

Deliverable 20

Public



EURO-COOP

***(Regional Innovation Policy Impact Assessment and Benchmarking Process:
Cooperation for Sustainable Regional Innovation)***

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Work Package 4: Conclusions, policy recommendations and benchmarking

Deliverable 20: **Report on the benchmarking process for regional innovation strategies and policies**

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1 Introduction

EURO-COOP is one of eight projects which are funded under the 6th Framework Programme for Research and its special programme on Regional Innovation Strategies, including new tools and approaches, under the strand for innovation policy impact assessment and benchmarking at the regional level. All of these projects aim at developing an innovation policy impact assessment system to improve the measurement of various impacts of innovation policy-making at the regional level. In each project, several regions take part in the development and implementation of impact assessment methods and benchmarking indicators. The work undertaken in EURO-COOP will contribute to the objectives of the eight projects but will additionally focus specifically on the needs of the regions that take part in the project.

The regional dimension

“The notion that regional factors can influence the innovative capacity of firms has led to increasing interest in analysing innovation at the regional level. Regional differences in levels of innovation activity can be substantial, and identifying the main characteristics and factors that promote innovation activity and the development of specific sectors at regional level can help in understanding innovation processes and be valuable for the elaboration of policy” (Oslo Manual, §116).

Indeed as a parallel to national innovation systems, regional innovation systems have been developing, and it has been argued that we are witnessing a regionalization of innovation policy (see special issue of Research Policy devoted to the regionalization of innovation policy, Research Policy 34, 2005). This is why EURO-COOP involves nine European regions: Vienna, West-Transdanubia, Bratislava, Paris, Lublin, Warsaw/Mazovia, Tartu/South-Estonia, Manchester and Berlin.

Four of these regions are from the 'old' Member States to the European Union, and five are located in the New Member States. Three regions have previous or current experiences with the RIS/RITTS methods which were or are applied in their regional innovation policy (Berlin, Bratislava and Tartu). All of the regions have regional innovation strategies in place (with the exception of Warsaw/Mazovia region which is currently developing an innovation strategy) and are in the process of evaluating the impacts of the policies set out in their respective strategies.

The project's basic assumptions

Research on innovation has given rise to many theoretical approaches. Although it is not our purpose here to engage in a theoretical discussion, it is legitimate to make our basic assumptions clear. The innovation theory followed by the EURO-COOP project is broadly-speaking a combination of the *evolutionary* and *systems of innovation* approaches. The evolutionary approach views innovation as a path-dependent process whereby knowledge and technology are developed through interaction between various actors and other factors; the patterns of interaction affect the future path of economic change.

Closely linked to the evolutionary approach is the systems of innovation approach. This “studies the influence of external institutions on the innovative activities of firms and other actors. It emphasises the importance of the transfer and diffusion of ideas, skills, knowledge, information and signals of many kinds. The channels and networks through which this information circulates are embedded in a social, political and cultural background that guides and constrains innovation activities and capabilities. Innovation is viewed as a dynamic process in which knowledge is accumulated through learning and interaction” (Oslo Manual, §96).

The objective of Deliverable 20 is to report on the development of a benchmarking process of innovation strategies and policies. Data and findings between the different partner regions (and also among the wider group of regions participating in this pilot action) will be compared in order to get a broader understanding of the situation in the regions. The regions will analyse, on the basis of the benchmark findings, the underlying reasons for the different performances to be able to identify successful policy measures and good practices. The benchmarking process has the aim to lead to cross-fertilisation and mutual learning processes. Generally, the benchmarking process developed in this project will constitute the basis for larger European-wide innovation policy benchmarking exercises which build on a strong bottom-up momentum (participation of key regional institutions and actors).

2 Benchmarking in Innovation Policy-making – a literature review¹

With the rise of ‘new public management’ – one of the several modes of governance where governance is linked to the paradigms of efficiency and effectiveness associated with the market economy (Berger, 2003) – public sector performance management and/or benchmarking has also advanced (Groenendijk, 2004). The basic idea behind public sector benchmarking is also ‘learning by comparing’ where comparisons should be used to “enhance the quality of policy making” (Lundvall & Tomlinson, 2002, 2003). The policy lessons learned from one system, administrator or sector should then be

¹ Adapted from EUROCOOP working paper, Berger, G, 2005, Benchmarking for Innovation Policy-Making – A literature Review; <http://www.iccr-international.org/euro-coop/literature/papers.html>

transferred to another system, administration or sector (Dolowitz&Marsh, 2000). Therefore, public sector benchmarking is closely related to 'policy transfer'.

As defined by Kaiser & Prange (2004a), the Open Method of Coordination (OMC) in innovation policy is based on continuous benchmarking of national or regional innovation policies and R&D policies against the best performers (i.e. major competitors) in the world. Subsequently, benchmarking serves two purposes.

1. To identify specific needs that exist for individual Member States, regions or industrial sectors (horizontal dimension). In order to overcome existing deficits, benchmarking also refers to best practice examples that have been successfully implemented elsewhere. The dissemination of best practices is supposed to take place through a process of mutual policy learning organised at the European level. The Mutual Learning Platform (MLP) which is organised by the European Commission is an example of this horizontal dimension.
2. On the basis of benchmarking results, the Member States or regions may agree on common European guidelines which have to be translated into specific targets for national and regional innovation policies (vertical dimension). The whole process is accompanied by periodic monitoring, evaluation and peer review pursued under the auspices of the European Commission.

Kaiser & Prange (2004a) argue that the European Commission is primarily engaged in the establishment of a framework for dialogue, coordination and benchmarking while the Member States are responsible for the creation of 'internal' coordination mechanisms. This involves horizontal coordination between the respective ministries, and vertical coordination between the national and sub-national levels. Therefore, regional and local actors are only indirectly involved in the coordination process.

The various sets of benchmarking indicators for innovation policy, like the European Innovation Scoreboard, give little sense of alternative patterns of socio-economic development and trade-offs. Room (2005) points out that the language used is that of "laggards catching up with leaders, with the assumption that those leaders hold out the future to which the laggards must adjust". However he argues that there would seem to be no reason why the selected benchmark indicators should not be used to reveal the trade-offs among the outcomes and, therefore, "a variety of possible futures". What is more, as Lundvall & Tomlinson (2002) point out, there is a tendency in innovation benchmarking in the EU to point to the USA and Japan as the leaders and Europe as the laggard. They argue that dubious and ad-hoc arguments are used to diminish the importance of the good innovation policy performance of smaller EU countries (like Finland or Sweden): "Analysing the systemic features of the small European and welfare-oriented countries may actually be more fruitful than attempts to catch up with the US."

(Lundvall&Tomlinson, 2002, 227). Generally, too much copying from best performers may be problematic having in mind that innovation policy-making should be characterised by 'innovation' rather than 'copying'. As Room (2005, 124-125) puts it: "Diversity rather than imitation is likely to be more productive of future innovation. (...) An approach to benchmarking and indicators which stresses alternative futures and political choice may therefore not only avoid the unthinking embrace of a single future, it may also promote the dynamism and innovation on which the knowledge-based new economy depends."

The problem with benchmarking in innovation policy is:

- The experiences with benchmarking innovation policy-making over the last years have shown the highly differentiated nature in the Member States and/or regions which can hardly be assessed by quantitative data alone.
- Consequently, innovation policy benchmarking still suffers from a **lack of qualitative indicators** (Kaiser&Prange, 2004b). This was also acknowledged by the European Commission (2001).
- Additionally, as Room (2005, 125) argues, the benchmarking indicators chosen for the process of a knowledge-based economy are "remarkably static". He suggests that indicators which can capture the dynamic change on the level of the firm and the specific spatial locality are needed, like ICT investment, human skills, organisational change or entrepreneurship. These would be so-called 'third generation' indicators of innovation, based on interactive chain-linked models of innovation, involving feedback loops and organisational as well as technological change.

The solution of problems with benchmarking is now called '**intelligent benchmarking**' (Lundvall&Tomlinson, 2002; European Commission, 2001). This means that benchmarking is about to adopt a systemic perspective. Thus benchmarking "should not be seen primarily as a narrow technical procedure focusing on comparing quantitative data" (Lundvall&Tomlinson, 2002, 223). Its rational should be that it focuses attention on

- the efficiency of a system;
- stimulating reflection, and thereby
- supporting learning among those involved.

This means that "benchmarking innovation systems, learning effects and social cohesion involve the development of more reliable indicators for the quality and intensity of relationships, interactions and networks" (Lundvall&Tomlinson, 2002, 224).

With this systemic perspective, benchmarking is to be extended in two directions: Firstly, it needs to look at all mechanisms which have an impact on innovation and research policies (e.g. public programmes, education and research systems, financial structures, etc.). Secondly, it will incorporate the wider policy framework and context. Lundvall & Tomlinson (2002, 209) point out that "the context – defined in its economic, technical, geographical, historical and cultural dimensions – has a great influence when it comes to determine what is a best practice way of doing things".

