Knowledge and Innovation

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Glossary of terms

CIP: Competitiveness and Innovation Framework Programme

EAFRD: European Agricultural Fund for Rural Development

EIS: European Innovation Scoreboard

ERA: European Research Area

ERDF: European Regional Development Fund

ESF: European Social Fund

EU-15: 15 EU Member States

EU-27: 27 EU Member States

EUROSTAT: Statistical Office of the European Communities

FP7: 7th Framework Programme for Research, Technological Development and Demonstration activities

GDP: Gross Domestic Product

ICT: Information and communication technologies

Innovation: is the introduction 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. The minimum requirement for an innovation is that the product, process, marketing method, or organisational method must be new (or significantly improved) to the company.

IRE: Innovating Regions in Europe

KIS: knowledge intensive services

Knowledge-based Economy: The knowledge–based economy describes trends in advanced economies towards greater dependence on knowledge, information and high skills levels, and the increasing need for ready access to all of these by the business and public sectors.

LRAs: Local and Regional Administrations

NUTS: Nomenclature of Territorial Units for Statistics

OECD: Organisation for Economic Co-operation and Development

PROs: Public research organisations

R&D: Research and Development

RDA: Regional Development Agencies

RIS: Regional Innovation Strategy

RIS: Regional Innovation Scoreboard

RIS-NAC: Regional Innovation Strategies in Newly Associated Countries

RITTS: Regional Innovation and Technology Transfer Strategies and Infrastructure

RTDI: Research, Technological Development and Innovation

SFs: The Structural Funds (also including the Cohesion Fund, even if it is not specifically aimed at supporting innovation) are intended to narrow the gaps in development between the regions and Member States of the European Union. These funds account for 35% of the Community budget and are, therefore, the second largest budget item (after the Common Agricultural Policy).

SMEs: Small and Medium-size Enterprises

Executive summary

This report sets out to offer an illustrative presentation of the roles, approaches, efforts and achievements of Local and Regional Authorities (LRA) in implementing the Knowledge and Innovation priority of the Lisbon Strategy. It forms a contribution to the establishment of the Committee of the Regions' (CoR) Lisbon Monitoring Platform.

As a background report, it bases itself primarily on published literature. Since there is a considerable reporting vacuum when it comes to innovation initiatives that are exclusively funded at the local and regional level, the report offers more of snapshot than a comprehensive overview.

Sectors versus territory: Different regimes of concentration for innovation funding open access points for LRAs to influence innovation policy.

Innovation has been an increasingly important aspect of the Lisbon Strategy since its inception in 2000. There are signs of a growing appreciation of the need to support innovation across most if not all economic sectors. This is beginning to replace the original tendency to over-concentrate innovation support efforts on high-tech industries. Another form of concentration, that of focussing on leading regions – both in European and national terms – still needs to be fully addressed.

Proximity to stakeholders is a key asset of LRAs in innovation policy.

Local and Regional Authorities have a number of vital deployable assets for economic development policies. These include proximity to economic and social stakeholders, universities and research centres. They also, however, operate within economic, administrative and legal frameworks over which they exercise little, if any, influence. LRAs can help to both stimulate local initiatives, and to link those initiatives to European networks.

Diversified regional innovation landscape: coordination as a specific challenge for LRAs.

The European Commission’s 2006 Regional Innovation Scoreboard illustrates a diverse and complex situation, where Member States with significant innovation achievements also include well below-average regions. The inverse is also true of high-performing regions in Member States with low innovation scores. Almost 30% of EU Research and Development (R&D) expenditure is

concentrated in 10 regions, and half of the EU's high-tech patent applications come from 13 regions.

Leading innovation regions (Copenhagen, Ile de France, London, Prague, Stockholm and Vienna) participate actively in global networks. Some technologically advanced regions (Baden-Württemberg, Ireland, Piemonte) rely heavily on private sector innovation, sometimes to the detriment of public support. Others (Athens, Berlin, Bratislava, Catalonia, Lisbon, Midi-Pyrénées) have active public innovation sectors, but less activity from the private sector. Less developed regions tend more to be consumers, than producers, of innovative processes and applications.

Obstacles to innovation policies to be found at the different levels.

Obstacles to successful innovation policies have been found to include an administrative rather than strategic approach, a lack of capacity and RDTI expertise amongst regional and national authorities, a lack of capacity within businesses and poor or non-existent policy coordination.

Institutional settings and mandates can hinder innovation actions, as can bottlenecks, including access to risk capital and infrastructure shortcomings such as inadequate broadband networks. Good governance and an effective institutional structure are important preconditions for strengthening regional innovation capacities.

High-level innovation guidelines: How can the relevance to LRAs be increased?

The Lisbon Strategy's Integrated Guidelines for Growth and Jobs 2005-2008 includes 24 economic guidelines, two of which are particularly relevant to the Knowledge and Innovation priority: 7) to increase and improve investments in R&D and 8) to facilitate all forms of innovation. These and other agreed European objectives are incorporated into the 27 Member State National Reform Programmes.

Experience and research help identify a number of issues affecting the Knowledge and Innovation priorities. The European and national guidelines set priorities but fail to directly address and engage ALL public stakeholders, the Commission, the Member States, AND Local and Regional Authorities.

A clear, limited, and feasible number of main issues and priorities needs to be defined within the Knowledge and Innovation priority area. It is only within such a focussed definition that a practical and constructive role for Local and

Regional Authorities can be developed. 8 policy areas and 16 related areas of action have so far been proposed. The question as to whether these are focussed enough to be fully relevant needs to be addressed.

The main Knowledge and Innovation issues represent key areas of activity to be developed and implemented at the local and regional level. Their implementation must take place within a distinct customised regional innovation policy that addresses the specific regional innovation needs and gaps. There is no off-the-shelf "best mixture of measures", so the high-level guidelines must be adapted to each region's specific requirements and situation.

Contribution of LRAs to FP6 and FP7: the limits of reporting.

The LRAs' contribution to, and participation in the 6th and 7th Framework Programmes is impossible to determine, as this was not addressed in the Ex-post Evaluation (FP6). Those regions whose development lags behind need inputs from other sources such as the European Structural Funds to support their integration into the European research and innovation system.

Structural Funds 2007-2013: Innovation-orientation and more targeted regional programmes as an opportunity for LRAs.

RDTI is a growing, but still small element of national Structural Funds programme expenditure. It has averaged around 6% of total spending, rising to a maximum of 16%. Fitting this expenditure into national plans and programmes has helped - some would suggest obliged - Member States to decide on research and innovation priorities, in terms of both themes and regional targets. Coordinating and connecting national priorities and structures with regional requirements and systems asks questions of the national authorities in many Member States.

As the majority of the programmes were/are of a regional nature (2000-2006: +/- 66%, 2007-2013: 70%), the existence of a more structured innovation system and a stronger regional RTDI policy framework makes it easier to implement more targeted regional programmes.

A strong role for LRAs in policy development and coordination requires either institutional powers or flexibility and political innovation.

Policy input and programme orientation for RTDI investment is a major issue for Local and Regional Authorities. In federal or structurally decentralised Member States, this role is obvious. In other Member States, it requires a degree of flexibility and political innovation. The importance of RTDI investments

varies widely across the EU and has not been of central importance to EU regional policy interventions.

Numerous regional and local level RTDI policy measures and support schemes exist but remain poorly (centrally) documented. Many administrative bodies and actors are involved in innovation policies and projects and many different funds provide grants. It is thus impossible to provide a comprehensive systematic picture of these elements. The contribution of LRAs is also poorly documented in other areas of action.

The coordinated use of RDTI development instruments at various levels presents a special challenge. LRAs urgently need to improve arrangements for cross-departmental and vertically co-ordinated preparation and use of Community instruments to support research, innovation and cohesion.

The growing commitment and achievements of LRAs in innovation policy across all typologies of state structure.

The commitment of LRAs to science, technology and innovation is growing, yet only 40 European regions (out of 271) achieve a R&D intensity of at least 2% (as a percentage of GDP). R&D policies in the regions are to a large extent focused on a broad innovation policy, because regions have – even in federal states – only limited competences in research policy.

Challenges in boosting applied research and promoting R&D investments at regional level include the following:

The capacity of public actors to raise R&D expenditure has already been strained. The structural weakness of business sector R&D can be a major challenge (Saxony, Germany).

R&D measures seem not to be an appropriate way to assess investments in knowledge economy activities, since many of the knowledge sectors in which the region is strong do not declare significant R&D investments, such as creative industries (Scotland, UK).

The massive dependency on a single R&D-intensive but vulnerable industrial cluster (automotive industries) needs to be addressed and other sectors and clusters have to be developed (Västsweden, Sweden).

The statutory situations of LRAs impact on their actions and contributions to implementing Lisbon related strategies. The cluster programme in Upper Austria based on the “Upper Austria 2000+ Strategic Programme”, the Institute for the

encouragement of Scientific Research and Innovation in Brussels (IWOIB), and the Technology Transfer Programme in Catalonia through the ACC1Ó agency offer examples from federal or significantly decentralised states.

The high-speed broadband partnership in Cornwall (UK), the skills pooling in the Polish Aviation valley project, and the development of the Zlin Regional Innovation Strategy in the Czech Republic are among examples from more unitary, or centralised, Member States.

LRA initiatives have achieved considerable results in widely differing fields including the Thermi Business Incubator in Thessaloniki, Greece, the Welsh Knowledge Exploitation Fund, the Porto Digital (Portugal), and the BOM regional agency in the Netherlands.

Beyond institutional powers: Governance as an opportunity to shape local and regional innovation policy.

The capacity of LRAs to develop and implement is not exclusively dependent on their institutional powers. Experience with regional innovation strategy exercises indicates that even in regions with limited powers, a partnership-based approach can improve policy-shaping and the policy-making process and generate new ideas for such policies.

Regional innovation policy and programmes require a regional governance system capable of addressing the technical issues, of ensuring an efficient management system and of working in partnership with national-level actors. Only a few regions provide open and transparent information about their activities, and there is relatively little information available on the success of their initiatives.

Geographical, institutional and capacity gaps as the main challenge for LRAs in fostering innovation policy.

A critical finding is the insufficient regional absorption capacity in terms of implementing RDTI measures in Objective 1 and 2 Programmes during 2000-2006. Increasing Cohesion Policy's emphasis on innovation can give rise to ever more complicated formal administration and legal uncertainties for LRAs implementing regional programmes. There are complaints about “red-tape” and auditing requirements. It seems that smaller regions simply do not have a sufficient number of qualified civil servants to take care of all knowledge- and innovation-related activities. More flexible and risk-tolerant practices in the implementation of the instruments are required - at least for smaller programmes.

In medium to large Member States with several regional innovation programmes, there is a clear need for LRAs to improve coordination between regional programmes and policies, both horizontally between regions and vertically with central government departments.

LRAs need to exploit the new opportunities offered to address the geographical, institutional and capacity gaps in the different areas of cooperation. Research, technology and innovation investments are heavily polarised in some European regions and diffusion mechanisms should be promoted through transnational action.

Increasing R&D investments is only one way to generate jobs and wealth. Many of the new knowledge sectors such as creative industries, do not declare significant R&D investments, . Should regions be more concerned with other types of policy challenges than issues related to scientific research and technological development? Does employment growth owe anything to RTDI policies? Are R&D measures appropriate ways of assessing investments in knowledge economy activities?

LRAs must be given a more central role in order to offset the current global economic crisis.

The global economic crisis accentuates many existing questions, and poses new ones for LRAs. In regions with dominant sectors such as vehicle production, will R&D investment be dramatically reduced? Regional RDTI initiatives in which private funding plays a major role, such as venture capital funds, clearly risk a decline in private funding. Will LRAs be forced to provide considerably more public money to safeguard existing initiatives and infrastructures?

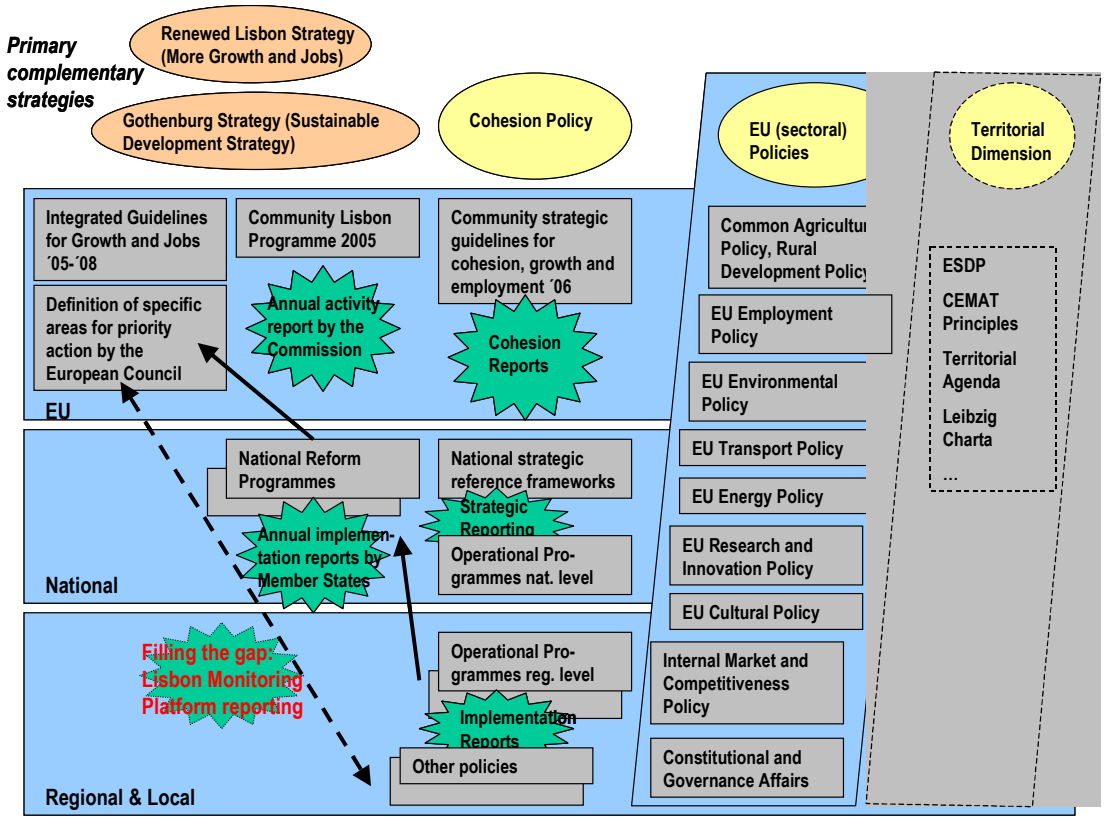
The current economic climate makes effective LRA actions in support of innovation even more vital. Best practices and identified strengths and success stories need to be more widely disseminated. Weaknesses and shortcomings need to be corrected, and a structured system for associating LRAs with policy development, as well as implementation, has become an even more urgent necessity.

1. Preface

The purpose of the report is to establish a systematic and illustrative collection of contributions from cities and regions in the implementation of the **priority area Knowledge and Innovation** of the renewed Lisbon Strategy for Growth and Jobs. The report is part of a broader effort to establish the CoR's "Lisbon Monitoring Platform". The background report should serve directly as a thematic contribution for the new Lisbon Monitoring Platform Report. In addition, the report also serves as a:

- Contribution to developing a clear and transparent methodology for the nascent monitoring and evaluation of Lisbon reforms at the local and regional level,
- Contribution to exchanges of good practice between regions and cities,
- Contribution to strengthening the involvement of relevant stakeholders in the Lisbon process and to increasing ownership of that process, particularly at the local and regional government level, to facilitate more coherent and effective policymaking.

Figure 1. Lisbon Monitoring reporting



In order to analyse the involvement of EU regions and cities in the implementation of the renewed Lisbon Strategy for Growth and Jobs in 2008,

we have adopted an approach that puts Local and Regional Authorities (LRA) at the centre of the analysis. Rather than explaining policy programmes, we focus on LRAs as policy actors in Lisbon-related fields.

This report is a first approach to closing the **"reporting gap"** that exists with regard to the contributions to the implementation of the Lisbon strategy at the local and regional level.

The practical method of monitoring regional and local contributions is based on a **review of existing literature** to demonstrate a variety of approaches to innovation support in different regional contexts. It should be borne in mind that the issue of identifying contributions at the local and regional level is **a vital one** and cannot be resolved solely on the basis of this limited background report. For instance there is **very limited current information** available on regional and local Technology and Innovation support instruments exclusively funded by local/regional sources.

This report is **organised** into four main chapters:

Chapter 2 sets out (i) the rationale, status quo, challenges and obstacles in developing Knowledge and Innovation, (ii) the main elements of the Lisbon strategy, delivered by EU institutions, Member States and LRAs and (iii) a non-exhaustive overview of relevant public interventions (the instruments including the main programmes and allocations under Cohesion Policy).

Chapter 3 forms the **core chapter** of this background report and describes the contributions of Local and Regional Authorities to the policy priority on Knowledge and Innovation. This chapter illustrates the Lisbon-driven LRA contributions to enhancing local and regional innovation policies in tandem with EU Innovation policy. For analytical purposes, a distinction is drawn between the **governance dimension** (concepts/mechanisms/capacities for the implementation, co-ordination and communication of the Lisbon-related priority) and the **operational dimension** (activities undertaken and instruments applied by LRAs). In chapter 3 **interesting cases** illustrating various approaches are identified in each of Lisbon-related areas of action and, where possible, common lessons are drawn. Additional examples of how to develop and co-ordinate innovation and knowledge policies at regional level – against the background of **different institutional conditions** in Member States – are given in the governance section of chapter 3.

Chapter 4 provides a **synthesis** of the main policy approaches of LRAs in terms of coordination and the means available to the LRAs for the delivery of this

policy priority. The interaction between local, regional, national and EU levels is also considered.

In the **chapter 5**, the report's **conclusions** are structured in three parts: Critical aspects for the involvement of LRAs, Challenges for the future, and Questions for further debate.

2. Background: Innovation policy and the EU Lisbon strategy

Fostering innovation has been a major priority at the European, national and regional levels, at least since the adoption of the Lisbon Agenda by the European Council in 2000.

Knowledge and Innovation are widely considered to be among the most important **driving forces** for economic growth. Investing in innovation is not an end in itself. The outputs and results of the innovation process are important for society as a whole, since they affect the economic performance of a region/country. **Benefits** from good innovation performance for a region/country (in an ideal model) are: increased GDP, job creation, productivity gains, competitiveness gains without pressure on salaries, the utilisation of benefits from the domestic and world markets and the ability to cope with the consequences of structural changes.

