important to look at what happens to the objectives and the corresponding tools. In regional planning quite often there are ambitious goals while the methods of implementation and/or the indicators of progress are missing. A shared strategic vision and a commonly accepted strategy are also not straightforward in many regions, which explains why practices that help establish accordance between different views and actions are required.

Although, as indicated above by the case studies of the ProAct regions, the strategy design process should be pursued as a project, regions have some options how it is actually facilitated. The choice between a centralised and coordinated, and a de-centralised and laissez faire approach to strategy development seems to depend on two issues:

- the social responsibility taking ability of the participating institutions; and
- the stakeholders’ certainty that their opinion counts.

Vienna (Austria) takes a centralised approach and the strategy development is managed as a project, with responsible organisations. In South East England the centralisation is effected through the institutional set-up, because the regional development agencies (RDAs) are only mandated to respond to the national plan, which is, in turn, formulated in discussion with the regions. Over time, perhaps the power to formulate regional innovation objectives may be transferred to the RDAs. In Leiden (the Netherlands) the practical co-ordination is in most cases outsourced to a local or regional consultancy firm that specialised at organising discussion type of workshops and processes. Later the different strategic documents that co-exist are usually valued by political confirmation. In South Moravia the agency JIC mandated to ensure a necessary accordance between the various regional economic policy documents.

Table 13

Responsibilities and coordination in strategy development

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
The responsible parties acted in concert when designing the strategy								
The different roles for the strategy design team were defined at the onset of the process; the responsible parties agreed to a strategy design process.	●	●		●				●
Some of the roles were defined but some roles were unclear; and / or the design process was not clearly stated.			●		●	●	●	
Responsibilities and the design process were unclear.								
Accordance between the different regional economic strategic documents								
Objectives in the different strategic documents are aligned; when someone reads the different strategic documents, the reader can identify regional priorities.	●	●	●	●				
Regional objectives are more or less clear in the different strategic documents, but there are too many of them and there is no priority order between the objectives.					●	●		●
The different (economic) strategic documents have different objectives and they do not overlap or the overlap between them is confusing; and/or the objectives could oppose one another.							●	

Source: The ProAct case studies

In Northern Hungary the centrally designed NDP-I programmes tried to address certain regional problems, however, they were centrally decided and Northern Hungary would probably have allocated these funds differently if it was given the possibility to do so. This also means that the innovation-related documents elaborated by the central government are accorded neither with one another nor with the regional interests. The documents elaborated by the region try to reflect the real local economic needs, nevertheless, there are delays and distortions when these are put into practice, also because of the mentioned frictions between the operation of different policy levels.

The practices above show that different processes may lead to the required accordance between the strategic documents is concerned, sometimes opposing practices may be efficient.

4.3 The importance of innovation and research in regional policy

As taken in this book supporting innovation and the spread of innovative behaviour is probably the most important in keeping or enhancing a region's competitiveness. As the regional innovation map of Europe in point 2.2 demonstrates, high-GDP and high-R&D regions overlap. Despite their common co-existence, innovation and R&D are not the same: the distinction is a reflection upon the so-called European Paradox (i.e. high potential of knowledge creation, yet low realisation of knowledge implementation). As the case of the EU shows, in many cases the results of high-quality scientific research are not used in practice (the Lisbon Strategy and the *Kok Report* [2004] both underline the serious economic consequences of the paradox).

If the importance of innovation is not prevalent in a region's strategy and strategic actions, it refers to a lack of knowledge on the recent agenda of competitiveness. Nevertheless, the reader should be very aware of the relation between artefacts and actual processes. If a given region does not have a specific department or strategy for research and/or innovation, it does not necessarily imply that the policy process is better if there is a specific strategy or department. If public officials do perform their work well, it does give added value. The key is again the process(es), in which innovation receives the necessary attention at the regional level.

Each of the case studies confirmed that the support to innovation, research and business renewal is an outstandingly (and often the most) important element – goal or tool – of the regional development strategies. However, the support to innovation is not understood uniformly across the ProAct regions.

South Moravia (the Czech Republic) is a nice example how a transition region adopted an innovation agenda as its main regional strategy. The regional stakeholders recognized that beside some outdated industries, the city of Brno has a strong (biotechnological) knowledge potential in the Czech context. It is a merit of the regional authorities of both the South Moravian Region and the City of Brno that they have conceived a crisis as a chance and innovation and research became the core of the regional economic strategy. Although an ambitious goal was set in the second Regional Innovation Strategy (by 2013 to become the most innovative Czech region while ranking among 50 most innovative European regions), stakeholders share this vision. We shall see how it succeeds, but the consciousness of the region is enviable among transition countries.

North Jutland (Denmark) has longer been a place for innovation-minded people and policy makers. Denmark has one the best macro-economic frameworks in the world; the rent is low, inflation is stable, infrastructure is well developed, national finances are in surplus, the labour market is flexible and skilled, the financial section is sophisticated, the political conditions are stable, etc. In these circumstances it would be a mistake not to play the innovation card. 30-40 years ago investments in innovation used to focus on buildings and bricks. The next phase focused on developing companies from the inside, i.e. trying to innovate products and establishing patents. The current phase focuses on entrepreneurship, ideas and knowledge... in SMEs. In Denmark public R&D investments are supposed to facilitate, support and even kick-start regional innovation in the private sector. Even the development of ICT is perceived as an infrastructure to provide ideal conditions for innovative processes. Despite its favourable position, Denmark views itself as a remarkable example of "The European paradox" since research is of a high quality, but does not boost Denmark into the European innovation top. The figures are below the Barcelona objectives and less than the countries that Denmark usually compares themselves with: Finland, France, Sweden and the USA. Thus improving innovation policies is an ongoing process. Innovation is now a top priority in both regional and national strategies: it is taken for

granted that competitiveness is to be achieved by being an innovative society. What makes North Jutland unique among the ProAct regions is the level of awareness among the everyday people: innovation, regional and national development are headline topics in North Jutland newspapers (this is characteristic also in the country). North Jutland proudly claims its innovation culture is certainly rising, partly because of the last 2-3 years intensive focus on innovation.

It must be noted that to raise awareness to innovation and research policy is primarily a national affair in Denmark. It is highly prioritized by the national government, especially during the past few years and it can be expected to keep this high priority. Topics like entrepreneurship, public financing of research and innovation, business development and globalisation has been discussed intensely in the Danish media and research institutions. Especially students and employees at research institutes have complained that the government has not had an adequate focus on research policy.

The fortunate Danish approach to entrepreneurship is confirmed by the literature. As the *GEM* [2006] study states at higher levels of income the role played by the entrepreneurial sector increases as more individuals have the resources to go into business for themselves in an economic environment that allows the exploitation of opportunities (ibid p.12.). Most EU transition countries are about to pass to higher income levels, so attention to entrepreneurship seems particularly important.

Table 14

Importance of innovation in regional strategy development

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Innovation and research are at the centre of the regional strategy								
Innovation is emphasised in the regional strategic documents; innovation is a central theme in the key strategic documents.	●	●	●	●	●			
Regional innovation priorities are considered; but it is not the most important core theme; objectives are mentioned which have only a distant relationship with innovation.						●	●	●
Innovation and research and development have no or only a nominal role in the regional strategy.								
Stakeholders understand the importance of regional innovation								
Stakeholders (including multi-nationals and SMEs) are aware of the role which innovation can play in economic growth; policy makers and other stakeholders recognise that social and political conditions can contribute to innovation (e.g. higher education)	●	●	●	●	●			
Some stakeholders are aware of innovation but not all (e.g. SMEs are not). Although some firms and higher education are innovative, policy makers do not support their innovative actions.						●	●	●
In the region there is no common definition about the role of innovation (e.g. it is narrowly defined, for example, to support only R&D or new scientific attainments, etc.); and/or stakeholders have only vague or no ideas about the role of innovation in r								

Source: The ProAct case studies

The case study from Leiden (the Netherlands) shows how the innovative mindset of relevant local stakeholders was responded to in a positive manner and also how policy takes the globalised model of local innovation systems, the open innovation is system on the agenda. This system is understood as a creative environment in which innovators rely not only on one (or few) particular types of knowledge, but on the entire spectrum of knowledge that becomes available for, within and around the innovators, no matter where knowledge exactly comes from. For policy makers a list of ‘products’ was defined, among which knowledge economy was one, which needs to be ‘delivered’. The evolution of and policy support to the Living Lab shows that innovation is inherent in the local strategy.

In South East England there is no one division or department in SEEDA, which is solely responsible for innovation. In fact, most divisions have incorporated an innovation constituent into some of its programmes. It should be stressed that the preconditions and supporting foundations underpinning innovation are include in many of SEEDA’s other programmes, e.g. transport infrastructure and broadband expansion can enable innovation (innovation is in the centre of the strategy).

In the New Member States regions the national governments have much less awareness towards innovation, if any, and poor regional funds for innovation often hinder to place innovation and research in the actual regional strategies (so other, often central government priorities, which contradict regional plans, remain in force). In Hungary, for instance, a national innovation strategy was accepted only in March 2007. In the meantime, Hungarian regions experimented with the elaboration of own Regional Innovation Strategies, however, no consistent funding has been associated with the strategic plans. It is not a surprise that there is no common understanding about the economic and social importance of innovation. Prior to 2004 innovation was not even listed among priorities of social and economic development in Slovakia. Most of the innovation-related activities target public research organisations (higher education facilities and the Slovak Academy of Science) and are concerned with knowledge production rather than with implementation and commercial use of innovations. Influenced by the EU, the Presov Region saw the first attempt to prepare the innovation strategy only in 2005. Similarly, the Regional Innovation Strategy for the Podkarpackie Voivodship (Poland) was elaborated for 2005-2013. Although in Podkarpackie only little attention is devoted to raising innovativeness, the most influential stakeholders have high interest towards innovation and seem to be aware that the voivodship has advantages in terms of industrial R&D and attempts were made at determining the branches having the highest impact on the growth of the innovative potential of the Voivodship. Unfortunately, the remaining stakeholders do not exhibit high interest in innovation problems.

It seems that the importance of the national government in raising innovation on the regional strategy agenda as well as making it work cannot be underestimated. In Vienna (Austria) the government statement about making innovation a national priority has the greatest impact: since the declaration by the city mayor in 2005 that Vienna should become a “European capital of science and research”, the ambition is taken even more serious in the public and is often referred to. On 6th November 2006 a public kick-off conference in the City Hall marked the beginning of a one-year discussion process to establish a coherent Strategy for Research, Technology and Innovation, which indicates that stakeholder involvement is not just the organisation of a few workshops.

Table 15

Support to local needs

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Awareness for the need for regional specialisation								
The strategy focuses on regional specialisations such as one or a few technology foci, sectors, a cluster or type of firm (e.g. support for locally owned SMEs).	●	●	●	●	●	●		
The strategy focuses on a broader set of regional objectives (e.g. support for the electronics industry in general etc.).								●
The strategy does not recognize the need for regional specialisation (only general, not region-specific objectives are apparent).							●	
Emphasis on a regional ‘flavour’, the details and specific context of the region								
The regional strategy incorporates a local profile or economic, social, and cultural identity (for example, the strategy identifies regional SMEs and universities or unique opportunities, regional technological expertise, etc.).	●		●	●	●			
Most of the regional development strategy was designed with some elements of a regional perspective.		●				●	●	●
The regional context is not included in the strategy.								
Building capability and potential								
In the strategy, there is a tendency to support competitive firms; or the main objective is to build skills and capabilities.				●				
In the strategy, there is a tendency to support competitive firms; but other social issues are equally important (e.g. support for deprived areas, subsidising traditional industries, etc.).	●	●	●		●	●	●	●
The strategy focuses primarily on supporting survival of uncompetitive firms.								

Source: The ProAct case studies

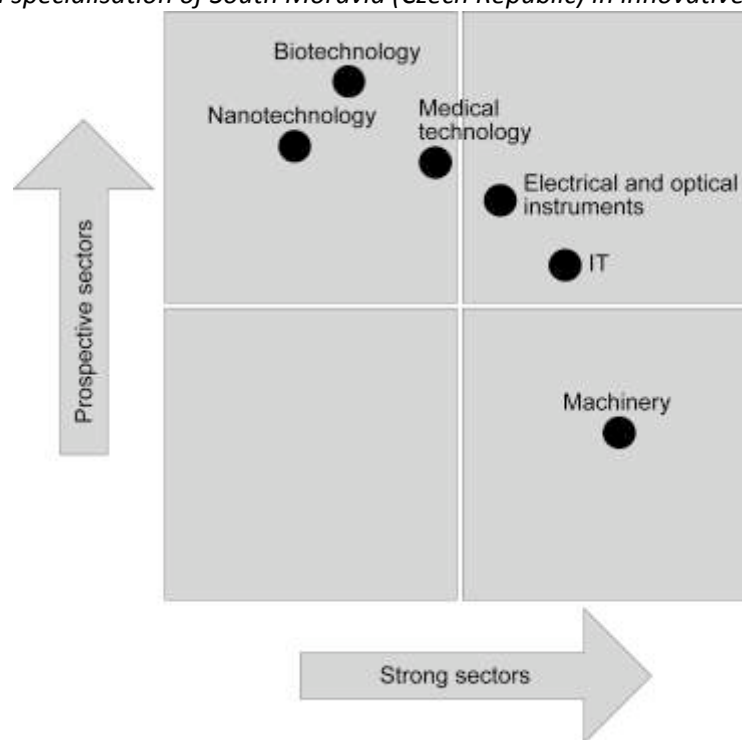
Despite the revealed importance of the national policy context, regions need to specialise to cope with international competition (see Porter [1998]). The strategies in six of the eight ProAct regions show high awareness to the need for regional specialisation. The policy objectives actually support this specialisation better in the Western ProAct regions. In Central and Eastern Europe there is also awareness for regional

specialisation, but the focus is less clear and often much less embedded in the local socio-economic environment.

Naturally the ProAct regions show different specialisation patterns. North Jutland (Denmark) seeks to focus on mobile technology, intelligent use of energy, smart building materials and smart houses, nanotechnology. The city of Leiden (Netherlands) traditionally relies on bio- and life sciences, however, new areas (such as satellite-navigation technologies) have recently gained policy focus in the 25 year vision. In addition, the co-creation of the Living Lab network is a clear sign that the awareness of the need for regional specialisation and bottom-up activities has shifted considerably over the past decades. Vienna would like to become the scientific and cultural capital of Europe. Ever since the mid 1990's there is a trend to build-up regional clusters. Instruments are more and more concentrated on stimulation of development in selected strengths. In the last years there is also a growing propensity for excellence and specialisation. Education, research, financial services, internet technologies and biotechnology will receive more attention in the future. In South Moravia (Czech Republic) there is a specific focus on biotechnologies, which was chosen among a select of innovative industries (see the figure).¹⁶ Northern Hungary also specifies the specialisation directions: mechatronics, chemical industry and tourism, but the different policy level documents have different visions. The Podkarpacie (Poland) region aims to lay the foundations for a Regional Innovation Strategy and development of the Aviation Valley (Dolina Lotnicza) cluster (despite the fact that the Regional Innovation Strategy does not indicate the specialization of the region directly). In the Presov Self-Governing region (Slovakia), no clear vision could be identified.

Fig.11

Regional specialisation of South Moravia (Czech Republic) in innovative industries



Source: <http://documents.jic.cz/ris-jmk-ii.pdf>

In the case of regional specialisation good practice means not only the recognition of the need to specialise but also the proper setting of specialisation objectives, which must be embedded and accorded with the stakeholders. The Danish consciousness is remarkable in this respect: the specialisation directions were not only founded as a common effort of the government, the regional authorities and the companies, but policy makers are also aware that although R&D capacities are in accordance with the industrial needs, the

¹⁶ The BCG (Boston Consulting Group) matrix is one of the useful tools to visualise the region's specialisation perspectives.

accordance is not perfect, and in some sectors and research areas, for instance nanotechnology and bio- and medical research, there could be a shortage of capacity in the region.

The awareness for regional specialisation does not necessarily go hand in hand with a specific emphasis on a regional 'flavour', i.e. the characteristics and detailed context of the region. Out of the Western EU regions South East England stands out, because the regional strategy is not built on a concrete regional character (also because of the size of the region). In contrast, from the Eastern skirts of the EU South Moravia (the Czech Republic) has to be mentioned, because the uniqueness of the region is apparent in the strategic positioning, which is not the case in Northern Hungary, Podkarpackie (Poland) and the Presov region (Slovakia).

In Vienna (Austria) policy and other stakeholders are proud of their city being a cultural centre, but they also know that a general overview of the strategic positioning of Vienna highlights significant specialisation and improvements related to mainly external conditions. Therefore, better eye is likely to be kept on the city characteristics in the future. Leiden (the Netherlands) views itself as a high-tech city (with focus e.g. on life sciences or pushing the Living Lab initiative forth as one of the first in Europe). The strategy in North Jutland (Denmark) underlines that Aalborg's main force and competence is the link between research institutes and the industries¹⁷ and the whole region is a showcase of enhanced entrepreneurship, the attraction of students and researchers, plus, of course, innovation. South East England is aware of its size and SEEDA can also focus specific policies towards those local areas within the region that require unique support, for instance, supporting areas which are socially or economically deprived. Yet, being large, there is no unique 'South Eastern Trend' apparent in the strategy. In South Moravia (the Czech Republic) there is an effort to emphasize the specific regional context: to utilize the available knowledge and research base while converting knowledge potential into innovative entrepreneurship and building on the mixture of continuity and novelty. In Northern Hungary, Podkarpackie (Poland) and the Presov Region (Slovakia) the regional strategies tend to look similar to the other regional strategies within the respective countries, for which the new situation of being EU member is also accountable. As, for instance, the Podkarpackie case study underlines, most of the public funds destined for financing innovation development were granted on the basis of procedures and rules that were uniform for all regions and did not take into account any differences in regional priorities and even the Integrated Operating Program for Regional Development was implemented in 16 voivodships with minimum account of their specifics. However, it is also this specific region where policy documents and policy behaviour differs, because the 'Aviation Valley' cluster became presently a sort of visit card of the region on international scale, which is more and more (proudly) emphasised as a Podkarpackie flavour of modern industries.

Having seen the examples from the ProAct regions, it seems that more developed regions have much less tendency to mix innovation policy with other policies (which, for instance, aim at helping the catching up of less developed or deprived areas) or, in other words, the support for innovation is prioritised higher than other policy practices. Nevertheless, the issue is not easy. Even the European Union has traditionally been exerting substantial effort to level regional disparities, despite the fact that low efficiency of the funds for catching up is common and in most cases the difference between EU regions does not decrease.

The arguments that building capability and potential can be more efficient gains ground only slowly in Europe. For instance, Vienna adopted strategic tools that support the successful regional actors: there is still a certain level of attention focusing on low-paid competition, but belief in the currently existing window of opportunities is becoming dominating more and more. South East England and the Presov Region (Slovakia) do not want to pick winner sectors. The strategic tools in North Jutland (Denmark) generally focus on the relationship between "ICT and SMEs", and within that approach, the most suitable (professional) economic actors are supported. The regional aim in Denmark is to make it as easy as possible to establish a new business. In Leiden (Netherlands), there is a tendency to support those that have been successful for a long time. Only recently have they started supporting new potential. Yet, similarly to Denmark, a number of new ventures grew out of applications that were based on the new wireless network. In South Moravia (the Czech Republic) the strategy is strongly specialised on support of SME innovative entrepreneurship, but less developed areas are also given attention. The approach in Northern Hungary is mixed – and in a way half-hearted: the strategy wants to support the best institutions, but catching up lagging areas could not be forgotten either. In Podkarpackie (Poland) it is preferred to support those initiatives, which have the highest

¹⁷ At the same time Denmark takes the European Paradox seriously and wants to improve the commercialisation of scientific research results.

chances for achieving good results while also stimulating the development of the remaining branches of social and economic life.

4.4 Balancing between EU / national / regional / local policy

The likelihood of implementing a successful regional strategy based on innovation and research is higher if planned strategic policy actions are in accordance with international (EU) and local policy making. Regional policy-making, or innovation for that matter, is to a great extent a matter of opportunities. If higher policy levels offer schemes through which new programmes can be started, it is good practice to be aware of this and use it if possible. In this sense, multi-level governance can offer great opportunities to regions: even if national governments do not offer possibilities, some EU body might.¹⁸ On the other hand, as the example of transition regions show, dependence on higher policy-levels can also prove to be detrimental to innovation.

Because of the specific influence of the Lisbon Agenda on regional innovation policies across Europe, we have to mention here the 'Open Method of Coordination' (OMC), as a policy-making mechanism. The OMC was introduced by the European Council of Lisbon in March 2000. It was a method designed to help Member States progress jointly in the reforms they needed to undertake in order to reach the Lisbon goals. The method included the following elements:

- fixing guidelines and timetables for achieving short, medium and long-term goals;
- establishing quantitative and qualitative indicators and benchmarks tailored to the needs of Member States and sectors involved as a means of comparing best practices;
- translating European guidelines into national and regional policies, by setting specific measures and targets;
- periodic monitoring of the progress achieved in order to put in place mutual learning processes between Member States.

Generally, the OMC works in stages. First, the Council of Ministers agrees on (often very broad) policy goals. Member states then transpose guidelines into national and regional policies. Thirdly, specific benchmarks and indicators to measure best practice are agreed upon. Finally, results are monitored and evaluated. However, the OMC differs significantly across the various policy areas to which it has been applied: there may be shorter or longer reporting periods, guidelines may be set at EU or member state level and enforcement mechanisms may be harder or softer.¹⁹

Although the OMC is a nice intellectual concept, in reality, the described way of balancing between EU / national / regional and local policy is almost impossible, because different policy levels have different flexibilities and the channels between them vary from one country to the other. Nevertheless, with the help of the ProAct benchmarks and the underlying case study experience, some findings can be presented.

The benchmarks of the accordance between different policy levels show the greatest variance thus far. In North Jutland (Denmark), South East England and Vienna the supranational, national, regional and local goals are similar and accorded and the likelihood of positive synergies of the concrete policy actions is high. In Leiden (the Netherlands), South Moravia (the Czech Republic) and the Presov Region (Slovakia) the different policy levels defined similar goals, but the actions are likely to differ. In South Moravia (Czech Republic) the Regional Innovation Strategy was built on analysing the influences from various (EU and national) policy levels and implementation of the RIS also contains the monitoring of superior strategies EU / national / regional. In Northern Hungary and Podkarpacie (Poland) even the aims of the different policy levels differ: such disaccordance is considered unfavourable. In Poland and Hungary top-down (central government) influence is strong and the regions are forced to get in line with national policy.

¹⁸ The concept of multi-level governance describes processes of policy control taking place between actors organised at different territorial levels and cross-sectoral policy networks (for further reading see *Bache-Flinders* [2004]).