Kaiser & Prange (2004a, 254) argue that "such a benchmarking model seems more appropriate to reflect the context-specific character of successful practices in innovation policy. However, it will also disclose that best practices are often based on specific local conditions and on specific modes of interaction between innovation organisations. This could constitute a strong argument in favour of a bottom-up benchmarking process in which organisations, local clusters or industrial sectors compare themselves with other respective units".

As brought forth by Room (2005) this process may need to be accompanied by '**benchlearning**' which involves the exchange of narratives, case studies and 'stories' which integrate qualitative and context-related indicators into coherent accounts of how change practically occurs. These narratives are in part intuitive, they embody a range of tacit knowledge, they recognise complexity and unpredictability, they tap into specificities of national and regional context and the path dependencies these involve as well as strategic choices being made by different policy actors.

3 What are we trying to benchmark?

The RIPIA method (see Deliverable 16, Comprehensive *Regional Innovation Policy Impact Assessment scheme*, for full details), is a four-stage method to assess the impact of innovation policy. It proposes to carry out benchmarking during the last (4th) Stage of the assessment.

3.1 The RIPIA method of impact assessment

A 'Regional System of Innovation' ('RSI') has many actors and stakeholders; and a regional innovation policy has many effects, direct or indirect, in the shorter or longer term. Any impact assessment has to be aware of these possibilities. Also evidence suggests the importance of more intangible and fuzzy issues - communications, relationships and mutual learning between stakeholders – for the system of innovation.

Therefore the RIPIA method aims to provide a route map and working tools for investigation as against a simple fixed answer to the question of 'impact assessment'. This helps explore the regional innovation agenda, the critical paths of causes and effects, the relationships of stakeholders, the qualities of governance, and the 'organization / regional learning' capacity as a foundation for the innovation process.

RIPIA method is designed as a flexible set of steps with a series of templates and graphic aids. It is compatible with the 'rational management' logical framework approach of objectives, inputs and outputs, where this is relevant. It provides a basis for benchmarking and comparison as far as possible, by identifying common and measurable issues among many other issues which are more fuzzy and intangible.

3.1.1 RIPIA 4 - stage process

The RIPIA method has 4 main stages, each with a series of steps:

- Stage 1 – '**baseline**' is concerned with scoping the boundaries and context, identifying the regional profile and innovation agenda, and defining the relevant parts of the 'regional system innovation' (RSI).
- Stage 2 – '**policy analysis**' - applies the 'logical framework' or rational management approach, across the relevant policies, programmes and projects.
- Stage 3 – '**extended analysis**' - extends the logical framework approach with network analysis, path analysis and others, with a variety of methods.
- Stage 4 – '**feedback**' - reviews the implications of the assessment, with feedback to actors / sectors and benchmarking for policy development.

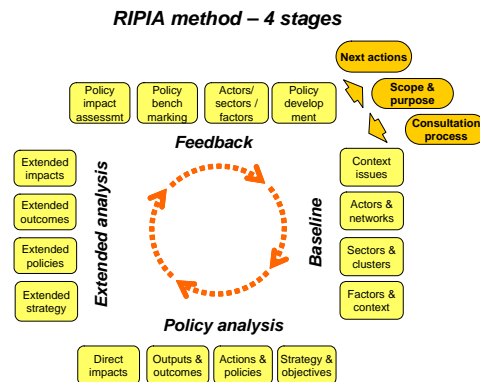


Figure 1

The method also follows 5 main themes or perspectives on the Regional System of Innovation:

- **Context:** the economic, political, technological profile of the region, with performance measures and benchmarks where possible
- **Actors:** institutions, networks, governance structures, and their relationships and interactions.
- **Sectors:** the particular issues in the structure of the industry, cluster or technology.
- **Factors:** other socio-technical issues such as I.P, legal, financial, infrastructure issues
- **Actions:** the strategy, policy, programme or project to be investigated.

At the core of the RIPIA method is the Stage 3 ‘extended analysis’ approach (**figure 2**). This builds on the linear model of the logical framework, to investigate the wider range of causes and effects which are generally more complex, fuzzy, intangible, indirect, upstream and downstream. We call this an ‘approach’ as it is not a fixed text book method and is a more flexible way of thinking - investigation, analysis, benchmarking - which is responsive to the situation. There are 3 main features of this approach:

- Policy causal analysis: this sets out a wide range of possible cause-effect chains, and then prioritizes the most significant risks or opportunities.
- Emergent system investigation: this looks for 'emergent' behaviour across a wider system, such as collective learning and cooperation.
- Policy opportunity benchmarking: this compares the cause-effect chains with 'opportunities', from best practices, scenario studies, and policy innovation work. With this the assessment can be framed in positive terms of creativity and opportunity.

With these in mind we focus on the 'policy impact', i.e the results of interventions from the public sector, (although in practice this often involves a complex set of statements and decisions). We can summarize an often long pipeline in four basic stages:

- Strategy and objectives: a generalized intention or discourse which may be more or less formal.
- Policies, programmes and projects:
- Inputs and outputs: the direct resources and results of the policy / programme / project
- Outcomes and impacts: this is the final focus of the method, and as far as possible compares the effects of policy-on / policy-off.

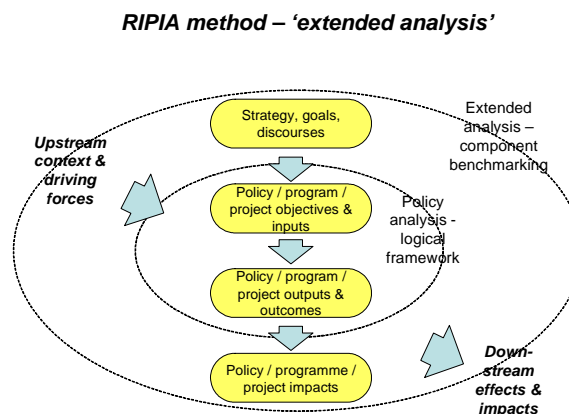


Figure 2.

3.2 Stage 4 of the RIPIA process

This stage takes the assessment result into a policy-focused benchmarking frame. It compares the 'impacts' against policy 'opportunities / best practices', and so provides feedback to future development of policy and monitoring systems.

RIPIA makes a number of considerations on indicators of benchmarking. There is a major challenge for benchmarking, i.e. the systematic comparison of indicators for the purpose of policy learning and development. Every region is unique, and policy generally has many possible effects and stakeholders, as discussed above. So it is not so useful to compare simple indicators which are the focus of the EIS and similar databases.

Take the indicator for '*patents per 1000 population*': there may be many contingent factors which influence this factor 'upstream', e.g. the '*centralizing structure of large firms*'. There may be many other factors which are influenced by this 'downstream' – e.g., the '*regional retention of larger firms*'. It can be difficult to find simple indicators for some of these factors, but they are at least as important as other factors which are lucky to have simple indicators.

Therefore to understand and assess the full impact of policies and programmes, and to monitor and benchmark their performance and effectiveness, we have to work within a wider framework. This should be based on the 'extended logical framework' analysis, which is the core of the RIPIA method.

The proposed benchmarking framework is shown in the table and figure below. The vertical axis shows the 'logical framework' steps as in the main method above. The horizontal axis shows the 'upstream – downstream' dimension, from the underlying driving forces, to the other factors which are influenced by the steps of the policy.

Table 1: Benchmarking framework

UPSTREAM FACTORS	POLICY LOG-FRAME	DOWNSTREAM FACTORS
underlying factors which drive the 'agenda' and the objectives	Objective / targets	other factors which are downstream of the objectives
factors driving the inputs	input indicators	other factors which are influenced by the inputs
factors which influence	output indicators	other factors which are

the outputs		influenced by the outputs
factors which influence the outcome	Outcome indicators	other factors which are influenced by the outcomes
factors which influence the impact	impact indicators	other factors downstream of the impacts
factors which influence the indirect & longer term	indirect & longer term effects	other general factors downstream

3.3 Our definition of benchmarking

In undertaking the benchmarking exercise it is imperative to break-down the broad regional system of innovation into measurable or specific components. In the case of the RIPIA model, the RIS has the following components – context, actors, sectors, factors, action. A more detailed template providing a summary to these components is provided in the annex.

But before undertaking a benchmarking exercise in order to compare regions, it is also important to start with internal benchmarking. As internal benchmarking helps in assessing how the region is performing against its own objectives. Only then does it make sense to compare oneself with other regions which are comparable or in other words as Papaioannou (2006) puts it with ‘people like us’.