Knowledge and Innovation are **not just related to high-tech industries** but can impact any industry or economic sector. Innovation is more accurately described as a process through which knowledge acquired through research or experimentation can be translated into new products, services or processes. Innovation is a systemic rather than a linear process, involving many different players and often happening over an extended period. Well-functioning innovation systems ensure the free flow of information across the interfaces between large enterprises, researchers, entrepreneurs, small and medium-sized enterprises (SMEs), investors of all kinds, consultants, intermediaries, local and regional authorities and other actors. Such systems may have technical components but are, above all, networks of individuals.

Proximity is an important feature of most innovation systems. Regions and cities have become the primary locations where knowledge is transferred, where local innovation systems are built and where the competition to attract investments takes place. Given the principle of territorial cohesion, Europe **cannot afford to limit R&D investment to just a few leading regions.** In the context of globalisation, innovation is a “conditio sine qua non” for all regions. The more underdeveloped and poor they are, the more innovative they need to be. Developing regional specialisation is of paramount importance for regional competitiveness and development strategies.

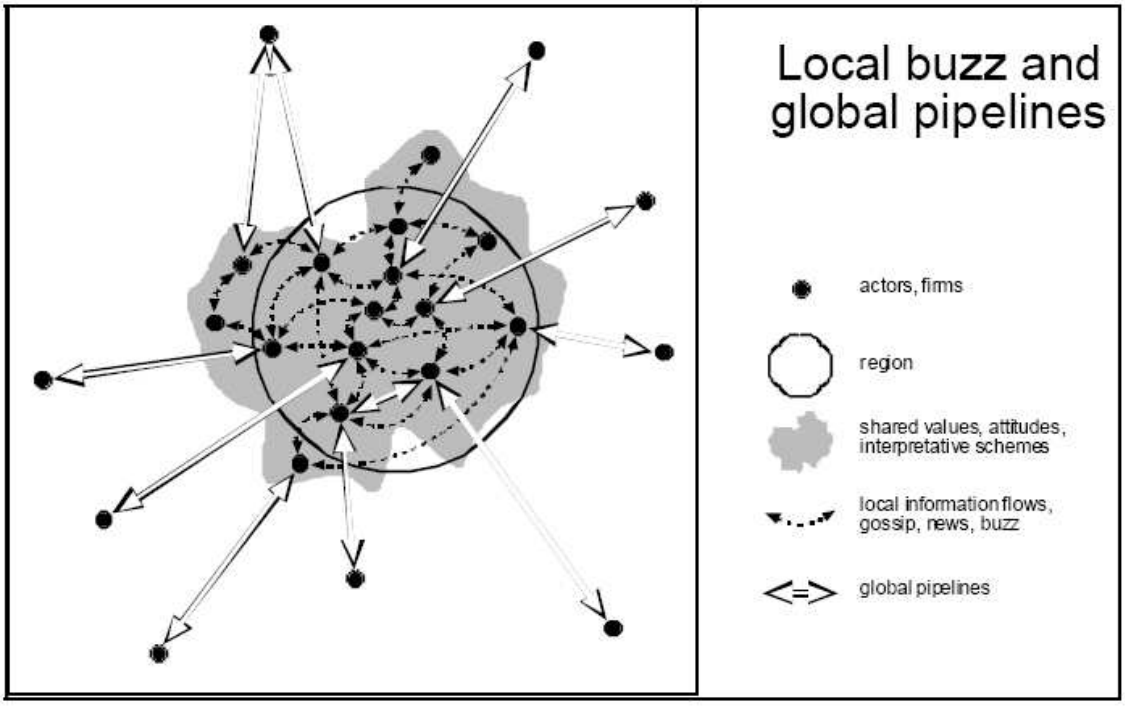
Against this background, it becomes clear that critical factors in the innovation process include:

- **framework conditions**, which are mainly but not exclusively set by public authorities and semi-public bodies at different levels (regional innovation policy, EU innovation policy, support services, access to finance, infrastructure etc.)
- **intensive communication and collaboration** between various actors in the regional innovation system (enterprises, universities, innovation centres, educational institutions, financing institutions, industry associations and government agencies) and
- **knowledge**, which is available through its workforce carriers (i.e. individuals in research organisations, in technology mediating organisations).

How can Regional Innovation Systems be stimulated?

Recent concepts on innovation policy stress the need for a twofold approach: Strengthening the **"local buzz"** while at the same time improving **"interregional and global pipelines"** to develop European regions as a place of innovation. The local/regional "buzz" can be stimulated, for example, through more effective provision of collective innovation support services and better governance of innovation. More effective interregional and global "pipelines" should be established to the outside world to help set up diffusion mechanisms, to develop and strengthen specific technology fields, and to achieve critical mass and visibility.

Figure 2. Local buzz and global pipelines



Source: Bathelt/Malmberg/Maskell (2003)

A **broad view** of the innovation process is also essential when it comes to designing political initiatives to foster learning processes. This means that focusing on R&D and technological aspects of innovation alone is often not enough. Policy makers should also address the organisational, financial, educational and commercial dimensions of innovation (Tödtling et al 2005).
Such innovation policies cannot be effectively developed without **building social capital and good regional governance.** They must include private sector participation in both planning and implementation. They must also ensure comprehension of, and compatibility and engagement with the agendas of other RTDI actors active in the region, such as regional development agencies, technology centres, public and private laboratories, universities, training centres and trade unions.

2.1 Trends, challenges and obstacles in developing Knowledge and Innovation

The status quo in Regional Innovation Performance

DG Enterprise's "Regional Innovation Scoreboard" (RIS), produced in 2002, 2003 and 2006 (including the new Member State regions) as a complement to the "European Innovation Scoreboard" (EIS), illustrates the divergent innovation and research performances in the regions[1].

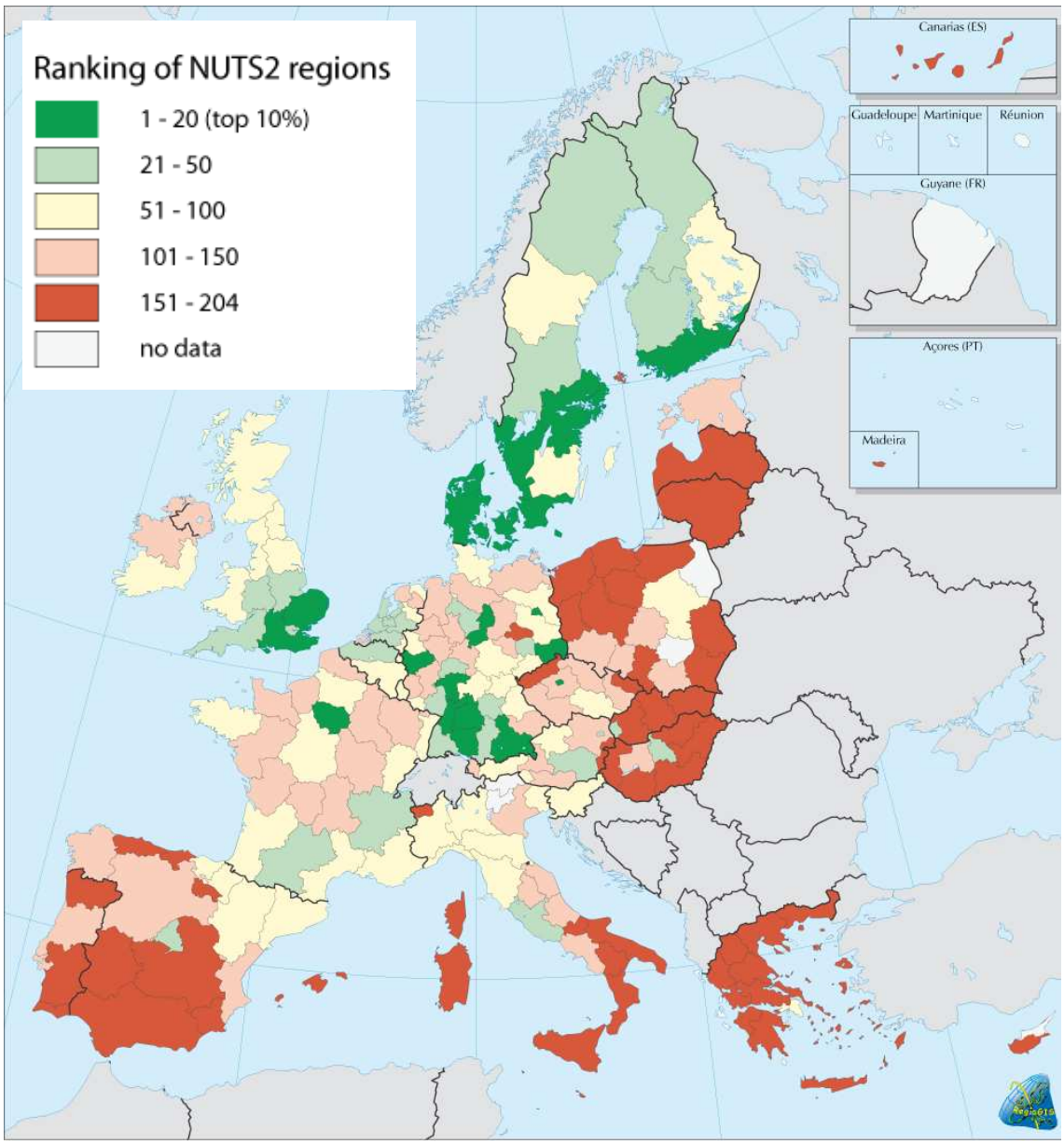
The Regional Innovation Scoreboard 2006 presents the following picture:

- Regions with **low innovation performance** are particularly concentrated in the **new Member States**, **Spain, Greece, Portugal and southern Italy.** They mostly coincide with the economically weaker regions in the Convergence objective of the Structural Funds Programmes (in red, see Figure 3).
- **Innovative regions** (in green, the top 20 out of 204 regions) are mostly located in the North of Europe.
- Finland and Sweden are European innovation leaders but they also **contain some regions that are only average performers**.
- **German regions present a highly diverse picture**, with some very strong regions while others are below average.
- In **France and the UK** the highest innovation performances are concentrated in or close to their capital regions.

[1] The 2006 RIS (MERIT) is based on EU25 countries, 208 NUTS2 regions (4 with no sufficient data), 7 indicators (Human resources in science and technology, Participation in life-long learning, Public R&D expenditures, Business R&D expenditures, Employment in medium/high-tech manufacturing, Employment in high-tech services, European patent applications) and 5 year trend analysis; see Hollanders (2006).

- While generally **regions in southern Europe and new Member States are lagging behind**, some individual regions nonetheless show very strong potential.
- While Spanish regions generally lag behind, the region of **Madrid is among the stronger innovation regions** in Europe.
- In the new Member States there are also some innovation "hot spots" that are already significantly above the EU average, such as the **Prague region** in the Czech Republic and the **Bratislava region** in Slovakia.

Figure 3. Regional Innovation Performance 2006, ranking of 204 NUTS2 regions by composite indicator (regions are classified into 5 groups using hierarchical clustering)



Source: Regional Innovation Scoreboard 2006, Hollanders (2006a)

So even **innovation leaders** have their **regional problems** at home. And some of the **weaker countries** have attractive innovation **"hot spots"** that are not noticeable when comparisons are based on national statistics alone (Le Bail, 2006).

This highly divergent picture at the regional level is underpinned by **strong regional disparities and concentrations** (Licciardello 2008):

- Almost **30% of R&D expenditure** in the EU-27 is **concentrated in 10 regions** (five in Germany and two in France). Ile de France excels, with 7.7% of the total EU R&D expenditure.
- The 21 regions which spend at least 3% of their GDP on R&D are **concentrated in 6 countries** (Austria, Finland, France, Germany, Sweden, UK), the Barcelona objective[2] is attained by only 21 Regions in the EU-27.
- Half of the high technology patent applications are concentrated in **only 13 central regions** (patent applications are often viewed as indicators of technological innovation).

The challenges facing regional innovation policy

Each type of regional economy has to develop its own distinct customised regional innovation policy, dealing with specific innovation needs and gaps. Different groups of regions face different strategic challenges, which can be described very briefly as follows (Technopolis et al, 2006):

- The **knowledge and innovation champions** on the top rung of the ladder of European innovative regions such as Copenhagen, Ile de France, London, Prague, Stockholm and Vienna need to compete on a **global**, not a national or even a European level.
- **More technologically advanced regions** such as Baden-Württemberg, Flanders, Ireland, Piemonte, Rhône-Alpes, Salzburg and Scotland, which are relatively strong on private technology but much weaker in public knowledge and urban services, need to stay at the leading edge in core technology capacities and move towards knowledge-based services.
- **Other capitals and regions with relatively strong public research** (e.g. Athens, Berlin, Bratislava, Catalonia, Lisbon, Midi-Pyrénées, Warsaw and Wallonia, etc.) are strong on public knowledge and relatively competitive in terms of urban services, but need to boost private technology and in particular the drivers of their knowledge economies. These regions face an important challenge in developing their current niches into "competitiveness

[2] The 2002 Barcelona European Council set the goal of raising overall research investment in the EU from 1.9% of GDP to around 3% by 2010. Nearly all Member States have set targets, which – if met – would bring research investment in the EU to 2.6% by 2010. But instead of rising, the overall level of EU research is currently more or less stagnant, see http://ec.europa.eu/invest-in-research/action/2005_communication_en.htm

poles" that will foster entrepreneurship (creation of spin-offs around universities) with linkages to international technology platforms and networks.

- **Less-developed regions** (broadly coinciding with the Structural Funds "Convergence" regions) lie on the southern and eastern rims of the EU. This group includes most of Greece, southern Spain, Poland except Warsaw, Estonia, Lithuania, Portugal except Lisbon, the Mezzogiorno, etc.). These regions are broadly speaking 'users' rather than 'producers' of technology. They face the challenge of making rapid strides towards higher technology activities based on their current skills base, increasing investment in knowledge and attracting more research-intensive industries.

Obstacles to regional innovation policy

Technopolis et al (2006) highlight the following main obstacles to the efficient absorption of funds and effective outcomes for RTDI measures:

- An administrative rather than strategic management of RTDI measures, leading to a lack of synergies with other initiatives.
- Lack of expertise at the regional and national levels in managing RTDI measures. The limited expertise of many officials responsible for the management of RTDI programmes and measures is particularly striking in the field of innovation and knowledge.
- A continuing dominance of supply-side measures with poor linkages to regional innovation systems.
- Limited interest for many 'softer' 'demand-side' measures aimed directly at businesses, due in part to their internal capacity limitations, and to excessively burdensome bureaucratic procedures.
- A crucial obstacle is the absence of policy coordination. In the vast majority of Member States, much more could be done to improve policy coordination between national and regional authorities or with national/regional agencies, to develop innovation policy and apply an adequate mix of instruments.

Main findings

Main Trends

- The conditions for Knowledge and Innovation in European regions **vary widely.** The Knowledge and Innovation landscape is highly diverse – even in the leading countries – and characterised by strong regional disparities and concentrations.
- Innovation and the development of regional specialisation is **essential for all regions,** so more broadly-based efforts need to be developed at the regional level to create an **environment that encourages research,**

development and innovation.

Main obstacles

- An administrative rather than strategic approach to RTDI measures.
- Lack of expertise in managing RTDI measures.
- Absence of national-regional policy coordination in most Member States.

Main Challenges

- Addressing the **institutional setting** and the **innovation milieu** as well as **innovation bottlenecks** (access to risk capital, broadband connections, transfer institutions etc.).
- **Good governance** and an effective institutional structure are an important precondition for strengthening regional innovation capacities.

2.2 Lisbon priority action on Knowledge and Innovation – the main issues

The overall EU Policy Framework

The principal policy document for implementing the re-launched Lisbon Strategy is the Integrated **Guidelines for Growth and Jobs 2005-2008**. Among the 24 economic guidelines, two are particularly relevant for the Knowledge and Innovation priority: Guideline No 7: to increase and improve investments in R&D, in particular by private business; and Guideline No 8: to facilitate all forms of innovation.

During the 2006, 2007 and 2008 **Spring European Councils**, the Member States agreed within the framework of the Integrated Guidelines 2005-2008 on **four priority areas**, including "investing more in knowledge and innovation" to be implemented in the context of the renewed Lisbon Partnership for growth and employment. Hence the Integrated Guidelines form the "stable framework" while the European Council sets flexible priorities every spring.

The Spring Council priorities address both Member States and the Community forming the Guideline for National Reform Programmes, for Cohesion Policy and for EU sector policies. The Member States are encouraged to pay particular attention to these priorities and to **integrating** them into their **national and regional strategies**.

The Council priority area "investing more in knowledge and innovation" covers a broad range of thematic areas such as **research** (3% R&D target, European Research Area, key projects in research such as GALILEO; EIT; joint programming of research), **broad-based innovation** (financing of innovative

SMEs, improved science-industry linkages, world class and regional clusters and networks) and **infrastructure** (scientific e-infrastructure and high-speed internet usage).

A key ambition in this priority area is the implementation of the **broad-based innovation strategy** forming the EU Policy Framework to promote Innovation (Council 2008).

The Commission's communication on innovation **'Putting knowledge into practice: A broad-based innovation strategy for the EU'** adopted in September 2006 (COM(2006) 502), favours a wide-reaching approach, stimulating both the supply and demand side of innovation and mobilising all relevant actors and resources, down to the local and regional levels. The communication defines **10 actions, which** are of particularly high political priority as part of the Lisbon strategy for growth and jobs.

What are the main issues of the EU Policy Framework that need to be taken forward at the regional level within tailor-made approaches?