¹⁹ For more information on the OMC see http://ec.europa.eu/invest-in-research/coordination/coordination01_en.htm and *Borrás-Jacobsson* [2004]

Table 16

Accordance of different policy levels

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Mutual understanding between different policy levels								
The goals from the EU / national / regional / local policy levels are closely aligned; and substantial synergies between the actions of the different levels are very likely to emerge.	●	●		●				
In the strategy design process the EU / national / regional / local policy levels defined similar goals; BUT the actions from the different levels are expected to differ.			●		●			●
The different policy levels have different aims which affect innovation and research policies and outcomes; no synergy is expected between the actions of the different policy levels.						●	●	
Regional policies are recognised at the national level								
Regional initiatives are apparent at the higher policy levels.	●	●			●			
Regional initiatives are not apparent at higher policy levels; or the regional initiatives changed at the higher policy levels.				●		●	●	●
Regional initiatives (if any) get distorted on higher policy levels.			●					

Source: The ProAct case studies

In South East England regional agencies do not formulate strategic objectives. Rather, the RDAs adopt 'strategic responses' to the policies that arise from the UK (Central) Government. In the strategic responses consideration is also given to a regional and local context. To ensure accordance, SEEDA has instituted a formal dialogue process with the EU through the 'SEEDA Joint Europe Committee'. This body was established to promote and lobby the European Union on behalf of the interests of South East England. This committee meets four times a year. Also, SEEDA has a permanent office in Brussels. The set-up could be similar for Northern Hungary, because there is a strong national agenda and NORDA could have similar functions as SEEDA. However, the disaccordance is likely to continue, because administrative means are often used to slow down the decentralisation process (legal procedures are slow, the Regional Innovation Agency network is not considered as a full-right partner, the management responsibilities of calls is over-centralised, the regional financial resources remain limited etc.). In the Presov Region (Slovakia) the regional policy has the ambition to be independent but it still depends on national and EU policy, especially from the financial point of view. This results in some 'enforced' accordance, and true, formal analysis of the innovation policy at the EU, national and regional levels indicates a strong correlation between adopted objectives.

Regional innovation policy came to the Czech Republic via participation of the Czech institutions in EU programmes. In South Moravia no frictions are felt in the region among EU, national, and regional policy. Obviously the involvement in EU projects conveyed an inspiration and support how to design and practice regional innovation policy. The original innovation strategy of South Moravia was primarily a bottom-up activity – developed in the time when nothing like that at national level existed.

Vienna (Austria) takes EU policies as an opportunity and this approach is widely agreed by the regional and central government stakeholders. Once agreed on higher policy levels, the strategic ambitions are taken very seriously, ensuring accordance between different policy levels. The municipality of Vienna successfully found a way to utilise opportunities provided by the EC to promote developments in domains of pressing relevance to a greater public. Although at a much smaller size the processes leading to accordance are similar in the city of Leiden (the Netherlands): there are continuous cycles of developing a vision, ranging between the municipality and local stakeholders, and the municipality and the central government.

In North Jutland (Denmark) the regional strategy is strongly influenced by the national innovation policies and strategies, both voluntarily and involuntarily. The government encourages the different regions to develop their own innovation strategy and policies, but the overall framework is put forward by the national government. The government gave priority to different kinds of analysis of innovation policies and re-structured the decision-making processes concerning innovation and the determination of innovation strategies and policies. The regional actors can in principle overrule parts of the national framework, but given that the national strategy is developed in cooperation with regional stakeholders and knowledge, based on Danish companies' strengths and wishes, and big parts of the regional funding stem from national sources,

such a strategy would not be sensible. The efforts, policies, research, development of innovation and initiatives are currently spread out on several levels. The ongoing major restructuring of the national and regional innovation system will make the system more coherent in the future though. From 2006 and onwards the North Jutland Regional Growth Forum will be the primary regional actor (every region in Denmark has such a Growth Forum). It is a law-regulated collaboration between businesses, knowledge- and educational institutions and public authorities - appointed members of these fields are members of the Growth Forum. The Forums policy suggestions are not binding for the top Regional authority, but it is expected that the suggestions will be followed, since all the relevant stakeholders, including politicians, in the region are situated in the Growth Forum.

In conclusion we can say that accordance with EU-level policy is on the agenda in the New Member States as financial resources for research and innovation are dependent on the political struggles in Brussels. However, the EU influence is usually communicated through the central government and there is no particular awareness of benefits from the EU (although this should be changing slowly as more and more regions get involved in programmes financed directly from Brussels). We would also mention that in Western regional policy the EU sources are demanded for the regional objectives formulated after defining regional needs. In Central and Eastern Europe, however, regional policy looks at the fashionable topics that the EU likes giving funds for, with the aim of maximising the level of external financial funding. In our view, the former approach is more fortunate and appropriate, because the latter often has two negative effects:

- Abandoning important issues to be solved: the EU must also see that in the new member states the need for different priorities is more frequent than stated for example in the accession documents (fighting corruption, support for education, setting transparency... just to name but few).
- Pouring money into useless projects, simply because some regions might not be ready to absorb funds for certain innovation-policy related objectives.

Accordance of the different policy levels is worth only little if regional policies are not recognised at the national level. As the case study from Northern Hungary underlines, the weakest point of the regional structure is actually its relationship with the central government. The pressure from the centre is obvious and this has a leverage effect towards local stakeholders as well, who do not think that bottom up initiatives in general can get to appropriately high levels. In more important issues local stakeholders expect initiations from the top, also because regional authorities are weak in power. In Podkarpackie (Poland) the 2000 law authorised central administration to develop a nation-wide regional development strategy as well as related support programmes. The mechanism of voivodship contracts was introduced. However, the financial dimension and the bureaucratisation repudiated the concept of those contracts and the coordination competencies in sectoral policies assigned to the regional development minister turned out to be entirely unenforceable and compromised the idea of creating a separate, even if weak, ministry for regional development.

In the UK there is also tension between regional and national agendas. Although this friction is historical, the introduction of regional development agencies was designed to resolve any imbalances among the regions, even if there remains no political representation. Nevertheless, the process of regionalisation in the UK is in the infant stage and it is too early to assert any judgement of 'good' practice. The Regional Development Agencies (RDAs) are given a wide remit to design programmes and supportive actions. The RDAs are encouraged to be 'innovative' in the design of these processes (while striving to be cost effective) as long as the programmes contribute to meeting the Government's targets. So the setup is similar to the Hungarian one, still, regional initiatives are more appropriately recognized in the UK than in Hungary. Governments believe the innovation system can be upgraded by widening and deepening collaborations with industry and knowledge base institutions at the national and local level. Governments are also aware that formulating and implementing sound policies require supporting practices.

Despite the case study experience, as regards the accordance between different policy levels benchmark group we still do not have enough empirical experience to draw robust enough conclusions about good practices. The reason is simple and complicated at the same time: if we assume that there is one uniform (growth – employment - and innovation-led) EU policy, there are still 27 different national policies and several hundred regional policies as well. European integration did not progress deeply enough in the field of

innovation policy, moreover, national innovation policies are often based on different ideologies. In some developed EU countries, innovation policy may intervene only in the case of market failures, in Central and Eastern Europe a more active role is expected by the experts. In the ProAct project we could not and did not want to support any of these ideological standpoints, but we hope that the benchmarks identified and the practices presented help good policy practices.

4.5 Risks in and flexibility of the strategy

Due to the rapid changes in the broader environment, the realisation of strategic objectives (or moving towards the vision) is possible only if there are regular reviews of the important environmental variables and the strategy. Such reviews need to be connected with the objectives and the vision. If there are frictions detected, corrective actions need to be taken and in an extreme case redefining the vision might even be needed. If there are scenarios behind or in the strategy, it indicates thinking about these issues a priori.

In management literature the case of US railways is a classical reference. At the beginning of its history, the US railways defined its vision as the development of railway transportation. The related strategies had been successful for decades. Then road transportation started to develop to the detriment of railway transportation. Many say that the vision should have been updated to “transportation” only: this way the company could have suited its activities to the changing environment.

The ProAct case studies show that the regional strategy does not deal with uncertainty Nevertheless, as the literature on risks shows, this analysis is an important element and probably good practice, so, if such analysis was not done, we would recommend to go for it! In a fast changing global economy even the developed regions need to be flexible in adapting to the new challenges (e.g. the competition posed by Asia). In catching up regions, the strategies should also be flexible.

Table 17

Analysis of uncertainty and scenarios in the strategy

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podlarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
The strategy is flexible								
The regional strategy deals with uncertainty (e.g. there are scenarios in the strategy); and/or the strategy is an orientation framework and the objectives can be adapted to the changing circumstances; and/or there are regular policy practices which are used to update the strategy.								
There are occasional practices which allow the strategy to be updated; and in some cases the objectives can be adapted in response to unexpected outcomes.	●	●	●	●	●			●
The strategy does not analyse uncertainty or risk; the strategic objectives cannot be change for many years.						●	●	

Source: The ProAct case studies

Although the benchmarks indicated in the above table are clear, there are some differences in the practical approach to risks and changes in the economic etc. environment.

The most flexible approach explicitly stated was revealed in the case of South East England, where the RDAs are encouraged to develop new and innovative responses, which can support the objectives of the Governments 10 year Framework. It means considerable flexibility, with a reasonable degree of control as RDAs are given a wide remit to design programmes and supportive actions. The situation is similar in Denmark, but, as a smaller country, a lot more emphasis can be placed on networking and discussing the strategic options. As a result of the discussions, recently even a revision of the regional set-up has taken place to better meet global challenges. At a much smaller scale, in Leiden there were strategic scenarios built during the vision developing process, and, even more importantly, creating multiple pillars for regional innovation policy is considered as a sign of risk sharing, which means a probably appropriate level of awareness towards risks.

In Vienna (Austria) the strategic papers build up a framework with a certain degree of stability, which at the end assures that the objectives do not change completely in every legislative period, but rather offer

something like a red thread preserving objectives and strategic projects. There are three types of measures capable to prevent a strategy from failing:

- provide reliability “bottom-up” by a broad basis formed by solid institutions and relevant stakeholders;
- secure credibility through “top-down” support by key figures in politics and by institutions carrying out RTDI and economic policies;
- establish monitoring, evaluation and control mechanisms in order to balance as much continuity and change as required for success.

In South Moravia (Czech Republic) the first Regional Innovation Strategy was adopted in 2002 and by 2008 the region expects to see the third update of the RIS. Therefore they have set 3 years period as a time for regular renewal of the strategy. This is a way to cope with risks in the strategy and how assure its flexibility. In Northern Hungary and the Presov Self-Governing Region (Slovakia) there are strategies currently running, but deviation between plans and reality are not followed. In these countries the strategies do not count with uncertainty.

Our case studies show that dealing with risks is associated more with the implementation and not the strategy formation level of policy making. This is a mistake or bad practice, because regions can be prepared for many changes. For this scenario building (with driving forces) is one of the useful tools. The next chapter presents in detail the practices associated with policy deployment and implementation.

5. Policy deployment and implementation practices

According to *Fayol* [1949], the main functions of management roles are prevoyance (forecast and plan), to organise, to command, to coordinate and to control. Ensuring accordance and evaluation of the functions is also a task for strategic management. We are convinced that implementing a successful regional innovation and research strategy requires similar management functions.

The ProAct regional innovation policy case studies showed many reasonable elements of implementing the regional strategies. In this chapter we take a look at the good practices of implementation processes.

5.1 Innovation, research policy tools and their flexibility

As we have already emphasised regions need to rely on innovation if they want to enhance their competitiveness and welfare. At the same time successful regions highly specialise to cope with intense international competition, so the appropriate regional innovation policy instruments must be

- in accordance with the regional capabilities; and
- influential on the society ensuring that the innovations introduced actually work and bring about the results needed for the region.

Nevertheless, a uniformly appropriate set of regional policy tools to support innovation probably does not exist; at least this is what we can conclude from the most influential literature on regional specialisation and the national systems of innovation (for the former see for instance *Porter* [1998] for the latter *Lundvall* [1988], *OECD* [1998]). The table below gives a summary of not only innovation, but also research policy tools available at the regional level and the *Paxis Manual* [2006] publication shows that there can be also good practices linked with the concrete tools chosen.

Table 18

Innovation and research policy tools categorised in the SMEPOL project

	Reactive tools allocating inputs for innovation	Proactive tools focusing on learning to innovate
firm-oriented support	subsidy for hiring technicians in SMEs R&D subsidies and loans, innovation grants risk capital training subsidies incubators with " hard " support research centres traditional " reactive " technology centres transfer units in universities technology transfer schemes	subsidy for hiring innovation managers in SMEs loans for competence development management advice risk capital with sparring partner function incubators with " soft " support business innovation centres , innovation centres " pro-active " technology centres audits, monitoring needs innovation coach innovation management training techno-economic intelligence schemes SMART scheme
system-oriented support	mobility schemes "research-industry" cooperative schemes "HEI industry" subsidy for cooperative R&D projects subsidy to promote use of business services collective user-oriented technology or innovation centres	pro-active brokers, match-makers cluster policies support for firms networking umbrella schemes local strategic plans schemes acting on the culture of innovation fostering strategic capabilities of policy makers (e.g. RIS)

Source: *Nauwelaers–Wintjes* [2000]

The ProAct regions differ greatly as regards the concrete tools chosen for innovation and research support. North Jutland (Denmark) for instance supports entrepreneurship, the ICT capabilities of SMEs, and higher

education. Implementation takes place on a project basis. Among others, Vienna also lays emphasis on building competence centres, a joint initiative of science and industry, supported by the Austrian government. Leiden (Netherlands) invests in the bioscience park and incubation facilities and tries to kickstart the Living Lab initiative of local stakeholders. In Podkarpackie (Poland), an innovation database and regional technology foresight are being created. Besides, various tools are planned: incubation, venture capital (also for start-ups), technology transfer, inter-sectoral cooperation, cluster development, innovation-oriented education, etc. In South Moravia (Czech Republic) there is an emphasis on incubation, clusters and entrepreneurship.

Given the importance of the local context, there will be no two regions similar as regards the main tools chosen for implementing the policy strategy. Thus it is more reasonable to examine two issues, of which the latter can be benchmarked:

1. Why were particular tools chosen? Giving a detailed account of the tools provides an insight into the overall conception of research and/or innovation. For instance, the idea of having science parks is based on the belief that physical proximity enhances the innovation process, the idea of technology and knowledge transfer might be based on an outdated linear view of innovation (“knowledge from universities must find their way to business”), etc. There can be other considerations as well (like “the region shall give new momentum to the tourism sector by supporting experimental research” etc.). By going into “why” questions like these, we can get to know more about the background of the specific choices that are being made.
2. What levels of accordancy have been attained between strategic objectives and innovation and research policy tools? Disaccordancy can be counterproductive: it is possible that higher (strategic) level policy declares innovation to be important whereas it is not confirmed by implementation practices (or vice versa); or it is possible that implementation practices cannot lead to the attainment of strategic objectives.

From the ProAct experience we could see that there is a quite high level of accordancy between the region’s strategic objectives and innovation policy implementation tools in Denmark, the UK and the Czech Republic. But could see that an ultimate coordination of policy implementation is not necessarily needed to achieve a reasonable level of accordancy²⁰ between the region’s strategic objectives and implementation tools. It is the policy makers responsibility to coordinate, given the region’s specific context.

In North Jutland (Denmark) there is no single leader of all the RDI related policies and practices, because there is no need for it: innovation policy is to provide an efficient framework for research facilities and businesses to be able to expand and innovate. The Danish national strategy, which is being discussed throughout the country has chosen the user-driven innovation road and all policy makers share this view and commonly agree on its importance, so accordancy of the innovation policy tools become accorded with the strategic objectives naturally. In South East England the Regional Development Agencies do translate the national innovation policy strategy to the regional level and develop customized tools – in line with the national objectives. In South Moravia (the Czech Republic) the applied tools of regional innovation policy are in accordancy with the strategic objectives, and it is to the merit that the region’s stakeholders agreed to ride the innovation-driven catching up road, which has proved to be taken seriously.

²⁰ It is not even absolutely necessary to have full accordancy between strategic objectives and the implementation tools. Nevertheless, actions that are counterproductive (or disadvantageous for the region) are definitely bad practice.

Table 19

Relationship of strategic objectives and the related innovation and research policy tools and the flexibility of programmes

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Strategic objectives and the innovation and research policies are in accordance								
Innovation and research policies clearly promote the regional strategy (i.e. most of the programmes directly support the regional innovation process); and the innovation policy objectives are being attained with the selected programmes.	●	●			●			
Some of the innovation policy objectives are not being attained (or cannot be attained) with the programmes chosen.			●	●		●		
Formal innovation and research programmes and work schemes are not widely introduced (e.g. the budget for such tools is low).							●	●
Flexibility in the programmes / schemes of work								
The strategic programmes and schemes of work can be adapted to social, economic and political changes (i.e. the programmes are not necessarily 'carved in stone'). Any change however, has to meet the stated strategic objectives; the strategic policy guidelines (the strategic documents) provide only a frame for policy, which is implemented to meet real needs of the region.		●		●				
Only some programmes can be adapted to any changes in the environment.	●		●		●	●		●
Programmes cannot be changed regardless of new developments.							●	

Source: The ProAct case studies

In Leiden (the Netherlands), where the situation is similar to Denmark as regards the embeddedness of innovation in the society, there is no research and/or innovation policy at the level of the municipality, but the support to local development are somewhat related to the overall national and regional strategy. It is clear, however, that there is a process of 'maturation' between the adoption and implementation of the strategy at the city level. In Vienna (Austria) in implicit and sometimes explicit phrases the strategic objectives appear in the concrete programmes of the city's main agencies to promote economic and technological development, research and innovation (WWFF, WWTF, ZIT), but some of the innovation policy objectives are not attainable with the tools chosen. In Northern Hungary the Regional Innovation Agency has been networking in the region for some years now, regional innovation projects have started and the RIA can also represent regional needs more and more efficiently in the different national planning processes, so some accordance could be achieved.

The situation is the most disparate in the Presov (Slovakia) and Podkarpackie (Poland) regions, because regional innovation and research policy tools are not widely used. In the Presov region only a simple business incubation facility, where simple incubation is offered for 3 years with some price reduction for room renting and office services, could be identified in contrast with the relatively ambitious regional innovation policy objectives. In Poland the relationship between strategy targets and the innovation and research policy instruments in the region has not been analyzed. Efforts that have been undertaken, were frequently of fragmentary character and were not coordinated with each other. The level of cooperation between individual players on regional innovation scene continues to be very low, it is not conducive for growing correlations between the strategy and innovation policy.

We have to anticipate that disaccordance between the overall (innovation) strategic objectives and the implementation tools is more frequent and causes more problems in the New Member States than in the old ones of the EU.

As regards the flexibility of actions and programmes, we cannot say that a high level of flexibility is undoubtedly good practice.

According to the ProAct case studies the policy implementation is the most flexible in South East England, where programmes are often designed to allow a degree of flexibility; this flexibility is particularly important to allow changes in the way deliverables are to be achieved. In Vienna the continuous discussions allow for flexibility: only the strategic objectives are 'carved in stone' (yet only for a short period these objectives are fixed, because they are also continuously discussed).

In South Moravia (the Czech Republic) the programmes and projects may be partially adapted to the changes; during the period of their implementation, only some programmes/projects may be changed. In general, the programmes are not necessarily traceable back to the agreed regional strategy but they

contribute to achievement of the strategic goals. Sometimes it happens that the programme is launched without a substantive discussion in which all stakeholder groups would participate. The reason is that the regional agency (JIC) is empowered by to act in such a way. In the world of business incubation the time matters and bold decisions have to be made sometimes very quickly hence there is no time to include all stakeholders into the decision making process. In the reports generated (each Q at the very least), however, the decisions and actions taken are included in a transparent way.

In Podkarpackie (Poland) a considerable limitation up to now has been the necessity that executors of projects adhere closely to the framework determined at the stage of project programming. In the course of realization of undertaken activities the changes taking place in the environment could be accounted for only to a small degree.

Overall it is advisable that policy makers and those implementing the strategy continuously adapt the actions to the changes in the wider socio-economic environment of the region.

5.2 The governance of implementation

Recent discussions about governance began in the 1990s (see for example *Rosenau–Czempiel* [1992], *World Bank* [1994], *Rhodes* [1996], *Stoker* [1998]).

The concept of governance describes the shift from formal institutions of the state (e.g. government) to a new way of governing through informal networks and non-governmental actors. This shift has occurred both in terms of the organisation of policy-making, as well as in the process through which this occurs. Concerning the process-issue, it has been argued that a linear approach does not work. It simply cannot be argued that one spends year one on strategy formation, year two on implementation and year x on evaluation. These parts of the process are interrelated, and occur in an unstructured manner (see also the concept of the ProAct policy learning cycle). When the organisation is concerned, it is common to distinguish *three “modes of governance”*: *those based on hierarchy, those based on market and those based on network relations*. If a political system is organised in a hierarchical manner, this has certain implications for the process and for the actors that will be involved. The same applies to the other governance forms.

Over the past decades, we have witnessed a move away from hierarchical forms of governance. Based on a great deal of factors, some systems developed a more market-oriented approach, whereas others started operating in networks. The UK is traditionally an example of the former, the Netherlands an example of the latter (*Kickert* [1997]). Unfortunately, it goes beyond the scope of this paper to illustrate the drivers behind these changes. For policy-makers, however, it seems to be important to realise the direction in which their regional governance system is developing. Market relations are usually based on contracts, and can thus be managed relatively easily. Network relations are usually based on more abstract notions, such as trust and social closeness, and are probably more difficult to manage. However, it needs to be argued that innovation often takes place in network settings. *Rogers* [2003] reports an example from medical innovation, in which it is argued that of the 500 key articles in a particular field, 41% reported research that at the time it had been conducted had no relationship whatsoever to the disease it eventually helped to treat. Hence, in a network sense, implementation should aim more at the process than at the final outputs.

The ProAct project participants agree that implementation should be governed with:

- taking the regional objectives into account; and
- a reasonable degree of flexibility.

The networking mechanisms shall ensure cohesion of the programmes and accordance with the strategy and the region’s needs during implementation. Implementation should not be understood in a narrow-minded way, instead, it should be viewed as the principal mechanism that benefits raising the region’s innovation capabilities.

The regional institutional set-up for governance largely differs across the ProAct regions. In South East England the regional innovation strategy is implemented by a network of institutions, which are assigned jobs along programme lines. There is no one single institution responsible for the strategy, but the South East England Development Agency (SEEDA) has an outstanding role (e.g. cares for the relationship between different policy makers, facilitates peer reviews, monitoring and evaluation, etc.). In North Jutland (Denmark)

strategy implementation is done along project lines with the involvement of many institutions. The Growth Forum is a body responsible for the strategy. In Northern Hungary the current strategy is centrally governed and locally implemented. The Regional Innovation Agency and its programmes are financed by the central government. In Presov (Slovakia) the regional innovation strategy is just getting in shape and there are no consolidated mechanisms of governing the implementation yet.