3.3.1 Start with ‘internal’ benchmarking

EURO-COOP is not about ranking the performance of all regions in a simple, scoreboard-type way. It is about comparing **the region’s own objectives** (at the start of a policy phase) with **its achievements** (at the end).

Example: **Berlin; general innovation policy**

Type of policy/programme	Berlin's regional innovation policy focuses on developing its USP in science, technology and enterprises in its existing ‘fields of competences’. There are at least 11 programmes for support of RTD. Policy instruments include competence field building, technology-transfer activities, spin off and entrepreneurship support, network support and support for young firms. Monetary support includes funding basic
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	research, funding industry-science projects and qualification improvement.
Objectives	<p>Innovation development targets: implementation and upgrade of national and international competitive centres of competence; development and utilisation of innovation enabling technologies</p> <p>Challenges addressed: Job creation, raising R&D intensity, raising regional and international competitiveness, improving economic growth</p>
Inputs	Several funds and funding sources such as the Berlin Investment bank funds, German research foundation, structural funds and so on.
Outputs	<ul style="list-style-type: none"> - about 40% of companies in Berlin innovate - within biotechnology sector firms developed better than German average - growth rate in employment and start-up activity in the 'field of competence' - strong linkages between university, research institutes and firms specially in the high-tech sectors such as biotechnology -generally growing regional knowledge transfer and technology transfer activities -improvement in skills and labour qualification
Outcomes	At the cluster level for example the biotechnology cluster regional cooperation was extremely successful as also trans-border cooperation; outcome of RIITS is not very clear; for most experts innovation is of highly relevance for the region, but actual importance reflected by actual policy measures, financial and personal engagement of all relevant actors, public attention and awareness seems not sufficient, awareness of the 'Quadriga' process is still low

Source: Berlin Summary template

3.3.2 Then compare comparable regions (not apples and pears)

It will be meaningful to compare similar regions, either based on similar economic sector/clusters, degree of development, GDP, population, and so on. While benchmarking, the criterion for selecting regions in order to compare apples with apples and not apples with pears is a crucial step. Take the case of Mazovia for example, it has a capital city Warsaw and the rest is rural area. Thus is it fair to compare it with other metropolitan regions? Similarly Paris which is a metropolitan city has the advantage of a well-developed financial market which increases its potential for easier access to venture capital. Vienne also a metropolitan city sees itself as a gateway to Europe. Berlin, a newly formed metropolitan city with the merger of East with West Germany, portrays itself as a young city which has not prospered with high unemployment rates as well as low GDP growth rates. Its field of competence – Biotechnology, ICT, and automotives are similar to those of other cities such as Vienna, Paris and so on. The criteria to look for similar regions should be clearly specified as this helps in understanding processes as well as impacts.

4 **How are we benchmarking it – and the results?**

4.1 **The EURO-COOP indicators**

This section brings forth examples of qualitative and quantitative indicators that have been used in exploring the regional system of innovation. It presents an indicative list and is not an exhaustive list of indicators.

4.1.1 From the point of view of firms

The following *qualitative indicators* enable understanding the functioning of the innovation system from the point of view of firms:

1. Identifying enterprises' **motives for innovating and their importance** (i.e. the firm's objective when engaging in innovation activities) is helpful when examining the forces that drive innovation activity ---> are the drivers of innovation at firm level known by regional policy-makers?
2. Questions on **barriers to innovation** can provide information on a number of issues relevant for innovation policy, e.g.

- economic factors (market and financial), such as high costs, lack of available finance or lack of demand,
 - knowledge factors, such as a lack of skilled personnel or knowledge,
 - institutional factors, such as lack of infrastructure
 - legal factors, such as regulations or tax rules.
3. Identifying the main **beneficiaries of innovation policy**: large, international firms (for whom subsidies will actually mean very little) or SMEs? A related question is “How much is regional innovation policy doing for SMEs?” In general for all SMEs problems exist in terms of – innovation infrastructure, lack of absorption capacity for finance, little interest in being innovative as day-to-day survival is more important and have difficulties engaging in more strategic and innovative activities, knowledge transfer from universities and public research institutes is poor to SMEs. Another factor that stands out in almost all big cities is the divergence in availability of technology, capital etc. by the MNCs and large firms as opposed to limitation of finance and capital by the SMEs.
 4. The **ability of enterprises to appropriate the gains from their innovation activities** is also an important factor, and policy plays a central role in the design of legal methods of protecting innovations (Oslo Manual, §414-415).
 5. **Sustainability** as an objective for financing innovation.

Quantitative indicators would include:

- Amount of investment from various funding sources– private and public
- Policy coordination between different segments of policy-makers as well as international companies that can also influence policy due to their financial muscle
- Number of firms created by this process
- Number of jobs created by this process
- Number of patents created by this process
- To what extent it contributed to the growth in earnings of the firms involved in this process

- Effect of these firms on the quality of living on those it impacted

4.1.2 From the point of view of national and regional authorities

The following figure illustrates the actor-network analysis approach. Each actor's activity / context can be shown with a summary of the actor-system, Their relationships can be characterized with a range. This of course is greatly simplified, and clearly any regional system of innovation will be much more complex in reality.

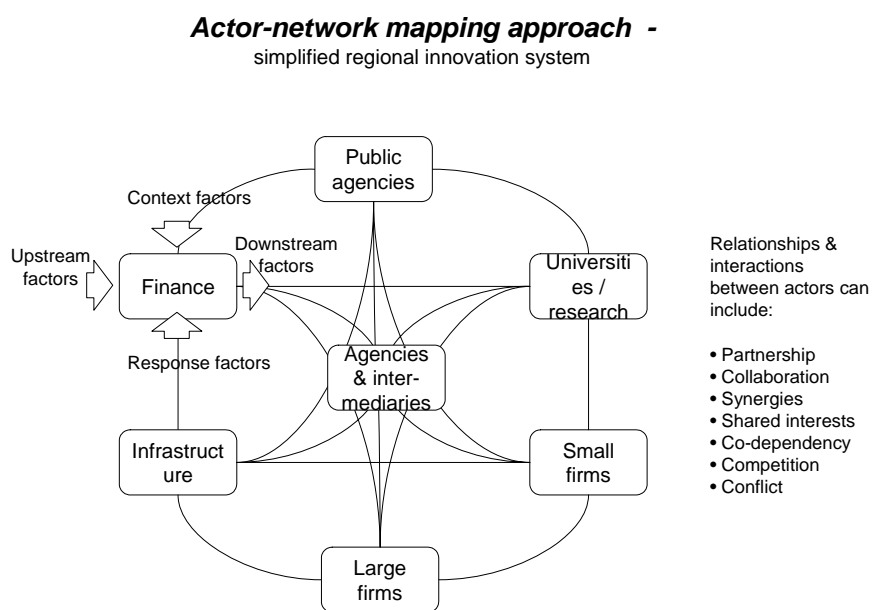


Figure 3.

The following qualitative indicators can bring forth the successful working of the regional innovation system from the point of view of actors:

- Quality of relationship in terms of measurement of interaction and networking between the different stakeholders and policy makers.
- How many different political agendas are driving the policy?
- Synergy between the different political agendas. For example are national programmes supported by regional framework policy or neighbouring political programmes?

4.1.3 From the point of view of input to innovation policy

1. Universities & Universities of applied sciences

- scientific performance
- experience in cooperation between different actors
- openness for cooperation
- ratio of national and regional funding
- openness and international cooperation
- brain drain

2. Companies

- technical and scientific absorption capacity
- large company with R&D centres in the region under question
- financial capacity for R&D
- openness for cooperation
- what is the role of FDIs in enhancing innovation in the region

3. Public research institute:

- scientific performance
- ration of regional to national funding
- experience in cooperation as well as openness towards cooperation

4. Technology parks

- equipment of laboratories and offices along the whole value chain
- provided space for laboratories in terms of square meter space
- Number of companies registered

5. Finance

- Different sources of financing
- Venture capital availability and financing
- Public vs. private financing

4.1.4 From the point of view of impacts of innovation policy:

The impacts of the innovation policy although general in nature will also depend on the objectives of the policy and the clusters it is trying to promote.