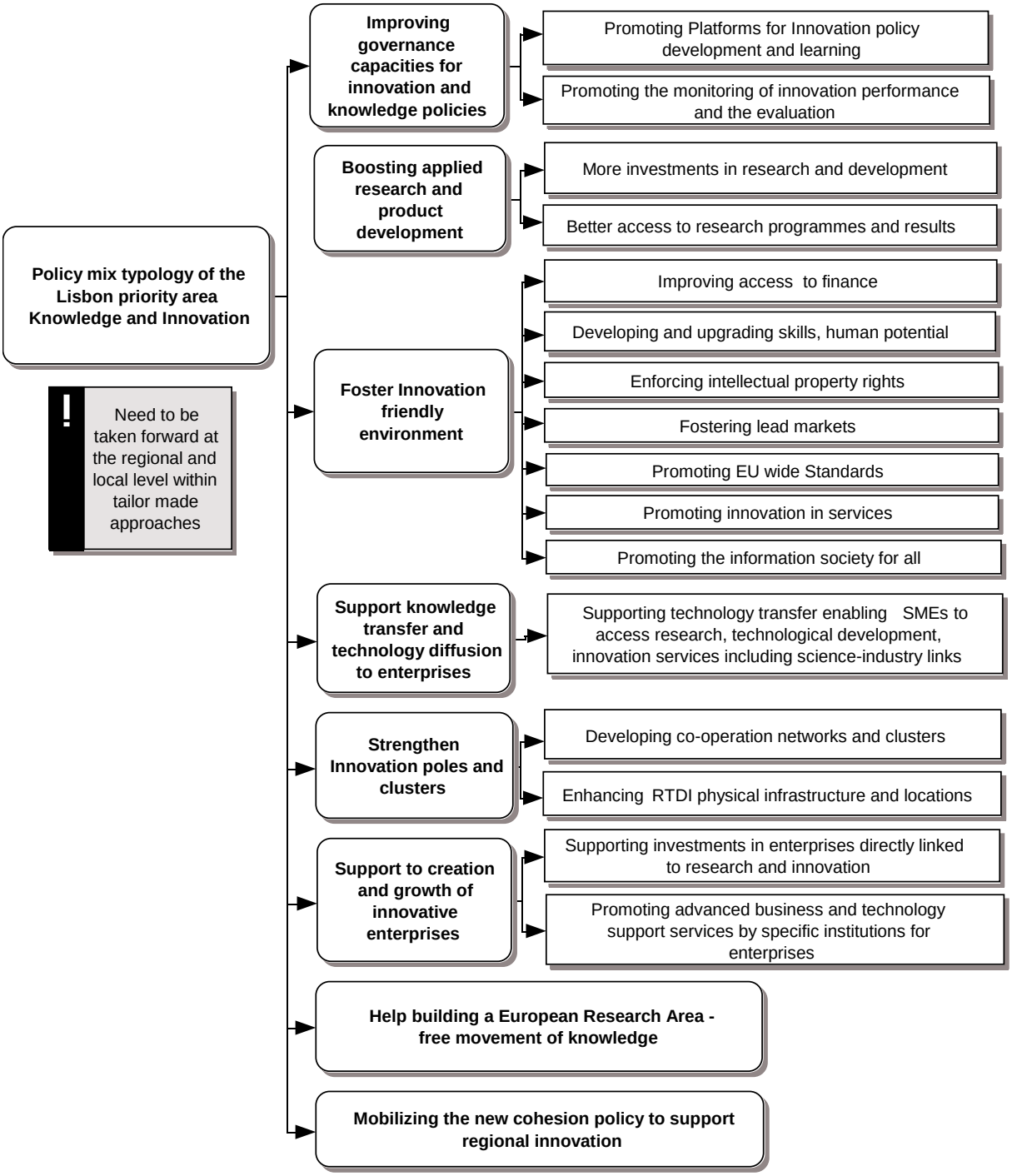
The three interrelated EU main policy documents (Integrated Guidelines, Spring European Councils priorities and a broad-based innovation strategy for the EU) can be seen as "highest level guidelines", which are not easily transferable to the local and regional level. The formal Lisbon procedure provides for the translation of high-level EU policy guidelines into the National Reform Programmes of the 27 Member States. The guidelines set out at national level should address inter alia the regional level as a direct target group.

It is thus of pivotal importance to identify an appropriate set of main issues within the priority area Knowledge and Innovation that LRAs can respond to in practical terms.

The following section **proposes a categorisation of the main issues**, that (i) can be linked to Lisbon-related EU policies and actions described above (ii) fall mainly within the remit of LRAs[3] (iii) are commonly used in innovation literature and (iv) can to a high degree be linked to interventions carried out under the Structural Funds programmes especially at regional level (e.g. Operational Programmes at NUTS II level) and to other Community instruments such as FP7 and CIP. The following figure points out the **wide range of actions**, which could be relevant for LRAs in fostering Knowledge and Innovation.

[3] Main issues which have not been taken into account are for instance: tax incentives for R&D, the Modernisation agenda for universities, Joint programming, National R&D investment targets, Joint Technology initiatives.

Figure 4. Policy mix typology of the Lisbon priority area Knowledge and Innovation (Policy areas and areas of action)



Source: Metis

The Policy-mix typology of the Lisbon priority area Knowledge and Innovation, which needs to be taken forward at the regional level on the basis of tailor-made approaches, can be described as follows:

1. Policy area: Improving governance capacities for innovation and knowledge policies

This policy area addresses developing and improving policies and strategies in support of innovation and knowledge and comprises the following areas of action:

- **Area of action: Promoting Platforms for Innovation policy development and learning:** The Commission established the Pro Inno Europe platform; related topics are (i) policy analysis and reports: INNO Policy trendchart, Regional Trendchart 2009, at www.proinno-europe.eu; ERAWATCH provides information on research policies, structures, programmes and organisations, www.cordis.europa.eu/erawatch/; (ii) Innovating regions - exchange of experiences and good practice: Innovating Regions in Europe - IRE Network, with 240 member regions - mostly former RIS beneficiaries, the new generation of Regional Innovation Strategies RIS-NAC (Regional Innovation Strategies in Newly Associated Countries), www.innovating-regions.org; (iii) The Initiative for innovation professionals supported by the EC under the 6th Framework Programme Europe INNOVA www.europe-innova.org. Furthermore, reference should be made to the "Regions for Economic Chance" initiative for the 2007-2013 period, for testing and implementing innovative ideas.
- **Area of action: Promoting the monitoring of innovation performance and the evaluation of innovation systems/policies/programmes and measures:** related EU initiatives include the European Innovation Scoreboard (EIS) and the regional scoreboard, Innobarometer, www.eis.eu; Evaluation at different levels and at different stages of the programming cycle is a core element of European policy delivery.

2. Policy area: Boosting applied research and product development

This policy area addresses pre-competitive development and industrial research projects and related infrastructures and comprises the following area of action:

- **Area of action: Supporting R&TD activities** in research centres: related EU initiatives: ERDF support, FP7.
- **Area of action: Better access** to research programmes and to research results: related EU initiative: CIP (Enterprise Europe Network)

3. Policy area: Fostering an innovation-friendly environment

This policy area seeks to improve the overall environment in which enterprises innovate and comprises the following areas of action:

- **Area of action: Improving access for entrepreneurs and enterprises to finance:** related EU initiatives: JEREMIE, CIP 2007-2013/ Entrepreneurship & Innovation Programme, ERDF support under Cohesion Policy.
- **Area of action: Developing and upgrading skills, human potential in the field of research and innovation:** related EU initiatives, ERDF and ESF support under Cohesion Policy.
- **Area of action: Facilitating public procurement of innovative products and services:** As a related EU initiative, a guide on dealing with innovative solutions in procurement was published by the Commission in February 2007; Commission Staff Working Document, SEC (2007) 280 at http://www.proinno-europe.eu/doc/procurement_manuscript.pdf
- **Area of action: Enforcing intellectual property rights:** a related EU initiative is the IPR helpdesk, www.ipr-helpdesk.org; The Commission adopted a communications on enhancing the European patent system in April 2007, a Communication on the IPR strategy was adopted in 2008.
- **Area of action: Fostering lead markets with high economic and societal value:** related EU initiatives: Lead Market Initiative, six markets have been identified: e-Health, protective textiles, sustainable construction, recycling, bio-based products and renewable energies.
- **Area of action: Promoting EU wide Standards:** the European Commission has established several pan-European Networks to bring together consumer associations, market experts, companies and policy makers to ensure the more successful exploitation of existing standards in Europe (see http://standards.eu-innova.org/).
- **Area of action: Promoting innovation in services:** A European Innovation Platform for knowledge-intense services was started in 2007/2008. The KIS (= knowledge intensive services) Innovation Platform is an integral part of the Europe INNOVA initiative, www.europe-innova.org.
- **Area of action: Promoting the information society for all:** ensuring availability of ICT infrastructure and related services and uptake of ICTs by firms and households; related EU-initiatives: CIP 2007-2013/ ICT Policy Support Programme, ERDF support under Cohesion Policy.

4. Policy area: Knowledge transfer and technology diffusion to enterprises

This policy area addresses direct support (aid schemes…) and indirect support (delivered through innovation centres, transfer offices…) for knowledge and technology transfer and includes the following area of action:

- **Area of action: Supporting technology transfer** enabling SMEs to access research, technological development, innovation services, including science-industry links: related EU initiative ERDF support under Cohesion Policy, FP7.

5. Policy area: Strengthening innovation poles and clusters

This policy area addresses direct support (funding of cluster activities…) and indirect support (grouping of infrastructures in poles…) and comprises the following areas of action:

- **Area of action: Developing co-operation networks and clusters between businesses, research, education and public actors**: related EU initiatives: EU cluster policy; some initiatives within the EU cluster policy are: (i) The European Cluster Observatory provides data on Cluster mapping and on Cluster organisation. (ii) The Commission adopted a Communication "Towards world-class clusters in the European Union: Implementing the broad-based innovation strategy" outlining a policy framework to facilitate the development of more world-class clusters in the EU in October 2008. (iii) in October 2008, the Commission also adopted a Decision setting up a high-level "European Cluster Policy Group" of up to 20 Members, which will share intelligence about cluster policies with a view to better assisting the Member States in supporting the emergence of world-class clusters.
- **Area of action: Enhancing RTDI physical infrastructure and locations such as technology centres or integrated thematic poles;** related EU initiative: ERDF support under Cohesion Policy.

6. Policy area: Supporting the creation and growth of innovative enterprises

This policy area addresses direct support (e.g. grants for SME) and indirect support (e.g. funding of incubators) and comprises the following areas of action:

- **Area of action**: **Supporting investments** in enterprises directly linked to **research and innovation**; related EU initiatives: ERDF support under Cohesion Policy.
- **Area of action**: **Promoting advanced business and technology support services** by specific institutions for enterprises and groups of enterprises: related EU initiative Enterprise Europe Network, ERDF support under Cohesion Policy.

7. General Policy area: Helping to build a European Research Area - free movement of knowledge

The European Research Area (ERA) is one dimension of a “fifth freedom” – the freedom of knowledge – completing the four freedoms of movement of goods, services, people and capital proposed by the Council (2008). In 2000, the EU decided to create the European Research Area (ERA). With the Green Paper

2007 the ERA was **re-launched**[4]. New ideas and initiatives are currently under discussion with regard to enhancing and intensifying ERA (see the opinion of the Committee of the Regions on the ERA-New perspectives, October 2007 on the Green Paper provided by the Commission COM (2007) 161). Related EU initiatives are, in particular, the Framework Programmes for Research and Technological Development.

8. General Policy area: Mobilising the new cohesion policy to support regional innovation

The regional dimension of EU innovation policy is particularly reflected in Cohesion policy. The Commission emphasises the importance of a Cohesion policy that really invests in knowledge and innovation. The new Cohesion policy for the period 2007-2013 puts particular emphasis on these areas through its "earmarking exercise". All Member States are encouraged to invest in knowledge and innovation. Cohesion policy can – through its Structural Funds Programmes – help all regions to build up regional innovation capacity and to exchange good practice through trans-national and inter-regional co-operation. Related EU initiative: ERDF support under Cohesion Policy.

Main findings

- High-level guidelines set priorities but do not yet **directly address all public stakeholders**: Member States, Commission **and** Local and Regional Authorities.
- Within the Knowledge and Innovation priority area a clear, limited, and feasible number of **main issues and priorities needs to be defined**. It is only within such a focussed definition that a practical and constructive role for Local and Regional Authorities can be developed.
- **8 policy areas and 16 related areas of action** have been **proposed** to date. There is a need for **additional reflection** as to whether these are focussed enough to be fully relevant.
- The main issues of the Lisbon priority area Knowledge and Innovation represent key areas of activity to be developed and implemented at **the local and regional level.** Their implementation must take place within a distinct customised regional innovation policy that addresses the specific regional innovation needs and gaps. There is no off-the-shelf "best mixture of measures". **The high-level guidelines must instead be adapted to** each region's specific requirements and situation.

[4] Green Paper, The European Research Area: New Perspectives, SEC (2007 41, (COM (2007) 161 final, 4.4.2007.

2.3 Overview of the national, regional and local ongoing innovation policies, programmes and initiatives

2.3.1 Community Instruments – the challenge of coordinated use

At the Community level, the Union possesses several instruments for a broad-based EU innovation policy: **Cohesion policy instruments** include: the European Regional Development Fund (ERDF) and the European Social Fund (ESF), the European Agricultural Fund for Rural Development (EAFRD); **the Research Framework Programme** (FP7 2007-2013 with a total budget of over EUR 50 billion); and the **Competitiveness and Innovation Framework Programme** (CIP 2007-2013 with a total budget of over EUR 3,6 billion). The EU funding for the Structural Funds programmes (ERDF, ESF) in the period 2007-2013 will exceed EUR 86 billion.

FP7 and CIP have been **increasingly involving** the national and **regional levels**. In FP7, more importance is attached to the regional dimension is than under FP6. Under the CIP, key actors from all EU regions are involved in projects and in the new Enterprise Europe Network, which provides business and innovation support services to enterprises.

The Structural Funds (ERDF, ESF) increasingly emphasise the role of research and innovation as crucial factors for regional development. The importance of innovation is also highlighted in the Community strategic guidelines for rural development for 2007-2013 (2006/144/EC), which set the framework for the EAFRD.

The legal basis of these instruments is as diverse as their implementation methods. Further innovation issues cut across many European Commission domains. A future challenge will be to build bridges between these instruments and domains. According to the Community Strategic Guidelines (2006/702/EC) the key to a coherent support strategy for research, technological development and innovation lies with the Member States and the regions.

Example: complementary financing by the Structural Funds, FP7 and CIP

Separate but related activities or parts of a project can be simultaneously funded by the Structural Funds, FP7 and the CIP. According to Practical Guide (2008) several options are possible:

- A region is involved in the development of a major research infrastructure (e.g. a synchrotron). Under the Research Infrastructures action of the FP7 Capacities Specific Programme, it receives funding for the design phase and

for certain preparatory work (legal, technical, etc). However, FP7 cannot finance the actual construction of the facility. This is where the Structural Funds can step in. If the region is eligible under the Convergence Objective, the Structural Funds can provide support for the construction and fitting-out of the facility.

- A university is engaged in upgrading the skills of its staff, with transnational actions (such as international fellowships) covered by the People Programme of FP7, while the European Social Fund under the Structural Funds at the same time supports advanced training within the region.
- An SME may be receiving support for an innovative business project in the form of a loan guaranteed by a financial intermediary approved under the CIP's SME Guarantee Facility, while other related but distinct activities, for example, training to up-grade staff skills in order to develop and implement the new business idea, can be in receipt of Structural Funds (under the European Social Fund).

2.3.2 FP6 – 2002-2006 from the LRA perspective

The **third block of activities** (Strengthening the foundations of the ERA) in FP6 was of some relevance to LRAs. The objective of this action was to stimulate the coherent development of research and innovation policy in Europe by supporting programme coordination and joint actions conducted at national **and regional level** as well as among European organisations. Activities include (i) Benchmarking research and innovation policies at regional level and (ii) Improving the regulatory and administrative environment for research and innovation. The support of coherent development of policies within the third block accounted only for 0.3% of FP6 budget (Report of the Expert Group, February 2009, table 1).

Very little is known about the contribution of LRAs to the implementation of FP6 as the regional implementation level is **not addressed** in the Ex-post Evaluation of FP6 (Report of the Expert Group, February 2009).

One reason may be the **thematic/sector focus** of the Framework Programme (versus the regional focus of Structural Funds).

2.3.3 FP7 2007-2013 from the LRA perspective

The Seventh Framework Programme is open to both public and private organisations across all its major activities. However there are a limited number of FP7-initiatives that are worth highlighting as being of specific interest to regional and local public bodies. Regional authorities are singled out as **key participants** in the '**Regions of knowledge'** initiative for research-driven clusters under the Capacities programme, one of the four main FP7 programmes targeting regional innovation, competitiveness and research capacity.

The 'Regions of knowledge' initiative builds on a pilot scheme and a call under the 6th Framework Programme in 2005[5] and aims to strengthen the research potential of European regions. The aim is to increase the capacity of European regions and their authorities, by involving innovative 'research-driven clusters' at local and regional level, to invest in and develop their research commitment.
26 projects had been approved in the 'Regions of Knowledge initiative by April 2009, with a further 6 projects under negotiation (see table 7 in the Annex).

Although highlighted clearly in the FP7 programme information, the contribution of LRAs to this initiative is **difficult to establish.** Only a few LRAs are listed under partnerships in the project descriptions available on the CORDIS-homepage[6]. No information is given as to the role, contribution and benefit of LRAs in these initiatives.

FP6 and FP7 are by **no way sufficient** to trigger Knowledge and Innovation capacity of (lagging behind) regions. **Other sources, such as the European Structural Funds** are needed to support the regions' integration into the European research and innovation system.

2.3.4 RDTI support in regional Structural Funds programmes in the 2000-2006 period

The 2000-2006 period covered a **total of 557 programmes,** including Objective 1, 2, 3 and Community initiatives. 244 programmes are **Objectives 1 and 2** programmes**.** Out of the 244 programmes funded, 144 were in Objective 1 regions and 100 in Objective 2.
Some 215 of these programmes (88%) were carried out in EU15 countries, the rest in the new Member States (the division between **regional and sector** programmes is shown in the annexed table 1).
The **majority** of the programmes in the **EU25** were of a **regional nature** (66%), especially in EU15 countries (74%), while in the **new Member States,** most programmes were **sectoral** (93%).
In the **new Member States**, there were no regional programmes in Objective 1 regions. In the **EU15 countries**, on the other hand, most Objective 1 programmes were regional except in Portugal and Ireland, where most were sectoral. In Italy, Spain and Greece, there was a fairly even split between regional and sectoral programmes.

[5] http://ec.europa.eu/research/regions/index_en.cfm?pg=knowledge.
[6] http://cordis.europa.eu/fp7/capacities/regions-knowledge_en.html.

In **Objective 2**, nearly all programmes in EU15 countries and all in the new Member States were regional (Bratislava, Cyprus and Prague).
A close look reveals the 66 regional Objective 1 and 94 regional Objective 2 programmes (in total 160) across the EU25 **concerned RTDI measures** (according to Applica et al 2008).