To understand and compare practices behind the institutional differences, the notion of ‘supportive networked governance’ is introduced: this type of governance occurs when policy makers consider networking as one of their main policy tasks with the intention of supporting bottom-up initiatives. If policy recognizes the importance of bottom-up initiatives and if regional innovation and research policy makers regard themselves rather as a networking-facilitating organisation (as opposed to the “owners of big funds”), then some of the evolutionary foundations of innovation have been internalised. Some useful steps in the process are:

- Identify local stakeholders and stakeholder groups in detail. A task for policy is to connect these parts and network between them. At the end of the day, the regional stakeholders form a sort of system (part of the regional innovation system), which is working, functioning and breathing. Thus bottom-up does not mean that policy supports and recognizes e.g. friends or members (supporters) of the ruling party, because nobody should be excluded on a political basis.
- Take concrete leadership practices on board. The delegation and division of responsibilities is not easy to facilitate: the person(s) responsible for implementation should have enough information but not an overflow of information from the colleagues. Staff motivation can also be important in the success of a programme’s implementation and motivation practices are interesting to compare.
- Ensure some degree of stability. It may not be the case in many new EU member states, where political elections seem to bring a cyclical influence (and not necessarily good influence) on strategy implementation.

Flexible and networking-based governance is still rarely featured in Europe. As the ProAct case studies show, the regional policy makers have built tight relationships with regional stakeholders and there is a regular dialogue during strategy implementation. Although these relations and dialogues are certain good practices, in some cases it is not necessarily enough for efficient implementation, and not only in Central and Eastern Europe.

Table 20

Governance of regional policy

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podlarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Supportive networked governance								
Regional policy makers systematically keep in contact with stakeholders and those involved in implementing the policy.	●		●				●	
Regional policy makers keep infrequent contacts with stakeholders and those involved in implementing the policy;		●		●	●			●
There is no further contact between stakeholders and policy implementers once the strategy has been formulated.						●		
Independence in governance								
Governance is completely independent of political interference: if there is a political change after general or regional elections, professional integrity remains central to on-going and future regional strategies.	●	●	●					
Governance is not completely independent of political interference: for example, if there is a political change at the regional, local or national level, personnel may change but on-going programmes will continue.				●	●		●	●
Regional policy governance is dominated by political persuasion: personal (or even family) relationships are much more important than professional considerations.						●		

Source: The ProAct case studies

In North Jutland (Denmark) the governance system is very multifaceted and hence makes it complex to present. The regional Growth Forum is responsible for the regional innovation strategy and policies. It does not handle the actual implementation of specific projects. There is definitely a strong network in between the

different steering committee members. They often meet in different contexts, and they are the ones that possess the relevant knowledge that can make a difference in the innovation strategy. Besides the Forum, there are many organisations such as the BDCND (Business Development Centre North Denmark), which does not directly participate in the setting of innovation strategy – it is a purely implementational unit. BDCND often meets with businesses and the companies that are involved in specific projects. There does not seem to be a specific schedule for this interaction though. Furthermore, the organization is also proactive, since they often visit local companies and entrepreneurs, and makes inquiries about their needs (hundreds of businesses each year). Bottom-up initiatives thus also have great influence concerning strategy implementation. There is also other evidence that supportive networked governance takes place in Denmark. For instance, the objective of the IDEA Program is to develop and support entrepreneurship and entrepreneurs all over Denmark, which is to be achieved by creating an international embedded network organisation which can commit researchers, lecturers, students, advisors, investors and business leaders to cooperate and thus create more competent entrepreneurs – drawing from knowledge that has its roots in the higher education system. At a more general glance, it is also known that Danish organizations operate with a flat hierarchy, compared to many other countries. Danish managers delegate more responsibility and more tasks to their employees than any other manager in the world. Danish employees are also particularly good at cooperation across sectors and organizations.

In South East England many programmes and projects cross-divisional boundaries, which in itself calls for some degree of networking – although obviously at not as intensive levels as in the case of Denmark. SEEDA does not have the manpower to internally implement most projects. SEEDA staff will manage or oversee the project deliverables, financial obligations, etc. SEEDA subcontracts the design and implementation of new programmes and projects to local business consultants and universities. Several times a year, SEEDA runs steering group meetings to solicit ideas. In many situations, projects are to be ‘innovative’. These partners are asked to design and implement programs/ projects but it is often the case that SEEDA takes a leading role in the design of the project. Also, SEEDA is responsible for the dissemination of the results and the sharing of good practices among the implementing partners and with other RDAs.

The Czech example of governance from South Moravia contrasts the UK practice in that the regional agency (JIC) provides services in a variety of areas: financing, consultancy, networking (incl. clustering and technology transfer), and training. JIC also assists the region’s main university research units predominantly at the following areas: stimulation of entrepreneurship, monitoring of the research projects running at universities, methodology for evaluation of ideas, protection of property rights, finding the partners for commercialization, drafting the standard procedure for commercialization, international co-operation, training for know-how transfer. The role of JIC is then above all being a networking centre and facilitator. Something as “regional innovation community” has emerged around JIC and that is a platform where all sorts of problems are discussed and clarified and contacts are kept.

The Presov Region (Slovakia) is one step behind. The relevant stakeholder groups of regional innovation policy have been identified, now it is a task to integrate their effort, inputs and capacities into the regional innovation building process. Still, the governance of implementation is done in a bureaucratic way and only very slowly. The situation is very similar at national level, where decentralisation was done incompletely with wide competences with very low or no budget and assistance in the wider innovation process.

The case study of Northern Hungary reports the most lagging behind in terms of supportive networked governance, because policy makers simply do not have the capacity to keep contact with stakeholders once the strategy has been formulated.

The Central and Eastern European case studies confirm that dependence on ‘high politics’ or ‘party politics’ (when political considerations can easily override professional considerations) is harmful, and political independence of those in charge of implementing the regional strategy is desirable. Although the Western case study writers often did not understand or misunderstood the exact meaning of this practice, we can state that such independence is an integral part of good practices in implementation.

In North Jutland (Denmark) the two big political blocks are in agreement concerning the relevance of research and innovation policy. If the left wing was to gain control of the government, the innovation policy would probably not change significantly. In Leiden (the Netherlands) before the strategies that were discussed with regional stakeholders can receive official support, they have to be translated into political documents. Only this way allows for allocating resources to particular programmes that are derived from the strategy.

In the Presov Region (Slovakia) governance is not completely independent, because the process of decentralisation has not been finished yet and final national strategy is still in some turbulence, which has negative effects on the continuation and dynamism of regional policy. In Podkarpackie (Poland) strategy management seems to be independent of political respects. It is evidenced by the fact that, despite a change in region's authorities in 2006, no changes took place in the adopted practice of RIS implementation. However, personnel changes do take place as a result of elections and it has some negative impact on the implementation practices.

As a result of inference from higher policy levels, in Northern Hungary unfortunately there is a 'carpe diem' sort of governance attitude (do what you can do today, because you may not be able to do it tomorrow), which at the same time is not brave enough to push the regional interest on the agenda.

As we have highlighted, if networked supportive governance is adopted the viewpoint of stakeholders (bottom-up initiatives) gets on policy agenda. The consolidation of stakeholder views is also an important policy task in the process, which requires effective policy assistance. Organising discussions offer important assistance to the dialogue between stakeholders. However, open (and substantive) discussion forums accessible to all are also missing in some regions.

In the Central and Eastern European ProAct regions important or opposing stakeholder groups (or even neighbour regions) are left out from the dialogue – but the Leiden (the Netherlands) case study also complains despite the fact that strategy-developing workshops still continued after the political programme was adopted and that the city invested in a public official who functioned as a stimulator, process facilitator, or coach in the network, rather than as a strategist or co-ordinator. In South Moravia the agency (JIC) mediates the contacts to investors, business angels, venture capital funds, innovation companies, universities, research organisations, intermediaries via its Innovation Club, but some stakeholders are still left out. In Northern Hungary local and regional policy makers do have good personal relationships with the main stakeholders and representatives of important companies and education institutions, several times have expressed satisfaction with their participation in regional decision making. Bottom-up initiatives need to follow the official way through the Regional Innovation Agency and the Innovation Council, which try to keep contacts with the stakeholders. However, if the local and the central interest are not in accordance, these relationships do not work (the stakeholders know that their initiatives will be put in action only if they meet the will of the central government).

Table 21

Dialogue with stakeholders

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Effective policy assistance to the dialogue between stakeholders								
All significant stakeholder groups participate in the policy networking process; and by facilitating regular dialogue between stakeholders, conflicts are resolved or avoided.	●	●		●				
Only some stakeholders take part in the dialogue; and/or the dialogue between the stakeholder groups is only occasionally facilitated.			●		●	●	●	●
There is no dialogue between the different stakeholders; or conflicts are not always satisfactorily resolved.								
Involvement of partner and neighbouring regions in programme implementation								
There is active collaboration with partner and neighbouring regions: for example, there are joint programmes and shared investments.								
Collaboration among partner and neighbouring regions exists, but these activities mostly entail discussions and dialogue: joint programmes and actions are not important.	●	●	●		●	●	●	
Partner regions do not co-operate in regional strategy activities.				●				●

Source: The ProAct case studies

Within the stakeholders' group, the involvement of partner and neighbouring regions in programme implementation seems problematic throughout Europe. Out of the ProAct regions the most striking are the examples of Vienna (Austria) and the Presov Region (Slovakia).

In Vienna there is sometimes fierce competition between the Land Vienna and the Land Lower Austria. Further, the cooperation possibilities with the neighbourhood are only a potential asset to become more

competitive in the world (moving from Regional Innovation Strategy (RIS) to Inter-Regional Innovation Strategy (IRIS), but facilitating this shift is really difficult. According to the South Moravia (the Czech Republic) case study, the Czech region has a different strategy (and we also enquired Western Hungary, they do not necessarily agree either). This is why Vienna increasingly turns to observe external contacts and options for collaboration more excessively than in previous times. In the Presov Region the situation is even worse, because neighbouring self-governing regions are considered rather as competitors than co-operators.

In Podkarpackie (Poland) at the stage of creating the Regional Innovation Strategy, the initiative of cooperation between neighboring regions of: Lubelskie, Podkarpackie and Świętokrzyskie (so-called TRIS), with the basic objective of the exchange of experience in implementing Regional Innovation Strategies, was undertaken. This trilateral cooperation is the result of the „Agreement on Regional Cooperation within RIS”, signed by Marshals of these three voivodships in November 2003. Nevertheless, these nice political steps still need to be taken more seriously in implementation.

In recent years in Leiden (the Netherlands), there has been more and more positive collaboration with neighbouring municipalities and with regional policy authorities as well. Specifically the setting up of an inter-municipal collaboration platform is worth mentioning in this respect. This can be taken as an indicator that crossing-border practices are being developed and sooner or later some examples of joint programmes can also be mentioned. Similarly, the EU-financed NORRIS programme (in cooperation with the neighbouring Slovak region), the output of which is an updated strategy, serves as a platform for discussions in Northern Hungary. Nevertheless, international relations are formed on a spontaneous basis and joint actions have not yet been experienced.

One way to get stakeholders involved in policy making is to provide them with the results of evaluations. In regional development there are huge amounts of public money the use of which is evaluated from time to time. Evaluation often means an overview of the financial documents and books. It happens even in developed regions that the costs of reaching a regional development objective is not examined in light of the results (certainly, it does not necessarily mean a waste of money). Thus we cannot say that an in-depth evaluation of all objectives and implementation programmes is good practice above all. However, there are two issues to take into account when evaluations are discussed:

- regional policy must know that it is accountable for the public and conduct evaluations when the general public requires (and good policy makers know in which cases it is required); and
- the evaluating organisation(s) must be independent.

Table 22

Evaluation practices

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Appropriate evaluations are in place								
Independent, regular and thorough evaluations of resource allocation and impacts take place; and the results of the evaluations are disseminated to relevant practitioners, interested professionals and the public.	●	●	●	●	●			
There are evaluations but they are either not independent, or frequent; and/or thorough; the ex ante, or the interim, or the ex post evaluations are delayed or incomplete; the dissemination of the results is not comprehensive or widely accessible.						●		●
Evaluations, if they exist, are not independent and not regular; and not thorough; the results are not available to key people, institutions or the public.							●	

Source: The ProAct case studies

The literature on strategic management advises as well that the implementation of the strategy is regularly followed, monitored and supervised. Our case studies revealed that evaluations are practiced in the more developed regions. In Central and Eastern Europe the culture of evaluation did not spread yet and even in the case of the few (and occasional, ad-hoc) evaluations the independence of the evaluator could often be questioned, because ties with the implementing organisation (or a higher policy body) was evident. We must also note that some case studies do not disclose much information about this topic.

In South East England virtually every programme is evaluated. In Vienna (Austria), the strategic documents include a running monitoring and a periodic evaluation every five years. A city development report (Stadtentwicklungsbericht) shall be prepared and has to be presented to the municipal council. Amendments and adoption of continuation are based on results of evaluations and monitoring processes. Concerning funding agencies, the WWTF and ZIT use an equal set of indicators to analyse the RTD location Vienna in the context of the state and developments of Austria, and in comparison to the European situation. However, there are only few papers that engage in some kind of systematic benchmarking exercise, providing a more detailed insight of the regional RTDI system as a whole. As already mentioned, in principle many data sets exist, but they are scattered in different papers, based on different methodological approaches, thus assuring only limited comparability. In North Jutland (Denmark) surveys are frequently performed as part of the common evaluation exercises: e.g. in the autumn 2002 a survey of one of the projects showed that the majority of participant companies were either "satisfied" or "very satisfied" with the project. Furthermore, 95% reported in the survey that they would join a similar project again and recommend the project to other companies. Case studies, peer reviews etc. are made public, and the responsible agency is continuously evaluated by different external agencies – who provide the funding. Furthermore, the project managers and consultants regularly exchange experiences, discuss the process with the stakeholders and internally at BDCND. The projects are always very public; comments are provided and the projects are often discussed in local newspapers, ensuring that evaluation is not only formal but also internalised in the society.

In South Moravia (the Czech Republic) the Working Group of RIS is an expert/advisory body. Its members are the representatives of RIS main stakeholders and individual independent experts (Working Group is structured into the sectoral expert sub-groups). The task of this group is to follow the practice of RIS in a complex way: to evaluate and monitor its implementation and generate and communicate new ideas for future strategy. In South Moravia, the process of evaluation has evolved to the scope and depth, which is appropriate to the economic possibilities and stage of development of innovation policy itself. The evaluation of strategy implementation is carried out regularly once a year. It is done in expert groups, which serve as advisory bodies of RIS. It is the only link the experts have to RIS – they may be designated as independent experts.

In Northern Hungary the practice of using surveys and studies to define the needs and impacts of programmes has only been evolving recently. An appropriate system of independent evaluation is not in place yet, similarly to the Presov Region (Slovakia), where the evaluation is made by the Regional Parliament Committee for regional development and tourism (CRD&T). This committee has competences to monitor and evaluate the programme, but this is not an independent evaluation, it is more or less a selfevaluation process.

In Podkarpackie – except for the annual determination of social and economic indices of RIS implementation results – no tools have yet been provided for a system of quantitative and qualitative assessment, to enable strategy evaluation.

5.3 The way the money goes

Financing means resources for research and innovation, and thus a way to be able to work. Ample financing does not necessarily mean that the work improves or speeds up because of the large amount of money available. The actual financing mechanisms that are connected to policy programmes also have importance. It is of particular interest to be able to see where money goes, and whether it is spent well. These questions are also related to further questions of evaluation.

There are many differences between the ProAct regions as regards the general approach to financing strategy or policy implementation. In South East England, where funding is provided over a three year corporate cycle, financing of the whole strategy implementation is not on the agenda. However, there is strict monitoring and evaluation to each of the projects/programmes financed. In Vienna (Austria) substantial funding for innovation and R&D is available. In order to improve and also monitor impact of budgets earmarked for research and innovation, an appropriate system of funding agencies is required. They act independently within their respective work assignment, yet under supervision of control institutions and politicians responsible. In North Jutland (Denmark) programmes are co-financed by national (50%), EU (25%) and regional (25%) sources. The city of Aalborg is important, as it is the only municipality that is able to finance

its own large projects. The major funding stems from national decisions. In 2007 innovation and entrepreneurship will receive 50 million Euros (this decision was finalized in the autumn 2006). The region receives a substantial part of this amount, and can influence how the money is to be spent and earmarked. A regional project will often generate grants from different funds, but the competition for project funds will increase significantly also in the public (university) sector. In Leiden (Netherlands) the strategy is elaborated with detailed financial planning and PPP (public-private partnerships) are important. Sufficient space is left for the flexible allocation of smaller sums of funding for e.g. feasibility studies. In Northern Hungary regional projects are financed by the central government and the Regional Innovation Agency is responsible for the projects (centrally planned and financed strategy with local implementation). Also because of the budgetary rules of the central government, financing is not balanced and there are substantial delays especially at the start of programmes. In the Presov Self-Governing Region (Slovakia) regional sources are poor: the EU is the most important financial source and there is some national financing as well. In Podkarpackie (Poland) there are only expectations, currently public financing for innovation is inadequate although the share of private sources in R&D is visible. The self-governing voivodships could not freely decide on how to utilise the financial resources in 2004-2006, but the years 2007-2013 offer an opportunity to decentralise regional policy and Regional Operational Programmes will become the first serious instrument to finance developmental directions defined by the voivodship self-government. Although more funds are guaranteed, it is necessary to search for some other-than-public sources of financing of innovation activities.

Table 23

Appropriate financing

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Appropriate financial governance								
The financing of regional programmes is fluid (i.e. there are no obstacles or bottlenecks); and/or the budgetary situation of the region is stable which contributes to programmes being financed.	●	●		●	●			
The budgetary situation of the region is stable, financing some programmes is not guaranteed.			●			●		
Programmes and projects are under-funded.							●	●

Source: The ProAct case studies

In relation to previously mentioned examples of public-private partnerships, there is a great relevance to such new forms of collaboration also in terms of financing. Many regional governments are offering funding to private venture capitalists, in the context of universities or science parks, but also for the region as a whole. Good practice in terms of financing also involves the development of a critical position to the question of which organisation is the most suitable to provide or distribute funds.

The ways regional innovation and research policy finances its aims are manifold. Direct project (programme) financing is one option, but giving incentives to financial intermediation is also possible. In the so-called market based systems of financing innovations the funds needed for innovation are raised through the capital market (the US, the UK or Australia). In credit-based systems (such as the Netherlands, Germany or Japan) innovations are financed mainly through the bank sector (see *OECD* [1995]). Direct financial support to small start-up companies is usually not recommended by experts, however, seed or venture capital firms can be encouraged to invest in the region.

In the Western European regions, where market economy has long traditions, financing that is in accordance with the needs of implementation is natural. As there is a developed capital market and a stable institutional background, even smaller anomalies of project financing is easier to overcome. In Central and Eastern Europe financing is not fluid, the capital market is less developed and this results a hectic financial flow: sometimes there is huge money available (which must be spent for example by the end of the financial year according to the budgetary rules), in other times months elapse without money. Even and fluid financing is good practice, the qualitative benchmark is there, no doubt about that.

5.4 Learning and feedbacks

There are many different ways of learning. *Argyris* [1977] for example distinguishes single-loop learning from double-loop learning. The former replies to the type of learning that will enable policy makers to do their work more efficiently. One can imagine that the repetition of a particular programme for many years can help in developing the approach. What, however, if this particular programme is not actually the most suitable for the goal that should be reached? This is what can be called double-loop learning: the type of learning for which policy makers have to question the underlying policies and objectives that define their work. Research has proven that the second type of learning finally leads to better results. When asking whether an “approach has changed” compared to earlier periods, it is important for the interviewer to be sure whether the first or second type of learning is implied.

The precondition to performance improvement in policy making is to reach a certain level of awareness towards learning in the implementing organisation(s). The ProAct case studies show different levels of awareness across EU regions.

Probably North Jutland (Denmark) has attained the highest level of such awareness in the ProAct sample of regions. As the case study states, a high level of development does not guarantee clarity and a clearly outlined structure. A lot of administrative bodies are involved in innovation policies and projects, and many different funds provide grants. It seems to be more important to have a clear learning strategy than clearly aligned institutions. In the region there are no external barriers for learning and employees and managers are highly responsible to learn.

In Vienna (Austria) the level of awareness is also high. For instance, in the strategy discussion process the City of Vienna invited from the beginning some 100 relevant stakeholders (“proponents”, representing universities, major business corporations, research centres, politics, also including social partners organisations) and experts from Europe and abroad (USA) in order to learn mutually and from the best. There is no one single strategy, but several – more segmented – papers that define the frame for implementation of RTD-instruments. These instruments (programmes, special measures, investing in infrastructure, cluster-networks, etc.) are developed in iterative processes with the aim to learn.

In South East England the development agency is ready to experiment with new policy review tools in order to learn. The use of case studies proved especially useful, as the policy area is complicated and there are too many dependent factors to measure. Moreover, there is usually a time lag between the implementation of a new idea and a measurable result.

The Leiden (the Netherlands) case study underlines that public officials who are closest to the stakeholders have great awareness towards learning. So geographical and social proximity to those, on whom policies shall have impact, is conducive to learning. However, in general terms not all the implementing organisations in the Dutch regional policy are open to learning.

Interestingly, the policy organisations in Podkarpackie (Poland) were also found to have some higher degree of awareness to learning (indeed, this is also proven by the enthusiasm shown in the second half of the project).

In South Moravia (the Czech Republic), Northern Hungary and the Presov Region (Slovakia) show lower levels of awareness towards learning. In South Moravia the General Meeting of JIC – as a steering body of RIS implementing institution - is held twice a year or more if desired, and this is a basis where stakeholders (South Moravian Region, City of Brno and 4 universities) discuss, evaluate, and monitor strategy implementation and collects information and experience. The Innovation Club’s monthly meetings are a place where businessmen, researchers, public officials and other stakeholders meet in order to exchange ideas and experience. In Northern Hungarian regional policy other issues (e.g. negotiation with the central government or networking) is considered more important than learning within the policy making bodies. In the Presov Region (Slovakia) even the terms “Learning, feedbacks & consequences” are not very often used for innovation and generally regional development policies. It is more than clear that the region has to learn from the others in Slovakia and EU, how to implement those elements of the strategy implementation which could prove the success since at the moment there is nothing own to share. This situation is a great challenge for other institutions and organisations. Awareness raising as a tool for learning and attracting the addressed groups for joining the regional innovation strategy and implementation projects is used by the Slovak regions very rarely, usually

without wider pre-dissemination in electronic and printed media, performed very formal, without effort to break communication barriers and without clear offer of the value for those whom the awareness is addressed.

There are several tools that can help the learning of policy makers and evaluation is certainly one of the most important among them. Achieving an appropriately high level of awareness is hard yet it has a direct relationship with the region's innovative potential. A small slice of this awareness is the way the results of monitoring and evaluation are treated. Although monitoring and evaluation is not always practiced in developed regions, taking the results seriously is a clear sign of good practice.

When business strategies are implemented, the management typically does not want to face the failure of the strategy and (sound) evaluation is not carried out. This practice gives grounds to uncertainty and distrust towards the management. Such a situation often comes before more serious problems emerge. In business life the bad practice (or lack) of evaluation has direct and often sad consequences. In regional innovation and research policy the consequences may not be direct but are at least as detrimental as in the case of companies. Moreover, independent evaluation of regional innovation and research policy actions is more difficult, because sometimes qualitative aspects become more important than quantifiable results.