For example, the Berlin innovation policy outlines the following impacts of its innovation policy:

- Increase employment rates
- Improve knowledge and technology transfer from public organisations to private regional firms
- Increase absorption capacity of firms and actors
- Brain drain to economically prosper regions
- Status of manufacturing industries compared to services and creative industries
- Gross value added
- Export orientation
- Economic growth – GDP growth
- Has the RIS influenced behaviour or actors (in terms of cooperation, coordination, transparency, efficiency etc).
- GDP per employee vs. GDP growth as a measure of success
- Productivity growth

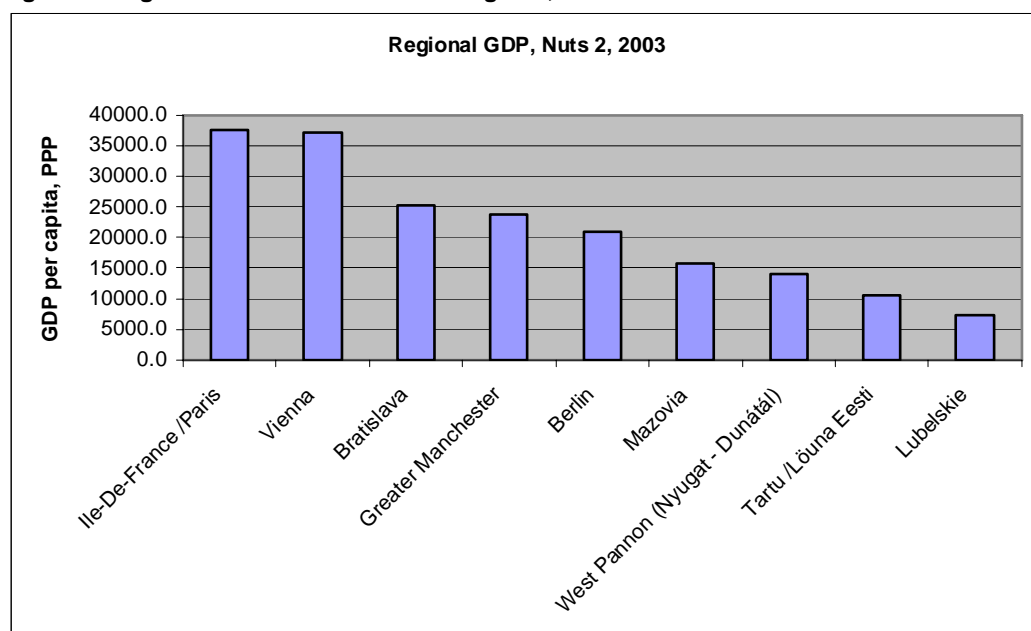
4.2 The benchmarking process & findings

To reiterate RIPIA is not about benchmarking regional performance or regional systems. It is about policy rationales and goals. It is about making explicit implicit rationales for policy action. The model explores the causal path of policies, as well as the multiplicity of factors influencing policies and the multiplicity of outcomes emerging from them (intended or not). There is no attempt to attribute cause and effect but to look at how different policies at different levels could influence innovation in the region. The RIS programmes also aimed at providing a framework or umbrella for coordinating all innovation related policy actions in the region. Here we compare regions based on the 5 themes of the regional system of innovation identified under the RIPIA model – context, actors, factors, sectors, actions.

In this section we attempt to analyse the difference in performance for the 3 EURO-COOP regions for which substantial data and analysis was collected – Berlin, Ile-de-France and Vienna. Although EUROCOOP has six more regions as case study regions, but we are undertaking only as an example the benchmarking exercise for these three regions.

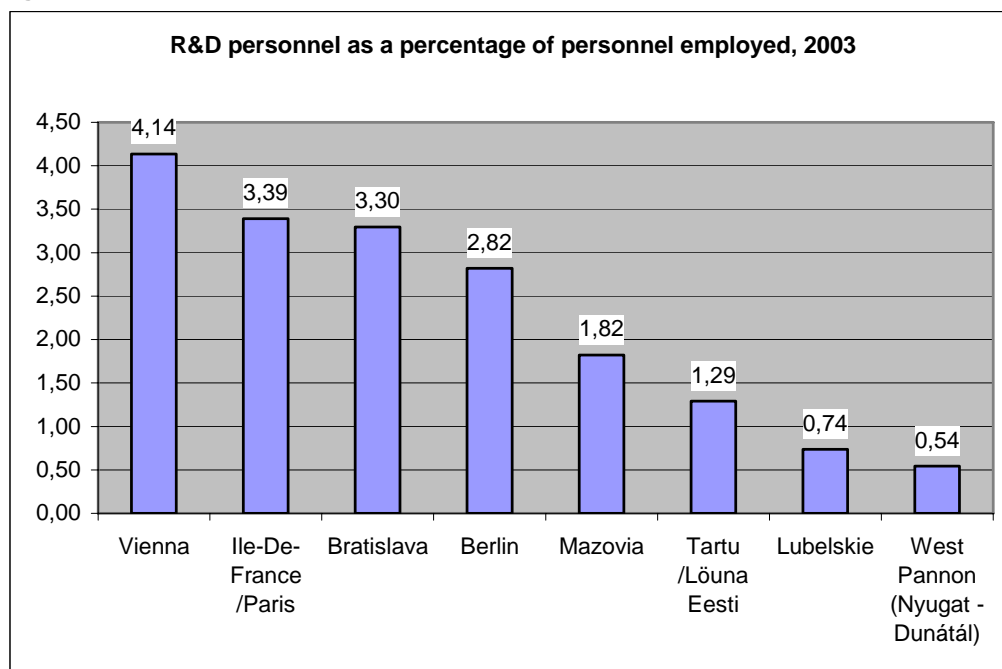
The following figures provide a snapshot of all the EURO-COOP regions. The data from the Regional statistics database, EUROSTAT is based on NUTS 2 region. Tartu being a NUTS 4 region has been replaced by Estonia as the whole of Estonia is a NUTS 2 region for the sake of data availability.

Figure 4: Regional GDP for EUROCOOP regions, NUTS 2 level



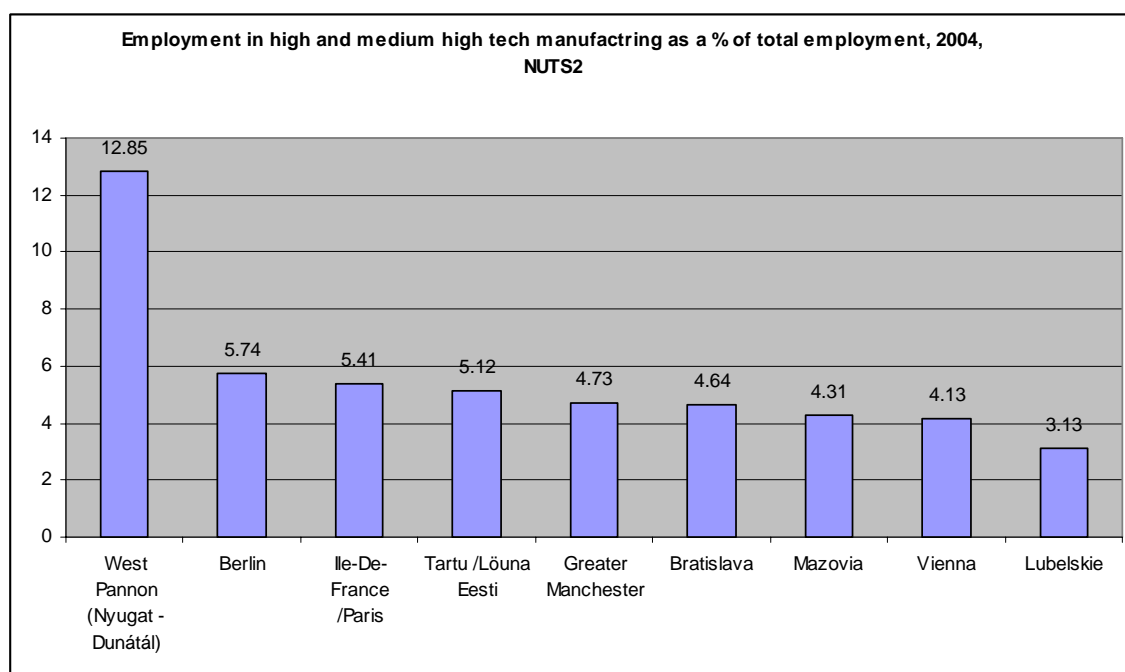
Source: Regions: Statistical yearbook 2006, EUROSTAT;

Figure 5: R&D personnel as a percentage of personnel employed for the EUROCOOP regions