Structural Funds (SF) support for RTDI measures - Regionalisation of RTDI policy

In "old" Objective 1 regions (Ireland, Portugal, Spain and Greece), SFs represent a **crucial, if not unique, resource** for supporting national and regional RTDI policies. From this point of view, the 'strategic' additionality of SF has been very high. As in the "old" Objective 1 regions, SFs are the main resource for supporting RTDI in the new Member States.
In contrast, the new 'Objective 1' regions have strong needs related to industrial restructuring and significant potential because of the availability of highly skilled and competitively-priced human resources, which attract foreign investment.
In terms of approaches to programming, the Objective 1 countries were characterised by a dominance of multi-regional operational programmes, with **weak regional-level capacities** to implement RTDI policies and measures.
In the Objective 2 regions, SF interventions played the role of a **complementary instrument** to national policies: in some places facilitating the local expansion or consolidation of technology centres or other innovation facilities. In other regions they were used to implement a regional RTDI strategy, and in a few cases to support particularly innovative interventions.
Technopolis et al (2006) point out that Community support has decisively contributed in some cases to a **decentralisation** of influence over RTDI interventions. The SF programmes have boosted the **role of regions** in previously strongly centralised countries (France, Ireland, Portugal) and strengthened a decentralisation trend elsewhere (e.g. Poland, Spain, United Kingdom). The experience demonstrated that the shift from a central to a decentralised approach of RTDI policy is not easy. It requires a governance system capable of facing technical issues and ensuring efficient management control.

Allocation of funds to RTDI

With respect to total Structural Funds (Objectives 1 and 2) in EU15 countries, support for **RDTI** accounted for around **6%** of the total - more in Denmark (16%), Austria, Belgium and Finland (14% in each). On the other hand, it accounted for only around 2% of the total in Greece and the Netherlands. Hence the **importance of RTDI investments varied widely across the EU**. These

figures suggest that RDTI measures particularly in Objective 1 areas have not been the central plank of EU regional policy interventions[7].
In comparison to that, "Basic infrastructure" was the largest broad category of expenditure in Luxembourg (71%), Greece (52%), Ireland (46%), Spain (45%) and Portugal (42%). In all these countries apart from Luxembourg, the biggest item within this was "Transport infrastructure".
A larger proportion of funding (38%) went on the productive environment than in the new Member States (33%), while in the latter more went to basic infrastructure (42%) than in the former (39%) (the annexed Table 2 gives a more detailed breakdown).

2.3.5 More RDTI support in regional Structural Funds programmes in the 2007-2013 period

Based on the information provided by the Managing Authorities of the Member States and Regions, the new Structural Funds Operational Programmes in line with the renewed Lisbon strategy will **emphasise the funding of research and innovation** in comparison to the more infrastructure-oriented investments during the previous period.
Licciardello (2008) points out the massive increase: in the 2000-2006 period about **EUR 26 billion** (= 11% of the total SF budget) were invested in research and innovation in the broad sense, of which **EUR** 10.7 billion went to RTDI in the narrow sense; compared to **EUR 86 billion** in 386 Operational Programmes in the new period 2007-20013 (= 25% of the total Structural Funds), of which EUR 62 billion in Convergence regions, EUR 22 billion in Competitiveness & Employment regions and EUR 2.1 billion for territorial cooperation.
Thus the planned investments in innovation in 2007-2013 through cohesion policy **are more than three times higher** than in 2000-2006[8].
In the 2007-2013 programming period, a large proportion of the programmes within the framework of Cohesion policy are designed and implemented at the **regional level**. In total, 258 (or 70%) of all 368 Operational Programmes for the period 2007-2013 are regional.
But the **real work is just beginning** to ensure that through the programmes, an effort is made to encourage broad innovation support on the ground. It is important to maintain this effort throughout the 2007-2013 period and that resources are not shifted to lower priority areas.

[7] According to Applica et al. (2008).
[8] See Commission staff Working document: Regions delivering innovation through cohesion policy, 14.11.2007, SEC(2007) 1547.

2.3.6 *Innovation Programmes and instruments funded primarily from regional sources*

In addition to EU co-financed innovation support programmes and measures throughout Europe, **a plethora of mainly national or regional funded policy measures** and support schemes aimed at innovation have been implemented or are in preparation. The diversity of these measures and schemes reflects the diversity of the framework conditions, cultural preferences and political priorities in the Member States and its regions.

The joint inventories[9] focus primarily on national-level instruments, while the **regional level is poorly covered.**

There are very **few databases** that are publicly available covering financial instruments at the regional level, e.g. the funding support database in Germany www.foerderdatenbank.de. The database makes it possible to find funding instruments at the regional level (Länder-level) for a range of thematic issues.

In order to demonstrate the **complexity** of regional innovation interventions, an example for Flanders (Belgium) and Vienna (Austria) is selected, as both are **federal countries**.

LRA	**Activities**
Flanders (one of three NUTS1 regions in Belgium)	**Technology and Innovation support instruments in Flanders** Belgium is the only country in Europe where RTDI policies are nearly **completely decentralised,** with responsibilities shared by several governments (e.g. the Flemish Government), each enjoying full autonomy of decision making. The Flemish regional R&D and innovation policy is currently implemented by about **13 programmes** covering a broad policy mix (e.g. funding of research and excellence centres, Industrial research Fund, Technology transfer fund, funding of companies). The R&D budget of the Flemish government amounts to some 900 Mio. EUR (2005, without federal government and EU support). In the **1990s**, a number of sector-based **cluster** initiatives were supported by the Flemish government; and have been partly converted into a new legal scheme through co-operative innovation networks, called VIS. Apart from the VIS, **excellence centres** have also been set up with government support. Between 2000 and mid-2007, nine excellence centres active in various economic sectors were established, aimed at building bridges between economic and technological innovation.

[9] ERAWATCH, INNO-Policy TrendChart annual country reports, 2006 Country Reports of the Strategic Evaluation on Innovation and the knowledge based economy in relation to the Structural Funds and the Cohesion Fund for the programming period 2007-2013.

LRA	Activities
	In **1999**, the **Innovation Decree** provided the legislative framework for the promotion of technological innovation as a policy area in the Flemish Region. This regulation was implemented by three government decisions (1) on R&D business support, (2) "interface services" aimed at making the best use of academic research, and (3) on "co-operative innovation networks", or VIS. These three implementing decisions were all approved in the course of 2001-2002. In **2003**, the Flemish government concluded an **Innovation Pact for Flanders** with industry representatives, universities and research centres, with the objective that by 2010 Flanders would comply with the 3% R&D spending target (1% funding by the government and 2% from the private sector). This Innovation Pact has become an example for the rest of Europe. The Flemish government promises to increase the budget for Science and Innovation with a net EUR 60 million on a yearly basis. Progress towards this goal is monitored annually by the Flemish Science Policy Council (VRWB). In mid-**2005**, the Flemish government approved a new regulatory framework for the public research organisations (PROs) and the Excellence Centres, whereby the latter are being redirected into Competence Centres. Good governance principles were introduced and contract terms were changed. At the end of **2005**, the **Flemish Innovation Policy Plan** was approved by the Flemish government. It contains nine action lines that can be generally applied. An integrated view on innovation across Flemish departmental boundaries (a horizontal or third-generation innovation policy) lies at the basis. In **2006**, the Flemish Science Policy Council, (VRWB), established in 1985, conducted a **foresight (priority setting) exercise** (Science & Technological Innovation 2004-2010) to identify the most important Flemish Science, Technology and Innovation areas. *Source: Flemish Government/Department of Economy, Science and Innovation (2008), Innovation Policy Research for Economic Growth (IPREG)-Country Survey for Flanders*
Vienna (one of nine NUTS2-regions in Austria)	**Technology and Innovation support instruments at the local level in Vienna** In Austria, the regional innovation policy is driven mainly by the regional governments (each of the nine federal regions - Bundesländer), has its own government (Landesregierung) and parliament (Landtag). The federal states have considerable powers in the field of innovation policy. Austria has therefore seen a regionalisation of innovation policy in recent years. Most Austrian

LRA	Activities
	regions - such as Vienna – have developed strategies and have mobilised substantial financial resources to implement them. Measures to support technology and innovation are mainly funded from regional sources, sometimes in combination with national ones. Support from the structural funds in Vienna, as in several other Objective 2 regions (Austria, Belgium, etc.) tends to be relatively marginal. Vienna offers **more than 40 technology and Innovation support measures** for a broad spectrum of actions including awareness raising, education and qualification, financing of research projects, support of innovative SMEs, investments in thematic location development provided by the Government of Vienna itself (Department 27) and through its **specialised municipal agencies** (Wiener Wirtschaftsförderungsfonds / WWFF, Zentrum für Innovation und Technologie / ZIT, Wiener ArbeitnehmerInnen Fonds / WAFF, Wiener Wissenschafts-, Forschungs- und Technologiefonds / WWTF) and by a **private-sector organisation** (chamber of commerce / WKÖ). The majority of the instruments are locally funded and only a limited number receive support from the Central government or the EU (see WIFO 2006). End of 2007 Vienna established a **new strategy** to focus its RTDI activities on several areas. *Source: WIFO (2006), http://www.wien.gv.at/forschung/*

Main findings

- The contribution of LRAs to **FP6 and FP7** is **hardly visible.** Other sources such as the European Structural Funds are needed to support the (lagging behind) regions' integration into the European research and innovation system.
- **RDTI is a growing but still small element of national Structural Funds programme expenditure**. It has averaged around 6% of total spending, rising to a maximum of 16%. Fitting this expenditure into national plans and programmes has helped or, some would suggest, obliged, Member States to decide on research and innovation priorities, both in terms of themes and of regional targets. Coordinating and connecting national priorities and structures with regional requirements and systems asks questions of the national authorities in many Member States.
- As the majority of the programmes were/are of a regional nature (2000-2006: +/- 66%, 2007-2013: 70%), the **existence** of a more structured innovation system and a stronger regional RTDI policy framework makes it **easier** to implement more **targeted regional programmes**.
- Policy input and programme orientation for RTDI investment is a major issue for Local and Regional Authorities. In federal or structurally decentralised Member States this **role is obvious**; in other Member States it requires a degree of **flexibility and political innovation.**
- The **importance of RTDI investments varies widely** across the EU and has **not been of central importance** for EU regional policy interventions. The 2007-2013 Structural Funds Operational Programmes plan to **emphasise** the funding of research and innovation in comparison to the more infrastructure-oriented investments during the previous period.
- In addition to Community support programmes at the regional and local level, **numerous** RTDI policy measures and support schemes exist**,** but they are **poorly covered** by joint inventories. Many administrative bodies and actors are involved in innovation policies and projects and many different funds provide grants. It is thus very complicated to give a systematic picture of the full range of instruments funded primarily from regional sources.
- RDTI development policy consists of a **wide range of instruments** at various levels, but **coordinated use** is a special challenge. Hence it is a pivotal task for regions to **improve** the arrangements for cross-departmental and vertically co-ordinated preparation and use of Community instruments to support research, innovation and cohesion at the regional levels.

3. The contributions of Local and Regional Authorities to the policy priority 'Knowledge and Innovation'

3.1 The operational dimension: the activities of LRAs

This chapter sets out policies and activities at the regional level, which are under the control of the regional authorities. Shared policies and activities implemented jointly by national and regional authorities are regarded as regional. Policies and activities implemented by national actors are excluded, even if they have a regional dimension.

36 examples and one comparative analysis are provided to illustrate the activities of LRAs to put forward the Lisbon priority area Knowledge and Innovation. The examples are presented for selected areas of action. The selection is based on examples mainly derived from openly available information sources (e.g. evaluations, studies, websites).

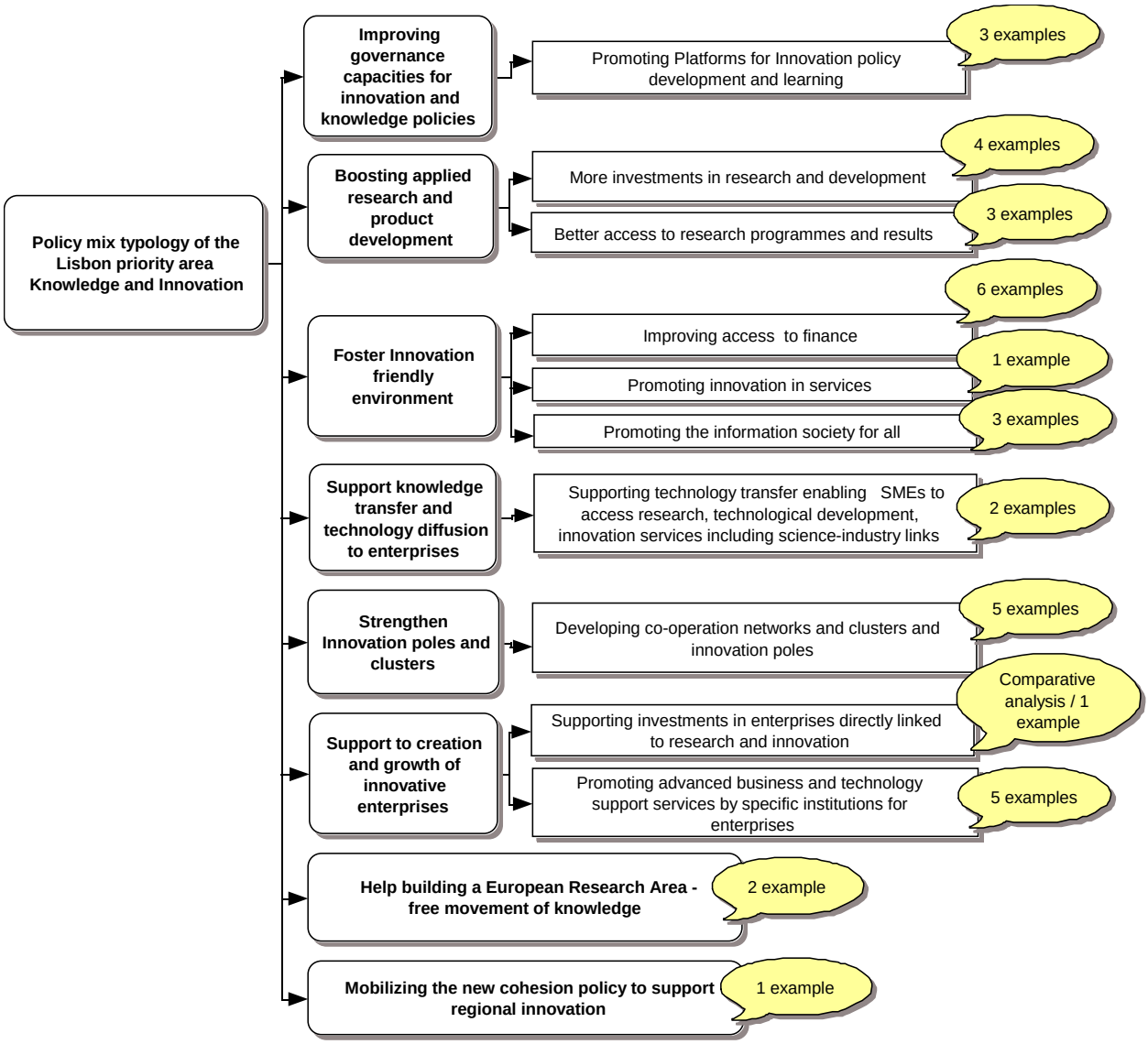
3.1.1 Policy area: Improving governance capacities for innovation and knowledge policies

Area of action: Promoting Platforms for Innovation policy development and learning:

In this area it is essential to highlight Regional Innovation Strategies and action plans (RIS/RITTS/RISI) aimed at developing **innovation capability in regions**[10]. Regional Innovation Strategy projects provide the participating regions with a unique, tried-and-tested approach to the promotion of innovation. Its five simple steps are: (i) initiating regional dialogue (ii) direct involvement of all relevant organisations in shaping innovation policy (iii) analysis of regional innovation needs and capacities (iv) selection of priorities for innovation support and (v) development of action plans and pilot projects.
By following these steps, over 150 European regions have placed innovation at the heart of practical competitiveness strategies. With support from the European Commission, they have developed a shared vision of the future, in which every company can be an innovator and they have aligned innovation support with the real needs of companies.

[10] See www.innovating-regions.org. Further information on Innovative strategies and actions can be found in European Commission (2006), Commission Staff Working Document, Innovative strategies and actions- Results from 15 Years of Regional Experimentation

Figure 5. Policy mix typology of the Lisbon priority area Knowledge and Innovation (Policy areas and areas of action)



Source: Metis

The first Regional Innovation and Technology Transfer Strategies and Infrastructure (RITTS, funded by DG Enterprise) and Regional Innovation Strategy (RIS, funded by DG Regional Policy) projects were launched in **1994**, and were followed by two further waves of projects covering regions in the Member States and EEA countries. Twenty-five RIS+ projects, financed by DG Regional Policy, were launched to support regions in the implementation of specific measures and projects stemming from their RITTS/RIS strategies. From **2002** onwards RIS has been integrated into the Innovation element of the FP6 RTD managed by DG Enterprise. Several generations of Regional Innovation Strategy projects have now been implemented. In **2005**, 33 new RIS projects were launched in regions in the new Member States and Associated Countries.