The methodology of evaluating innovation is not easy (see *EPUB* [2002]). Innovation surveys, macro-level and cost-benefit analyses, benchmarking, foresight, etc. can be used. Also, the output and outcome should be distinguished and there are a number of different measures that can be used:

- scientific-technological outputs: publications, patents, prototypes, new products, new technologies, new organisational modes, standards, etc.;
- outcome of science and technology: the impact of new knowledge, new mechanisms to exchange knowledge, developing a cooperative culture, emergence of networks, development of the community, etc.;
- economic outcome: new dynamics to value added, improvement in competitiveness, an influential organisational innovation, employment growth, etc.;
- social impacts: rise in the level of the quality of life, environmental protection, etc.;
- policy impacts: appearance of up-to-date development policies, harmonised innovation policy actions, positive changes in the regulatory framework, innovation-based view of other policies, etc.

Independent evaluation is an important element of policy learning, but at the same time one of the main reasons for attaining a reputation of bureaucracy. This makes evaluation a critical issue, requiring proper consideration. Evaluation reports to the public regarding the accountability of regional innovation and research policy makers between election periods. If independent evaluation is general practice and the results of evaluation are used for future policy design, there is a feedback and awareness towards learning in the regional innovation and research policy processes concerned.

Peer review probably has an outstanding role in evaluating programmes: it can be cost effective and very useful when a bunch of independent experts – with a proven record of expertise in the given field – are collected and they share their views in a common report.

There are many different concepts of evaluation. Traditionally, it was part of the linear model of policy making, being one of the later phases, after agenda-setting, decision-making and implementation. With the growing awareness that policy processes are not linear, another approach to evaluation had to be found. The follow-up of the linear model was one in which numerous feedback-loops were introduced. These can be considered as *ex ante* and interim evaluations and they turned out to have raised bureaucracy often to unwanted levels.

Another framework for change with respect to evaluation can be found in the shift to new forms of governance. As we mentioned earlier, a project in a market context is very different from one in a network. The same applies to evaluation, which is different if there is an underlying contract with clear objectives and hard criteria. A question that is still very hard to answer is how projects in a network setting can be evaluated, if the goal of the project is to 'create a breeding-ground for innovation' for instance. The same notions of active participation and trust are important here as well. Another issue with network governance is that it is more difficult to predict *ex-ante* what the outcome of a process will be. This greatly depends on the composition of the network, considering that the choice for a specific group of actors means that certain

actors are necessarily excluded. As for the problem of ex-post evaluation of network settings, satisfaction is mentioned as an important criterion. Even though one of the partners might have practically ‘lost’ in a network, this might be balanced out by other types of benefits (Klijn & Koppenjan [2000]).

We would also mention the “behavioural additionality” concept behind recent practices of evaluation. It basically refers to the change in the conduct or behaviours of individuals and institutions as a result of the policy intervention.

We should also get a good understanding on the type of learning that is meant to be achieved. The evaluation can aim at finding how the programme can be improved or become more efficient (investigate whether the programme contributed to reach the objective in a single-loop learning process). Additionally, it can also seek to explore what might be a better way to reach the objective (and question the whole programme set-up in a double-loop learning process).

Table 24

Use of implementation experience: learning and feedbacks

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Awareness towards learning in the implementing organisation(s)								
The implementing organisations are open to learning opportunities: e.g. encourages evaluation, self-assessments, takes part in brainstorming activities with external organisations on policy issues, etc.; and in general the implementing organisations do not block improvement initiatives.	●	●		●			●	
Not all implementing organisations are open to learning; or although the implementing organisations are open to learning; the pace of learning is slow which diminished the learning potential.			●		●	●		●
Future improvements are less likely because there is no learning culture in the organisation.								
Monitoring and evaluation results are used in future policy activities								
There are regular (ex-ante, interim and ex-post) evaluations and monitoring activities; and the results have an immediate impact on policy practices.								
Although evaluation and monitoring exercises are undertaken, these events are infrequent throughout the main regional policy instruments; and/or the results have little or no impact on policy practices (or only late impact if any).	●	●		●	●	●	●	●
The results of any evaluation or monitoring exercise (if they occur at all) are only used for final reports etc. and are not disseminated to the policy stakeholders.								
Continuous capability building								
There are learning objectives that are continuously and appropriately set and accomplished.		●						●
There are some examples of learning, but the opportunity is not given to everyone (limited to some ‘strong’ people only or some parts of the implementing organisations etc.).	●		●	●	●	●	●	
There is no training and learning objectives within the agency.								
Mobility of programme / project personnel for learning								
Staff are encouraged to learn from other departments, agencies and other organisation through study leave, secondments, tours, etc.								
There are some examples of mobility, but a formal procedure does not exist (e.g. they are not general).	●	●		●	●	●	●	
Personnel mobility is discouraged.								●

Source: The ProAct case studies

Monitoring and evaluation is meaningful only if policy (and the public) can learn from the results of monitoring and evaluation. If the results call attention to problems, corrective mechanisms should start. In an extreme case, even the strategy needs to be modified.

Needless to say, monitoring and evaluation results are not necessarily used in future policy activities. Indeed, the feedback of results into policy making is a problem across all the ProAct regions. But we do not have to go that far, because even the practices of evaluation and monitoring are highly different.

In South East England the development agency SEEDA makes use of external consultants to undertake evaluations. SEEDA actively participates in the evaluation process and will also often conduct internal evaluations, which include learning activities (e.g. the use of SWOT analysis is common). Recently, programme managers have received training in ‘formative’ evaluations techniques; formative evaluations weave learning milestones into the duration of the project and are undertaken internally by SEEDA project managers (internal

learning). So awareness for learning, again, proves to be high, yet it is an indirect feedback into the regional policies. Similar practices can be mentioned for North Jutland (Denmark) as well.

In the New Member States regions evaluation and monitoring is not commonplace, programmes are monitored much more sporadically than in the developed regions (see also the next chapter). Therefore, this learning opportunity is mostly missed in Northern Hungary, South Moravia (the Czech Republic), the Presov Region (Slovakia) and Podkarpackie (Poland).

Continuous capability building within the regional development organisations is not yet in focus, with the exception of South East England, and to some extent, Presov. In South East England an internal continuous improvement programme has been established. SEEDA also shares and promotes good policy practice with other regional development agencies. In Northern Hungary some awareness to the issue has emerged. Although the Regional Innovation Agency of Northern Hungary did not organise events to disseminate the Baross Programme experience, in the future the RIA would like to arrange for such events.

Not much information could be collected as regards training and intersectoral and international mobility of personnel. In Northern Hungary we could see that the dedicated people are occasionally provided the chance to travel and learn abroad – in similar regional development agencies. The practice has improved the professional development of employees. In Leiden (the Netherlands) the Living Lab is being built from an open innovation perspective. It is fully embedded in an international network of other Living Labs, companies, governments and research organisations. Due to this, mobility is a natural feature of the work process. In South East England SEEDA has been able to retain staff for long durations. This ensures continuity of work themes and the retention of any learning from past projects.

6. Practices at programme and project level

Programme, and within programmes project management is the most common implementation mean of reaching strategic aims. Project management often receives the criticism that project-centric planning is short-termist. Nevertheless, among policy makers implementing strategies and strategic programmes in the frame of project management has gained overwhelming popularity over possible alternative approaches such as trend-oriented goal-setting (for a summary on the theory see *Locke-Latham* [2002]) or directional planning (*McCaskey* [1974]). In this chapter we survey the good practices pertaining to the programme or project level of regional innovation and research policy.

In order to grasp this issue properly, we need to return to what was said earlier regarding 'modes of governance'. The term project management implies something different if the setting is hierarchic rather than market or network in nature. Considering that most regional bodies are moving either in a market or network direction, we mostly focus on these two here. A project in a market-like setting is probably based on some sort of a contract, in which specific objectives or other types of criteria are mentioned that need to be met. A project in a network-setting can have the same set-up, but is often less clear in terms of outputs. Many regions nowadays have projects to develop an open innovation platform, or a breeding-ground for new projects. Obviously, such vague expectations are less applicable to traditional types of evaluation. We have noticed from experience that such a setting is difficult to deal with for policy-makers: the 'hard output' that their executives require cannot be given; the only thing they could say is that communication is developing or that the innovation climate is changing. Only once this has occurred can concrete outputs be expected. Considering that a great deal of innovative activities work in this manner, a better understanding of how to deal with such uncertainty is required. One way of doing this is to be actively involved in a network to get a sense of the atmosphere. Trust is very important: if a renowned company or institute is arguing for more patience in terms of concrete outputs, it is probably easier than in the case of a start-up company.

The European Union also supports regional innovation primarily in the framework of projects and we are also convinced that lower levels of regional institutions will largely rely on projects in governing their regions towards agreed innovation aims. Thus, the practices at programme level were included in the ProAct benchmarking framework. It is also worth mentioning that the European cohesion policy has already had a positive impact on programme implementation in the New Member States.

6.1 Starting a programme

In an international comparison, initiations and decisions on regional innovation programmes can originate from a number of different organisations. The order of decision-making may also show various patterns.

As regards good practice, there is no generally accepted view on this topic. Gathering information, however, can highlight good practices. Assessing the 'quality' of stakeholders in the programme initiation process (professional and reasonable, or rather political and clientele-building approaches dominate), the impact of stakeholder involvement in the decision making process, assessing the accordance of the given programme with the prevailing regional strategy etc. are issues to touch upon. Distinction between formal and informal ways of exerting impact on the decision making can also show different practices: if the formal process states a particular committee is in charge of putting decisions into practice, it is good to attempt to find out whether there are informal processes behind this. Often, there is a period of intensive e-mailing between the stakeholders involved that does not turn up automatically.

The question of initiation is also particularly relevant in the context of multi-level governance. Specifically in a comparison of regions from the old and new EU member states, it turns out that there is still a higher degree of centralisation in the latter group. This is understandable, considering that the formal decision to decentralise is only of a recent date. It is important to realise, however, that even though regional policies may seem to be conceived decentrally, they are often connected to national schemes.

In South East England and North Jutland (Denmark) there are various regional authorities that launch calls for proposals. This helps competition and avoids building monopolistic (government) positions. In Leiden (the Netherlands), the regional government uses national policy schemes as a framework to launch its own innovation policy. In Northern Hungary and the Presov Self Governing Region (Slovakia) the central government dictates regional programmes: giving more power to the regions seems to be a long process. Nevertheless, EU funding principles did have some positive impact on the decentralisation of policies in the New Member States.

In the ProAct case studies there are substantial differences as to who (which organisation) initiates a given action and also to who can approve a programme and decide about its onset. In older member state regions of the EU programmes are decided with only a few political considerations and the weight of professional decisions is high. This is not a surprise as developed regions have longer history in supporting the regional economy. In new member states, however, regions were constructed only a few years ago (upon EU insistence) and in these administratively defined economic spaces the stakeholders started to realise their (longer-term) interest only recently. The national economic policy delays the decentralisation of financing the regional development decisions, which were central government responsibility earlier.

Designing programmes consistent with the regional strategy is featured in Vienna (Austria) and Northern Hungary. In both cases it has to be stressed that R&D capacities are financed mostly at the national level. That means the major part of influence and impact concerning the improvement of research competencies and industrial capacities derives from the national level. However, the strong position of Vienna as capital city leads to large-scale self-driven STI programmes and projects, which cannot be said for Northern Hungary, where only very weak regional innovation policy could be identified.

In the other ProAct regions there are huge differences behind the fact that programmes are not necessarily traceable back to the overall regional strategy.

In North Jutland (Denmark) the programs are in alignment with the overall national and regional strategy. Some items might not be traceable to specific elements in the strategy – but the strategy is to let different actors exploit different needs. Thus, it can be concluded, that there is a clear connection between innovation strategy, policy tools and actual program implementation. In North Jutland we also found an exceptional example: academic research showed that companies in North Jutland have an unused export potential of somewhere in between 400 and 700 million euros. North Jutland's regional authority and the North Jutland Development Fund took the initiative to launch the first North Jutland export program, which was a huge success. Such a start is almost unimaginable in many European countries.

In South East England what makes SEPIA (South East Programme for Innovative Actions) unique is the realisation that one programme can cut across several strategic objectives, notably, economic development and improving disadvantaged communities.

In South Moravia (the Czech Republic) the projects may be traced back to the key strategic goal – to improve environment for innovative entrepreneurship. Nevertheless, each programme is not necessarily traceable back to the agreed regional strategy but it contributes to achievement of the strategic goals. For instance the prerequisite for the firms' participation in the project Microloan is their membership in Technological incubator VUT. Technological incubator is a non-residential property owned by VUT (Technical University in Brno) and operated by JIC. Generally speaking, the regional innovation projects – largely operated by JIC – are of two basic kinds: those designed on contract basis with well defined tasks, indicators, and deadlines (incubation, financial services) and those more directed on strengthening and cultivating innovation culture with rather indirect impacts – these are based on networking, facilitating, communicating (training, consultancy, clustering, facilitating contacts, organizing meetings and workshops, maintaining web portals, organising project consortia for project applications, etc.).

In the Presov Region (Slovakia) so far there have been no direct programmes initiated by the regional government or institutions: programmes were and still are initiated at national level.

In Podkarpackie (Poland) the implemented programs are in good agreement with the strategic documents and, usually, prior to launching them, consulting is carried out in order to take stakeholders' opinions into account.

Table 25

Launching regional innovation and research programmes

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Programmes are consistent with the regional strategy								
The programme can be traced back to the agreed regional strategy; or the programme contributes to the realisation of regional strategic objectives.				●		●		
The programme cannot be traced to the agreed regional strategy; but it contributes to the realisation of regional strategic objectives.	●	●	●		●		●	●
Programmes are not linked to the presiding strategy and did not contribute to the regional strategic goals.								
Stakeholders are appropriately informed before the start of the programme								
Discussion took place between different stakeholders before the programme was drafted; and/or the programme concept was introduced at regional stakeholder forums.	●		●			●		
The programme idea was introduced without enabling substantive discussions; or not all the stakeholder groups were informed.				●	●		●	●
There was no contact between the different stakeholders before the introduction of the programme drafts.		●						

Source: The ProAct case studies

Informing the stakeholders before a programme starts also shows different practices in the ProAct regions. When the competence centre programme was started in Vienna (Austria) in 1998, a pilot phase was introduced in which a number of proponent groups with experience in cooperative initiatives were invited to submit tenders according to the requirements laid down in the guidelines of Kplus. This procedure and the resulting evaluation were carried out in much the same way and with the same stringency as the two subsequent public Calls for Tender. By the end of 1998, five Kplus competence centres were selected from this pilot phase. The start of the year 2000 saw the approval of seven additional centres, six more were accepted and selected for funding in 2002. Following systematic investigation of the results achieved by the various Competence Centres established, again another Call for Proposals to form new competence centres (“Kneu”) under a farther advanced programme named COMET was published in the year 2006. In 2006 some 270 enterprises of different size were involved in Kplus centres, generally in the form of multi-company projects with several enterprises, collaborating with various scientists (mainly from universities and universities of applied Sciences [Polytechnics]) on problem-solving research. In the future Kplus centres are expected to become additional competitors in their field of expertise.

In Leiden (the Netherlands) the Living Lab has remained a volunteer initiative and no government intervention was needed. The initiative developed with little financial public support, but did get the possibility to place a node on City Hall, which was one of the earlier drivers for the network. The activity has been identified as “autonomous innovation”

Although in the Presov Region (Slovakia) no regional innovation programmes were launched, all relevant stakeholder groups have been identified, now it is a task to integrate their effort, inputs and capacities into the regional innovation building process.

Last, but not least we have to mention that in Northern Hungary the very limited regional innovation policy tools are not just accorded with the regional innovation strategy, but stakeholders were also appropriately informed before the Baross Programme started. Nevertheless, the problems of having numerous strategic papers with different priority agendas does not help to see clearly what is actually going on in the region in terms of innovation policy making.

In all regions implementing the strategy usually means the launching and managing of competitive calls for proposals, openness is especially important. Certainly, there is no general good practice as to how these calls should be managed, but principles of the Transparency International might be quoted here. The TI’s Minimum Standards for Public Contracting provide a framework for preventing or reducing corruption. The Standards (see: *TI* [2005]) recommend that:

- public procurement authorities should implement a code of conduct for strict anti-corruption policy;

- allow a company to tender only if it has implemented a similar code of conduct;
- maintain a blacklist of companies for which there is sufficient evidence of their involvement in corrupt activities;
- ensure that public contracts above a low threshold are subject to open competitive bidding;
- provide all bidders with easy access to information on the tender;
- allow bidders sufficient time for bid preparation;
- ensure that contract change orders that alter the price or description of work are monitored at a high level;
- ensure that control and auditing bodies are independent, and responsibility for demand assessment, preparation, selection, contracting, and supervision of a project is assigned to separate bodies;
- use committees at decision- making and create well trained and adequately remunerated staff;
- promote the participation of civil society organisations as independent monitors.

We encourage regional policy makers show how the above is interpreted in terms of regional innovation development. If the time available to draft the calls, submit proposals and conclude contracts is too short, it may indicate an intentional hindrance to decent competition.

On the other hand, after real competition, there is a need to efficiently facilitate the project launch process by preparing the contract rapidly and enabling the project start quickly. The general practice of handling competitive calls in the field of regional research and innovation is fairly easy to analyse.

Table 26

Competition and timing of regional innovation programmes

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
The principle of competition is upheld								
Projects were submitted through a competitive bidding process (i.e. there are objective criteria and all potential proposers could bid).	●	●		●				
Although formally the process was competitive, there were some (administrative) barriers, which could exclude potential bidders (e.g. size limit, turnover limit, minimum number of PhDs, etc.).						●	●	●
The process was not competitive and the implementing agent was selected by another mechanism.			●		●			
Appropriate timing of calls								
Sufficient time was given to all phases of the bid process, (e.g. between drafting and issuing the calls, proposal submission deadlines, contract and project start times, etc.)	●	●		●				●
Sufficient time was given to some phases but not to all the phases.			●				●	
Insufficient time was given to the entire process.					●	●		

Source: The ProAct case studies

Exceptionally the developed regions also call for proposals without real competition, but the Leiden case is special because a larger group of stakeholders is supported by step by step and rather well-networked policy actions. In general, the principle of competition is highly advised, especially in Central and Eastern European countries, where 'targeted' competition is commonplace. In South Moravia (the Czech Republic) the regional agency JIC does not organize any calls, applications to enter the incubator are being received permanently. Still, the process of admission into an incubator may be considered competitive and transparent.

In Northern Hungary we saw that although competition was not limited in theory, sometimes in practice it could have been, because the time between announcing the calls and closing the proposal submission process was extremely short – in this particular case competition was ensured by the Regional Development Agency, which informed the potential proposers on time. In Podkarpackie (Poland) similar practices are noted, and, similarly to Northern Hungary, the grants are obtained by those projects which are a better response to local needs and are correlated with the regional policy in respect of expected outcome. However, many applicants, who have no suitable experience, complain about too short periods from the moment of competition announcement to the application acceptance deadline.

In Vienna (Austria) grants are awarded on a competitive basis only. Competition between the Kplus proposals, which are being selected for funding in a two-step process – by the help of many experts from domestic and foreign science and industry – is only a part of appropriate arrangements. Another is the unavoidable requirement to take risks – not only on the basis of own contributions, but primarily by the obligation to jointly form a new company that shall prosper beyond the funding period of max. seven years. As a matter of fact, science and industry partners who create a K-centre become connected for long time, not only for one research project, rather for the development of new, innovative products and marketing activities alike. In doing so, K-Centres turn up as new players in science and in markets, thus increasing competition in certain areas. Therefore one can expect very careful planning from the beginning of such an endeavour, and clustering of further investments and co-operation agreements. In North Jutland (Denmark) it is a conscious strategy to make sure, that regional innovation projects are initiated from several different institutes and authorities. Fragmentation of projects entails diversity, gearing and competition. Usually there is strong competition for project funds.

6.2 Responsibilities and management

International practice shows a variety of options to govern regional innovation and research programmes. Many solutions are possible. The existence of artefacts says a lot about the process or about practices. For instance, the existence of public-private bodies may suggest that policy makers recognize their limitations in terms of the field they are dealing with.

It is important that not only the EU-funded programmes be well managed, but also the programmes / projects funded from national / regional etc. sources as well.

Obviously, there are many different ways in which the public-private dichotomy can be explained. The decision to privatise certain activities can be considered as such, but also to have a formal public-private partnership or to allow a private organisation to maintain public funds. Private influence is not a panacea for innovation policy, however. Good practice, in this sense, exists when a proper motivation exists for acting in a particular manner. Again the critical assessment of the position to be taken, and the discussion of the different sides is important.

When the general practice of project management is described, it is worth describing the process and the related regulations: e.g. if there is an enforced policy on time management or quality issues. Such regional (local) measures should contribute to efficient programme management, whereby the costs of running successful programmes are low. It is also worth thinking about the human resources side of programme management: it is possible that the programme was successful because of some dedicated individuals (key people), who took substantial workload in running the given programme. If it was so, it might also turn to be important why these key people were enthusiastic (e.g. there might have been sophisticated incentive mechanisms, traditions etc.).

According to management theory, the efficient implementation of project requires clear definition of responsibilities, appropriate timing of the different sequences of the project and avoiding bureaucracy. These needs do not always appear in the programmes presented by the ProAct case studies.

In the case studies the administration duties are told in general to be appropriately low against the total programme budget. However, we have seen immense bureaucracy that had to be performed towards the central government (or the EU), which crowded out the resources available locally and limited the networking possibilities of project officers, whereas the total cost remained low (and the work was not efficient). Keeping deadlines and enforcing effective project time management is also a problem – obviously not independently of the financial flows, especially in the Central and Eastern European regions.

Table 27

Programme administration, time management and HR policy

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Reasonable administration duties								
The firms' (the receiver's or the programme's other target audience's) costs of administering the programme were reasonably low; and public administration of the programme was efficient.	●	●		●	●			●
The firms' (or other target audience's) costs of the programme were low but public administration was not efficient for some reason; or the firms' (or other target audience's) costs of the programme were high but public administration was efficient.			●			●	●	
There were significant and unjustifiable administration duties reflected also in high costs against total programme budget.								
Programmes/ project met time targets								
There are effective policies and/or regulations related to project time management issues; and/or the programme was implemented as scheduled (without unjustifiable delays) and the organisation responsible for implementing the programme played a positive role in the timely delivery.		●			●			
There was no policy and/or regulation on project time management or it was not effective but the programme was implemented as scheduled; and/or although the programme was implemented as scheduled (without unjustifiable delays), the policy organisation in charge of the programme played a neutral or negative role in the timely delivery.	●			●		●	●	
There was no policy on time management; and/or the programme was not implemented as scheduled (there were unjustifiable delays), and the organisation responsible for the programme hindered the timely delivery.								●
Appropriate human resource management								
Competent individuals were employed to manage and implement the programme/project based on skills and experience criteria.	●			●				
Some individuals are competent, but many others are not.		●			●	●	●	●
The programme did not employ appropriately skilled personnel.								