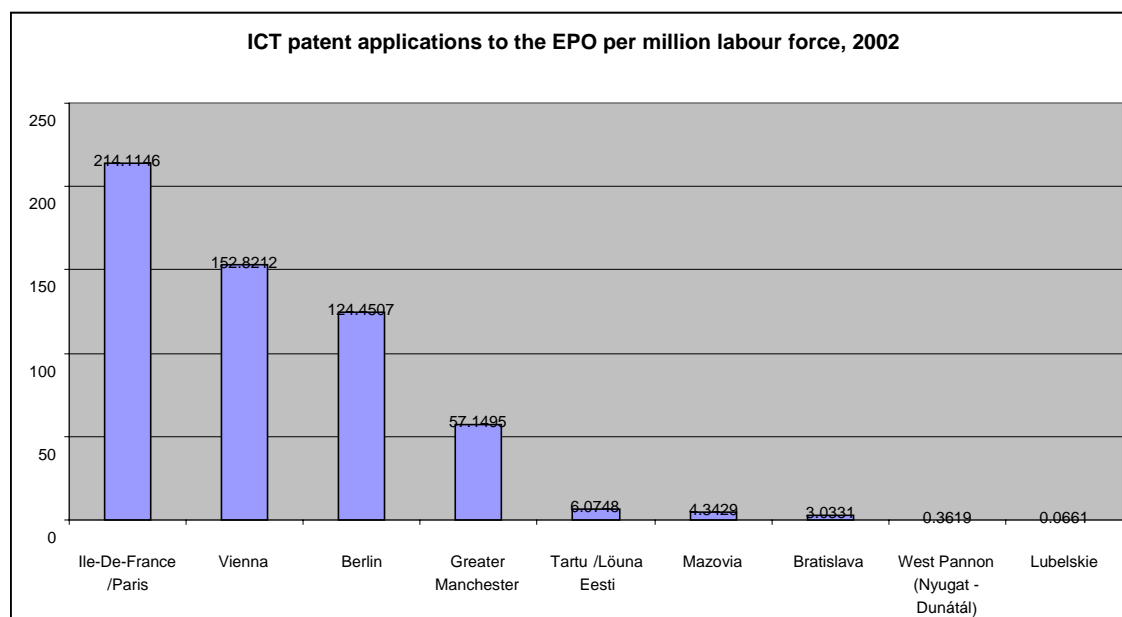
Source: Regions: Statistical yearbook 2006, EUROSTAT

Figure 6: Employment in high and medium high-tech manufacturing as a % of total employment, 2004



Source: Regions: Statistical yearbook 2006, EUROSTAT

Figure 7: ICT patent application, 2002



Source: Regions: Statistical yearbook 2006, EUROSTAT

4.2.1 Application to EUROCOOP regions – 3 metropolitan region – Berlin, le-de-France, Vienna²

BERLIN

Being a rather young capital – national government moved back from Bonn in 1999 – assembled in 1920 from many former independent cities and distinct neighbourhoods, and separated from the West for over 40 years by the “Iron Curtain”, Berlin is still reinventing itself. Though differences between East and West Berlin seem to be vanishing, there are still significant economic and social disparities. Moreover, the economic capacity of the surrounding rural East German *Länder* is weak, and Berlin cannot benefit in any way (“isolated island”). All in all, policy-making faced several governance challenges after reunification: necessary (but painful) economic structural change and strong political fragmentation at the regional level.

Context

Berlin is a federal state and a dense economic, cultural, social and logistical node within eastern Germany. It is geographically isolated within rural and structural underdeveloped surrounding regions of Eastern Germany. At the politico-administrative level the Berlin metropolitan region is divided into two different political entities:

² The following information has been compiled by the EUROCOOP partners based on the testing of RIPIA methodology in their respective regions.

- the highly-indebted, but focus of much attention city of Berlin and,
- its rural surroundings, Brandenburg.

These two entities try to co-ordinate innovation policy while competing on settlement issues. Still, since 2006 both regions not only co-ordinate international marketing efforts within a joint team, but may adopt successful settlements within the partner region as a success for themselves.

While in political and cultural terms Berlin does take a lead within Germany and Europe, the regional economic restructuring and long history of **loss in industrial employment/production capacity** (50% loss of industrial employment after reunification) have resulted in poor economic performance. As a consequence, Berlin strongly lags behind its German or European competitors: the average inhabitant of Berlin enjoys only half the private income (€14,700 pa) of a citizen of Hamburg and all newborn in Berlin have a public debt burden of €17,700 (about 5 times higher as in Munich). In this context, regional actors realized early that innovation and the knowledge-driven economy are the only chance for Berlin. For most actors, innovation is of high political (and personal) relevance for the region: innovation is seen as pivotal to translate the strength of knowledge infrastructure and scientific excellence into economic growth.

Actors

German federal multi-level governance creates complex and rather inflexible policy making conditions. In Berlin state governing mayor has comparably limited influencing power on his senators and respective ministries. Political coordination within the region is felt to be very difficult and true cooperation was stated unsatisfying by several actors. Effectiveness and efficiency of processes are not sufficient. There is lack of transparency of actors, instruments within economic development for business actors. Furthermore, in Berlin information diffusion and mutual cooperation between business support actors, intermediaries and administration was reported not to be sufficient.

At the sub-regional level one observes a lack of co-ordination between the Berlin city region and its urban districts: the implementation of co-ordinated measures is expected to stay difficult because of natural competition between the two political entities. Berlin is indeed strongly oriented towards its respective quarters ("Kieze") and local authorities underline the city is still strongly fragmented in many ways. Moreover, cooperation within the city is said to be difficult, since for a long time both sides (of the city population) have been thinking of themselves as "*reunification losers*".

National cluster and networking initiatives are powerful drivers in regional hi-tech policy. Certainly, many financial resources go to the excellent scientific institutions and knowledge infrastructure (4.25% of GDP), but private research expenditures are under average, not reaching Lisbon recommendations: the region is missing the economic or private counterpart of its large public sector. **Private equity and venture capital are still**

problematic to get for high technology start-ups and young fast growing companies past the seed stage. (However this seems a national challenge.) Moreover, entrepreneurial mentality – especially within research institutions and higher education institutions – is still ranked low by many experts: while (national and regional) innovation policy succeeded in creating and supporting excellent research institutions, it now needs to help them introduce scientific knowledge into (smaller scale) companies and foster innovation within the region.

Furthermore, the tools of public-private-partnerships (PPP) are said not to be used sufficiently by regional actors not the least because of a lack of knowledge, awareness and ability within the public sector and difficult national framework conditions.

Factors

There is a conflict between universities and companies on the question who delivers the most added value within commercialising patents. In Berlin firms view patents as too expensive since entrepreneurial ideas of possible markets and so on are the most important aspect in commercialisation.

Furthermore there is generally a risk avoiding mentality in German financing community more so after the crash in 1990s. Most insolvency is caused by lack of capital as well as the short period of financing at 5 years.

On a legal and contractual issues, complexity of contracts (for example, joint R&D projects, regional or EU financed projects) leads to a barrier for SMEs apply. Furthermore application for programmes is sometimes comparably time consuming, while success is not guaranteed.

In Berlin tight regional budget limits possibilities of publicly financed universities to attract high profile scientists. Potential for university-industry collaboration suffers from deteriorating quality of research infrastructure within several university facilities since most of them lack adequate financial resources and are ‘underfinanced’.

Sectors

Concentration seems to be the key word in the attempts to improve strategic thinking and reach strategic clarity within regional innovation policy. Already in 1992/93 the region decided to focus on certain technology fields. Then, **Berlin took part in a RITTS project in 1996-1998 but its long-term influence is difficult to clarify**. Finally, a decisive step was taken in 2004 with the setting-up of the so-called “Quadrige Process” (“Quadrige: a coherent innovation strategy for Berlin”), aiming to form larger clusters of partially overlapping technologies (e.g. biotechnology and medicine) therefore improving their competitiveness. A Steering Committee meets regularly. Detailed master plans for the

fields of competence and a controlling system for R&D funding have been introduced since then.

Hence, the innovation strategy of Berlin – concentrating on certain technology fields by “strengthening the strengths” – appears appropriate. Even though promising fields might be left out, concentration can sharpen understanding and focus attention. Scarce resources may have a more visible effect when a critical mass is reached quickly. Not only financial resources are concentrated but also human and institutional resources (within the framework of the Quadriga Process). The current fields of competence are: Biotechnology, Medical Technologies, Information & Communication Technologies ICT, Traffic Technologies, Laser and Optical Technologies. And indeed, recent improvement gives reasons for hope. In 2006, in line with national and international trends, the Berlin economy grew significantly for the first time since 1995. Industrial restructuring processes and tight financial policy seem to be having an effect.

However, it is too soon to draw any definitive conclusion: **certain boom industries (e.g. biotech) still have little impact on overall employment and new industrial developments are below the expectations of stakeholders.**

Berlin, 15 years after reunification the structural change and transformation of economy still continues. Industrial development is partially driven by transformational difficulties (east), partly by rapid structural change (west).

Actions

Overall objective of the innovation policy in Berlin is to address the challenges of jobs creation, raising R&D intensity, raising regional and international competitiveness amongst others.

To increase employment rate, the Berlin Senate favours a long-term strategy consisting of roughly two factors: increase the establishment of foreign industry and focus on the development of innovative, knowledge-based industries.

In Berlin innovation policy focuses on developing its USP in science, technology and enterprises still existing ‘field of competence’. The main policy idea is to improve networking and regional cooperation within fields of technological competence. This includes initiation and activation of a closer cooperation between Berlin and Brandenburg research institutions as well promoting public understanding of science and innovation.