Evaluations and studies (Technopolis 2006) have underlined the role of a **partnership-based development of regional innovation strategies** as a mechanism for improving the design and delivery of RTDI measures. The following examples will illustrate this point:

LRA	Activities
Five Polish regions (NUTS2)	A **process of development of RIS** started in Poland in 2002 with the first five projects in the regions of Opolskie, Śląskie, Warmińsko-Mazurskie, Wielkopolskie and Zachodniopomorskie initiated with EU support through the RIS-NAC programme. Based on this experience, in 2003, the Polish government provided national grants to all other regions in order to prepare a RIS. Subsequently, the Structural Funds have provided opportunities to continue expanding the capacities of regional partnerships in the area of innovation. Under the Integrated Regional Operational Programme (2004-2006), support was provided for five types of projects under measure 2.6 Regional Innovation Strategies and transfer of knowledge. Projects funded can support further development of RIS, creation of networks, development of information exchange and communication systems, internships for higher education institution graduates and for employees of the R&D sector, and scholarships for doctoral students in strategic areas pre-defined by the RIS. *Source: Country Report Poland, Technopolis et al 2006*
Zlín Region (NUTS3), Czech Republic	The Zlín Region, the authority responsible for economic development of its territory and Tomas Bata University in Zlín, a institution of tertiary education and a base for research and development, along with other partners that support the development of the Zlín Region, have agreed on the need to bring targeted aid to innovative entrepreneurship in the region, and to **form a Regional Innovation Strategy.** In the spring of 2004, a call for proposals was announced for projects supporting the creation of regional innovation strategies with financing from the EU's 6th Framework Programme for Research and Technological Development. The Zlín Region reacted to this call for proposals, and became one of 33 successful applicants. After completion of negotiations with the European Commission on the final form of the project, in June 2005 it began to create its first regional innovation strategy *Source: http://www.innovating-regions.org/*
Lower Austria	The Land of Niederösterreich (NÖ) is the largest of Austria's nine provinces and is situated in the north-east of the country around the

(NUTS2 region), Austria	city of Vienna. The main objectives of the **series of RIS-NÖ projects** (RIS/RITTS/RIS+/RIS++) were (i) to improve collaboration among firms (and between firms and technology providers) in the field of innovation, (ii) to intensify R&D activities, (iii) to commercially exploit the outcome of R&D activities, and (iv) to promote innovation awareness. To achieve these objectives, a communication platform for innovation activities was established in order to consolidate and coordinate the innovative forces in the region. An improvement in the quality and the use of the innovation supporting services in the region is one of the main results achieved. **Several generations of RIS** for Lower Austria have, since 1997, become a major part of the Niederösterreich strategy for the Structural Fund Objective 2 Programme in the 2000-2006 and 2007-2013 programming periods. *Source: http://www.ris-noe.at/*

3.1.2 Policy area: Boosting applied research and product development

Area of action: More investments in research and development

Expenditure on research and development (R&D) is a commonly used indicator for interpreting a region's attitude toward inventive activities. Research and development (R&D) intensity is calculated as R&D expenditure as a percentage of GDP. According to EUROSTAT data for 2005, there are **40 regions**[11] where R&D intensity is above 2%, and in half of these it is above 3% (a target set for the whole of the EU to reach by 2010). Several clusters with high R&D intensity can be identified, often in regions that have universities and research institutes (such as Braunschweig or Tübingen in Germany), or areas where transport manufacturing is particularly important (such as the Midi-Pyrénées in France or Stuttgart in Germany). The ten most research-intensive regions included four German and four Swedish regions (EUROSTAT 2008).

Data underpins that only a **handful of regions** in Europe have **several decades' experience** in designing and implementing regional R&D policies. Other regions especially in Southern Europe and in the New member States have only very recently – through European Programmes - identified science, technology and innovation as important policy issues. Therefore, R&D policies are especially successful in those regions that have experienced actors who are able to exploit research results (Dory, T. 2008).

[11] In total there are 271 NUTS2 regions in the EU27 countries.

A similar distribution can be seen in terms of **Patent applications,** since these can provide an impression of innovative regions that act as important sources of knowledge. High numbers of applications (relative to population size) are recorded in several regions of Germany, France, Italy, Austria, Finland, Sweden and the United Kingdom. The top ten most active patenting regions included eight in Germany (Stuttgart was the highest), one in Austria (Vorarlberg) and one in the Netherlands (Noord-Brabant) (EUROSTAT 2008).

The **high concentration of patents** is related to the fact that generating patents requires **inputs** (*e.g.* investments and physical and human capital) and **infrastructure** (*e.g.* laboratories) which tend to be **geographically clustered**. The sectoral concentration of industries also has an influence on the concentration of patents, as some sectors have a higher production of patents than others (OECD Regions at a Glance 2009).

The following examples illustrate R&D performance and challenges at the regional level and – as an output indicator – the production of patent applications (per million inhabitants).

LRA	**Regional performance and challenges**
Free State of Saxony (one of sixteen NUTS1 regions in Germany)	Saxony (Freistaat Sachsen) can be regarded as a **prime example in terms of targeted public investment in RTDI** as the largest part of R&D is performed by the public sector. The regional R&D intensity is ranked above OECD average but below German average. The regional value of patents per million population is significantly below the German Country average. However Saxony is a leader among the eastern German states, with their challenges of economic transformation. Most of the funding for technology and innovation support programmes at the regional level in Saxony is provided by ERDF. For the 2000-2006 period, Saxony received over EUR 350 million from the ERDF to support R&D, which Saxon enterprises and public research agencies complemented with an extra EUR 85 million for 320 projects supported by FP6. In addition, the regional government uses its own fiscal power to complement this funding. The capacity of public actors to raise R&D expenditures has already been strained. The structural weakness of business-sector R&D is a major challenge. *Source: see OECD data in the annex; Koschatzky, K., et al (2007)*
Scotland (NUTS1 region, one	Scotland has a profile of **strong public R&D and weak private R&D.** Overall regional R&D intensity is below the OECD and UK averages. The regional value of patents per million inhabitants is

LRA	Regional performance and challenges
of the 12 official regions in the UK)	slightly below the UK average. Scotland has continued to invest heavily in its universities and has supported real growth in research. The weakness, however, is the private business sector, which is structurally weak, as overseas owned companies undertake relatively little R&D in Scotland and the indigenous company base is weak. Over the last decade there has been increased investment in the public sector research base but only limited growth in the private sector. In addition to the relatively weak R&D intensity, there is a debate over whether R&D measures are appropriate ways to assess investments in knowledge-economy activities, as many of the knowledge sectors where the UK (and thus Scotland) is strong do not declare significant R&D investments, such as creative industries and financial services. *Source: see OECD data in the annex; Charles, D. (2007)*
Västsverige (one of the eight NUTS2 regions in Sweden)	Västsverige is a **leading research region in Europe**. The impressive regional R&D intensity is ranked top of all European regions. The regions of Västsverige (Sweden), Baden-Württemberg (Germany), Stredni Cechy (Czech Republic), and Zuid-Nederland (Netherlands) have more than 80% of their R&D expenditure performed by the business sector. The regional value of patents per million inhabitants is above the, already very high, Swedish average. The very high R&D expenditure by industry illustrates that the Västsverige region is Sweden's industrial heartland. The second biggest contributor to R&D expenditure is Higher Education, in contrast to Government, which plays a minor role. The region possesses highly competitive industry clusters, particularly the massively dominant automotive cluster (e.g. Volvo Group, Volvo Car and Saab Automobile) and a fast-growing biotechnology cluster. The automotive cluster invests heavily in R&D and collaborates closely with universities and research institutes. One of the region's greatest assets – the automotive cluster that is to a large extent foreign-owned – may also be seen as a liability due to its dominance. A top priority in RTDI policy is to eliminate the "Swedish paradox", which suggests that high investments in R&D do not seem to be paying off sufficiently in terms of economic growth. The exploitation aspects, commercialisation of R&D and technology transfer therefore have to be increased. Another aspect concerns the massive dependency on the

LRA	Regional performance and challenges
	automotive cluster, which needs to be addressed; other sectors and cluster have to be developed. *Source: see OECD data in the annex; Aström, T. et al (2007)*
Emilia-Romagna (one of the 21 NUTS2 regions in Italy)	Emilia-Romagna has a profile of **relatively strong private R&D and medium-level public R&D.** In overall terms, regional R&D intensity is below the OECD average, but above the Italian average. The regional value of patents per million inhabitants is above the Italian average. Industrial specialisation in the region is diverse and involves very small structures (90% of enterprises have fewer than 50 employees) and ranges from traditional industries (e.g. ceramics, food processing) to medium and high-technology sectors. Strong business R&D is driven by the automotive industry (e.g. Ducati, Ferrari), biomedical devices and mechatronics. Although R&D intensity is low compared to the OECD average, the performance is rapidly improving (especially business R&D) supported through the strong R&D and innovation infrastructure in Emilia-Romagna. The research infrastructure also includes the industrial research laboratories and the innovation and technology transfer centres that form the Emilia-Romagna High-Tech Network. The Network is co-financed through the Regional ERDF-Programme for Industrial Research, Innovation and Technology Transfer (PRRIITT). This network is coordinated by ASTER, which is the institutional core of the regional RTDI policy. ASTER is a Consortium among the Emilia-Romagna Regional Government, the five Universities, three National Research Centres and the Entrepreneurial Associations located in the region. The regional government, universities, research centres, business associations and trade unions hold shares in the consortium and are involved in decisions on policy priorities and implementation. This strategy has proved to be successful in terms of the employment of about 900 R&D researchers in enterprises, and about 300 new specialised staff involved in applied research across 27 laboratories and the generation of 750 research contracts between enterprises and research centres (2006 data). The results indicate a successful research and technology transfer strategy at a regional level. The main policy challenge is to further upgrade the composition and size of industry, since the average enterprise size of Emilia-

LRA	Regional performance and challenges
	Romagna's businesses is still too small to make large investments in R&D. *Source: see OECD data in the annex; Gagliardi, D., et al (2007), www.aster.it*

Area of action: Better access to research programmes and results

In addition to the activities of national actors, LRAs across Europe have established regional information centres with experienced staff providing personalised advice and information in the country's own language to help potential beneficiaries apply for EU research funding and exploit technology opportunities. These regional Information centres have been set up under the Enterprise Europe Network. Launched in 2008 by the European Commission as part of the EU's Competitiveness and Innovation Framework Programme (CIP), the Enterprise Europe Network combines and builds on the former Innovation Relay Centres and Euro Info Centres (established in 1995 and 1987 respectively).

LRA	Activities
Land Upper Austria (one of nine NUTS2 regions in Austria)	The Land Upper Austria established a **specific agency called CATT Innovation** Management GmbH. The agency supports and accompanies Upper Austrian companies and institutions in matters relating to national and international innovation management with a focus on research, mobility and innovation funding, technology transfer and intellectual property rights. CATT promotes innovative collaborations and helps to stimulate technology-intensive innovation between universities and business in order to guarantee the international competitiveness of Upper Austrian enterprises. CATT provides solutions to R&D needs by providing a single point of targeted access to the vast pool of expertise in Upper Austrian academic research. *Source: www.catt.at*
Free State of Saxony (one of sixteen NUTS1 regions in Germany)	To support the transfer of technology from universities, other higher education institutions or public research institutions to the enterprise sector, the state of Saxony (Freistaat Sachsen) maintains a **network of 42 centres**. This network includes **four centres for technology consulting** (Technologieagenturen) located in Dresden, Leipzig, Chemnitz und Görlitz that also form the Enterprise Europe Network contact points providing information and advice in particular to SMEs. *Source: www.irc-sachsen.de, Koschatzky, K., et al (2007)*

Scotland (one of the 12 NUTS1 regions in the UK)	To promote Scottish participation in research programmes and international networks there is a **specific scheme**, the *Scottish Proposal Assistance Fund* that assists SMEs to participate in proposals to FP7. The central contact point is the powerful regional agency Scottish Enterprise. *Source: www.scottish-enterprise.com, Charles, D. (2007)*

3.1.3 Policy area: An innovation-friendly environment

Area of action: Improving access for entrepreneurs and enterprises to finance

Innovation finance involving public-private partnerships supports the creation of new companies (start-ups and spin-offs); as well as young fast-growing firms (so-called "gazelles"), which face problems in securing development funds. Their problems in accessing funds depend on the maturity of the firm, the level of risk as well as on the specific sectors or technology areas of the new venture. Common forms of intervention include financial engineering instruments (such as guarantee schemes), creating innovation funds and support for financing specific types of innovative projects, e.g. collaborative projects. The following examples illustrate various approaches at the regional level:

LRA	**Activities**
Scotland (one of the 12 NUTS1 regions in the UK)	The **Scottish Proof of Concept Programme** is an example for **supporting the commercialisation** of leading-edge technologies during three key stages, i.**e**. early-stage development, proof of concept and intellectual property (IP) management. The Proof of Concept Programme was created in 1999 to address the lack of available funding, from both the public and private sector, to support the development of research concepts into commercial products or services. Recent research examined the economic and wider impacts of the first six rounds of funding between June 2000 and June 2005. The Programme currently supports 184 groundbreaking projects and has already created over 500 new jobs. The evaluation concludes that there are likely to be further significant future impacts for Scotland as Proof of Concept Programme projects mature. Longer-term predictions estimate that over a 10-year period, any given Proof of Concept Programme funding round could result in between £40 million and £100 million Gross Value Added to Scotland's economy. As a result of the Proof of Concept Programme, there has been significant change within Scottish institutions towards the development of

LRA	Activities
	commercialisation activities, as well as encouragement of private sector interest, support and funding through Business Angels. *Source: Technopolis (2008), Charles, D. (2007)*
Thessaloniki (NUTS3), Greece	The **Thermi Business Incubator** in Thessaloniki created a small investment fund to invest in companies located in the incubator that are likely to produce high returns on investment. THERMI Business Incubator is investing in enterprises primarily from the fields of Informatics, Biotechnology, Telecommunication, Medicine-pharmacy products and Energy-environment. The time horizon of the investment can vary from 3 to 5 years and depends on the exit strategy, e.g. sale to a stock market or sale to an enterprise that has a strategic interest. The investment decision is taken by an experienced team consisting of executives with experience in the Greek and international business environment. *Source: Technopolis (2008), www.thermokoitida.gr*
North West region (one of the 12 NUTS1 regions in the UK)	**The North West Business Investment Scheme** is an innovative £23 million fund designed to offer flexible investment structures for both start-ups and more established North West businesses providing seed and venture capital investment to Small and Medium-sized Enterprises. The Scheme provides up to GBP one million of funding for businesses. Currently the portfolio includes around 40 enterprises (e.g. start-ups, technology enterprises). The North West Business Investment Scheme and the costs of its management is part financed by the European Union through the European Regional Development Fund Programme 2000-2006 and by the Northwest Regional Development Agency. The Business Investment Scheme is managed by YFM Private Equity on behalf of the Northwest Development Agency. YFM Private Equity was incorporated in 1987. As the investment arm of the YFM Group, it has built up a portfolio of funds that provide equity and loan finance to small and medium-sized enterprises throughout the UK. Including the Business Investment Scheme, it has in excess of GBP 250 million of funds under management. *Source: Technopolis (2008), www.nwbis.co.uk*
Bavaria (one of sixteen NUTS1 regions in Germany)	Financial support to finance R&D measures for the private sector is conducted within the **Bavarian Technology Support Programme** (BayTP), which is the central measure of the Bavarian government for the commercial sector. BayTP supports innovative and technologically risky development projects through to the completion of a prototype. Since the implementation of the

LRA	Activities
	programme in 1980, approximately 400 projects have been supported with grants of EUR 68 million. In addition, 400 projects have been supported with soft loans of EUR 170 million. *Source: Stahlecker, T. (2007), www.stmwivt.bayern.de/pdf/technologie/*
Midi-Pyrénées (one of 26 NUTS2 regions in France)	The regional innovation agency, **Midi-Pyrénées Innovation (MPI)** created in 2006, financed jointly by the Region of Midi-Pyrénées and the French State, is the leading regional innovation support structure providing financial incentives for RTDI in the private sector. Its mission is to stimulate, promote and support innovative industrial projects by regional enterprises, through local actions in the following fields: training, information, projects assistance, financing, advice in IPR, internationalisation and communication. Under the new "Regional competitiveness and employment" objective in the Midi-Pyrénées region for the period 2007-2013 around EUR 360 million of public funds are available, co-financed by the ERDF to develop competitiveness among businesses by means of a support policy focusing on aid for projects, innovation and raising the level of professionalism. *Source: www.mp-i.fr, ec.europa.eu/regional_policy/country*
Catalonia (one of the 18 NUTS2 regions in Spain)	The **Catalan Network of Venture Capital Co.** The agency ACC1Ó (CIDEM/COPCA) promotes the creation of the Catalan Network of Venture Capital Firms and Investors in Catalonia. This network organises a large annual conference (http://www.foruminversio.cat/eng.html), which has become the reference for Investment in Catalonia. ACC1Ó also supports innovative SMEs in start-up phases through advisory services for technology-based entrepreneurs, financing start-ups (the Genesis Programme) and the promotion of Alliances. *Source: Source: Sanz Ausas, M. (2008), http://www.cidem.com/*

Area of action: Promoting innovation in services

In the past few years, the interest in policies supporting creativity and innovation in the creative sector has increased significantly, in line with the economic growth forecasts and the employment potential in this sector. To support cooperation between enterprises and designers etc., but also between science and the creative industries, numerous programmes in the more advanced regions have been created.

LRA	Activities
City of Vienna (one of 9 NUTS2 regions in Austria)	An Austrian regional example is the **specialised young agency "departure"** in Vienna, a funding organisation and point of contact for people active in the field of the creative industries, established in 2003 by the City of Vienna. Departure has multiple objectives: the development of an economically sustainable basis for Vienna's creative professionals, to promote economic growth, boost employment and establish new companies. This requires the strengthening of entrepreneurial know-how and cooperation between creative professionals and the wider economy. Departure also supports individual creative and entrepreneurial performances as well as the establishment of creative services such as design as a completely 'natural' service for classic companies. *Source: www.departure.at*

Area of action: Promoting the information society for all: ensuring availability of ICT infrastructure and related services and uptake of ICTs by firms and households

Information and communication technologies (ICT) contribute to regional development in numerous ways. Applying ICT applications simplifies and enhances the operations of small and medium-sized enterprises (SMEs) and local and regional administrations as well as contributing to the quality of life of society, including the elderly and disadvantaged groups. ICT as an object of research or business development can become a key factor in promoting local and regional innovation potential and new business creation. Some different cases of ICT projects can be illustrated:

LRA	Activities
City of Porto (part of the NUTS2 region Norte in Portugal)	The **Porto Digital project** was initiated by four organisations from the city of Porto: Porto City Council; University of Porto; Portuguese Business Association; and the Porto Light Rail Company ("Metro do Porto"). While the Portugal Digital national programme has been applied in 28 Portuguese cities and regions, only the municipal initiative Porto Digital has managed to build an infrastructure on such a scale. The network will enable all schools in the city to be linked, establishing e-communications between them for free. This infrastructure is to be commercially exploited in the future through business agreements to be established with Internet service provider companies. The Porto Digital project covers both infrastructure and networking activities: it is a municipal initiative

LRA	Activities
	combining the installation of 93 km of fibre-optic cable and equipment for wireless transmission, together with the development of a host of public networks in education, employment, culture, tourism and so forth, supported and enhanced by e-government service delivery. *Source: Technopolis (2008), www.portodigital.pt/*
Cornwall and Isles of Scilly NUTS2 region (part of the NUTS1 South West region in the UK)	Cornwall in the UK is an example where public regional funding can lead the private sector, both targeted SMEs and major providers, into previously underdeveloped or under-serviced areas. Cornwall is characterised by rural remoteness, a narrow economic base with a preponderance of low value-added sectors. SMEs in the region had demonstrated little interest in ICTs as business tools, and the population as a whole lagged behind in computer and internet use. In addition, government figures in 2002 predicted that 45% of the population would be left without internet broadband infrastructure, whereas London, by comparison, already had 100% coverage. The strategic challenge here was to establish a **public/private partnership**, in which the private-sector telecommunications provider would upgrade the infrastructure, while a publicly supported development body would raise awareness and stimulate demand amongst SMEs. Cornwall Enterprise is charged by the County Council with the economic development of Cornwall and is committed to building a knowledge economy in Cornwall. It is working to create its vision of a "hyper-connected Cornwall" that keeps up with Information Communication Technology (ICT) developments. *Source: Technopolis (2008), www.cornwallenterprise.co.uk/*
Amsterdam (NUTS3 region in the Netherlands)	Amsterdam local authority in the Netherlands **promotes ICT in education**. The municipality of Amsterdam recently allocated EUR 900 000 to connect schools to the Broadband Network for Amsterdam Schools (BOA). The money is intended to be put towards the connection costs, as well as to fund information and training for teachers using the system. As a result, some 85% of schools in Amsterdam will have broadband Internet. This will make it possible for more children to use audiovisual teaching tools and new forms of education simultaneously. *Source: National Progress Report Netherlands 2008: http://ec.europa.eu/growthandjobs/national-dimension/member-states-2008-2010-reports/index_en.htm*

3.1.4 Policy area: Knowledge transfer and technology diffusion to enterprises

Area of action: Supporting technology transfer enabling SMEs to access research, technological development, innovation services including science-industry links

Closing the 'gap' between academic research and the business sector is a priority for policy makers across the European Union. It has been on the agenda since the lack of collaboration between science and business was identified as a major obstacle to innovation more than 20 years (!) ago (Technopolis 2008).