Source: The ProAct case studies

Administration duties remain reasonable in Vienna (Austria) also because of the technological support: all applications for financial grants are submitted and processed on-line. Although for RTD grants similar practices are prevalent in Hungary, efficiency remains a problem. In South Moravia (the Czech Republic) administrative costs are kept at reasonable level but its amount is not possible to determine precisely.

As regards the timely management of programmes, it is usually a problem. In Northern Hungary when the Baross Programme started, there was no enforced policy on controlling the timely progress of projects. Since 2007, the implementing Regional Innovation Agency controls if project implementation meets the set deadlines. In the Presov Region after the publishing of calls there are 2–3 months before the submission deadline for project development when rules of the call are available and published. Later the practice becomes subject to criticism: the time needed between proposal submissions and signing the contract is at least 6 months. The companies have to wait with realisation of the project for signing of the contract, because the costs spent before are not acceptable.

It must also be stressed that the success of projects and programmes almost always depends on dedicated individuals involved in the programme. In Podkarpackie (Poland) the number of persons employed for implementing the priority # 2 of the IROP is nearly three times lower than the country average, so being enthusiastic is not always enough, careful management of the human resource deployment is also needed.

Transparency is an important aspect of efficient project implementation. Taking responsibility and being accountable for policy actions implies a level of reliable documentation of the course of events, but of course the regional innovation and research policy support should not be overly bureaucratic. Clear and decent documentation is important when it comes to evaluation, audit or other means of assessing policy performance.

The increase of technology is an important factor in this respect. Many transactions or communications in general are performed via e-mail, or even on blogs. This implies that the flow of information is almost beyond control. It may occur that some contracts are filed on paper in an old-fashioned archive, whereas some

agreements remain in the inboxes of the involved individuals. The question of what good practice is difficult. On the one hand, flexibility in information management, by using IT like electronic signatures, or blogs can facilitate efficiency, and can take away a feeling of bureaucracy. On the other hand, this will inevitably push out the borders of the organisation, which might lead to less overview.

In accordance with the increased amount of emails, the ProAct methodology asked for two types of documentation of projects:

- paper-based (contracts, official letters, other official material); and
- electronic (emails to and from the responsible regional organisation).

Table 28

Paper-based and electronic information management

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Appropriate documentation procedures								
Procedures are in place for documents to be made available and these procedures are easy to follow (e.g. the documentation system enables timely continuation of the programme even if the people in charge of the programme change position / job).				●				
Documentation procedures are in place but these procedures are difficult to follow or they are not effective; or the documentation of some actions was good (e.g. ensuring that documents can be preserved and read for a specified period) but that of the others bad.	●	●	●		●	●	●	●
There are no documentation procedures in place.								

Source: The ProAct case studies

We found that in some cases there are problems with the paper-based documentation, however, the real problem seems to be the limited and not standardised use of electronic information management, especially, again, in the Central and Eastern European countries. In South Moravia (the Czech Republic) project documentation some cases that do not fall into the category of best practices. In Hungary the un-organised handling of emails was mentioned. The Podkarpackie (Poland) case study also noted that the fact that only documents in paper version are recognized is a considerable hindering restriction.

Consequent (if needed, quality assurance level) documentation of past events and emails is obviously good practice as shown by, for example, the North Jutland (Denmark) case study or Leiden (the Netherlands), where the municipality works according to very formal procedures when it comes to documentation. Often, an oral agreement has already been reached, but for the sake of administrative standards, the formal procedures still remain to be executed.

6.3 Programme monitoring and audit

Monitoring the progress of implementation is an important source of management information, indispensable for the governance of regional strategic programmes. In this framework, the term monitoring means “an eye to ensure that processes are on the good track”. If the processes are off-track, the monitoring mechanisms shall ensure signalling as early as possible.

Monitoring should be a continuous practice and its results should reach the top management of regional innovation and research policy programmes. The *Paxis Manual* [2006] also states that monitoring is a good practice in many of the regional innovation and research programmes. Despite its importance, monitoring is often not used in regional development.

In a network setting, the best practice of monitoring is to keep in touch with the process without disturbing it (but having an influence on it when needed). As the difficulties of evaluation of network-projects has been mentioned a few times, such informal monitoring can help to have a better view on the overall outcome of the project at the end.

Table 29

The monitoring of a regional innovation programme

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Functioning monitoring mechanisms are in place								
There are regular (not necessarily formal) monitoring systems in place; and modification of the programme are introduced when monitoring results identify any divergence from the objectives.	●	●	●	●				
A monitoring system is in place but the results are not used to modify programmes; or monitoring was undertaken for some but not all programme activities; or monitoring was undertaken for some but not all programmes.					●	●		●
No monitoring systems are used.							●	

Source: The ProAct case studies

According to the case studies, monitoring became common practice in European regional innovation programmes (in some cases the EU influence should not be underestimated). Nevertheless, quite frequently there are no corrective actions taken even if monitoring shows substantial divergence from planned objectives (one of the reasons being the contractual limitations). It is also true that in the most successful regions there is direct feedback to the broader policy objectives and programmes, and corrective actions also take place.

The implementation of the strategy is not monitored in South East England, however, the system of programme monitoring functions well. There are milestones and performance indicators and independent assessment on the progress of the programmes. Monitoring was carried out on a quarterly basis by the SEPIA Programme Manager and a mid term financial and activity review also took place. Individual project reports were provided at the end of each quarter. These reports were reviewed against individual project objectives/targets and, where necessary, action plans were implemented to ensure that the projects remained on target. In the final quarter of the programme, Deloitte MCS Limited was appointed to provide an independent evaluation of the programme. Key results were gathered through interviews with project managers and beneficiaries and a review of all programme and project documentation.

In Leiden (the Netherlands) monitoring occurs continuously, and is mostly based on intangible indicators like the strength of the network and the trust between its members. It is hard to report on such monitoring, as turned out from the experiences of public officials that were involved with the Living Lab. Still, self-monitoring is one of the activities of the Living Lab, which was embedded in biweekly operational meetings. The minutes of these meetings are distributed to key stakeholders.

In Northern Hungary there was no time to conduct an elaborate monitoring system for all programmes. Developing it is a slowly crawling process.

In the Presov Self Governing Region (Slovakia) monitoring is done in an informal way: in this case institutionalisation is the future, otherwise the practice will be overly dependent on the personal character of policy makers. Serving the public obviously requires well-functioning institutions and policy mechanisms of monitoring and evaluation.

In Podkarpackie (Poland) in the RIS implementation process, continuous monitoring will be conducted for the realization of projects financed from public funds. The effects of strategy implementation are measured mainly through analysis of quantitative indices obtained from the system of public statistics, which is not fully compatible with the needs. At the beginning programme modification should not be expected as a result of monitoring.

In South Moravia (Czech Republic) a monitoring system, which can be developed, has been in use for a few years. Monitoring is conceived predominantly as a continuous interactive process – project managers and JIC consultants are able to gather relevant information and follow the processes. There is also space available for possible corrections. However, not for all the important processes was monitoring done. In case of the Microloand Fund, which is presented in the case study, monitoring is performed continually by the Manager of Microloans Fund and the consultants of JIC. The Manager monitors and analyzes the repayment process and maintains the permanent contacts with the involved firms.

In North Jutland (Denmark) monitoring is an everyday practice. The monitoring process was continuous and thorough in case of the programmes described in the case study. If these demands were not fulfilled, the

contract could be terminated by the Digital North Jutland project. The contractual demands were adequately wide, which means that if changes were necessary, it was possible to alter the programme objective. The techniques used for a wider programme evaluation were scientific peer reviews, extensive surveys, quantitative data collecting, and extensive qualitative interviews with key personnel.

Audit is one of the practices that cannot be done without reliable documentation. Just as evaluation and to some extent monitoring, audit is also an important constituent of the accountability of regional innovation and research projects. One of the (easily verifiable) preconditions of a successful audit practice is that it is done by an organisation that is independent of the institutions and people in charge of the projects.

Probably there were bad experiences, so the European Union more and more requests independent audit of the projects funded by community money. However, as the table below shows, the audit of regional innovation and research projects is not common.

Table 30

The audit of regional innovation programmes

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Prešov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
Audit systems are in place								
Programme audits take place, and there are or would be consequences of audits.		●		●	●		●	●
There are programme audits but no consequences take place for some programmes audits take place while other programmes do not implement audits.	●							
There are no programme audits.			●			●		

Source: The ProAct case studies

In South East England, Deloitte conducts audit for each of the programmes. In North Jutland (Denmark) there are also regular audits. In Northern Hungary and Podkarpackie (Poland) audit is not part of the processes to close programmes. In South Moravia (the Czech Republic) all projects realized from public fund subsidies are subjected to obligatory audits in accordance with the European Union guidelines.

6.4 Sharing project and programme experience internally and externally

In the literature of evolutionary economics (see e.g. Hodgson [2003]) increased knowledge flow and knowledge accumulation is an important precondition to localised innovation processes.

Without feedback, there is no learning and this is especially true in the ProAct policy learning cycle. Feedback of the results of evaluation, monitoring and audit is the most influential way to establish motivation of those implementing policy. External discussion of the results of evaluation, monitoring and audit not only contributes to the transparency of regional innovation and research project implementation but it is also a dissemination tool. Additionally, it also helps to spread the practice of networking. Such external discussions on evaluation and dissemination of the project results is also possible abroad and we may assume that the good practice policy experience can be shared with industry and higher education as well.

One of the difficulties in this respect is related to the organisation of the public body that is in charge of policy making or implementation. The most obvious example is the gap between the political and the executive layer. If public officials get a considerable amount of influence in the process, this is often referred to as the 'third power'. In a principal-agent type of situation (in which information is asymmetric) politicians depend upon the knowledge of the officials in their departments for information. This does imply, however, that public officials are usually more involved in the practical side of the programmes. In terms of evaluation, specifically if this refers to network evaluations, it might be difficult to communicate the less concrete outputs. Good practice in this respect is to be innovative in communicating programme results.

If the practice of disclosing information about regional innovation programmes exists, at some point the analyst has to assess whether evaluations and monitoring efforts are actually used for learning purposes. Even if an evaluation was carried out perfectly, it will not be effective unless it is integrated in a feedback process.

In Vienna (Austria) the ministry in charge of the structural Programmes assigns great importance to the evaluation of the work done and the success achieved by the projects and the Competence Centres (the programme described in the case study). Therefore, the criteria for the evaluation are developed individually for each programme and published before its start. This ensures transparency and fairness: All projects know when they will be evaluated and what consequences the evaluation will have. As mentioned above, the programmes themselves are also evaluated. For instance a critical and comprehensive assessment of the Kompetenzzentren programmes Kplus, Kind, and Knet has been carried out by "Fraunhofer Ges., Institut für Systemtechnik und Innovationsforschung" in collaboration with "KMU Forschung Austria". The implementing agency ZIT itself was evaluated recently in order to learn of employment impacts of the programmes which are in place to foster innovation and technology development in Vienna. The report ("Beschäftigungswirkungen technologiepolitischer Maßnahmen", available in German only), elaborated by KMU-Forschung Österreich on this analysis was delivered in March 2007, stating a number of recommendations for future development of measures and programmes. Because of the relevance of the Competence Centres – Programmes, results and developments are frequently discussed in the public. In accordance with other topics of research and innovation policies experiences, lessons learned from results of assessments were inserted in the current debates concerning the development of the new Viennese FTI-strategy, and will certainly also be of great relevance to the new national dialogue on research, initiated by the Minister of Science and Research in autumn 2007. It is worth mentioning that a wide-scale discussion on innovation is also continuously taking place in Denmark.

From the description of the practice of evaluation we know that in South East England more than 2,000 local businesses have taken on board the concept of 'innovation' and explored new ways of working that would enable performance improvement as a result of the SEPIA programme. From a sample of 63 companies, more than 30% reported that the intervention from SEPIA has or will increase sales, improve their competitiveness or reduce their costs.

The SEPIA evaluation report noted the following reasons for the programme's success:

- the delivery partners were locally based
- the delivery partners listened to the needs of the SMEs
- the SME participants formed the agenda for the projects.

These conclusions are valuable probably for all European regional innovation policy makers. Yet not only the authority initiating the programme receives the results of monitoring and evaluation but the results are also disseminated to the widest possible public.

In North Jutland (Denmark) it was a specific part of the strategic objective of the Digital North Jutland project that the programmes effort and results were to be disseminated and made public, both to businesses and the society. This was done extensively, both nationally and internationally. The government decided that DNJ should:

- collect and visualize the objectives, values, strategy of subprojects – as a showcase to others of interest in Denmark;
- evaluate each single project and the total project;
- spread the knowledge of the project internationally and hereby attracted international interest.

In Northern Hungary the Regional Innovation Agency of Northern Hungary did not organise events to disseminate the Baross Programme experience. In the future the RIA would like to arrange for such events. In the Presov Region it is possible to get for example particular annual reports on "State of the entrepreneurship in SMEs" for years 1999 – 2005 as well as reports on concrete realised calls where are accessible all relevant statistics, i.e. numbers or applicants, formal and total evaluations and threshold values, etc. but what is missing more less in both is deeper analyses of the reached results, their general effects and some feedbacks. The same situation is with dissemination of the results, where mostly very formal and quite "secrete" way of information distribution is used without wider possibility of discussions with relevant stakeholders of the process. In Podkarpacie (Poland) the results of studies, monitoring and assessments are made available (mainly through posting them on the internet sites) by institutions, which realized them. It applies in particular to activities financed from public funds. Yet these assessments are not systematically done. In South Moravia (the Czech Republic) the project experience is discussed regularly and continually at work meeting in JIC and in

wider circle of stakeholders and interested persons at both formal and informal encounters. However, sometimes important results do not reach the interested public.

Table 31

The disclosure of information in regional innovation programmes

	North Denmark	South East England	Leiden	Vienna	South Moravia	Northern Hungary	Podkarpackie	Presov Region
	DK	UK	NL	AT	CZ	HU	PL	SK
The results from evaluations, monitoring and audits are available to the wider public								
Evaluation, monitoring and audit results are disclosure with relevant agencies; and they are available to the public.	●							
Only some results from evaluations, monitoring exercises and audits reach the public; or although disclosure of the evaluation, monitoring and audit results took place, all the results did not reach the interested public (but e.g. only a few distinguished people).		●	●	●	●	●	●	
There are no evaluations, monitoring exercises and audits, or evaluation, monitoring and audit results (if they exist) reached only the contractor policy makers or the higher level policy makers and are not available to the public.								●
Proactive interactions between project officers and contractors								
There were regular interactions between project officers and contractors; and the interactions contribute to the realisation of the programme / project.	●	●	●	●				●
There are occasional interactions between project officers and contractors (e.g. for some of the programmes/projects it works, for others it does not); and/or the discussion did not contribute to the realisation of the programme / project.					●	●	●	
Regular interactions did not take place between project officers and contractors (e.g. contacts were highly formal).								

Source: The ProAct case studies

According to the case studies, project officers often have proactive relationships with the contractors, which seem to be a good practice (e.g. in Leiden or North Jutland). The Czech case study from South Moravia mentioned that manager of the Microloans Fund is an employee of JIC. He communicates with the involved firms continually on everyday basis. However, despite these fruitful relationships, the workload of the employees of regional development agencies is often high, due to paper-production and bureaucracy. This is a problem especially not only in Central and Eastern Europe.

7. Conclusions and recommendations

This last chapter is a summary with respect both to the practices studied and the more general conclusions of the ProAct exercise.

The example of the ProAct regions clearly demonstrate that despite very different local contexts, it is worth talking about regional innovation and research policy practices that help the regional stakeholders to learn about and improve the performance of their region. However, the efficient tools and practices are very diverse as a result of the different patterns of regional development of European regions. It seems that day-to-day, regional innovation and research policy makers get involved in at least one element of the ProAct policy learning cycle and it implies that the practices presented are usable.

The strategic dimension of regional innovation and research policy making is gaining importance (EC [1998]). Successful policies encompass the most important elements of a regional innovation and research strategy (vision, objectives and tools, implementation, monitoring policy development, networking, evaluation etc.).

The highest level of strategy-oriented management was seen in North Jutland (Denmark), where the enhancement of the national and regional management of innovation has been continuing for almost a decade now. Danish organizations operate with a flat hierarchy, compared to many other countries. Danish managers delegate more responsibility and more tasks to their employees than any other manager in the world. Danish employees are also particularly good at cooperation across sectors and organizations. Recently the cooperation between national and regional agencies was strengthened. At the same time competition is also furthermore enhanced, as the different agencies and research divisions compete for the same project funds. Not only Danish companies are the most innovative in the world, but also Danish public institutions. They focus on developing new ideas that can be transformed to better service for citizens and companies. In this respect especially innovative ways of using ICT in the cooperation between public institutions and businesses and citizens are highlighted in the Danish innovation strategy.

In Vienna (Austria) a strategic view has been taken recently, marked by the fact that the current strategy development was managed as a project, with responsible organisations. The municipality of Vienna actually is a huge public enterprise. Capabilities of well organised administration, continuity of RTDI policies beyond terms of political bodies and functions, and certainly also stability regarding economic and fiscal potentials for funding, are essential for successful implementation of strategies.

In Vienna and North Jutland (Denmark) strategy setting and learning about strategic opportunities are perennial processes. In Leiden (the Netherlands) there are also continuous cycles of developing a vision, ranging between the municipality and local stakeholders on one side, and the municipality and the ministry on the other side. In South Moravia (the Czech Republic) a commonly shared vision of innovation strategy is continually shaped and facilitated. Therefore, strategic planning and thinking should not be a one-off or periodical activity but inherent in policies.

In analysing the more and less successful policy practices in the eight ProAct regions, we have found *five principles of good practices in regional innovation and research policy*. These are:

1. *Awareness*: get a more or less uniformly accepted understanding of the importance of innovation by involving stakeholders in continuous discussions.
2. *Innovation*: place innovation, renewal and the ability to cope with competition in the centre of a vision and appropriate strategy, and assign consistent funding to it.
3. *Networking*: focus on networking stakeholders in the region and support bottom-up initiatives, especially those, which are more or less aligned with the strategic directions of the region, but also others if the bottom-up push reaches critical mass.
4. *Accountability*: be responsible and introduce a system of independent evaluations or other mechanisms that enforce full and continuous accountability of the decision makers.
5. *Learning*: help the learning of public and private organisations, extending to individual and civil society stakeholders in the region by stimulation and support of discussions (provision of information, expertise, infrastructure).

Maintaining such principles efficiently will constitute the body of good practice in regional innovation and research policy. The ProAct case studies demonstrate and justify the general validity of these principles. To prove this, we have to say that in the practical regional policies of the developed countries these principles are usually enforced by some socio-economic mechanism. In less developed EU countries, however, even more formal practices are lacking that could prove the existence of these principles.

Table 32

Overview of the five principles in the ProAct countries

	DK	UK	NL	AT	CZ	HU	PL	SK
<i>Awareness</i>	●	●	●	●	●	●	●	●
<i>Networking</i>	●	●	●	●	●	●	●	●
<i>Innovation</i>	●	●	●	●	●	●	●	●
<i>Accountability</i>	●	●	●	●	●	●	●	●
<i>Learning</i>	●	●	●	●	●	●	●	●

Legend: green: the principle is fully in practice, yellow: somewhat in practice, red: not enforced, not in practice

Source: editors' assessment, based on the case studies

In the following, conclusions based on comparison between the lessons learned from practices in the eight ProAct regions are presented according to these five principles. Because of its overarching relevance for the accomplishment of adequate practices, financial aspects are addressed separately in an additional final sub-chapter.

7.1 Awareness for the importance of innovation

In poorer regions there is often political pressure to give higher priority to catching up (equalization by imitation) than to innovation: On the one hand policy makers are afraid or not powerful/competent enough to use innovation policy tools as the main instruments to support catching up. On the other hand though, cautiously considered imitation policies can turn out quite instrumental to catch up in transition periods (cf. *Westney [1988], Schnaars [1994]*).

In South East England, which is a region of the size of a country, the SEPIA programme did cut across several strategic objectives, notably, economic development and improving disadvantaged communities, yet it still was an innovation support programme. For mostly political reasons, but also due to poor professional discussions about the role of innovation in catching up, such programmes are gaining ground in Central and Eastern Europe only very slowly.

A critical mass of innovators can be at the good place and at the right time only if there is a generally conducive national and regional context for innovation. This recognition is also acknowledged by the policy development of the European Union, which, at the beginning of the 1990's started to widely support regional networks and called for the decentralisation of the innovation and technology policy (see *EC [1992]* and *EC [1998]*). Since then, the Regional Innovation Strategy (RIS) was implemented in more than 100 European regions, and network-centres became the focus of attention instead of centres of excellence. The basic research orientation and technology push also seems to have been left behind, although in less developed regions there is a clear tendency to assign innovation with technology.

Due to the importance of macro-effects we have to state that if economic policy is not business-friendly, if elements of the National Innovation System are underdeveloped (such as the protection of intellectual property rights in practice) it will have a negative impact on regional development as well.

Undoubtedly, both the EU and the national governments have great impact on regional innovation and research policies as it is largely supported by the ProAct experience. In Vienna the successful competence-centre programme was initiated by the central government. R&D capacities are substantially financed at the national level. That means the major part of influence and impact concerning the improvement of research competencies and industrial capacities derives from the national level. Concerning public awareness the government statement still provides the broadest impact: Since the declaration by the mayor of Vienna in his government statement 2005, that Vienna should become a "European capital of science and research", this

ambition is taken serious in the public and is often referred to. The municipality of Vienna also found a way to utilise opportunities provided by the EC to promote developments in domains of pressing relevance to a greater public. We should not forget that there is sometimes fierce competition between the Land Vienna and the Land Lower Austria, which indicates that a cooperative innovation policy is not always easy to follow. In Denmark the Danish government initiated the project by forming an expert committee who formulated the objectives for the future ICT strategy. Based on a vision of a Digital Denmark, the government chose the North Jutland region, to become the center of the visionary project “Digital North Jutland”.

One of the first steps is to raise innovation on appropriate policy levels as early as possible. In less developed regions the policy makers’ awareness concerning innovation is far from being satisfactory, compared to the fact that the internalisation of an innovation policy agenda seems crucial as shown by the Austrian, Danish, Dutch and UK regional case studies. An acceptable degree of awareness has been developed in South Moravia (the Czech Republic) as well.

In Denmark the regional strategy is strongly influenced by the national innovation policies and strategies, both voluntarily and involuntarily. The government encourages the different regions to develop their own innovation strategy and policies, but the overall framework is put forward by the national government. It was a strategic decision to concentrate most of the innovation performance and framework research in national units, rather than having fragmented local analysis-institutes.

At the level of Dutch municipalities, such as Leiden, basically, there is no direct involvement of EU policy. Indirectly, it could be argued that the funding that was acquired by regional organisations had quite an impact on the local innovation system. In addition to this, strategic decisions of the European Commission to focus on issues like clustering, Living Labs and on technologies like satellite-navigation had quite an impact on the regional projects that were EU-financed. The way of thinking that was developed in the course of such projects had an impact on the participation in strategy-design processes in the municipality. In this sense, the indirect impact of European policy could be argued to be rather large.