At present there are at least 11 programmes supporting technology, research and development on regional level. Policy instruments to promote innovation include:

competence field-building, technology transfer activities, spin-off and entrepreneurship support network, support for young firms; monetary support includes R&D support, funding basic research, funding of industry-science-projects, qualification improvement.

Some of the outputs of the various programmes are – 40% of companies in Berlin innovate, the biotech sector is better developed than the German average; growth in employment and start-up activity can be observed; generally growing regional knowledge transfer and technology transfer activities; many positive examples of close cooperation between science and business; regional global players seem to dominate the scene.

Outcomes of the innovation policy have largely led to better interplay between science and industry as well as 'since the days of RIITS in 1999 the business community has become more active'. The 'Quadrige' initiative started only in 2004 is too soon to see an impact. Already the Quadrige process showed some positive effort in tackling the lack of coordination. Within the regional level the actors improved networking with the help of Quadrige – even agreeing on objectives and timeframes within the strategic fields of competence. Some experts say that innovation is of high political relevance for the region, but actual importance reflected in policy measures, financial and personal engagement of all relevant actors, public attention and awareness seems not sufficient.

ILE-DE-FRANCE including Paris

As a political, economic and administrative decision-making centre, Paris and the Ile-de-France region exert a considerable influence at the national level. Ile-de-France attracts more than ¼ of French head offices, and even more for high added-value activities, research, B-to-B services, financial activities and managerial functions (e.g., ¾ of French head offices for banks and insurance companies). In France, 1 out of 3 company of 100+ employees has its head office in the Ile-de-France region, while about 2 out of 3 companies of 500+ employees are located there.

Context

According to most indicators of the European Innovation Scoreboard, the Ile-de-France regional performance is close to, or even largely above, the EU mean/average. The Ile-de-France region is the French (and European) leading region for both public and private research: it attracts a quarter of French students (just under 600,000), a third of researchers and 40% of research laboratories (2500 public and private research laboratories). Moreover, the Ile-de-France region attracts a wide range of know-how: the region is active, to different degrees, in 118 of 119 scientific and technological competences considered as being 'key competences' for the future competitiveness of French industry. And economic activities are strongly connected with innovation (13 researchers and engineers for 1000 employees on average), though this statement cannot be generalized to all branches of industry. In 2003, R&D spending accounted for 3.5% of regional GDP (France = 2.38% of national GDP; EU15 = 1.98% of EU15 GDP).

Ile-De-France region comprise 29% of national GDP and approximately 5% of EU GDP; GDP of Paris is nearly 275 percent of the national average; despite these robust economic figures, Ile-de-France suffers from fragmentation of this potential due to the “spread” of the education and innovation institutes - at the institutional level (17 universities, approximately 40 public high schools and many private schools), geographical level (182 sites) and academic level (1,513 laboratories); industrial employment is on its way to recession; resultant being increase in social exclusion phenomena which has increased the number of troubled and unprivileged “sensitive urban areas” to in fact a third of the national total.

Actors

Administrative complexity of the regulatory environment (including intermediary organisations) is one of the more prominent problems in the region both in terms of strategy/consensus building and policy coordination. Administrative borders generate inter-regional competition between regional and sub-regional authorities to attract investments with the detriment of synergy effects and the overall coherence of the system. In the region support to innovation is very diverse, complex and involves a multitude of actors; thus is difficult to co-ordinate, and to access especially for SMEs. This results in lack of readability, coordination at the implementation level, unclear identification of responsibilities; results in lack of legitimacy and transparency of the system.

Due to shortage of financing sources/small size of possible financing; existing financial support for innovative companies should be somehow ‘individualised’ or ‘customized’ as well as a flexible system of financing; venture capital needs to be further improved.

Factors

The regional and metropolitan strategies are caught in a tension between the need to support economic growth through innovation and the need to pay greater attention to the social and environmental impacts of such a policy.

As far as patenting, intellectual property and licensing of knowledge for R&D is concerned, this sort of support should be provided by the state through its various agencies.

Regulations and legislations procedures need to be made easier as well as to create a single entry point in order to provide easier access to innovation support. Other related issues are the burden of administrative procedures, constantly changing application rules, weak incentives and so on.

As far as R&D infrastructure is concerned, the support from public laboratories is limited and moreover operational contacts with research organisations are said to be very limited. The very notion of 'time' is very different between SMEs and public institutions (lack of reactivity, delays), and objectives are very divergent (publications versus patents/industrial exploitation). A strong involvement of public authorities can make it possible to define common objectives for example for technology transfer.

Sectors

A positive aspect of the current policy mix is the emphasis placed on the creation and development of networks. Beyond cluster policy (PRES, RTRA, competitiveness clusters or SPL), public support to networking not only across disciplines but also between business and the knowledge and technology supply (such as universities, public research laboratories and so on) is seen as a key priority either for national, regional and local authorities.

Actions

Due to the deindustrialisation as well as the increasing relocation of services in bordering cities, the city of Paris in collaboration with the Chamber of Commerce and the Industry of Paris (CCIP) promotes a strategy of economic development through innovation and technology. Also the Ile-de-France regional council adopted in 2005 a regional strategy for higher education which defines a certain number of priority thematics for the region.

Attempts are being made to have sustainability part of the Ile-de-France innovation culture at regional innovation strategy level and in this line assess the more globally the impact of innovation-support policies both at the multi-level as well cross-sectoral, including mutual effects and interactions between technological and non-technological aspects.

When strong R&D assets achieve poor industrial outcomes, there is a clear need to strengthen the links between suppliers and users of knowledge. Indeed, in the Ile-de-France region, public-private partnerships are still the exception, not the rule. Moreover, patenting and commercial exploitation of research in a long-term perspective (granted licences, ceased patents, etc.), as well as technology transfer, are still not a priority within universities (lack of dedicated financial and human resources). In this context, the challenge for all involved authorities is twofold: **1. stimulating technology transfer and all forms of partnerships between public research and private industry to shift from the *juxtaposition* of regional competences to their *integration*; 2. focusing resources on a range of key activities likely to serve as a driving force for the whole region.**

As from the end of the 1990s (and especially from the beginning of the 2000s), this led to a significant renewal of regional development policy: cluster policy was said to be the most appropriate policy to reach a critical mass of actors in a few selected sectors while supporting “hybrid cooperations”. Along this line, the main objective of the so-called “competitiveness clusters” policy (*pôles de compétitivité*), initiated by the French Government in 2005, was precisely to go beyond cultural cleavages between ‘publications’ and ‘patents’. Competitiveness clusters reflect the combination, in a given region, of three key *actors* (firms, higher education hubs, research units) and three key *factors* (R&D, geographical proximity, public-private partnerships). They are underpinned by local/regional synergies between industry, research and training communities, and are located in close physical proximity (which allows rapid exchange of new results and ideas). The objective is to create “innovative ecosystems” by reaching a critical mass of companies around collaborative R&D projects (leverage effect) and fostering technological transfer from public research organizations to industry in a range of selected application sectors with a high growth potential (primarily in high-tech industries but also in more mature ones). This is an incentive for more effective and well-targeted development strategies (clearly identifiable and competitive at the international level) aiming, over the period 2005-2015, to reach a critical mass of companies and investments around a few macrosectoral-type “clusters”, with excellent relays in terms of technology transfer.

In the Paris – Ile-de-France region, this policy is very welcome since one can notice a relative fragmentation of the techno-industrial base (even within the same sector or discipline) as well as its relative erosion over years when compared to other metropolitan regions in Europe. In partnership with regional and sub-regional authorities (mainly the Ile-de-France Regional Council and the City of Paris), the French government selected (and supports) five competitiveness clusters in the Ile-de-France region: *System@tic* (Complex systems), *Medicen* (Life sciences), *Cap Digital* (Digital life), *Mov’eo* (Sustainable Mobility and Road Safety), *Ville et mobilité durables* (Urban topics in a sustainable development perspective). In the same way, public authorities intend to encourage the formation of clusters in the academic and research field through the setting-up of so-called PRES (“Higher education and research clusters”, *Pôles de recherche et d’enseignement supérieur*) and RTRA (“Thematic networks for advanced research”, *Réseaux thématiques de recherche avancée*). These groupings aim to remedy the fragmentation of the academic field in the Ile-de-France region (there exist not less than 17 universities in the region, distributed over 182 sites, as well as forty public high schools and many private high schools).

However, this relative consensus on the strategic importance of the knowledge economy (meaning economic development through innovation and research), as well as on considering cluster policy as the most appropriate tool in this regard, has not formally resulted in a single concerted and unified implementation process. Indeed, there exists at least as many innovation support programmes as there are decision levels shaping innovation policy in the Ile-de-France region. The reason for this is the **low level of co-**

ordination between all involved authorities (whether they are national/decentralized, regional or subregional).