As one approach, competence centre programmes have become a well-established instrument of modern R&D policy. Within these centres, partners from science and industry are committed to the strategic, medium to long-term research collaboration on jointly defined R&D priorities. Many European countries (e.g. Austria, Estonia, Hungary, Sweden, the Netherlands, Slovenia) have launched programmes of this kind in recent years; they are often co-funded by the ERDF, particularly in the new Member States (Technopolis 2008). Other initiatives like the Austrian one rely exclusively on national funding sources.

Some approaches to stimulating collaboration between science and business can be illustrated:

LRA	**Activities**
Austrian Bundesländer (9 NUTS2-regions)	The **Competence Centres programmes** in Austria are among the most successful technology policy initiatives. Today, some 1 500 researchers from science and industry work on jointly defined top-level research programmes at more than 40 centres. The programme also plays a central role in **regional innovation policy:** the centres helped to attract researchers to research clusters outside of the scientific dominant capital Vienna and promoted regions as highly-skilled technology developers. Regional bodies (Bundesländer) typically support 'their' centre. The Competence Centres programmes are followed up by the 'COMET' programme *Source: Inno-Policy TrendChart Country report Austria 2008)*
Catalonia (one of the 18 NUTS2 regions in Spain)	The **Technology Transfer Programme in Catalonia**, Spain offers another example: The newly established regional agency ACC1Ó (a merger of the two agencies CIDEM and COPCA) is responsible for the promotion of the Technology transfer Programme (TT) in Catalonia. The main objective of the TT Programme is to promote the generation, transfer and commercialisation of knowledge that

	can be applied to business activity. More concretely, the Catalan Technology Transfer Model intends (i) to foster the creation of a technology transfer system, (ii) to promote the use of technology (iii) to foster business cooperation in R&D&I projects, (iv) to promote knowledge transfer and technology in user companies; and (v) to foster and strengthen the cooperation between the private sector, the public sector and the universities. *Source: Sanz Ausas, M. (2008)*

3.1.5 Policy area: Innovation poles and clusters

Area of action: Developing co-operation networks and clusters between businesses, research, education and public actors

One of the most widely-used tools in regional policy to enhance competitiveness and adapt economies is to foster clusters. Clusters are defined as geographically close groups of interconnected companies and associated institutions such as research institutes, business associations as well as local authorities, linked by shared strategies and visions of development, common technologies and skills. Cluster projects can be developed to respond to a very wide range of regional problems and opportunities; they are an adaptable type of intervention (Technopolis 2008).

Regional initiatives in this field are – as compared to other key areas – **reasonably well documented though the European Cluster Observatory** aimed at informing policymakers, cluster practitioners and researchers, throughout the world, about European clusters and cluster policies. According to Oxford Research AS (2008) all 31 observed countries have cluster programmes at a national and/or regional level. However, cluster policy is still at an early stage in many countries. Around half the countries in the survey first started applying cluster policy after 1999.

- **National Cluster approaches:** In most of the European countries, cluster policy at a national level is implemented by agencies organised under the different ministries. In the 31 countries covered by the study, a total of 75 national or state-level cluster agencies have been identified. National cluster programmes are found in 26 out of the 31 countries. In total, 69 national cluster programmes have been identified.
- **Regional Cluster approaches:** It is not possible to state exactly how many organisations are responsible at a regional level. Nonetheless, it is clear that the number of organisations is much higher than at a national level. There are fewer regional cluster programmes than national ones. There are no regional cluster programmes in 43 percent of the 31 countries.

Some approaches at regional level – including also science and innovation poles - can be illustrated:

LRA	Activities
Piemonte (one of the 21 NUTS2 regions in Italy)	**Bioindustry Park Canavese** is a science and technology park located in Canavese, near Turin in the north of Italy. The park was conceived at the beginning of the '90s as an instrument for territorial economic development, in the context of policies of Regione Piemonte and in coherence with actions carried on by the European Union and by Italian authorities. The Park promotes and develops research in biotechnologies and life sciences, hosting enterprises from the chemical, pharmaceutical, diagnostic, bioengineering and information science fields. It offers research facilities, scientific and support services, such as technology transfer, patent support, tutoring/mentoring of start-ups and spin-offs. The park is an example with the ambitious aim of **establishing a collaborative R&D cluster** in a high technology area. The Bioindustry Park was a high-risk project attempting to develop a new business-based biomedical cluster 'from scratch'. To achieve this ambitious objective the project was designed in three distinct phases: the creation of research capacity, the attraction of companies, the supply of linkage and business services, each carefully planned, implemented and assessed. The park is managed by a private company. *Source: Technopolis (2008), www.bioindustrypark.eu/*
Vastervik (part of NUTS3 region Kalmar in southern Sweden)	An example for a cluster project in a region with more experience in research, development and innovation policy is **PUCK (Polymerindustrins Utvecklingscentrum)**, which is highly customised to address specific and very pressing regional issues. Vastervik region suffered as the result of the collapse of local manufacturing and has successfully built a thriving new network of SMEs based around polymers, which had been a regional sector since the 1930s. PUCK started with a core leadership team of nine members but this was found to be ineffective and the partnership was developed to include all relevant regional stakeholders in the polymer sector. PUCK has around 35 member companies which each have an average of 20 to 30 employees. The network includes companies

LRA	Activities
	which specialise in consultancy or the manufacturing of high-quality, cutting-edge products used in the car manufacturing, aviation, marine or medical sectors. *Source: Technopolis (2008), http://www.puck.se/, http://ec.europa.eu/regional_policy/projects/stories/*
Upper Austria (NUTS2 region in Austria)	Another example is the **Cluster programme in the Upper Austria region**. Since 1998, Upper Austria has vigorously pursued a cluster-oriented economic and technology policy on the basis of the "Upper Austria 2000+ Strategic Programme". At present, some 1 500 companies, R&D bodies and educational institutes are partners in the eight inter-branch networks such as the Automotive Cluster, Drive Technology, Plastic Cluster, Furniture-Wood, Eco Energy Cluster, Food Cluster, Health and Mechatronic cluster. This represents clear evidence that the local business community has recognised the need for close cooperation between companies, business, education and RTDI actors *Source: INNO-Policy TrendChart Country report Austria 2007), http://www.clusterland.at/*
Catalonia (one of the 18 NUTS2 regions in Spain)	Founded by the University of Barcelona in 1997, **Barcelona Science Park** (Parc Científic de Barcelona) was the first science park in Spain and is an international point of reference in the promotion of innovation, with more than 2 200 professionals working there. The set-up was overseen by central and regional government bodies and the Catalan savings bank. Barcelona Science Park is part of a government-driven vision for the region. At present, the park is home to 4 research institutes, more than 50 companies, an incubator for biotechnology companies, more than 70 research groups and a wide range of research support technology. In addition, it organises more than 120 activities for the promotion of scientific culture and new careers in science, in which close to 6 000 people participate each year. *Source: http://www.pcb.ub.es/homepcb/live/en/p1.asp*
Podkarpackie (NUTS2 region in south-east Poland)	An example in a new Member States' Objective 1 regions with limited policymaking experience in science, technology and innovation is **Aviation Valley, Poland.** Aviation Valley in Podkarpackie region in Poland was the first Polish cluster and is now used as a model to develop cluster programmes for other sectors. The Aviation Valley Association was started in 2003, as a non-

LRA	Activities
	profit organization, as a means to further the rapid development and growth of the aerospace industry in south-eastern Poland. This historic decision was conceived by a group of leading aeronautic producers, suppliers and entrepreneurs. Significant funding for the Association has been provided by Pratt & Whitney, a world leader in the design, manufacture and service of aircraft engines, space propulsion systems and industrial gas turbines. The Aviation Valley Association currently represents 72 companies within the region. *Source: http://www.dolinalotnicza.pl/pl/1/1/*

3.1.6 Policy area: Support for the creation and growth of innovative enterprises

Area of action: Supporting investments in enterprises directly linked to research and innovation

The Structural Funds are an important resource for supporting the Lisbon Strategy in the field of RTDI. The absorption capacity for RTDI measures and critical factors for implementation will be illustrated.

LRA	Performance in implementing RDTI measures
Regional authorities implementing Objective 1 and 2 programmes	**Comparative analysis of the expenditure capacity to implement RDTI measures in Objective 1 and 2 Programmes, 2000-2006** Applica (2008) examined the gap between actual expenditure on RTDI measures in Objective 1 and Objective 2 programmes in the 2000-2006 period with the planned allocation of Structural Funds. This gives an indication of the capacity to spend the resources allocated to RTDI in the different countries. The data used relate to payments certified by national authorities as at the end of 2007. In the Objective 1 Programmes in the New Member States there are significant differences in the gap between expenditure and allocations in RDTI. Under-spending varies from 22% of the amount allocated in the Czech Republic and 34% in Latvia to 74% in Slovenia and Hungary. In total only approximately 63% of allocated funds could actually be implemented (see annexed table 3). In the EU-15 Objective 2 Programmes, there are gaps between

LRA	Performance in implementing RDTI measures
	expenditure and allocations related to RDTI, varying from 61% in Italy to 97% in the Netherlands. In total, about 80% of allocated funds related to RTDI could actually be implemented. The **shortfall on expenditure related to RDTI measures therefore indicates serious implementation problems** – with a few exceptions (Denmark, Netherlands, Sweden, Finland) – in all European countries. This has to be seen against the background of the allocation to RTDI in the 2000-2006 period generally being lower than in the new Structural Funds 2007-2013 period. *Source: Applica (2008)*
Austrian Bundesländer (9 NUTS2-regions)	**RTDI support in the regional Austrian Objective 2 programmes** In the 2000-2006 period, expenditure to support RTDI projects in a narrower sense in the eight Austrian Objective 2 programmes (at regional level) accounted for about 11% of total public expenditure and achieved a **72% expenditure rate**. RTDI support included "Direct support to firms" (Funding of innovation and technology projects, funding of research and development projects) and "Indirect support for innovation" (Building up of "hard" and "soft" infrastructure, such as Cluster networks, Technology-centres, Logistic/Start up centres, Technical colleges, Research centres and Broadband infrastructure). Operationally many **problems and bottlenecks** were detected in the implementation of RTDI support measures, for instance (i) insecurities in the establishment of impulse centres due to a lack of regulations, (ii) very complex administration of network-oriented soft-industrial measures (iii) the absorption potential concerning innovation-oriented new projects being significantly over-estimated in some regions and (iv) the negligible potential of innovative and researching companies in structurally weak regions. In general, the following points are seen as **critical** for Structural Fund implementation: **Overly complex Objective 2 programme areas:** due to small and fragmented areas, the differentiation between Objective 2 and phasing-out areas is to a significant degree not practicable and generates additional bureaucratic work and expense. **Administrative workload:** generally, administrations suggest

LRA	Performance in implementing RDTI measures
	that Structural Funds implementation has reached the borderline of what can be implemented, in terms of continuous new interpretations of regulations through the Commission and resulting insecurities in the legal framework. Ongoing new interpretations by the Commission and Austrian Second Level Control oblige the Managing Authority and Implementing Bodies to constantly change administrative procedures. Therefore, there is little behavioural security and legal certainty. At the same time, considerable effort is required for documentation purposes (e.g. providing documents for financial control). **Financial control-based segregation:** a trend of only projects that are expected to be implemented without causing operational problems being included in the programmes. Consequently, the funding programmes become remote and difficult to access for weaker SMEs. The high requirements placed on project-holders act as a selection mechanism that was not intended as such in the programme strategy. The funding agencies prefer to co-finance projects that are unlikely to encounter financial difficulties during implementation. Complicated (e.g. innovative projects) projects and/or projects from inexperienced project owners tend to be financed from national sources (risk-avoiding behaviour in Structural-Funds-Programmes). *Source: Applica/ISMERI/wiiw (2008), National Report Austria*

Area of action: Promoting advanced business and technology support services by specific institutions for enterprises and groups of enterprises

Since 2000, a new generation of regional and local technology agencies has emerged in Europe that offer new types of portfolio aimed at pro-actively influencing learning processes within companies and within the region. In addition to the recently established ones, there are also few “older” ones (such as BOM in theNetherlands or Germany's AGIT), which have already been involved in regional restructuring efforts in the 1980s and 1990s, which have modified their mission and portfolios. Such agencies are for example (Sadowski 2007):

- The local agency IRSIB-IWOIB, Brussels, Belgium, established in 2004
- The local agency ZIT, Vienna, Austria, established in 2002
- The regional agency BOM, Noord Brabant, Netherlands, established in 1983
- The regional agency Innovatiecentrum West-Vlaanderen, West Vlaanderen, Belgium (ICWV), established in 2003

- The local agency AGIT, Aachen, Germany, established in 1983
- The regional agency SEEDA, South East England, UK, established in 1999

This new portfolio includes activities to improve learning (to innovate) on the company level (e.g. incubators with "soft" support) and at the systemic (region) level, such as cluster policies or support for firm-networking. Due to the diversity of technology agency portfolios in Europe, benchmarking exercises are of limited value. The following paragraphs illustrate some of the "good practices" from these agencies:

LRA	**Activities of technology agencies**
Region Brussels (NUTS2), Belgium	**The Institute for the encouragement of Scientific Research and Innovation in Brussels (IWOIB)** established the "Spin-offs in Brussels" (SOIB) programme to support the academic sphere (universities and technical colleges) as well as the industrial (companies and centres for joint research). The financial support covers a period of two years. For academic spin-offs, this period can be extended for another two years, for industrial spin-offs for one additional year. Facilitation of the spin-off during these two years based on detailed advice has been part of the scheme. *Source: Sadowski, B. (2007): http://www.iwoib.irisnet.be*
Vienna (NUTS2), Austria	The **Viennese ZIT agency** inter alia constructs and operates high-value, multi-functional technology-oriented commercial properties in order to support the crucial linkage of the different players impacting the innovation process. In addition to making technologically top-quality infrastructure available, ZIT aims to develop business locations in which companies, scientific institutions and educational facilities can come into direct contact with each other as a means of facilitating cooperative partnerships (Life Sciences Campus Vienna Biocenter, Media and Creative Industries – Media Quarter Marx). It must be stressed that all of the federal states in Austria – not only Vienna – have established agencies to provide support measures for innovation and R&D. *Source: www.zit.co.at*
Noord Brabant (NUTS2), Netherlands	The **BOM** agency, **Noord Brabant, Netherlands**, supports Industrial Spin-Offs: This programme is aimed at industrial spin-offs from existing SMEs or large companies. It provides support for developing a business plan and defining the business model, and for seeking out investment, for market research and contractual aspects with respect to intellectual property rights, technology transfer, and for participation and management

LRA	Activities of technology agencies
	coaching in areas such as human resource management, finance or project management. In the first phase of the programme the objective is to collect the relevant experiences and scientific evidence to detect potential spin-offs ("Spin-off Scan"). In the second phase, so-called "spin-off scouts" (mostly retired entrepreneurs) make contact with potential industrial spin-offs. Approximately 150 companies are to be visited and for 40 of them a spin-off scan should be undertaken to look for opportunities for further growth of these companies. If there is potential for growth, the spin-off team should facilitate the growth of these companies. This should lead to the setting up of at least 6 new spin-off companies. *Source: Sadowski, B. (2007): http://www.bom.nl*
West Vlaanderen (NUTS2), Belgium	The Innovation audit at the agency Innovatiecentrum **West-Vlaanderen (ICWV)** aims at evaluating the innovative strengths of production-oriented SMEs. Based on a two-hour interview, 49 best practices in the area of innovation are detailed. After the audit, the manager receives an audit report and the innovation adviser develops, with the manager, a plan to improve the company's innovative strengths. Part of the innovation audit package is a book entitled "49 best practices for innovative SMEs". Furthermore, the **ICWV** helps in finding the Right Partner (example): A machine tool company has been successful in acquiring a project for a nutrition company: the development of an innovative appliance for processing food. The company has all the necessary knowledge in-house with respect to the construction, mechanics and monitoring of the appliance. But the nutrition company has, naturally, also been interested in high-quality requirements with respect to hygiene and food quality. The company now has to choose between acquiring the necessary knowledge in the short term or losing the contract. The solution: Based on the extended network, the ICWV can look for a potentially suitable partner. After discussing the list of potential candidates, an appointment with the ICWV and a suitable candidate company is made. As the company can work with the ICWV and the (other) company, the contract for the development of the innovative machine can successfully be pursued. The regional innovation agency also offers services for **Intellectual Property** and searches for related and relevant

LRA	Activities of technology agencies
	patents; it facilitates setting up a well-targeted company IPR strategy based on a sequence of workshops; it develops a systematic strategy that enables companies to develop successive patents, as well as providing contacts with patent lawyers offering effective patent application services. *Source: Sadowski, B. (2007), http://www.innovatiecentrum.be/*
Aachen (NUTS3), Germany	The agency AGIT, **Aachen, Germany,** manages industrial estates such as the Technology Center "Am Europaplatz" (TZA). AGIT provides services and infrastructure for new start-up companies (a subsidised rent for technology-oriented start-ups; ultra-modern telecommunication technology and in-house support, advice from patent lawyers, tax consultants and insurance agents; assistance in drafting business plans; access to an international network of partners etc.). *Source: Sadowski, B. (2007): http://www.agit.de/*

3.1.7 General Policy area: Helping to build a European Research Area – the free movement of knowledge

The European Council (March 2008) highlighted the "free movement of knowledge" as a priority for responding to the challenges of globalisation and for transforming the EU into "a truly modern and competitive economy". This "freedom" should be created by removing barriers to the cross-border mobility of researchers, students and university teaching staff.