In the United Kingdom there is higher-level centralisation than in Denmark or the Netherlands. Regional agencies do not formulate strategic objectives. Rather, the RDAs adopt ‘strategic responses’ to the policies that arise from the UK (Central) Government. To clarify the vision to become a global knowledge hub, the UK Government has set out a series of measurable objectives. RDAs are mandated to respond to the national plan. Over time, perhaps the power to formulate regional innovation objectives may be transferred to the RDAs.

In the New Member States it is also very often necessary to understand “higher level” policy in order to understand why the regional ones perform as they perform. In Podkarpackie (Poland), Northern Hungary and the Presov Region (Slovakia) the awareness for innovation policy at higher government levels is not convincing at all. If it was, then regional processes would also be supported in favour of localised innovation processes, the importance of which is highlighted in the literature. National policy is often not willing to decentralise its power and it is shown in its behaviour: up to now, the innovation and research policy took little account of the specifics of the Podkarpackie (Poland) region, as it concentrated mainly on the realization of targets and priorities significant for governmental circles. Most of the public funds destined for financing innovation development were granted on the basis of procedures and rules that were uniform for all regions and did not take into account any differences in regional priorities. Even the Integrated Operating Program for Regional Development was implemented in 16 voivodships with minimum account of their specifics (Podkarpackie). In Slovakia the policy of the national government towards the regional structures is not yet supportive: the process of decentralisation has not been finished. The final national strategy is still in some turbulence, which has negative effects on the continuation and dynamism of regional policy.

Last, but not least we point to the great impact the EU had on innovation policy processes in the New Member States. In the Czech Republic, but also in Hungary, Poland and Slovakia Regional Innovation Policy came to the country via participation in EU programmes. The National Development Plans and the Regional Operational Programmes were elaborated upon EU initiatives. From 2006 in Northern Hungary regional innovation policy started to become an *everyday practice*: the Regional Innovation Agency started networking in the region (including companies and education and research institutions), regional projects have started and the RIA can also represent regional needs in the different national planning processes. From South Moravia (the Czech Republic) the supportive national context could also be seen beyond EU support: JIC and other regional actors are now engaged in final phase of preparing two big innovation-oriented R&D projects which

are also promoted by the Czech government. Central European Institute of Technology (CEITEC) – the project with budget 50 million € to be co-funded by the EU Structural Funds – should represent a modern centre of excellent research integrating life sciences, ICT and material science.

In conclusion it is no doubt that both national and EU institutions can greatly support regional development with the help of innovation policy tools and practices. There is room for further research and discussion about real economic regions, but – even more importantly – more rigorous regional policy preconditions can be set at the EU level before support to regional development programmes get funded.

7.2 Networking approach to regional development

Regional development is a complicated evolutionary process. Having seen the empirical examples, the ProAct consortium is convinced that facilitating social debates and networks is one of the most important regional innovation and research policy tasks. Exploring realistic development paths is possible only if the different stakeholders understand one another and can join forces for concerted actions whereby policy contributes to neutralising and consolidating the opposing stakeholders' views. In Denmark there was a vivid social debate on innovation and its importance. The result is that people in North-Jutland are ready to think in terms of innovation and be flexible: unquestionably a key to present and future success.

The EU also promotes networking by different policy schemes (mobility actions, thematic networks and workshops, coordination actions, conferences etc.) and it has a great impact on the whole of Europe. In the New Member States topical conferences are frequent even in the poorly performing regions, but whether there are substantive discussions and consequences of the discussions remain questionable: in ProAct quite often stakeholders were contacted, but not all the relevant ones, and consequences of the discussions remain more uncertain than in developed regions.

Efficient networking was key to make innovation understandable for the public in North Jutland (Denmark) and Vienna (Austria). On 6th November 2006 a public kick-off conference in the Vienna City Hall marked the beginning of a one year discussion process to establish a coherent Strategy for Research, Technology and Innovation. A new national dialogue on research policy was initiated by the Minister of Science and Research in Autumn 2007. In Denmark it seems everything is discussed and networked. Twice a year the Business Development Centre North Denmark (BDCND) arranges meetings where representatives from all growth centres participate. Experience is shared and cooperation is established in these meetings.

Raising awareness to innovation and R&D is a networking issue, which concerns different levels and may have different aims:

- *Raising awareness in the public:* (i) to respond to the fear of contact with high-tech (e.g. genetic manipulation) or new technological application in general (e.g. paying parking fee by cell phone); (ii) to inspire/stimulate the use of new technologies (upgrading public openness); to support life long learning.
- *Raising awareness among decision makers in business:* (i) increase the share of researching and innovating companies, (ii) achieve more cooperation projects in RTD; (iii) introduce R&D and innovation in all economic sectors; (iv) reduce mental distance against (financial) risks; (v) increase information access to regional, national and EU funds for RTDI support.
- *Raising awareness in science:* (i) increase the understanding of the importance of science – industry cooperation; (ii) enhance awareness in scientific communities concerning science – society issues.
- *Raising awareness in politics:* (i) spreading information about the context: what can be influenced – and what cannot; (ii) positioning of the agencies to secure and raise budgets for RTDI activities; (iii) winning regional politicians for “lobbying” on national and EU levels.

In Denmark the social embeddedness of innovation is so high and networking is done at so many levels that for the case study authors it was difficult to determine which subject needs to be analysed at the regional innovation policy level. Moreover, the society is eager to learn (SMEs from large firms, for instance), which is really hard to copy. In Slovakia and Hungary the networking between project officers and contractors is much less frequent than in Denmark. From South Moravia (the Czech Republic) we could see that networking

occurs more and more frequently and as a planned and useful activity: the JIC founded Innovation Club is a place where businessmen, researchers, public officials and other stakeholders meet in order to exchange ideas and experience. Innovation club holds its session each month.

Networking also enables the careful bottom-up design of instruments, which is highly advisable. Examples are the K-centres programme in Vienna (Austria) and the Living Lab project in Leiden (the Netherlands). As a generalisation, it seems that larger social debates work better in regions where networking is more frequent and collaborative. Consolidating different interests is not easy in these cases, either. However, the whole society is interested in regional policy, substantive information is easily available, the interested stakeholders easily find public forums to share his/her opinion with policy makers and politicians take up the responsibility to design policy tools in accordance with the stakeholders' motivations (not neglecting to take care of opposing opinions). The process is marked by a general support and success to regional innovation and research policy.

Central and Eastern Europe has different traditions. From the top the central government does not give political power to the regions and the newly established regional institutions easily and the same is true with the counties, but from the bottom. Sometimes conflicts of interest are sharp, as the Hungarian report shows. Networking remains fashionable but rather in-effective: the central government follows its own political logic whereas local stakeholders are not really willing to contribute to the official regional policy (for the Hungarian example see also *Papanek* [2006]).

An important element of networking is the involvement of stakeholders in strategy development and policy implementation. From time to time the stakeholders' motivations need to be known for policy in order to be able to consolidate them with a view to fostering development in desirable directions. These consolidation processes lead to a sustained interest of potential co-operators and provide a platform to find compromise with opposers. When relevant stakeholders are not involved in strategy formation and implementation it may be detrimental to future development as some examples from the less developed EU regions demonstrate.

In Denmark also the social aspect of innovation is gaining importance, the whole society is viewed as 'stakeholder'. Innovation is now a top priority in regional and national strategies, i.e. competitiveness is top priority, but it is taken for granted that this is to be achieved by being an innovative society.

To achieve appropriate stakeholder involvement the quality of democracy is also important: in the Netherlands before the strategies that were discussed with regional stakeholders can receive official support, they have to be translated into political documents. Only this way allows for allocating resources to particular programmes that are derived from the strategy. There are persistent efforts and increasing ability to create legitimacy for policy actions.

For Competence Centres established in Vienna (Austria), stakeholder involvement is imperative not only in discussion, but in implementation as well: Following the successful competition to win funding, partners from research and industry sectors are obliged to jointly create a new research enterprise which shall live on beyond the limited time period of public funding.

In Europe, where regions have administrative and not economic boundaries, it is also important to involve the neighbouring regions in the networking process. In the US, regions as a unit of analysis, were determined with the help of commutation data so that most of the employees of a region find occupation in the same region. 172 such regions were determined, which have very different size. Some of them are peripheries of a country's capital, others have smaller or larger centres, but there are regions without any centre. These regions are used for economic analysis (see for instance *Porter* [2003] and also: <http://bea.gov>). European level of analysis or policy making is not possible in a similar way, because *EU regions* are based on the former county-system. Therefore, an additional yet important policy task is to be aware of the neighbouring regions' dynamics, understand where actual regional borders are and what change can be expected as a result of policy intervention.

The Vienna case study is a nice example, because the city's strategy does not only rely on developing the innovation capabilities, but it is done with a view to the potential impact on the surrounding (usually cross-border) regions. So, Vienna increasingly is turning towards this larger concept of a trans-border region, when it comes to issues of future developments and strategies. Moreover, EU integration will spark off the emergence of such "trans-border regions". An inventory of such EU regions is not hard to compile (the map of regional

innovation also gives some ideas in Chapter 2.2) and strategic thinking in such economic areas is worth promoting.

In the Netherlands in recent years, there has been more and more positive collaboration with neighbouring municipalities and with regional policy authorities as well. Specifically the setting up of an inter-municipal collaboration platform is worth mentioning in this respect. This can be taken as an indicator that crossing-border practices are being developed.

Nevertheless, there are EU regions where this issue is not so easy to handle. For instance most of the Northern Hungary region traditionally forms one economic unit with East Slovakia, where the centre is Kosice (Kassa). The southern belt of the region is more linked with the Great Plain, whereas its western skirts have ties more with the Capital region (Central Hungary). The EU-financed NORRIS programme (in cooperation with the neighbouring Slovak region), the output of which is an updated strategy, already helps learning from one another.

Beside the economic boundaries also the ability to deal with globalisation needs to be underlined, because in successful cases there is a glocal – global and local – view to innovation (in South East England, Denmark, but also in Leiden, the Netherlands).

7.3 Innovation in policy focus

From the literature on regional development it seems evident that there are complex efforts needed to support regional innovation in general, and SMEs in particular. Only using specific innovation enablers can enhance the innovation processes of small businesses. Incubation facilities help the birth of innovative start-ups, venture capital can help them develop further, industrial zones provide specialised services etc. Cluster formation can be very influential, too (see e.g. *Cooke [2001]*).

Economic regions more and more specialise and compete. Europe is taking up the new global economic trends. As the works of Drucker, Krugman, Porter and others demonstrate, flexibility became the most important source of competitiveness as a result of the ICT revolution and the economies of scale became less important. The long tail²¹ of SMEs appeared in many sectors and large companies turned to outsourcing, of which China and India also make profit. Nevertheless, dominant companies and regionally concentrated groups of companies often determine the competitiveness of regions. It is very important in any region whether high or low productivity elements of the value chains (i.e. the companies participating in the given productive activity and those supporting them, as well as the totality of the institutions active in the given branch) are present in the region. If relatively long segments of the value chain are present, or if a substantial concentration of a “valuable” value chain element exists, they form a competing cluster. In-depth studies of competitiveness often use clusters as the units of analysis.

In all the ProAct regions there is some awareness for business clusters, however, the approaches to identify clusters and which regional strengths should be supported differ across the regions.

In Vienna (Austria) ever since the mid 1990’s there is a trend to build-up regional clusters. Instruments are more and more concentrated on stimulation of development in selected strengths. In the last years there is also a growing propensity for excellence and specialisation. Nevertheless, the Viennese regional policy instruments do not identify sectors directly, simply because the city is a melting pot of many different services and there is no policy need to precisely describe sectors that are preferred. Riding the innovation driven road and being a scientific-technological capital is enough for the moment: according to the practices explored, stakeholders are able to define specialisations for themselves.

South East England is the size of an average European country, and this vast region also established several specialised industrial clusters. Examples include the motor sport and biotechnology clusters in Oxfordshire; new media and creative industries in East and West Sussex; marine technologies in Hampshire; aerospace in Kent and Hampshire; and software, telecommunications and network infrastructures along the M4 corridor.

²¹ The term was popularised by *Anderson [2006]*. It is originally used for products that are in low demand or have low sales volume but can together make up market shares that exceed that of the large mammoths’ if the distribution channel is large enough. In other words, the new technologies open up this opportunity for many SMEs.

So there is awareness at the policy level about specialisations, but, similarly to Vienna, direct sector-specific policy schemes are not characteristic. At the regional policy level SMEs are important. The policies of the Government Department for Innovation, Universities and Skills and the Department for Business, Enterprise and Regulatory Reform are not necessarily aligned with the complexities of small and medium size enterprises (SMEs) nor are the two Departments familiar with regional nuances and characteristics, so the Regional Development Agencies are mandated to act for SMEs mostly.

The focus of regional innovation and research policies on local SMEs was clearly seen in the South Moravia (the Czech Republic), Leiden (the Netherlands) and the North Jutland (Denmark) case study as well.

The North Jutland Growth Forum in Denmark and more than 100 business leaders, researchers and politicians have participated in a two-day workshop process and identified four clusters that the region ought to focus on in the future. We should notice that this process of identification is quite typical for the setting of regional innovation strategy and policies. These clusters have been chosen because they already are a vital part of the industries in North Jutland and the region continuously needs to improve its strength to be able to successful in a globalized world. It is thus an attempt to strengthen the winners. The clusters are: provisionals; building materials; cordless technology; life science technology.

The strategy planning is still in progress but the fact that certain clusters have been identified is an important part of the strategy. These business areas will receive a lot of attention in the years to come. Finding specialisation is an issue especially for smaller regions. However, the overall Danish strategy is more about enablers – competence, entrepreneurship and ICT, but awareness for regional specialisation is also high.

In South Moravia (the Czech Republic) specialisation may be characterized as a mixture of continuity and novelty. The regional agency JIC is mostly active in the field of networking and clustering. Several regional clusters have recently emerged facilitated and assisted by JIC:

- *WTA* (Water Treatment Alliance): 15 companies and Faculty of Civil Engineering at Technical University in Brno involved;
- *CAIC* (Czech Aircraft Industry Cluster): 18 companies and Faculty of Mechanical Engineering at Technical University in Brno involved;
- *CETI Cluster* (life-science cluster): 16 companies and Faculty of Science at Masaryk University involved.

Overall, it seems that South Moravia stepped on the way of transition to innovation-led policies more than the other transition regions because of its strong focus entrepreneurship and the higher level of involvement of local stakeholders in policy design processes.

In the Podkarpackie region (Poland) the innovation and research policy region concentrates largely on the development of the aviation branch, although the strength of this focus is not necessarily traceable back to strategic documents. Indeed, extraordinary effort of the supporting stakeholders was needed to make the specialisation appropriately appear in policy practice.

In Northern Hungary the development strategies deal with regional specialisation. Improving the competitiveness of traditional and newer sectors in the region is in focus. The following industries and orientations are preferred (and these guide innovation-related support as well): environmental industries; logistics; renewable energy; mechatronics; chemical industry; nanotechnology.

Determining winner sectors may prove to preserve the path-dependent development, which might not be fortunate in the less developed regions. However, getting rid off path dependence is not easy in developed regions either. In Vienna (Austria) more influential groups have more influence but policy tries to cope with this: for instance there are no pre-defined thematic guidelines limiting the technological areas in which a “Vienna Spot of Excellence” may be created – but only after competitive calls for proposals and evaluation. The Danish case study also highlights that the competition is furthermore enhanced. Different agencies and research divisions compete for the same project funds. This way of treating specialisation might be a European way of enforcing competition.

Experts argue that in sectors that have substantial demand for high-technology (e.g. electronics, biotechnology) a university creating and distributing innovation knowledge is an important engine of regional development, while in traditional branches, like chemicals and production of instruments this factor has secondary importance (*Varga* [2004]). According to the ProAct case studies, universities are very important for

providing region-specific knowledge which is needed for the development of a cluster. The research centres affiliated with universities play an important role in the R&D infrastructure:

- In the Podkarpackie Voivodship (Poland) the Rzeszów University of Technology plays a leading role with its research and applications in machine building and aviation, modern plastics technologies, new solutions in automation and steering.
- In Northern Hungary research in mechatronics and electronics of the University of Miskolc should be mentioned.
- In Aalborg (North Jutland, Denmark) the university is specialised for computer sciences and other new technologies.
- South East England has 11 universities and eight higher education colleges including the universities of Oxford, Sussex, Southampton, Surrey, Reading, Cranfield, Portsmouth and Brighton.
- Vienna (Austria) hosts nine universities, five universities of applied science (polytechnics), and many more RTD institutions which together employ approximately 40% of all RTD human resources of Austria. This helps Vienna to identify and envision itself as the scientific-cultural centre of Europe.
- In South Moravia (the Czech Republic) there are four universities in Brno: the Masaryk University, the Technical University, the Mendel University of Agriculture and Forestry Brno, and the University of Veterinary and Pharmaceutical Sciences.
- The Leiden University (the Netherlands) is the oldest university in the country. A wide range of sciences is taught. Life sciences is especially strong.
- The Presov University (Slovakia) was established by law in 1996 as it was formerly part of the University of Pavol Jozef Safarik (Kosice). It has more a humanities focus.

The ProAct case studies from the more developed regions underline two trends. First, university-industry collaborations are spreading at a fast pace. Second, more and more competitive elements appear in funding higher education research.

In Denmark the university sector is undergoing a very big reform. Universities are being driven by professional boards (business managers make up the board) now. The research divisions are going to have to fund themselves by winning projects on a year-to-year basis. The competition for project funds will increase significantly. In North Jutland many regional companies have gained advantage of the strong link between the industry and Aalborg University. This link is also visible in the regional policies. The experience in the UK is similar: the increase of government, business and universities partnerships is a positive development. New and innovative ideas from the knowledge base institutes are introduced to a wider audience by such collaborations (Lambert [2003]).

In Vienna (Austria) a big change in the field of technology and knowledge transfer has been implemented by federal legislation by the new University Act of 2002. It provokes more competition, and favours research closer to regional needs and user-oriented applications. The new autonomy of the universities enhances flexibility, yet also more exposure to business requirements, international knowledge transfer, benchmarks and mobility.

7.4 Accountability

Since Fayol [1916], control is recognized an important management function in any administration. In regional innovation systems the control by the public means accountability of the decision makers.

From the case studies we could see the least information about the 'accountability principle' of regional innovation policy, because it was not part of the benchmarking exercise. Nevertheless, in regional innovation policy governance accountability means the acknowledgment of responsibility for actions, decisions, and policies on the decision makers' part.

Attaining the state of being accountable in innovation policy is cumbersome. The reason is twofold:

- i. today's strategic decisions and actions may have an impact only in the far future

- ii. explaining and justifying innovation policy actions for the public may prove hard because of the complex systemic relationships in innovation systems and also because of cutting-edge topics like biotechnology, nanotechnology or even science-industry relationships.

Regions in the New Member States of Europe try hard to adjust their policies to the EU – also in terms of innovation policies. Not only they anticipate that substantial funding comes from Brussels, but they also learned from more developed regions that innovation and new knowledge is something that really drives the world today. However, quite often there is discrepancy between the perceptions of the policy makers and the down to earth reality in the regions. And this is where poor accountability comes in. Obtaining the funds and being part of an innovation policy hub is exciting and attractive. In addition, it is easy in contrast with finding the real innovation policy solutions for underdeveloped regions, which is a hard job as the ProAct benchmarks show. Doing the hard job is not sufficiently enforced by the public because of poor democratic traditions, and unaccustomed evaluation mechanisms (both formal evaluations and the working forums of evaluations such as the social dialogue). Finally, the job is somewhat harder in developing than in the developed regions, where the society more easily accepts and trusts professional policy-making. Thus regional innovation policy easily becomes the ivory tower of policy makers – unless the policy learning processes gain momentum and help both the public and the decision makers to understand that innovation policy is beneficial for them, the impact of actions can be measured and reviewed, and policy makers are also accountable for the innovation policy decisions.

Although it was not studied explicitly, the ProAct case studies do show some of the above and justify that accountability (and evaluation etc., tools that help to enforce accountability) is an important part of the regional innovation and research policy improvement. To start with, political responsibility of city councillors and other leaders of regional policy bodies must be tied explicitly to their functions, and reporting schemes by managers of funds and agencies to political representatives are required. Such mechanisms need to be reflected in government statements and other communications published by policy makers (cf. examples in Case Studies of Leiden, North Jutland, Vienna).

7.5 Policy learning

First we would like to emphasise that any deeper assessment about the quality of regional innovation and research policy and the related practices is rather complex. Higher level benchmarks in the ProAct Benchmarking Framework does not always mean higher quality in policy making. Regional policies do not necessarily have to rely on each of the practices proposed to learn about in ProAct. What is important is that the strategy sets a development direction in accordance with the region's needs and policies help the flexible implementation of such a strategy: according to our experience the ProAct benchmarks help to explore how to make regional innovation and research policy behave that way (the ProAct Online Benchmarking Tool available on www.proact-network.net helps everyone interested to get a quick taste of the benchmarking exercise).

From the ProAct case studies we can see that the regional information providers usually do not know if their way of managing regional innovation and research policy is actually good practice. Further, the underlying concepts of regional innovation and research policy are ever changing, such as the participant organisations and the techniques of facilitating policy actions. This dynamism of institutions and policy actions is apparent in the case studies and it shows that studying policy practices is reasonable.

In ProAct we could see that benchmarking is a useful learning technique even if hardly quantifiable comparisons are at stake: the complex processes of regional innovation policy became more or less comparable or at least visible for one another. Here we would quote the Leiden (the Netherlands) example: the case study explicitly states many of the practices described in the *Benchmarking Framework* [2007] are already in place. Beyond that all project partners confirmed that using the ProAct policy learning cycle was a useful exercise, because it enabled:

- a structured information collection about designing and implementing regional innovation and research policy making visible the elements of appropriate practices (or best practice);
- learning about other regions as well as own strengths and weaknesses; and

- balance creation between regional needs and regional research and innovation policy formation.

This was stated even explicitly in the Slovak and Polish case studies:

- “We are very optimistic in finalisation of the benchmarking and use the reached ProAct project knowledge for further innovation and research policy development in the Presov Self-Governing Region and maybe Slovakia as whole.”
- “Participation in the realization of the ProAct project has been of considerable importance for the effectiveness of the implementation of the Regional Innovation Strategy and for creating of the innovation and research policy in Podkarpackie Voivodship. Ability to make comparisons with (benchmarking to) other regions and to exchange experience, permits perfecting of the existing system, in order to optimise its functioning.”

The whole ProAct experience justifies that regions can and should be managed with attention to (best) practices because the interested public sometimes has difficulties to follow what is in the policy maker’s head. For instance in the Podkarpackie voivodship (Poland) despite the fact that the Regional Innovation Strategy does not indicate the specialization of the region directly, the innovation and research policy realised in the region concentrates largely on the development of the aviation branch.