VIENNA

Vienna might not obviously rank as a first-tier metropolis like Paris or London, but economically and geographically it is in a second-tier position and gaining importance as a gateway, with a number of other European capitals within a few hundred kilometres' reach.

Context

Vienna is in a unique position, being both one of the nine states (*Land*) of Austria and a municipality (*Gemeinde*), which gives the City Hall a broad portfolio of instruments and funds. 'Vienna' generally means the metropolitan region that lies within the borderline of the state of Vienna; there is no surrounding non-urban area. However, a greater entity, the 'Vienna Region', includes the states of Vienna, Lower Austria and Burgenland – thus different policy actors operating from different budgets. Finally, Vienna also takes (the driving) part within the trans-border region CENTROPE, that covers the regions of Bratislava and Trnava (Slovakia), South Bohemia and South Moravia (Czech republic), Győr-Ménfőcsanak-Sopron and Vas (Hungary).

While nearly 40% of all Austrian research is performed in Vienna, more than 90% of research and innovation activities are governed and financed by the federal level (universities, funds, etc.). However, the nine Austrian states (*Bundesländer*) have massively increased their involvement in RTDI matters over the past years – Vienna being at the forefront of this development. Indeed, Vienna 'discovered' innovation policy in the 1990s, when the collapse of old smokestack industries and the challenges posed by the new Europe called for change. Due to the fact that national activities are, and will continue to be of paramount importance for the regional system of innovation, Vienna's policy actors find themselves both free to act and bound by a number of restrictive framework conditions. They have the freedom to design, initiate, co-ordinate and fund innovation support activities at the regional level but are bound as regards resources, and are not in the driving seat to propose fully-fledged policy measures. It is mainly the national level, and increasingly also the EU, that provide funds, institutions, laws and governance.

The regional policies are mainly directed at Vienna as a city and as one of the main R&D centres of Austria. However it is trying to develop itself also as a cross-border region with CENTROPE. Although the identification is there in terms of strategies, but on the operational front one does not come across many projects to develop the area as a composite region.

Actors

Vienna innovation strategy is characterised by a strategy that makes itself; rather bottom-up, partner and opportunity driven. In Vienna multi-level governance, coordination of policy measures between the various arms of the Viennese government (namely, Mayor of Vienna, City Councillor for culture and science, city councillor for city development and Transport, City Councillor for finance and economic policy, City Councillor for Health and Social Policy) and between the Viennese government and the National government which funds nearly 90 percent of the R&D in Vienna. Practice of “national policies writ small” plays a role – national and regional level initiatives are not always closely related.

Financing from private sources is a problem due to low availability of Venture capital which is partially owed to the underdeveloped financial market. Furthermore 95 percent of the public funding comes from the national level, making them more important actors than the regional level.

The private sector is characterised by a dominance of SMEs which have little resources for RTDI as opposed to large firms which have intensive R&D facilities in Vienna.

Factors

Venture capital is not a very mature sector in Vienna. This is a spillover from the fact that the financial markets in Austria are not well developed. However the 4 clusters that are being developed in Vienna – ICT, Biotech, Automobiles and Creative industries are being financed intensively via different programs.

Sectors

In line with the above cluster policy plays an important role with the objective of promoting the established networks – not only between enterprises but also with public (research) institutions and universities and polytechnics. As far as education skills and training is concerned the city plan emphasises investments in research and innovation infrastructure, development of polytechnics along with universities, as also the AMS (Arbeitsmarktservice) offers training programs that suit the needs of the market.

Actions

Until now the City of Vienna has not had a single, comprehensive innovation strategy, but a very broad development strategy, where ‘innovation’ is ‘hidden’ behind different strategies as well as behind the objectives of agencies, departments and institutions. This is changing: a broad, mainly expert panel-based process was launched in autumn 2006 to turn Vienna’s research, technology and innovation policy into a comprehensive strategy. The current approach very much relies on the allocation of diverse responsibilities for different parts of innovation policy to various agencies and institutions,

which might be interpreted as an integrated approach, but also leads to a situation where many innovation measures tend to appear 'ad-hoc' rather than based on a co-ordinated mid- or long-term strategy. However, the guiding principle of 'The strategy and policy that makes itself' is rather bottom up, partner and opportunity-driven.

Finally, Vienna has a quite explicit approach to innovation, characterized by (i) an overall Vienna Strategy document (STEP 05), (ii) a cluster policy for the biotech, automotive, ICT and creative industries, (iii) initiatives to attract firms to Vienna and develop new locations and (iv) a bottom-up approach to communicate with, and support the universities and research institutes. This approach is not clearly translated into policy measures, but implemented quite adequately by the day-to-day interplay of innovation actors and agencies.

According to the indicators that are commonly used to assess a region's innovation performance, Vienna is clearly doing well. Looking beyond these aggregated figures, namely to the interplay of actors and the co-ordination of policy measures, there is still room for improvement, though this varies between sectors and clusters. A better understanding of the multi-level policy-making process clearly enhances the opportunities of the region and gives a chance to improve the interplay of policy actors.

4.3 **Analysis of the benchmark findings**

4.3.1 **Underlying reasons for different performances**

Innovation is only one of the means of achieving macro-economic policies. Each region has set its own goals depending on the clusters it wants to promote as well as the economic growth targets that it wants to set for it. The application of the RIPIA method brings forth the fuzzy nature of the regional innovation systems.

The following tables attempt to bring forth the diversity of framework conditions, policies and impacts in the three regions under examination in EUROCOOP – Berlin, Ile-de-France, Paris.

Regional innovation scoreboard ranking, 2006	
Berlin	11
Ile-de-France	9
Vienna	24

Context analysis – economic, technological, political profile of the region	
Berlin	A federal state and a dense economic, cultural, social and logistical node within East Germany; surrounding regions are rural; massive loss of industrial capacity; innovation is seen as a key factor to economic growth
Ile-de-France	Comprises 29% of the national GDP, however still suffers from fragmentation of R&D potential; industrial employment on its way to recession; resultant being increase in social exclusion phenomena
Vienna	Federal state of Austria, sees itself also as a key player in the CENTROPE region; industrial employment has reduced significantly thus a shift towards services

Actors analysis – institutions, networks, governance structures; their relationship and interaction	
Berlin	German federal multi-level governance creates complex and inflexible policy-making conditions; coordination at sub-regional level is a problem due to due to 'east' and 'west' considering themselves as 'reunification losers'; national clusters and networking initiatives are powerful drivers at the regional level; PPP not used significantly
Ile-de-France	Administrative complexity of the regulatory environment including intermediary organisations is one the most prominent problems for strategy/consensus building as well as policy coordination; support to innovation is diverse, complex & involves a multitude of actors; thus difficult to co-ordinate and to access by SMEs
Vienna	Multi-level governance structures wherein the national level funds 90 % of the public funding and the regional level whose policies are spread by the various arms of the regional government; policy coordination seems to be working fine but has room for improvement

Factors analysis – socio-technical issues such as I.P, legal, financial and infrastructure issues	
Berlin	Private equity financing as well as venture capital is still problematic; entrepreneurial mentality is still ranked low as well as a risk avoiding mentality; conflict between universities and companies regarding patents; complexity of contracts a barrier for SMEs; potential for university – industry collaboration suffers from deteriorating quality of research infrastructure
Ile-de-France	Financing mechanisms need to be more individualised and customised; tension between regional policy objectives of supporting economic growth through innovation vs. social and environmental impacts of policy; single entry point needed to provide easier access to companies; public support for R&D is limited
Vienna	Private financing is a problem due to low venture capital funds which is a spillover of low developed financial markets; IPR regulations are gaining more importance which maybe a hurdle for university-industry relationships; fragmentation of R&D funding thus too many small projects

Sectors analysis – structure of industry, cluster and technology	
Berlin	Aim of the technology sectors is 'strengthening the strengths'; industrial development driven by transformational difficulties (east) and rapid structural changes (west); cluster policy for development of various technology sectors
Ile-de-France	Much emphasis on creation and development of networks; cluster policy is very active
Vienna	Private sector dominated by SMEs which have little resources for RTDI; cluster policy plays an important role in financing and developing networks; services dominates the regional economic structure; large MNCs have access to internal RTDI facilities thus are at an advantage