LRA	Activities
Catalonia (one of the 18 NUTS2 regions in Spain)	**Programme to removes obstacles to the mobility of researchers in Catalonia, Spain** The ICREA programme in Catalonia is designed to remove barriers to the mobility of researchers between the public and private sectors and between areas and countries. ICREA is a foundation jointly promoted by the Catalan government through the Ministry of Innovation, Universities and Enterprise, and the Catalan Foundation for Research and Innovation (FCRI). ICREA helps to promote the Catalan R+D System by hiring scientists capable of leading research groups and/or supporting existing groups already established in Catalan universities and research centres. *Source: http://www.icrea.cat/web/home.aspx*

Bundes-länder in Germany (NUTS1-regions)	The German Federal Länder have rolled out measures aimed at **promoting the mobility of researchers**, amongst others by setting up points of contact for young researchers willing to return; by enabling foreign nationals to be appointed as civil servants; Optimising the efficiency of institutions of higher education and institutes of the Federal Länder. *Source: National Progress Report Germany 2008: http://ec.europa.eu/growthandjobs/national-dimension/member-states-2008-2010-reports/index_en.htm*

3.1.8 General Policy area: Mobilising the new cohesion policy to support regional innovation

In line with the renewed Lisbon strategy the new Structural Funds Operational Programmes for the period 2007-2013 will emphasise the funding of research and innovation in comparison with the more infrastructure-oriented investments during the previous period. However, considerable doubt exists as to whether the regional actors have enough capacity to implement the ambitious goals.

LRA	**Activities**
Austrian Bundesländer (9 NUTS2-regions)	**More RTDI support in the Austrian regional Structural Funds Programmes in the new period** In the current 2007-2013 period, RTDI and entrepreneurship issues are **dramatically enhanced** in the nine Austrian regional Structural Funds Programmes. About 77% of ERDF funds are allocated to the priority theme "Research and technological development (R&TD), innovation and Entrepreneurship" (including the codes 01-09). The allocation of funds in R&TD infrastructure has **tripled** compared to 2000-2006, while R&TD activities in research centres has **doubled** and Assistance to R&TD, particularly in SMEs has remained at the same level. *Source: ÖROK (2008)*

Main findings

- The regions' **commitment** toward science, technology and innovation is **clearly growing**, but only a **few regions** in Europe are currently performing well. Only 40 European regions out of 271 are achieving a R&D intensity of at least 2% (R&D expenditure as a percentage of GDP). Challenges in boosting applied research and promoting R&D investments at regional level are:

- The capacity of public actors to raise R&D expenditure has already been strained. The structural weakness of business sector R&D is a major challenge (Saxony).
- R&D measures seem not to be an appropriate way to assess investments in knowledge economy activities, since many of the knowledge sectors where the region is strong do not declare significant R&D investments, such as the creative industries (Scotland).
- The massive dependency on a single R&D intensive but vulnerable industrial cluster needs to be addressed, other sectors and clusters have to be developed (Västsweden).
- High investments in R&D do not seem to be paying off sufficiently in terms of economic growth (Västsweden).
- The need to develop capable regional networks of industrial research laboratories, innovation centres, technology parks and enterprises to activate R&D projects and to improve science-industry links (Emilia-Romagna).

■ R&D policies in the regions are to a large extent focused on a **broad innovation policy**, because regions have – even in federal States – only limited competences in research policy. Regional policies are developing an innovation-friendly environment, creating science-industry links and developing absorption capacity while R&D is mainly funded by national actors. That indicates a good complementarity between regional and national policies.

■ The nature and scope of **LRA actions and contributions** to implementing Lisbon related strategies obviously vary in line with their statutory situations in the different Member States. In federal or significantly decentralised States, such as Austria, Belgium and Spain, one finds examples of agencies and bodies with wide-ranging policy remits. The cluster programme in **Upper Austria** based on the "Upper Austria 2000+ Strategic Programme", the Institute for the encouragement of Scientific Research and Innovation in **Brussels** (IWOIB), and the Technology Transfer Programme in **Catalonia**, through the newly-established regional agency ACC1Ó, are all good examples of such initiatives.

■ Significant **LRA actions and contributions** are, however, also to be found in more unitary, or centralised, Member States. The public/private partnership to provide high-speed broadband access in **Cornwall** (UK), the bringing together of existing local skills in the **Polish** Aviation valley project, and the development of the Zlin Regional Innovation Strategy in the **Czech Republic** are amongst the examples cited.

■ **LRA initiatives have achieved considerable results** in widely differing fields. The Thermi Business Incubator in Thessaloniki, **Greece,** offers a supportive environment for start-ups, the **Welsh** Knowledge Exploitation

Fund (UK) provides collaborative funding and the **Porto Digital** (Portugal) scheme brings fibre-optic services to that city, while the BOM regional agency in the **Netherlands** stimulates business spin-offs. A **new culture of strategic R&D collaboration** is emerging in some regions (e.g. Competence Centres in Upper Austria) to close the gap between academic research and the business sector.

3.2 The governance dimension: the role of LRAs and their interplay with the EU and national levels

3.2.1 Conditions for Local and Regional Authorities' contributions to innovation policy

Governance in innovation policy is a very complex process and is interconnected with other policy areas such as research, education, infrastructure development, and the promotion of economic development.

There are **significant differences in regions' formal powers and capabilities** in terms of design, funding and implementation of innovation and knowledge policies (Technopolis et al 2006).

- In **Federal States**[12] (Austria, Belgium, Germany), the role of the federal ministries and organisations is combined with the role of the regions/the federal State (power-sharing). The federal States have considerable powers in the field of innovation policy.
- In **Regionalised unitary States** (Italy, Malta, Poland, Spain, UK) competences are devolved to the different regions. Implementation of innovation and knowledge policy has often been devolved to the Regional Development Agencies (RDA).
- **Decentralised unitary States**[13] such as Finland have undertaken a reform process to establish regional authorities.
- **Centralised unitary States**[14] such as Bulgaria and Romania constitute the largest group. Regional levels may exist for administrative reasons but are subordinate to the central state. The countries are heavily centralised, the regional dimension of the RTDI system is still rudimentary.

[12] Typology of state structure according: http://ec.europa.eu/governance/areas/group10/report_en.pdf and ESPON project 2.3.2. Final Report (for New Member States' classification).
[13] Czech Republic, Denmark, Finland, France, Latvia, Slovakia, Sweden, The Netherlands.
[14] Bulgaria, Cyprus, Estonia, Greece, Hungary, Ireland, Lithuania, Luxembourg, Portugal, Romania, Slovenia.

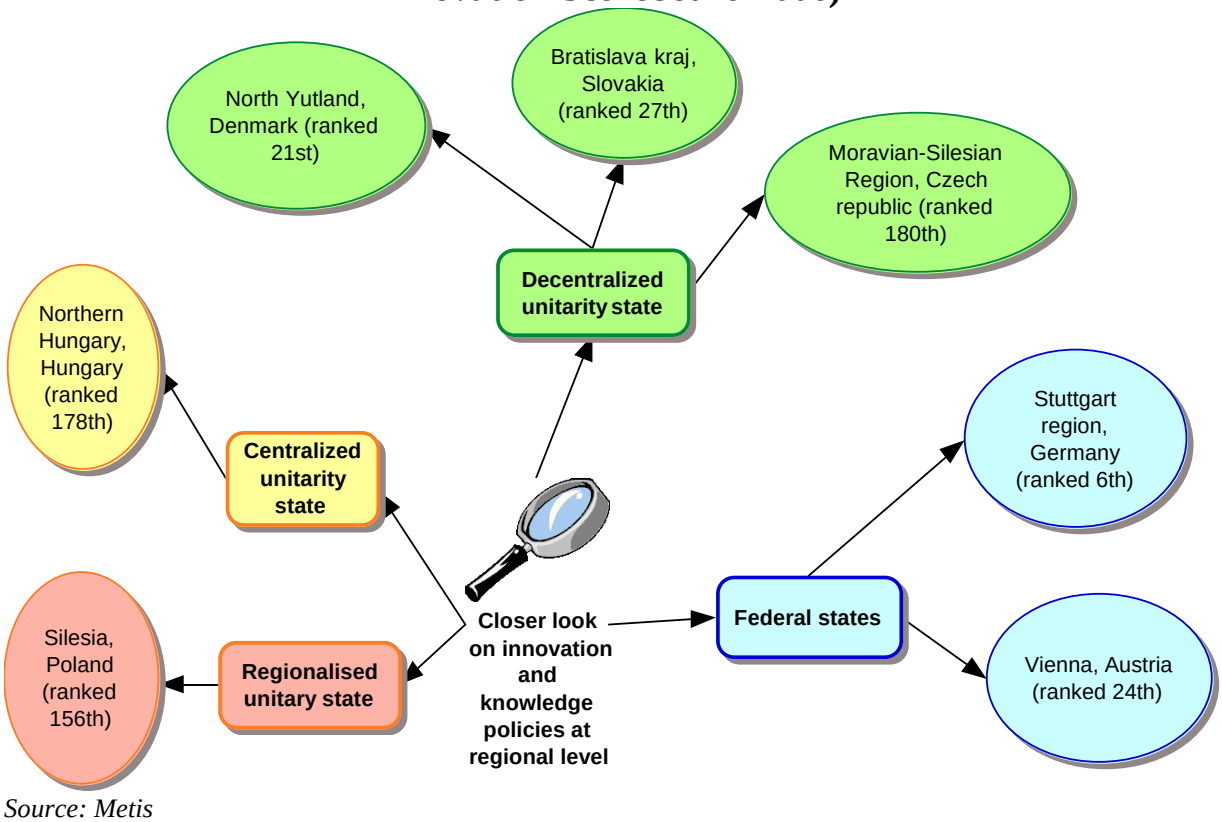
Efficiency of the governance systems

As the European Innovation Progress Report 2006 points out, the effectiveness and efficiency of the governance system is **not related to the type of model adopted**. Neither the bottom-up (a collection of initiatives from practitioners providing innovation services) nor the top-down (providing strategic direction from high-level policy makers) governance models are to be encouraged. Various forms of effective co-ordination can be observed in this context: formal or informal, top-down or bottom-up, strict or flexible.
Technopolis (2006) points out that **strong partnerships** are more important than the formal decentralisation of powers. Even in regions with limited powers, a partnership-based approach can improve policy-shaping and policy-making and generate new ideas.

3.2.2 The delivery of innovation and knowledge policies at the regional level

This section sets out challenges and strategies to develop innovation governance and innovation capacity at the regional level under the conditions of different state structures.

Figure 6. Examples of innovation and knowledge policies at regional level within different state structures (Rank indicated according to the Regional Innovation Scoreboard 2006)



Source: Metis

Federal state examples

Both the following examples illustrate that federalism usually ensures a significant voice for the regional level in RTDI investment policies.

LRA	Activities
Stuttgart Region (NUTS3 region in Germany)	**A TOP RTDI region keeping the competitive edge.** According to the Regional Innovation Scoreboard 2006, the NUTS3 region Stuttgart is **ranked 6th** among the 208 European regions; R&D intensity[15] in the Baden-Württemberg region is 4.20%, far above the national average (2.51%) and the OECD average for the year 2005 (2.25%). Although the Stuttgart Region, Germany, is one of Europe's **economic powerhouses,** with a significant concentration of high-tech industries and a balanced economic structure, there are certain challenges that pose **risks** to the area's continued economic success: – **Lock-in effects:** The dominant role played by the automotive industry and manufacturing technology is seen as a challenge to the long-term viability of the region. – **Lack of specialist staff:** A lot of companies are already failing to find trained staff and engineers. – **Comparatively low number of company start-ups:** The strong labour market has encouraged those leaving university to pursue careers as employees in companies, instead of starting their own companies. – **Ageing infrastructure:** The infrastructure of the Stuttgart Region as an economic engine is reaching its limits. In order to respond to these challenges effectively, the agency Wirtschaftsförderung Region Stuttgart (WRS), founded in 1995, developed a **regional economic strategy for the Stuttgart Region in 2007.** The objective of this strategy is to develop areas for policy action, between now and 2020, that will further expand the competitiveness of the Stuttgart Region and provide a solid foundation for the region to meet its future requirements in terms of safeguarding employment and wealth. **"Strategy 2020",** as the plan is called, takes into consideration that this region is one of the few in Europe to have extremely high-tech production with a strong regional value-added contribution that ranges from basic research to manufacturing and product-related services in the main industries. The strategy was **agreed upon and developed** at the regional level, in discussions with regional decision-making bodies and

[15] R&D intensity is defined as the ratio between R&D expenditures and GDP (Source OECD).

	entrepreneurs. The federal level had **no major formative role**. **Areas of action** for economic policy in the Stuttgart Region include: developing networks and clusters; business development and encouraging company start-ups; the training and development of specialist staff; and the marketing of the region and investor services. The **Open Innovation Initiative** is another key element in implementing the regional economic strategy. This initiative encourages the opening-up of companies' research and innovation processes, so that these processes can be used by anyone else who is interested. *Source: Haug, V. (2008, Director of the Stuttgart Region Economic Development Cooperation)*

LRA	**Activities**
Vienna (NUTS2-region in Austria)	**Vienna - Development of a Strategy for Research, Technology and Innovation.** According to the Regional Innovation Scoreboard 2006, the NUTS2 region Vienna is **ranked 24th** out of the 208 European regions; R&D intensity is 3.25%, far above the national average (2.45%) and the OECD average for the year 2005 (2.25%). Vienna's efforts to encourage a dynamic regional environment are described in its **new Strategy for Research, Technology and Innovation** ("Forschungs-, Technologie- und Innovationsstrategie Wien"). This strategy, which runs until 2015, was drawn up following a year of discussion. Those promoting the effort included **city councillors from the relevant departments, business representatives, universities, research organisations and the media**. In order to learn from the best examples, the City of Vienna also invited some **100 relevant stakeholders** and **experts** from Europe and beyond to discuss innovation strategies. Under the strategy, established in late 2007, a small number of fast-track projects beginning in 2008 will deliver their first effects by 2009. **The main objectives** (between now and 2015) of research, technology development and innovation (RTDI) policies, based on this strategy, are: – to **increase research and development (R&D) expenditure i**n Vienna from the current 3.13 percent to over **4 percent;** – to increase the percentage of **employees with academic degrees** from 16.4 percent to 20 percent; – to increase the **number of researchers** by 25 percent; – to double the **number of enterprises engaged in R&D** and – to exceed the target number of 200 companies participating in FP7 projects.

	Regarding **strategy implementation** (management in general competencies, quality assurance, monitoring and supervision), it should be noted that in political as well as in administrative terms the municipality of Vienna is very **powerful**. It has all the political functions of a federal province, with an elected municipal council, a mayor and the appropriate legislative and executive power. At the same time, Vienna will seek to strengthen its position as an **international network-based location** of research and innovation through transnational cooperation. In this process, priority will be given to Vienna's integration into the dynamically growing **European region CENTROPE** (Austria, Czech Republic, Hungary and Slovakia). Concluding from the experience of Vienna: Innovation is **not only about money, technology, and industry.** The socio-cultural environment seems as important as economic and technological preconditions. Drafting RTDI strategies is likely to fail if trust in innovation policies is at risk. Therefore, the education and training of personnel in many institutions is crucial. Stakeholder involvement, monitoring and control processes are challenges to regional innovation policies that should never be underestimated or above all neglected. *Source: Wurm, C. (2008) Department of EU-strategy and economic development of the City of Vienna*

Decentralised unitary state examples

Although most of RTDI system actors operate at the national level, some of the regions in decentralized unitary states such as Slovakia and the Czech Republic have been developing Regional Innovation Strategies (co-funded by the EU) and coordination tools (in Denmark) to foster their specific role. In Finland, regional actors are responsible for innovation-related issues.