The ProAct consortium has laid emphasis on learning and networking, and understanding the mechanisms of direct (or “hard”) regional innovation and research policy tools can be advised especially for the catching-up regions. In creating incubation facilities, science parks and industrial zones, supporting clusters and spin-off activities the catching-up regions can learn from the developed ones, with the help of the ProAct framework. A very interesting experience of the project is that policy makers in developed regions do not necessarily think about their practices as a way to success, because it is so natural in their context (e.g. the culture of evaluation). In this respect it is also true that compared to Western European regions, the Central and Eastern European regions are more government-centric than governance-lead as regards regional innovation policies.

The case studies confirm as well that regions where policy learning takes place at a faster pace are more successful. The benchmarks, which can also be associated with policy learning (such as evaluations, awareness towards learning in the implementing organisations), clearly show this.

In the less developed EU regions there is some degree of policy learning, but this considers rather narrow areas of policy making, which means that learning is not inherent in their regional economic systems and only sporadic positive learning examples can be mentioned.

In the Slovak Republic there are no National Innovation Plan and other consistent innovation policies. “Learning, feedbacks & consequences” are not very often used terms in making innovation and generally regional development policy in the Presov Region. It is more than clear that the region has to learn from the others in Slovakia and EU, how to implement those elements of the strategy implementation which could prove success. Participation in ProAct raised some awareness: the benchmarking results are likely to be used in future development because the study helped us to understand the current situation. Nevertheless, learning from foreign experience can have a great impact: the research-based spin-offs scheme originated after a visit by NADSME (National Agency for Development of SMEs) experts to the University of Twente in the Netherlands in 2000. The university and its high class business school offered education and research in areas ranging from public policy studies and applied physics to biomedical technology. The experts were particularly interested in activities supporting business and technology incubators. In the following year, the NADSME experts visited Israel and were impressed by the excellent business research infrastructure in this country. Following these visits, NADSME decided to hire an Irish consultancy firm to provide technical assistance and transfer of know-how for the Research-based Spin-Offs initiative in Slovakia. The Business and Innovation Centre in Bratislava also participated in the initial stages of the scheme.

Poor regional involvement and motivation in strategy formation *has been changing slowly* in Hungary: regional policy makers started to be more active and the central government also learned that the involvement of regions in regional plans is indispensable. Thus the *elaboration of new strategies* reveals a slightly different and improved practice. The practice of using surveys and studies to define the needs and impacts of programmes is evolving. When the Baross Programme started in Northern Hungary, there was no enforced policy on controlling the timely progress of projects. Since 2007, the implementing Regional

Innovation Agency controls if project implementation meets the set deadlines. All this reflects some elementary learning processes in Hungarian regional innovation policy.

It also needs to be mentioned that for Hungarian, Polish and Slovak regional policy spending the available funds is more important than seeing the results or networking (one of the reasons being, of course, the relatively young age of the institutions, which were established around EU accession in 2004). This and the lack of appropriate monitoring and evaluation systems hinder policy learning.

In more developed regions learning is taken rather seriously both at higher policy levels and at the level of implementing organisations. This is clearly reflected in the Vienna (Austria) case study: in the City lessons learned from results of assessments were inserted in the current (and continuous) debates concerning the development of the new innovation strategy. The first series of the competence-centre programme was evaluated critically, and the results of evaluation as well as other previous experiences were taken seriously by the implementing organisation ZIT, in which the awareness for learning also proved to be very high.

In Denmark knowledge is not located primarily in strategy documents or single persons, but in the entire network of associated competent employees and partners. There is a general trust in analysis and survey numbers, which helps fact-based policy making. The government gave priority to different kinds of analysis of innovation policies and re-structured the decision-making processes concerning innovation and the determination of innovation strategies and policies. To learn, Denmark always compares itself with the best performing regions of the world, which is in accordance with the regional performance. Nevertheless, problems are also critically highlighted, e.g. the case study mentions that “Denmark seems to be a remarkable example of the ‘European Paradox’ since research is of a high quality, but does not boost Denmark into the European innovation top”. Such a healthy critical attitude is an important pre-condition for policy learning to improve system performance. Or another example is when FORA made a survey among the companies in the North Jutland region with the intention to figure out how the companies evaluate the regional framework for innovation. The survey indicates three areas that the innovation policy needs to address. These areas will play a more important role in the future, and it is not just a slogan there.

From the South East England example we would mention that the region is rather cautious about the modern tools that assist policy learning. The analysis does not take it for granted that a policy intervention can directly improve the performance of a business, an industry or the regional economy as a whole. There are too many dependent factors to measure. Moreover, there is usually a time lag between the implementation of a new idea and a measurable result. One bright spot, which was noted in this study, is the use of case studies in programme evaluation reports and performance reviews to improve the innovation-supporting policies. The implementing agency SEEDA also does learn on purpose. Recently, programme managers have received training in ‘formative’ evaluations techniques; formative evaluations weave learning milestones into the duration of the project and are undertaken internally by SEEDA project managers.

An important conclusion from the ProAct benchmarking is that monitoring and evaluation activities should be taken much more seriously in the New Member States in order to properly inform policy about learning and performance improving opportunities. Evaluation also help to explore the occasional disaccordance between abstract strategic objectives and the more concrete innovation policy tools to fill in the gaps.

7.6 Financing is critical

When going through the practices proposed by the ProAct benchmarking framework, the case studies did show that good practices are not enough if there is no consistent funding available to finance innovation activities. In all ProAct case studies the issue of financing comes up: either as a major bottleneck or as an important enabler.

The city of Vienna (Austria) started to fund activities formerly dominated by the state. The universities by tradition are financed and supervised by the federal ministry responsible, and for a long time the municipality of Vienna did not really conduct an own policy concerning the higher education sector. However, given the current situation of rising awareness regarding the relevance of education, research, and innovation, the city of Vienna increases active support of universities. In order to improve and also monitor impact of budgets earmarked for research and innovation, an appropriate system of funding agencies is required. They act

independently within their respective work assignment, yet under supervision of control institutions and politicians responsible.

In North Jutland (Denmark) Aalborg is by far the most important player in the region, and the only municipality that is able to finance its own big projects. It is a conscious strategy to make sure, that regional innovation projects are initiated from several different institutes and authorities. Fragmentation of projects entails diversity, gearing and competition. A regional project will often generate grants from different funds. Furthermore, it has to be pointed out, that the individual programs, institutions and centers are going to be even more dependent on project-dependent funding.

In South East England funding for innovation is provided over a three-year corporate cycle, which brings substantial stability into the system. In Leiden (the Netherlands) positive developments started with financing that enabled funds for innovation in the 1990s. Research and innovation policy is derived from the national urban policy programme. This money is earmarked for developing the knowledge economy. However, only a small amount of money was used for the new innovation policy programme, the Living Lab, which is being developed by the stakeholders themselves.

In South Moravia (the Czech Republic) finding a stable financing mechanism is a crucial task for any regional innovation policy. It can be said that in South Moravia the main actors have during a short foundation period been learning to find and tune such a system. For the present, financing of innovation-related policy schemes is fluid and stable.

In Slovakia there were significant increases in public spending for R&D and innovations but most funds are allocated by the central government. Regional policy has the ambition to be independent but it still depends on national and EU policy, especially from the financial point of view. The structural funds are considered as the most important source of financing the development strategies and there is strong dependence on them. In the country there is no money allocated to the regional agency to fund the programmes.

In the Podkarpackie Voivodship (Poland) in the course of works on the diagnosis of the Regional Innovation Strategy, a list of 58 projects was prepared. They make up a Database of Innovative Projects which should be completed as a result of the implementation of RIS. This pragmatic project-oriented approach deserves a very positive acknowledgment. However, the RIS has no criteria for selection (evaluation) of projects, nor does it identify specific sources of funding for specific projects: the RIS has no funds of its own and relies primarily on EU funding. As a result, the projects which are actually implemented might not be mutually coherent, they might be selected in different locations and according to varied procedures, often based on distinct criteria. In many cases they are not mutually coordinated. The realization of the 'AERONET-Aviation Valley' CAT is the most advanced, as it is connected with the establishing of the consortium led by Rzeszow University of Technology, as well as with the dynamic development of the aviation industry in the region. However, none of the projects has been developed and submitted in full comprehensively. Individual elements are being implemented through realization of segmental projects that contain them.

Last, but not least, Northern Hungary elaborates detailed innovation strategies without having major funds for them. The only exception is the Baross Gábor programme, the funding of which was provided by the central government, but the projects of which were autonomously decided by the Regional Innovation Council. Even so, we cannot talk about fully-fledged regional innovation policy, simply because not enough funding is available. This also means that actual regional programmes – whether or not they are innovation-related – are not accorded with the strategic objectives. Finding solutions to the problem is not easy and unimaginable without arranging for the consistent funding of regional innovation.

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Annex 1: The ProAct Benchmarking Framework

The ProAct benchmarks and practices were found and finalised in a series of discussions. The benchmarks described are intended to contribute to the development of policy learning within a regional innovation systems framework. The benchmarks should not be treated as a set of practices that a region must achieve however. Policymaking is context specific and this process should be sensitive to historical, social, political and economic characteristics, which are unique to national and regional fabric.

Nonetheless, the authors and the ProAct network members suggest that this guide has been shaped by two principles:

- A greater number of the policy practices exist in mature regional administrations than in new and often less developed regional administrations;
- It is not necessarily an inferior policy if a policy practice does not exist or is incomplete. However, 'achieving the ProAct described practices', on the whole, can facilitate policy co-ordination and contribute to greater effectiveness in the formulation and implementation of regional innovation and research policies.

Every attempt has been made to simplify the identification of the practices. The intention of this benchmarking exercise is *not to evaluate* the substance of the policy practices but rather *to ensure the completeness* of the practices. Therefore, the benchmarking process proposes that a three point scale be used which will inform policy makers about the practice of regional policy making. The scales are defined as the following:

- (3) points are given if the practice is fully completed or if the practice extends to a full reach;
- (2) points are given if the practice is partially completed or not fully extended;
- (1) point is given if the practice is not observed or greatly under-performed.

The scorecard is not intended to be a quantifiable exercise but, rather, contribute to the current and future policy process. The benchmarks and the associated rankings can facilitate a dialogue among policy makers, stakeholders, industrialists, innovation experts, academia and other interested parties. This discourse can bring forth transparency to the policy making process and reveal areas which could benefit from targeted upgrading.

1. STRATEGY FORMATION

Strategy formation underpins what the region intends to accomplish and creates the themes and context which directs activities. Policies are identified and formulated during this first phase. It is this early stage that builds the underlying foundation for policy implementations and the associated programs and activities. There are six elements within the strategy formation process:

- i. Finding a vision
- ii. Stakeholder involvement and the consequences of this involvement
- iii. Co-ordination and facilitation of strategy development
- iv. The emphasis placed on innovation and research at the regional level
- v. Balancing EU / national / regional / local policy agendas
- vi. Managing risks and uncertainties

Within the six policy elements are a number of benchmarks, which can inform policy makers about appropriate policy practices.

1.1 Finding a vision

Does the region project a unique picture of the future? A vision of what the region may look like in the future may be described in policy documents, web-sites, or other media. The vision could possibly highlight the specialisation of the region and the opportunities which region would like to pursue. It is also telling if the design and development stages of the vision are revealed. Two open-ended questions can be asked which may identify both the vision and the design and development process:

- i. Is there a process for identifying regional specialisation? If there is a process, how does it work?
- ii. Is there a process for identifying new regional opportunities? If there is a process, how does it work?

Were any of the following management tools and techniques used to design and develop the region's vision:

- surveys,
- expert consultation,
- negotiation with neighbour regions / other policy makers,
- SWOT analysis,
- competitor analysis,
- other?

Benchmark 1:

economic boundaries of the region are considered in the vision and / or the main strategic directions

- (3) the practice exists if the main regional strategic documents:
- deal with economic spaces beyond the immediate region (also, if necessary, including global market forces); and
 - the anticipated development in all parts of the region is also considered.
- (2) the practice partially exists if the main regional strategic documents:
- consider only some parts of the economic space, i.e. there are important neighbouring region(s) that were left out when the region's vision and / or the main strategic directions was / were developed.
- (1) the practice does not exist if the main regional strategic documents:
- deal only with anticipated development within the region's administrative borders only.

Benchmark 2:

rigorous analysis is performed before the vision and / or the main strategic directions are found

- (3) the practice exists if:
- the regional strategy is based on studies developed by internal experts and/ or with the help of external experts. Both internal and external experts have experience in the topic; and
 - studies include elements which are relevant to the future development of the region. For example, this could include future business opportunities of the regional economy and drafted solutions to the main problems of regional development.
- (2) the practice partially exists if:
- the regional strategy relies on studies developed with the help of experts, who have proven experience in the topic they were contracted for, but;
 - these studies do not cover all the topics that are important for the future development of the region. Coverage of the studies is not sufficient if the studies cover a narrow range of issues.
- (1) the practice does not exist if:
- expert studies are not conducted before the regional strategy is drafted.

1.2 Stakeholder involvement

Stakeholder involvement is important for many reasons. Representative groups may have different viewpoints, support different strategies and visions of the future from a narrower section of the wider population. Regional policy makers can solicit these views using an array of actions. It is important to reveal the nature and scope of this involvement. Some leading questions can assist in this process:

- What are the different phases of stakeholder consultation in drafting the strategy?
- How long do these phases take?
- Which social groups, companies, experts, stakeholders from the region are contacted in the design process of the strategy?
- How is this contribution taken into account?
- What mechanisms are used to consolidate the different inputs?
- Are alternative strategies discussed?
- Are there safeguards to ensure that all stakeholder views are considered?

It is important that stakeholders are involved in the process but it is not necessary that policy makers accept all the views, which are espoused.

Benchmark 3: important stakeholders are involved in finding the vision and / or the main strategic focus

(3) the practice exists if:

- all the important stakeholders take part in the strategy design process; and
- their views have been taken into account in the regional strategic documents developed; and
- the main elements of the consolidated strategy are accepted by these stakeholders.

(2) the practice partially exists if:

- there are some important stakeholders, whose views are not taken into account; or
- some stakeholders were asked, but their views were not adequately taken into account.

(1) the practice does not exist if:

- stakeholders were not consulted, when the region's vision / strategy was drafted.

Benchmark 4: the vision / strategy is disseminated widely

(3) the practice exists if:

- all regional stakeholders and the general public are aware of the regional vision / strategy (e.g. it is accessible on the Internet or the strategy appears in the written and electronic media, etc.)

(2) the practice partially exists if:

- only some stakeholders in the region are aware of the regional vision / strategy

(1) the practice does not exist if:

- the majority of stakeholders are not informed about the reach of the strategy; or
- the strategy is not available to the public.

**Benchmark 5:
discussions on strategic options are effectively facilitated**

- (3) the practice exists if:
- there were public forums where all different strategic options were discussed.
- (2) the practice partially exists if:
- during the strategy design process, several strategic options emerged, but only a select number of the options were discussed
- (1) the practice does not exist if:
- The different strategic options were not discussed.

1.3 Coordination of and facilitating strategy development

It is important to know who takes the lead in the different phases of compiling the strategy and how it happens. Strategy development and the different roles may include the following elements:

- The roles of the different stakeholders in the process.
- Who compiles the different drafts of the strategy document?
- Are strategic tools used to develop objectives?
- What are the key indicators, which are associated with the strategic objectives?

**Benchmark 6:
the responsible parties acted in concert when designing the strategy**

- (3) the practice exists if:
- the different roles for the strategy design team were defined at the onset of the process;
 - the responsible parties agreed to a strategy design process.
- (2) the practice partially exists if:
- some of the roles were defined but some roles were unclear; and / or
 - the design process was not clearly stated.
- (1) the practice does not exist if:
- responsibilities and the design process were unclear.

**Benchmark 7:
accordance between the different regional economic strategic documents**

- (3) the practice exists if:
- objectives in the different strategic documents are aligned;
 - when someone reads the different strategic documents, the reader can identify regional priorities.
- (2) the practice partially exists if:
- regional objectives are more or less clear in the different strategic documents, but there are too many of them and there is no priority order between the objectives.
- (1) the practice does not exist if:
- the different (economic) strategic documents have different objectives and they do not overlap or the overlap between them is confusing; and/or
 - the objectives could oppose one another.

1.4 The emphasis placed on innovation and research at the regional level

The support to 'fresh thinking that creates value'²² is essential at the regional level policy design. In this respect the followings should be clarified:

- Innovation has a central position in the regional strategy.
- Stakeholders are aware of the importance of innovation.
- Focus of the regional strategy on specialisation and regional characteristics.
- The understanding that innovation is evolutionary in nature and thus the support for developing skills and capabilities is important (and probably more effective) than providing subsidies and other industrial development schemes.

Benchmark 8: innovation and research are at the centre of the regional strategy

(3) the practice exists if:

- innovation is emphasised in the regional strategic documents;
- innovation is a central theme in the key strategic documents.

(2) the practice partially exists if:

- regional innovation priorities are considered; but it is not the most important core theme;
- objectives are mentioned which have only a distant relationship with innovation.

(1) the practice does not exist if:

- innovation and research and development have no or only a nominal role in the regional strategy.

Benchmark 9: stakeholders understand the importance of regional innovation

(3) the practice exists if:

- stakeholders (including multi-nationals and SMEs) are aware of the role which innovation can play in economic growth;
- policy makers and other stakeholders recognise that social and political conditions can contribute to innovation (e.g. higher education and other institutions which support creativity, removing bureaucratic obstacles, financial incentives, etc.)

(2) the practice partially exists if:

- some stakeholders are aware of innovation but not all (e.g. SMEs are not).
- although some firms and higher education are innovative, policy makers do not support their innovative actions.

(1) the practice does not exist if:

- in the region there is no common definition about the role of innovation (e.g. it is narrowly defined, for example, to support only R&D or new scientific attainments, etc.); and/or
- stakeholders have only vague or no ideas about the role of innovation in regional economic prosperity.

²² See Richard Lyon's words in The Economist's special report on innovation, 13 October 2007 (p.4)

**Benchmark 10:
awareness for the need for regional specialisation**

- (3) the practice exists if:
- the strategy focuses on regional specialisations such as one or a few technology foci, sectors, a cluster or type of firm (e.g. support for locally owned SMEs).
- (2) the practice partially exists if:
- the strategy focuses on a broader set of regional objectives (e.g. support for the electronics industry in general etc.).
- (1) the practice does not exist if:
- the strategy does not recognize the need for regional specialisation (only general, not region-specific objectives are apparent).

**Benchmark 11:
emphasis on a regional 'flavour', the details and specific context of the region**

- (3) the practice exists if:
- the regional strategy incorporates a local profile or economic, social, and cultural identity (for example, the strategy identifies regional SMEs and universities or unique opportunities, regional technological expertise, etc.).
- (2) the practice partially exists if:
- most of the regional development strategy was designed with some elements of a regional perspective.
- (1) the practice does not exist if:
- the regional context is not included in the strategy.

**Benchmark 12
building capability and potential**

- (3) the practice exists if:
- in the strategy, there is a tendency to support competitive firms; or
 - the main objective is to build skills and capabilities.
- (2) the practice partially exists if:
- in the strategy, there is a tendency to support competitive firms; but
 - other social issues are equally important (e.g. support for deprived areas, subsidising traditional industries, etc.)
- (1) the practice does not exist if:
- the strategy focuses primarily on supporting survival of uncompetitive firms.

1.5 Balancing EU / national / regional / local policy agenda

Regional policies are embedded in a policy environment, which entails policy levels from above and below. Synergetic impacts are expected only if the different policy levels are aligned. It is advisable to clarify if:

- the different policy levels are in accordance and aligned; and
- regional efforts are likely to be supported at the regional level or not.

Certainly, there can be cases when the regional policy proves to be going in the right direction while the other policy directives from the other levels are not (or vice versa). Still, thinking and learning about potential frictions is useful.

Benchmark 13: mutual understanding between different policy levels

(3) the practice exists if:

- the goals from the EU / national / regional / local policy levels are closely aligned; and
- substantial synergies between the actions of the different levels are very likely to emerge.

(2) the practice partially exists if:

- in the strategy design process the EU / national / regional / local policy levels defined similar goals; BUT,
- the actions from the different levels are expected to differ.

(1) the practice does not exist if:

- the different policy levels have different aims which affect innovation and research policies and outcomes;
- no synergy is expected between the actions of the different policy levels.

Benchmark 14 regional policies are recognised at the national level

(3) the practice exists if:

- regional initiatives are apparent at the higher policy levels.

(2) the practice partially exists if:

- regional initiatives are not apparent at higher policy levels; or
- the regional initiatives changed at the higher policy levels.

(1) the practice does not exist if:

- regional initiatives (if any) get distorted on higher policy levels.

1.6 Dealing with risks in the strategy

Uncertainty is a key concept in innovation management and so it should be in the strategic management of regions. Therefore, it is advisable if the regional strategies leave room for flexible adaptation to an always-changing environment.

Benchmark 15: the strategy is flexible

(3) the practice exists if:

- the regional strategy deals with uncertainty (e.g. there are scenarios in the strategy); and/or
- the strategy is an orientation framework and the objectives can be adapted to the changing circumstances; and/or
- there are regular policy practices which are used to update the strategy.

(2) the practice partially exists if:

- there are occasional practices which allow the strategy to be updated; and
- in some cases the objectives can be adapted in response to unexpected outcomes.

(1) the practice does not exist if:

- the strategy does not analyse uncertainty or risk;
- the strategic objectives cannot be change for many years.

2. POLICY DEPLOYMENT AND IMPLEMENTATION

Policy deployment and implementation encompasses the region's practical responses to realise the stated vision and strategies. From an innovation and research and development policy standpoint, six elements are identified within the deployment and implementation process:

- i. Innovation and research policy programme and schemes of work
- ii. Governance
- iii. Networking practices
- iv. The way money goes
- v. Evaluations
- vi. Learning and feedbacks

Under each of the six policy elements are a number of benchmarks, which can inform policy makers of the appropriate policy practices.

2.1 Innovation and research policy programme and schemes of work

Innovation and research policy programmes and schemes of work should be in accordance with the main directions laid out in the strategy formation process. Orientating questions could include:

- Which regional research and innovation programmes were launched? E.g. incubation, strengthening university-industry links, science parks, innovation centres, etc.
- How and why were these programmes chosen? Are there any programmes that cannot be traced back to the prevailing strategy? If so, what is the rationale for these programmes?
- How would you describe the flexibility of the innovation-related programmes? Do they allow for flexible implementation or is it mandated that the programmes be strictly followed?

Benchmark 1:
strategic objectives and the innovation and research policies and programmes are in accordance

- (3) the practice exists if:
- innovation and research policies clearly promote the regional strategy (i.e. most of the programmes directly support the regional innovation process); and
 - the innovation policy objectives are being attained with the selected programmes.
- (2) the practice partially exists if:
- some of the innovation policy objectives are not being attained (or cannot be attained) with the programmes chosen.
- (1) the practice does not exist if:
- formal innovation and research programmes and work schemes are not widely introduced (e.g. the budget for such tools is low).

Benchmark 2:
flexibility in the programmes / schemes of work

- (3) the practice exists if:
- the strategic programmes and schemes of work can be adapted to social, economic and political changes (i.e. the programmes are not necessarily 'carved in stone'). Any change however, has to meet the stated strategic objectives;
 - the strategic policy guidelines (the strategic documents) provide only a frame for policy, which is implemented to meet real needs of the region.
- (2) the practice partially exists if:
- only some programmes can be adapted to any changes in the environment.
- (1) the practice does not exist if:
- programmes cannot be changed regardless of new developments.