Actions analysis – strategy, policy, programme and project

Berlin	<p>Policy focuses on developing its USP in science, technology and enterprises still existing 'field of competence'; policy idea is to improve networking and regional cooperation within fields of technological competence; focus on development on innovative, knowledge-based industries; 11 programmes for promotion of innovation; policy instruments to promote innovation include: competence field-building, technology transfer activities, spin-off and entrepreneurship support network, support for young firms; monetary support includes R&D support, funding basic research, funding of industry-science-projects, qualification improvement;</p> <p>Outputs show that 40% of the companies in Berlin innovate; biotech sector is better developed than the German average; regional global players dominate the scene</p> <p>Outcomes of the 'Quadriga' process initiated in 2004 show improvement in networking at the regional level and agreement on objectives as well as time-frames for development; however innovation is of high political relevance for the region, but actual importance reflected in policy measures, financial and personal engagement of all relevant actors, public attention and awareness seems not sufficient</p>
Ile-de-France	<p>Policies and programmes by both the city of Paris and Ile-de-France region are active in the region; 'sustainability principle' is important in the development of the region; public-private partnership still suffering; not resulted in a 'single concerted and unified implementation process'</p>
Vienna	<p>Strategy and policy that makes itself, rather bottom-up and based on several documents; currently an overall RTDI-strategy is being developed; programme manage to address specific needs but a systemic approach is missing;</p> <p>Inputs to the policy and strategy include focus on human resources, investment into infrastructure support structures as well as direct and indirect support measures;</p> <p>Outcome expected is sustainable and STI based economic growth; social wealth enhancement</p>

The benchmarking findings show that while on the European Innovation scoreboard the three EURO-COOP regions under analysis are performing above average, the analysis based on the 5 criteria established under the RIPIA method show very different results:

- Administrative complexities make innovation funds difficult to access in all the three regions. A need for a 'one-stop-shop' for innovation related activities is needed which will ease the entry into and access to funds for entrepreneurs and new entrants
- In the case of Ile-de-France where huge industrial capacity losses have led to a social exclusion phenomena, the objective of innovation policy has to take this aspect into consideration; in Berlin too reunification restructuring objectives have to be considered while implementing innovation related measures which is lacking currently
- Vienna appears to be performing quite well in the multi-level governance structures but has a 'spread' of innovation measures which makes it problematic for access of information and funds by SMEs
- Cluster policies are performing well in all the regions as they are targeted towards defined projects and have a clear financing structure
- In Paris in the Ile-de-France region regional industry is on the way to recession, with job losses of more than 50% between 1975 and 2002 (730,000 jobs lost in 27 years) and a relative share in regional added value dropping from 25% to 15% between 1984 and 2000
- Working of the triple helix system – university, business and government, does not seem to be working so well in Berlin.
- Private financing sources are limited in all the three regions. In Vienna this is partly owed to the financial markets.

The above results try to serve as a platform for providing feedback to policy. Additionally they help in understanding the processes and impacts of in the innovation system as well as underlying factors for the success and failures for certain policy measures.

5 What benchmarking ought to do – recommendations

5.1 Market benchmarking not as a competition but a mutual learning process!

- First regions should undertake internal benchmarking that is benchmark themselves against their own objectives
- Next the compare apples with apples. This includes first setting down criteria to identify typology of regions, for example, GDP, population, economic structure. In doing so the objective should not be who is the leader and who is the laggard, rather it should serve as mutual-learning exercise.
- Benchmarking should serve more as a feedback mechanism to improve certain parts of the regional innovation system.
- Diversity of approaches across different countries provides an excellent opportunity to compare and access practices employed in different countries and hence learn from each other. Such an exercise would entail starting with a checklist of framework policies, under each national system of innovation and an assessment of how well each is done in comparison with others that are using similar mechanisms (Papaioannou, 2006).

5.2 Respect diversity

It has been made abundantly clear during the project that one-size-fits-all policy will not be effective in the long run. A great variety of regions can be found in the EU, even (especially!) within individual countries, each with its own economic base and networks of actors. If we wish innovation policy to be benchmarked meaningfully, it needs to be context-specific. This means that we need have a clear understanding of “the context”.

High-technology v. other sectors

Different policy measures are needed for different economic sectors. Most of the cluster policies that have been developed in the three regions reported here is targeted at high technology sector where the interaction and collaboration with industry per se is quite

clear. However traditional sectors require a different policy approach as these have to revive dying industries and this could also include policies that target global technology search and transfer, including collaborations world-wide.

Furthermore, high-technology sector constitutes only a small part of the regional/national economy and that innovation concerns most of not all the sectors.

Stable v. volatile

The business environment is not the same for all firms leave alone sectors. Policy benchmarking should take into account – the nature targeted sectors, is it established, mature, fairly stable or is it an emerging, volatile sector.

Different industries need different approaches to innovation. Volatile industries like ICT which witness change in technologies at a fast pace, need to have sufficient funding sources to adapt to changes as well as to access technology.

5.3 Include the many factors conducive to policy innovation

Not only the inputs and output factors as specified in the European innovation scoreboard should be considered but also processes should be treated as unit of analysis. Structured comparisons between different policy agencies trying to deal with similar challenges provide opportunity for policy learning as well as ways to make policy processes more effective. The advantage of policy benchmarking is that it can inform, explain and/or justify to citizens the performance and practice of public sector organisations with respect to specific policies and services.

Assessment of framework conditions include – the science and technology infrastructure and its connections to industry; education system; financial system; industrial relations system; sectoral support infrastructure such as trade associations, technical bodies and so on; specific industrial policy mechanisms at both national and regional level (Papaioannou, 2006).

6 Conclusions

The benchmarking process should be clearly defined by the policy-makers and stakeholders in order to have any effective benchmarking results. As in the case of RIPIA

model developed under EUROCOOP the entire RIS was broken down into meaningful measurable components – context, actors, factors, sectors and actions; these brought forth the multiplicity of actions and the multiplicity of outcomes. Developing a cause and effect relationship is complicated in a innovation system due to overlapping networks and interactions needed to build the RIS. Benchmarking thus entails: examining framework conditions in each region; identifying upstream and downstream factors for strategy/policy/programme/project input, output and outcome; and assessing impacts of policy measures in relation to the above mentioned factors.

7 Annex

7.1 Stage-4 template of RIPIA

	KEY QUESTIONS		NOTES	
STAGE 4 –				
a) benchmarking of impacts				
1	<p>Identify for each programme / major project the impacts on the RSI:</p> <ul style="list-style-type: none"> • overall short term & direct impacts • comparison of 'actual' with 'expected' impacts where these are identified. • uncertainty and confidence levels 		<p>This is to provide a summary list of direct & short term impacts. Where possible we should compare impacts before and after (although in many cases this will not be possible):</p> <ul style="list-style-type: none"> • The ex-ante expected impacts are likely to be focused on the funding and the direct outcomes. • The ex-post estimated impacts are likely to be influenced by many contingent factors in the RSI (e.g. finance, macro-economic trends, project pipelines etc). 	

2	<p>Identify for each programme / major project the impacts on the RSI:</p> <ul style="list-style-type: none"> • overall longer term & indirect impacts • uncertainty and confidence levels 	<p>This is to provide a summary list of indirect and long term impacts:</p> <ul style="list-style-type: none"> • Each of these is likely to be at a very high level of uncertainty. • The impacts may be over-taken by contingent factors in the RSI (e.g. finance, macro-economic trends, project pipelines etc). • Therefore a scenario approach may be useful: i.e. to say 'what if' key factors were more or less significant influences (e.g. the macro-economic trend) • Overall this stage depends on the experience of stakeholders and advisors
3	<p>Identify as far as possible indirect & long term impacts on regional context as measured by statistical indicators.</p>	<p>This stage aims as far as possible to complete the 'causal paths' links between policies / programmes / projects, and the regional context indicators.</p>
4	<p>Then identify for combined packages of policies:</p> <ul style="list-style-type: none"> • overall short term impacts • overall long term impacts • uncertainty and confidence levels 	<p>This is to provide an overall summary in non-technical language.</p>

7.2 Summary template to enable benchmarking and feedback to policy

	MAIN ISSUES to report	CASE STUDY notes	CASE STUDY comments	BENCHMARKS (indicator & other)
A) CONTEXT				
	sponsor / client – objectives, scope			
	topic or theme area			
	scale issues - region /city / network			
	time issue – strategy / programme, short / long			
	regional typology			
	political issues			
	discourse / agendas / problems			
	other			
B) ACTORS – institutions, stakeholders, networks				
	national / international authorities			
	city-regional authorities			
	education & training			
	finance			
	SMEs			
	large firms			
	professions			
	technology, R&D bodies			
	agencies & intermediaries			
	other			
c) FACTORS – structural / socio-technical issues				
	Intellectual property			
	professional standards			
	regulation & legislation			
	legal & contractual			
	financial & risk profile			
	education skills & training			
	other			
D) SECTORS – issues with the industry, technology or profession				
	spatial & network issues			
	sector & industrial structure			
	contracting & management			
	skills, training, career incentives			
	intermediaries / gate-keepers			
	technology & diffusion issues			
	other			