2.2 The governance of implementation

In regions, which have demonstrated propensity for innovative behaviour, policy governance is embedded in a networked environment. Such a setting encourages an array of individuals, institutions, firms and other vested parties to participate in all facets of the strategy process. These policy stakeholders are contribute by providing new ideas and undertake programme responsibilities and evaluations. This policy governance recognises the role of the political theatre but is protected from political interference. Some key questions to consider include:

- How systematically are regional stakeholders contacted during the programming phase by the regional policy makers?
- Is there a tendency for political interference in regional development? If yes, what is the nature of this interference and what impact does this have on the policy process?

Benchmark 3:
supportive networked governance

- (3) the practice exists if:
- regional policy makers systematically keep in contact with stakeholders and those involved in implementing the policy.

- (2) the practice partially exists if:
 - regional policy makers keep infrequent contacts with stakeholders and those involved in implementing the policy;
- (1) the practice does not exist if:
 - there is no further contact between stakeholders and policy implementers once the strategy has been formulated.

**Benchmark 4:
independence in governance**

- (3) the practice exists if:
 - governance is completely independent of political interference: if there is a political change after general or regional elections, professional integrity remains central to on-going and future regional strategies.
- (2) the practice partially exists if:
 - governance is not completely independent of political interference: for example, if there is a political change at the regional, local or national level, personnel may change but on-going programmes will continue.
- (1) the practice does not exist if:
 - regional policy governance is dominated by political persuasion: personal (or even family) relationships are much more important than professional considerations.

2.3 Networking practices of the policy implementing organisation(s)

Not only should stakeholders be systematically contacted, the breadth and efficiency of networking are also important in the implementation process. The questions to consider are:

- Does the policy implementing organisation contact all the important stakeholders? Are neighbouring regions included in these discussions?
- Are there any procedures, which can resolve any potential conflicts between stakeholders?

**Benchmark 5:
effective policy assistance to the dialogue between stakeholders**

- (3) the practice exists if:
 - all significant stakeholder groups participate in the policy networking process; and
 - by facilitating regular dialogue between stakeholders, conflicts are resolved or avoided.
- (2) the practice partially exists if:
 - only some stakeholders take part in the dialogue; and/or
 - the dialogue between the stakeholder groups is only occasionally facilitated.
- (1) the practice does not exist if:
 - there is no dialogue between the different stakeholders; or
 - conflicts are not always satisfactorily resolved.

**Benchmark 6:
involvement of partner and neighbouring regions in programme implementation**

- (3) the practice exists if:
 - there is active collaboration with partner and neighbouring regions: for example, there are joint programmes and shared investments.

- (2) the practice partially exists if:
 - collaboration among partner and neighbouring regions exists, but these activities mostly entail discussions and dialogue: joint programmes and actions are not important.
- (1) the practice does not exist if:
 - partner regions do not co-operate in regional strategy activities.

2.4 The way the money goes

The financial support system is equally important for policy makers and the target audience. Even a very good strategy and supportive policy may have a low impact if appropriate resources are not in place. The financing mechanism of any regional innovation and research system must be comprehensive and transparent. Is the financial system for the regional programmes adequate? Once the money has been allocated, can it be easily accessed? Is the governance over the financial system appropriate for current and future programmes? These are the questions to consider.

Benchmark 7: appropriate financial governance

- (3) the practice exists if:
 - the financing of regional programmes is fluid (i.e. there are no obstacles or bottlenecks); and/or
 - the budgetary situation of the region is stable which contributes to programmes being financed.
- (2) the practice partially exists if:
 - while the budgetary situation of the region is stable, financing some programmes is not guaranteed.
- (1) the practice does not exist if:
 - programmes and projects are under-funded.

2.5 Ex-ante, interim and ex-post evaluations

The different uses of public money should be evaluated, even in those programmes which are complicated or the outcomes and impacts are expected to occur beyond the immediate delivery period. The following questions explore the evaluation practices:

- Are there regular independent ex ante, interim and ex-post evaluations of the programmes?
- How are the programmes evaluated (e.g. peer review, surveys, case studies, etc.)?
- To what extent is the evaluation independent? Who/which organisation performs the evaluation?

Benchmark 8: appropriate evaluations are in place

- (3) the practice exists if:
 - independent, regular and thorough evaluations of resource allocation and impacts take place; and
 - the results of the evaluations are disseminated to relevant practitioners, interested professionals and the public.
- (2) the practice partially exists if:
 - there are evaluations but they are either not independent, or frequent; and/or thorough;
 - the ex ante, or the interim, or the ex post evaluations are delayed or incomplete;
 - the dissemination of the results is not comprehensive or widely accessible.
- (1) the practice does not exist if:
 - evaluations, if they exist, are not independent and not regular; and not thorough;
 - the results are not available to key people, institutions or the public.

2.6 Learning and feedbacks

Openness towards learning and supporting the ability to learn are key approaches in the innovation process. Specific issues to raise with the implementing organisations include:

- Have the policy implementing organisations introduced procedures and practices which capture possible learning outcomes? If yes, please provide some examples. Does current implementing experience have an impact on future practices (for example has any implementation practices been affected from the advice attained from a previous evaluation)?
- What are the consequences of any evaluation? Do the evaluations have an immediate impact on practices?
- Are there any learning objectives within the policy implementing organisation(s)?
- Are there examples of mobility of personnel for learning objectives?

Benchmark 9: awareness of learning in the implementing organisation(s)

(3) the practice exists if:

- the implementing organisations are open to learning opportunities: e.g. encourages evaluation, self-assessments, takes part in brainstorming activities with external organisations on policy issues, etc.; and
- in general the implementing organisations do not block improvement initiatives.

(2) the practice partially exists if:

- not all implementing organisations are open to learning; or
- although the implementing organisations are open to learning; the pace of learning is slow which diminished the learning potential.

(1) the practice does not exist if:

- future improvements are less likely because there is no learning culture in the organisation.

Benchmark 10: monitoring and evaluation results are used in future policy activities

(3) the practice exists if:

- there are regular (ex-ante, interim and ex-post) evaluations and monitoring activities; and
- the results have an immediate impact on policy practices.

(2) the practice partially exists if:

- although evaluation and monitoring exercises are undertaken, these events are infrequent throughout the main regional policy instruments; and/or
- the results have little or no impact on policy practices (or only late impact if any).

(1) the practice does not exist if:

- the results of any evaluation or monitoring exercise (if they occur at all) are only used for final reports etc. and are not disseminated to the policy stakeholders.

Benchmark 11 continuous capability building

(3) the practice exists if:

- there are learning objectives that are continuously and appropriately set and accomplished.

(2) the practice partially exists if:

- there are some examples of learning, but the opportunity is not given to everyone (limited to some 'strong' people only or some parts of the implementing organisations etc.).

- (1) the practice does not exist if:
- there is no training and learning objectives within the agency.

Benchmark 12:
mobility of programme / project personnel for learning

- (3) the practice exists if:
- staff are encouraged to learn from other departments, agencies and other organisation through study leave, secondments, tours, etc.
- (2) the practice partially exists if:
- there are some examples of mobility, but a formal procedure does not exist (e.g. they are not general).
- (1) the practice does not exist if:
- personnel mobility is discouraged.

3. PRACTICES AT THE PROGRAMME LEVEL

Project management routines and procedures are commonly used to manage government programmes and projects. Project management techniques are often criticised as being overtly project-centric and focusing only on short term goals. Nevertheless, project management has emerged as the most popular approach among those policy makers that implement strategic programmes. Seven elements are proposed to benchmark at the programme level:

- i. Initiation and decision on programme
- ii. Transparency
- iii. Responsibilities and management
- iv. Documentation
- v. Monitoring
- vi. Auditing
- vii. Sharing programme experience

With each of the seven policy elements are a number of benchmarks, which can inform policy makers about appropriate policy practices. In this part, benchmarks can be given for:

- one programme (e.g. one that is analysed in the ProAct case studies); or
- the general programme level practices.

3.1 *Initiation and decision on programme*

Two issues are important at the earliest deliberation of programme activities:

- ensure that the programmes are in accordance with the strategy and policy;
- ensure that relevant stakeholders are informed about the orientation of the proposed tendering and project process.

Benchmark 1:
programmes are consistent with the regional strategy

- (3) the practice exists if:
- the programme can be traced back to the agreed regional strategy; or
 - the programme contributes to the realisation of regional strategic objectives.

- (2) the practice partially exists if:
 - the programme cannot be traced to the agreed regional strategy; but
 - it contributes to the realisation of regional strategic objectives.
- (1) the practice does not exist if:
 - programmes are not linked to the presiding strategy and did not contribute to the regional strategic goals.

**Benchmark 2:
stakeholders are appropriately informed before the start of the programme**

- (3) the practice exists if:
 - discussion took place between different stakeholders before the programme was drafted; and/or
 - the programme concept was introduced at regional stakeholder forums.
- (2) the practice partially exists if:
 - the programme idea was introduced without enabling substantive discussions; or
 - not all the stakeholder groups were informed.
- (1) the practice does not exist if:
 - there was no contact between the different stakeholders before the introduction of the programme drafts.

3.2 Transparency in the proposal calls and submissions

International organisations (the UN, Transparency International, etc.) strongly recommend that organisations receiving public money should be selected through an open competitive process (within a national framework of public procurement). The following information pertaining to the bidding process should be available:

- Which institution co-ordinates the tendering process and selection process? Describe these processes.
- What are the time frames for (a) proposal submission, (b) contract preparation and (c) any negotiated stages?

**Benchmark 3:
the principle of competition is upheld**

- (3) the practice exists if:
 - projects were submitted through a competitive bidding process (i.e. there are objective criteria and all potential proposers could bid).
- (2) the practice partially exists if:
 - although formally the process was competitive, there were some (administrative) barriers, which could exclude potential bidders (e.g. size limit, turnover limit, minimum number of PhDs, etc.); or
- (1) the practice does not exist if:
 - the process was not competitive and the implementing agent was selected by another mechanism.

**Benchmark 4:
appropriate timing of calls**

- (3) the practice exists if:
- sufficient time was given to all phases of the bid process, (e.g. between drafting and issuing the calls, proposal submission deadlines, contract and project start times, etc.)
- (2) the practice partially exists if:
- sufficient time was given to some phases but not to all the phases;
- (1) the practice does not exist if:
- insufficient time was given to the entire process.

3.3 Responsibilities and management

Good practices in programme management are reflected in reasonable administration duties, time management principles and appropriate human resource management. Questions to pose are:

- Are the administration duties of the programmes extensive? Are the related administration costs high or low (reasonable)?
- Is there a policy on the time management of programmes?
- Did the programme implementing agent employ competent individuals to implement the programme?

**Benchmark 6:
reasonable administration duties**

- (3) the practice exists if:
- the firms' (the receiver's or the programme's other target audience's) costs of administering the programme were reasonably low; and
 - public administration of the programme was efficient.
- (2) the practice partially exists if:
- the firms' (or other target audience's) costs of the programme were low but public administration was not efficient for some reason; or
 - the firms' (or other target audience's) costs of the programme were high but public administration was efficient.
- (1) the practice does not exist if:
- there were significant and unjustifiable administration duties reflected also in high costs against total programme budget.

**Benchmark 6:
programmes/ project met time targets**

- (3) the practice exists if:
- there are effective policies and/or regulations related to project time management issues; and/or
 - the programme was implemented as scheduled (without unjustifiable delays) and the organisation responsible for implementing the programme played a positive role in the timely delivery.
- (2) the practice partially exists if:
- there was no policy and/or regulation on project time management or it was not effective but the programme was implemented as scheduled; and/or

- although the programme was implemented as scheduled (without unjustifiable delays), the policy organisation in charge of the programme played a neutral or negative role in the timely delivery.
- (1) the practice does not exist if:
- there was no policy on time management; and/or
 - the programme was not implemented as scheduled (there were unjustifiable delays), and the organisation responsible for the programme hindered the timely delivery.

**Benchmark 7:
appropriate human resource management**

- (3) the practice exists if:
- competent individuals were employed to manage and implement the programme/ project based on skills and experience criteria.
- (2) the practice partially exists if:
- some individuals are competent, but many others are not.
- (1) the practice does not exist if:
- the programme did not employ appropriately skilled personnel.

3.4 Documentation

Taking responsibility and being accountable for policy actions implies a level of reliable documentation of the course of events. However, regional innovation and research policy support should not be overly bureaucratic. Clear and concise documentation is important when it comes to evaluation, audits or other assessments of policy performance. How is the information management system organised? Which means of communication are used for documentation? Upon request, would it be possible to present all the documents related to the programme so that every important step of programme implementation is apparent to the general public?

**Benchmark 8:
appropriate documentation procedures**

- (3) the practice exists if:
- procedures are in place for documents to be made available and these procedures are easy to follow (e.g. the documentation system enables timely continuation of the programme even if the people in charge of the programme change position / job);
 - there is an archive policy ensuring that documents can be preserved and read for a specified period upon completion of the programme.
- (2) the practice partially exists if:
- documentation procedures are in place but these procedures are difficult to follow or they are not effective; or
 - the documentation of some actions was good (e.g. ensuring that documents can be preserved and read for a specified period) but that of the others bad.
- (1) the practice does not exist if:
- there are no documentation procedures in place.

3.5 Monitoring

Monitoring the progress of programme and projects is an important source of management information, which is indispensable for the governance of regional strategies. In this framework, the term monitoring means 'an eye to ensure that processes are on the right track'. Effective monitoring mechanisms should pick up on any problems and the programme has a better chance of correcting any problems if issues are raised early. Relevant questions are: is monitoring a regular practice? If yes, what happens to the results of the monitoring exercise? Do they feed into the higher policy levels? What happens if unfavourable trends emerge?

Benchmark 9: functioning monitoring mechanisms are in place

- (3) the practice exists if:
 - there are regular (not necessarily formal) monitoring systems in place; and
 - modification of the programme are introduced when monitoring results identify any divergence from the objectives.
- (2) the practice partially exists if:
 - a monitoring system is in place but the results are not used to modify programmes; or
 - monitoring was undertaken for some but not all programme activities; or
 - monitoring was undertaken for some but not all programmes.
- (1) the practice does not exist if:
 - no monitoring systems are used

3.6 Audit

Like evaluations and monitoring exercises, audits are an important constituent to ensure the accountability of regional innovation and research projects. Organisations, which undertake audits, should be independent.

Benchmark 10: audit systems are in place

- (3) the practice exists if:
 - programme audits take place; and
 - there are or would be consequences of audits.
- (2) the practice partially exists if:
 - there are programme audits but no consequences take place;
 - for some programmes audits take place while other programmes do not implement audits.
- (1) the practice does not exist if:
 - there are no programme audits.

3.7 Sharing project / programme experience internally and externally

Organisational learning is ineffectual without appropriate feedback. Feedback from the results of evaluations, monitoring exercises and audits can motivate programme planners and implementing agents. Discussing these results openly not only contributes to the transparency of the policy and programmes but it is also a dissemination tool: it helps to spread the practice of networking. The questions, which can help uncover these processes are:

- Are the results of evaluations, monitoring exercises and audits discussed within the implementing organisation? Are they discussed in public forum? Are the programme results disseminated? If yes, how?
- How can the contact between the policy officer and the contractor be described? Is it a formal relationship (roles are predefined) or a more proactive relationship (continuous dialogue, equal partners in the process, etc.)?

Benchmark 11:
the results from evaluations, monitoring exercises and audits are available to the wider public

(3) the practice exists if:

- evaluation, monitoring and audit results are disclosure with relevant agencies; and
- they are available to the public.

(2) the practice partially exists if:

- only some results from evaluations, monitoring exercises and audits reach the public; or
- although disclosure of the evaluation, monitoring and audit results took place, all the results did not reach the interested public (but e.g. only a few distinguished people); or

(1) the practice does not exist if:

- there are no evaluations, monitoring exercises and audits, or;
- evaluation, monitoring and audit results (if they exist) reached only the contractor policy makers or the higher level policy makers and are not available to the public.

Benchmark 12:
proactive interactions between project officers and contractors

(3) the practice exists if:

- there were regular interactions between project officers and contractors; and
- the interactions contribute to the realisation of the programme / project.

(2) the practice partially exists if:

- there are occasional interactions between project officers and contractors (e.g. for some of the programmes/projects it works, for others it does not); and/or
- the discussion did not contribute to the realisation of the programme / project.

(1) the practice does not exist if:

- regular interactions did not take place between project officers and contractors (e.g. contacts were highly formal).

Annex 2: The list of ProAct case studies

The city of Vienna in a dynamic regional environment (*Josef Hochgerner, Thomas Berndt*)

Regional innovation policy in South Moravia (*Jiří Loudín, Adolf Filáček, Michal Kostka, Magdaléna Šedová, Kateřina Tydláčková*)

Regional Development and Regional Research and Innovation Policy in Denmark (*Peter Lindgren, Henrik Dam, Carsten Bergenholtz*)

Walking in others' shoes: regional research and innovation policy practices in Northern Hungary (*Attila Nyiry, Dénes Antal, Balázs Borsi, Gábor Papanek*)

From Science Park to Living Lab, Research and Innovation Policy in Leiden (*Wouter Mensink, Bernhard Katzy*)

Regional Development and Regional Research and Innovation Policy in Poland (*Jacek Szlachta, Wojciech Dziemianowicz, Janusz Zaleski, Teresa Pasterz, Dariusz Wyrwa*)

Regional development and innovation policy in Slovakia with focus on Presov Self-Governing Region (*Branislav Kolenka, Viliam Duras*)

Benchmarking Regional Innovation Policy: South East Programme for Innovative Actions (SEPIA), South East England Development Agency (SEEDA) (*Howard Rush, Jeff Readman*)

Annex 3: Multivariate analysis with NUTS-2 level data

The statistical analysis in Chapter 2.2 relies on the Eurostat's regional statistical database. Data of 284 NUTS-2 regions were used, but only 140 regions had all the data. Most data were from 2003-2005, but sometimes 2001, 2002 and 2006 data also had to be used. The table below summarises the main descriptive statistics of the database.

Table 33

Basic properties of the European NUTS-2 level regional database

Variable	Number of data available	Arithmetic mean	Minimum	Maximum
R&D expenditures (% of GDP)	205	1,31	0,02	8,70
Total R&D personnel (% of total employment)	201	1,30	0,06	4,52
Population with lifelong learning (% of 25-64 age class)	253	10,0	1,0	30,1
BERD / GERD %	200	53	0	100
HERD / GERD %	185	31	0	84
Employment in agriculture (%)	264	7,1	0,5	49,8
Employment in high-tech services (%)	257	4,1	1,0	11,5
Employment in manufacturing industries(%)	276	17,7	5,0	36,2
Population density (persons/ square km)	283	365	2,2	9210
Unemployment rate (%)	269	8,95	2,50	30,10
Change in population density 2000-2005	283	1,01	0,94	1,10
Patent applications to the EPO* (per mill. of inhabitants)	238	50	0,10	381
GDP in Euro per capita	276	20899	1942	71338
Cumulated growth of GDP 2000-2004	269	1,20	1,00	1,67

* by priority year

Source: computations by Borsi from Eurostat data

To see the basic structure in the data, a principal component analysis was performed was first. Five principal components resulted and these components explain 75% of the total variation in the basic data. The components explain well the statistical relationships between the variables as shown in the correlation matrix below.

Table 34

Correlation matrix of the rotated principal components and the original variables

Variable	Component				
	1	2	3	4	5
R&D expenditures (% of GDP)	0,75	0,30	0,24	-0,05	0,30
Total R&D personnel (% of total employment)	0,86	0,11	0,36	0,01	0,03
Population with lifelong learning (% of 25-64 age class)	0,77	-0,18	-0,09	0,25	0,15
BERD / GERD %	0,15	0,84	0,07	0,14	0,26
HERD / GERD %	-0,23	-0,77	-0,24	-0,04	-0,16
Employment in manufacturing industries(%)	-0,21	0,76	-0,15	-0,08	-0,17
Employment in agriculture (%)	-0,12	-0,25	-0,69	-0,29	-0,18
Employment in high-tech services (%)	0,47	0,30	0,65	-0,01	-0,05
Population density (persons/ square km)	0,07	-0,18	0,83	-0,04	0,09
Unemployment rate (%)	-0,13	-0,19	-0,01	-0,88	0,10
Change in population density 2000-2005	-0,01	-0,10	0,08	0,84	0,14
Patent applications to the EPO* (per mill. of inhabitants)	0,19	0,36	0,08	0,13	0,61
GDP in Euro per capita	0,37	0,03	0,30	0,47	0,63
Cumulated growth of GDP 2000-2004	-0,05	0,03	-0,04	0,10	-0,90

* by priority year

Source: computations by Borsi from Eurostat data

Nevertheless, principal component analysis requires all data be present in the database, which means that the table above is based on the data of 140 regions only. To handle missing data, we turn to cluster analysis, an exploratory data analysis tool with the help of which we can sort the different regions into groups in a way that statistical similarity between two regions is maximal if they belong to the same group and minimal otherwise.

First, we distinguished the outlier regions for each of the variables i.e. we separated all those regions, for which any of the variables was extremely high or extremely low. Then a k-means cluster analysis was run ($k=6$). This way six groups of the 50 regions could be identified. They constitute group 1,2,3,7,8 and 11 in Chapter 2.2.

Second, a k-means cluster analysis ($k=5$) was run for the remaining 90 regions for which all the data was available.

Third, a tricky step came to classify some of the remaining 144 regions. Using the 11 groups of regions that resulted, the standard deviation was computed for each of the variables within the 11 groups. Adding or subtracting the standard deviation from the group mean defined upper and lower bounds for each variable for each region group. Then, we checked region by region that how many of the existing variables fall within the upper and lower bounds of the groups. If for a given region a sufficiently high number of its variables fell within the group's 'statistical boundaries', it was joint to that group. What is sufficiently high? It was decided one by one, but in general, if much more than half of the region's available variables fell within one group, then we decided to leave it there (e.g. Brandenburg Südwest (Germany) had 13 variables, of which 11 fell within the upper and lower bounds of the eighth group, and only 5 fell in the fifth group etc. so we decided that Brandenburg Südwest should belong to group no. 8).

This way was an additional 56 regions could be classified, which means 196 out of the 284 NUTS-2 regions.

This report is the summary of the work and series of consultations in the ProAct network. It is a practice-oriented writing with the aim to describe the good practice processes associated with

- (i) strategy formation,
- (ii) policy deployment and
- (iii) the practices at programme / project level.

Every regional decision maker has day-to-day relationship with at least one of these three levels of policy making. With this publication our aim was to contribute to policy learning, to initiate further debates and to encourage new studies in these fields, because – if done well – regional innovation and research policy can greatly increase the competitiveness and wellbeing of Europe.

If interested, please visit also www.proact-network.net for free downloads of the case studies behind this report and the ProAct Online Benchmarking Tool and many more!

www.proact-network.net



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