Four examples are provided (Regional coordination in Finland, Bratislava, the Moravian-Silesian region and North Jutland):

LRA	**Activities**
NUTS2/3 regions in Finland	**Regional coordination of Structural Fund support in Finland** In Finland, the **regional TE-**Centres (Employment and economic development centres), which are responsible for many regional activities of the Ministries of Labour, Trade & Industry and the Environment, have an **important role in managing SF-funded interventions**. They act in conjunction with the **Regional**

LRA	Activities
	Management Committees, which were created to coordinate the key actors: regional actors, municipalities, State authorities, and social and economic interest groups. The coordination of RTDI at national and regional level is ensured through **four-year regional strategies adopted by Regional Councils**, and these strategies have to be coherent with the national framework. Co-funding of SF-funded RTDI interventions is financed by agencies (TE-Centres, TEKES, Finnvera), which use SF in accordance with national guidelines. Strong points are: coherence between the national and regional levels, good integration of SF with national RTDI guidelines, a high level of expertise through specialised agencies, and strong partnerships at the regional/local level. *Source: Technopolis et al (2006) Country Report Finland*
Bratislavsky kraj (NUTS2 region in Slovakia	**Bratislava - Striving for high-tech.** According to the Regional Innovation Scoreboard 2006, the NUTS2 region Bratislavsky kraj is **ranked 27th** out of the 208 European regions; R&D intensity is 0.88%, above the national average (0.51%) and far below the OECD average for the year 2005 (2.25%). The Bratislava region is a **leader** in high-tech business and development within the country. Within Slovakia, Bratislava is the **only region that has a sound performance** in the innovation index, ranking 27th out of all regions in the EU in the 2006 European Trend Chart on Innovation. This ranking means that the Bratislava region is very successful compared to other regions from the New Member States. In fact, Bratislava was one of **only three regions** from the New Member States to make it into the ranks of the best 50 EU regions. Bratislava's **regional innovation strategy of 2004** lays out the general objectives with regard to the support of R&D and innovation infrastructures. It also focuses on supporting technologically-oriented SMEs with innovation potential and innovative start-ups. More recently, the region signed a Memorandum of Understanding to create a **strategic platform** for the development of an innovative, knowledge-based region together with the capital city and its two universities. One of the next steps will be to establish a **Regional innovation centre** bringing together the triple helix actors (government, universities and industry). It is also planned to participate more actively in **CENTROPE**, particularly as concerns projects and initiatives to benefit the

LRA	Activities
	electronics, automotive, biotechnologies, and ICT sectors. These initiatives are designed to help achieve the region's ambition to become the future high-tech core of Central Europe. *Source: Ceplikova, V. (2008) Department for Regional development at the Office of the Self Governing Region of Bratislava*
Moravian-Silesian region (NUTS2 region in the Czech Republic)	**The Moravian-Silesian Region - A cradle for clusters.** According to the Regional Innovation Scoreboard 2006 the NUTS2 Moravian-Silesian region (Moravskoslezsko) is **ranked 180th** out of the 208 European regions; R&D intensity is 0.70%, far below the national average (1.45%) and the OECD average for the year 2005 (2.25%). The Moravian-Silesian Region of the Czech Republic is in **transit** from a region dominated by heavy industry to one based on innovation and knowledge-based industries. Encouraging this transition has involved **cooperation** between the various actors in the field, including businesses, universities, the government, etc. To foster this cooperation, the region has relied on **business clusters** and a variety of new initiatives, including an **innovation strategy** and **InOva**, a scheme to create partnerships that encourage innovation. The Moravian-Silesian economic tradition of coal and steel production proved to be the building blocks for a diverse group of industries. Participants in these industries cooperate with one another, helping to make the Moravian-Silesian Region the **cluster initiative leader** in the Czech Republic. Large engineering and metallurgic companies work on their competitive positions based on joint research and collaborative innovation projects. The **cluster concept** is one of the essential pillars of the Moravian-Silesian regional industry and innovation strategy. The current cluster organisations have been partly funded from the region's budget. In **2002**, a pilot study on industrial groupings was carried out within the PHARE Programme. The study proved that clustering can help to overcome the region's industrial restructuring problems. In **2003**, the Moravian-Silesian Engineering Cluster, the first Czech cluster organisation, was established in Ostrava. For its 2004-2006 programming period, the Czech Republic was the first of the New Member States to include a cluster programme in their EU Structural Funds Operation Programme, Enterprise and Industry (OPEI). The OPEI intermediary body, CzechInvest, encouraged clusters with

LRA	Activities
	a broad awareness-raising campaign in **2004**. During the current programming period, 2007-2013, the cluster programme is **included in the Czech Republic's new Operation Programme**, Innovations and Entrepreneurship. Regionally, the cluster organisations get professional support from the ClusterNet initiative, run by the Regional Development Agency (RDA) Ostrava. *Source: Bruskova, P. (2008), Director General of the Regional Development Agency in Ostrava*
North Jutland (NUTS2 region in Denmark)	**The "Regional Growth Forum" approach in Denmark to better coordinate innovation policies on regional level.** According to the Regional Innovation Scoreboard 2006 Denmark is **ranked 21st** out of the 208 European regions (there are no detailed regional data available). The R&D intensity is 2.49%, slightly above the OECD average for the year 2005 (2.25%). Denmark consists of 5 regions, including the **North Jutland region** (comprising 11 municipalities). Until 2006, the North Jutland County was the primary regional actor concerning regional innovation policies. From 2006 and onwards, the **North Jutland Regional Growth Forum** will be the primary regional actor (every region in Denmark has its own Growth Forum). This is a legally-regulated collaboration between businesses, knowledge and educational institutions and public authorities - appointed representatives from these sectors are members of the Growth Forum. The Growth Forum has **20 members**, all appointed by the regional authorities. – 3 members are appointed on the regional authorities' own initiative. – 6 members are appointed following recommendations from the municipalities in the region. At least one member has to represent the outer regions. – 6 members from business are appointed following recommendations from business organisations. – 3 members from knowledge and educational institutes are appointed on the regional authorities' initiative. – 2 members represent employers and employees. It thus acts on the basis of input from the relevant actors in the region, and the municipalities' influence will significantly increase in the future. The Forum's policy suggestions are not binding on the Regional authority, but it is expected that the suggestions will be followed, since all the relevant stakeholders,

LRA	Activities
	including politicians, in the region are involved in the Growth Forum. The Growth Forum has **three main objectives**: – Regional business development strategy, within the national framework and taking the region's potential into account. – To monitor the region's growth conditions. – To develop and recommend the adoption of proposals for co-financing regional growth development projects (including projects concerning innovation, knowledge and technology). The Growth Forum is thus responsible for the **regional innovation strategy and policies**. **It does not handle the actual implementation** of specific projects. The implementation processes are handled by different Business Centres, knowledge-institutions, GTS institutes and so forth. The connection between the Growth Forum and the implementation units is quite close, in part because of the above-mentioned member-base of the Growth Forum. *Source: North Jutland case study provided by http://www.proact-network.net/*

Regionalised unitary state examples

Regionalised unitary States such as Poland have devolved competences to the different regions. Since the year 2000 Polish voivodships have become more independent in terms of creating and implementing regional policy. Recently, the regional authorities acquired some power over allocation of EU funds and the central government left appropriate funds in the regional budgets. Many initiatives have recently started aiming to enhance regional RTDI policies. They are determined to a great extent by EU policy.

In the UK, implementation of innovation and knowledge policy has been devolved to the Regional Development Agencies (RDA).

LRA	Activities
Silesia (NUTS2 region in Poland)	**Silesia - keeping the innovative area on the right track** According to the Regional Innovation Scoreboard 2006, the NUTS2 region Silesia (Slaskie) is **ranked 156th** out of the 208 European regions; R&D intensity in the Slaskie region is 0.34%, far below the national average (0.58%) and the OECD average for the year 2005 (2.25%). The Silesia Voivodship, (Województwo Śląskie in Polish), a region that was once shaped by mining and metallurgy, is now a centre of

LRA	Activities
	technology and innovation. A transformation to automotive and high-tech industries has helped Silesia become **one of the most economically vibrant regions of Poland.** The region now has a strategy to encourage further innovation and to maintain development through innovation. **Silesia's "Regional Innovation Strategy"** is the **first such plan** to be implemented in Poland. The strategy, under the slogan "Imagination creates reality", presents the Silesia Voivodship as a creative and innovative region. The strategy was prepared and is being managed with the participation of international experts. Silesia's Regional Innovation Strategy focuses on the mobilisation of all the actors of the "triple helix" – science, economy and administration by **strengthening the integration** of advanced technological centres, excellence centres, incubators and technological parks, local authorities and innovative enterprises. Local and regional stakeholders signed the **"Silesia Declaration for the Development of a Creative Innovative Region"**, which calls for improvement of competitiveness of the Silesia Voivodship in Europe. A variety of activities spelled out in the Regional Innovation Strategy are already being implemented, with the financial support of EU Structural Funds, state budget funds, and private capital. The need to support innovation was acknowledged in the Regional Operational Programme of Silesia Voivodship. One priority of the programme is devoted exclusively to research and development, innovation and entrepreneurship. *Source: Stas, M. (2008), Director of the Department of Regional Development in the Marshal´s office of Silesia*
NUTS1 regions in the UK	**The Role of Regional Development Agencies in 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 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 help to achieve the Government's targets. *Source: UK Case Study Report, available at http://www.proact-network.net/, http://www.englandsrdas.com/about_the_regions*

Centralised unitary states

The research and innovation policy shows a highly centralised structure in centralised unitary States such as Hungary. The Government sets strategic objectives and broad policy guidelines for research and innovation policy and the regions do not have independent decision-making power on RTDI policies. A major step forward in developing and co-ordinating regional innovation policy was the creation of Regional Innovation Agencies in 2005.

LRA	Activities
Regions in Hungary (at NUTS2 level)	**First steps in Hungary to supporting regional innovation governance** R&D intensity in Hungary is 0.97% - far below the OECD average for the year 2005 (2.25%). The NUTS2-region Northern Hungary (Eszak-Magyarorszag) is ranked 178th out of the 208 European regions, according to the Regional Innovation Scoreboard 2006. The R&D intensity of Northern Hungary is extremely low (0.32%). Regional policy institutions are new and still being formed in Hungary. From 2004, the National Office for Research and Technology promoted the creation of the so-called Regional Innovation Agencies (RIA), for which a tender was launched in every region. Based on the results of this tender, **seven Regional Innovation Agencies were established in Hungary** (one in each region.) Each agency was attached to the organisation of the Regional Development Agency (to NORDA in the case of Northern Hungary), yet it remained autonomous in terms of its scope of activity and budget. The Regional Innovation Agency of **Northern Hungary** (NORDA) was established on **1 January 2005** and at the beginning had only 2 employees. It expanded gradually and had 6 employees by 2007. The strategic aims of the Agency include: – alleviating the territorial imbalances of R&D funds by developing the scientific and technological infrastructure which strengthens the local relations of multinational companies; – developing the innovation potential of regional SMEs and increasing the number and volume of R&D projects and – establishing tools to make the most efficient use of regional innovation resources. The region developed a Regional Innovation Strategy (RIS [2004]), which is widely accepted and the RIS is used as a baseline reference document. *Source: Case study Regional Research And Innovation Policy Practices In Northern Hungary available under http://www.proact-network.net/*

Main findings

- There are **significant differences in the formal powers and capabilities of regions** to design and implement innovation and knowledge policies. But the capacity of the regions to develop and implement such policies is not exclusively dependent on their institutional powers. Experience with regional innovation strategy exercises indicates that even in regions with limited powers, a partnership-based approach can improve policy-shaping and the policy-making process and generate new ideas for such policies.
- The statutory situation does, however, have a clear impact. In federal States such as **Austria,** Local and Regional Authorities are structurally involved with the national authorities and the social partners in developing and implement innovation oriented policies. This provides a very clear example of what can be termed **vertical integration**.
- The Silesia Voivodship in **Poland** developed its Regional Innovation Strategy bringing together local authorities, local representatives of national government, businesses, educational institutions and other local stakeholders to assist in moving the region forwards in its economic transformation from one dependent on mining and metallurgy to a more modern and innovative economy. This, despite the centralised nature of the Polish State, provides a good example of **horizontal integration.**
- It is difficult to offer an EU-wide assessment of the effectiveness of Local and Regional Authorities in regional innovation strategies, as many of the examples, such as **Danish** growth forums, or the **Bratislava** Regional Innovation Strategy, are relatively new initiatives which have yet to establish track records. More established bodies such as the Wirtschaftsförderung Region **Stuttgart** (WRS), founded in 1995, have clearly demonstrated the effectiveness of carefully building a broad-based structure involving as many stakeholders as possible and carefully constructing an inclusive regional development strategy – Strategy 2020.

4. Synthesis: The involvement of LRA in the policy priority ‘Knowledge and innovation’

4.1 LRA Approaches to the coordination of policies in the priority area 'Innovation and Knowledge'

Improvement of multi-actor policy co-ordination at the regional level can be seen across all institutional settings and particularly in the New Member States:

- **In Federal States:** Examples are Regional economic strategy for the Stuttgart Region 2020, Development of a Strategy for Research, Technology and Innovation in Vienna.
- **In Regionalised unitary States**: Examples are Regional Development Agencies in England, Regional Innovation Strategy in Silesia.
- **In Decentralised unitary States:** Examples are Regional coordination of Structural Fund support in Finland, The Regional Growth Forum approach in Denmark, Bratislava’s regional innovation strategy, Innovation and cluster strategy in Moravian-Silesian Region.
- **In Centralised unitary States.** An Example is Supporting regional innovation governance in Hungary.

The regionalisation of RTDI policies allowing tailor-made solutions to region-specific issues is well illustrated, but the design and delivery of regional innovation policy is a very demanding task in terms of achieving critical mass and the coherence of measures.

The regionalisation of RTDI policies and an enhanced role for LRAs is a **general trend** as described, but **not an easy exercise**. Regional innovation policy and programmes require a **regional governance system** capable of addressing the technical issues, ensuring an efficient management system and of working in partnership with national-level actors. The existence of a more structured innovation system and a stronger regional RTDI policy framework makes it easier to implement more targeted regional programmes.

Complex procedures in implementing regional Structural Funds Programmes undermine a flexible and risk-tolerant innovation governance.

There are **complaints from LRAs about "red-tape" and auditing requirements** related to the implementation of Structural Funds Programmes. These are perceived as discouraging many potential beneficiaries and hindering local implementation of important projects. Consequently, the continuously increasing orientation towards innovation in ERDF is confronted by ever-more complicated formal administration and legal uncertainties.

New policy frameworks for regional, innovation and research policies (CIP and FP7) offer many opportunities, but this potential needs to be exploited by LRAs.

The need for improved coordination and management of policies by LRAs is even **more challenging within the current 2007-2013 period**. At the EU level, the new policy frameworks for regional, innovation and research policies (CIP and FP7) offer many opportunities for synergies with the new Structural Fund programmes in support of the Lisbon strategy. However: this potential needs to be developed and exploited at the 'grassroots' level, since complementarities will only develop if exploited by local and regional actors through more structured and permanent forms of collaboration. Local and Regional actors may be **overwhelmed** by the weight of these new opportunities. It seems that smaller regions simply do not have a sufficient number of qualified civil servants to take care of all knowledge- and innovation-related activities.

4.2 The means (instruments, resources) applied by LRAs to the delivery of the policy priority 'Innovation and Knowledge'

The contribution of LRAs is relatively well documented in more traditional and popular areas of action such as Clusters. A variety of approaches and some stand-alone examples in areas of action having achieved a higher level of active engagement could be demonstrated.

The contribution of LRAs is relatively well documented in the following areas of action: Development of **Regional Innovation Strategies** (RIS), Development of **Innovation poles and clusters**, Support for the creation and growth of **innovative enterprises**, Promotion of **advanced business and technology support services** to enterprises by specific agencies, Supporting **technology transfer**, Improving **access to finance**, Promoting the **information society** for all, Mobilising the **new cohesion policy** to support regional innovation.
Since 2000, the launch of the Lisbon Strategy, **LRAs have made serious efforts** to develop specific **"Strategies for Research, Technology and Innovation"** to cope with their increasing role in RTDI policy. These strategies have in general

been developed and agreed on at the regional level in broad discussions with regional decision-making bodies and entrepreneurs.
LRAs – especially in the more advanced regions – established a **new generation of regional and local technology agencies** – or adapted "older" ones – that offer a new type of portfolio aiming at pro-actively influencing innovation learning processes within companies and within the region. Both initiatives are funded (i) either solely from regional sources (or mixed regional and national funds) (ii) or co-financed by Structural Funds.

The contribution of LRAs is poorly documented in partially new and developing areas of action.

The contribution of LRAs is poorly documented in areas of action as such: **The evaluation** of innovation policies and measures at regional and local level, the enforcement of **intellectual property rights**, promotion of innovation in **services**, assisting the construction of a **European Research Area**-free movement of knowledge, facilitating pro-innovation **public procurement**, fostering **lead markets** and developing **skills, human potential** in the field of research and innovation. These areas of action are partially new and developing and knowledge and activities are somewhat limited.

Regional Structural Funds programmes related to Knowledge and innovation have given more weight to regional and local policy makers and implementing agencies, but the absorption capacity of the regional level to implement RDTI measures is still – with a few exceptions – not sufficient. This problem is likely to worsen during the new SF period.

The Structural Funds are an important source for supporting the Lisbon Strategy in the field of RTDI. The majority of the programmes are of a **regional nature**. In the 2000-2006 period, **160 regional programmes concerned with RTDI measures** were implemented across the EU25. **A very critical concern is the insufficient absorption capacity** of the regional level to implement RDTI measures in Objective 1 and 2 Programmes, 2000-2006. In the Objective 1 Programmes in the New Member States, only some 63% of allocated funds was committed. In the EU-15 Objective 2 Programmes about 80% of allocated funds related to RTDI could actually be committed. That indicates **serious implementation problems** – with a few exceptions (Denmark, the Netherlands, Sweden, Finland) – across all European countries. It must, however, be noted that the allocation to RTDI in the 2000-2006 period was in general much lower than in the new Structural Funds period 2007-2013.

The contribution and relevance of primarily regionally-funded RTDI instruments is very difficult to estimate.

In addition to Community support programmes at the regional and local level, numerous RTDI policy measures and support schemes exist **covering a broad policy mix**, but they are **poorly covered by joint inventories**. It is a very complicated task to give a systematic picture of the entire range of instruments funded primarily from regional sources. The coherence with Community programmes is in general not sufficiently clarified, with the risk of fragmentation of efforts.

There is clear evidence that some regions make considerable efforts to better design and coordinate their RTDI-instruments.

However, only a limited number of LRAs devote considerable resources to benchmarking and studies to ensure policies are based on best practices. The long-term success of activities and instruments often remains unproven.

5. Conclusions

Critical aspects of the involvement of Local and Regional Authorities and lessons learnt

Capacity challenges for regional (and national) officials and programme managers of measures in the field of innovation and knowledge.

The regionalisation of RTDI policies and general efforts to create an environment that encourages research, development and innovation require a **capable regional governance system** able to address technical issues, ensure efficient management and work in partnership with national-level actors. Furthermore Community Instruments such as FP7 and CIP offer more participation possibilities for LRAs than in the past, but **coordinated use** is a particular challenge. **The weight of these requirements** to improve the arrangements for cross-departmental and vertically co-ordinated policy design and implementation and better co-ordinated use of Community instruments may be **overwhelming** for LRAs, given the limited expertise of many of their officials with responsibility in the field of innovation and knowledge. Therefore possibilities should be explored to provide **capacity-building** assistance to regional (and national) officials and managers of programmes and measures in the field of innovation and knowledge.

Insufficient absorption capacity and severe implementation problems at the regional level with regard to RDTI measures.

A critical finding is the insufficient regional absorption capacity in terms of implementing RDTI measures in Objective 1 and 2 Programmes during 2000-2006.

In order to create capabilities or demand in enterprises and to increase the absorption capacity for RTDI support measures **a phased approach** should be adopted by LRAs in implementing innovation and knowledge interventions (e.g. raising capabilities in SMEs to undertake projects **before** launching new funding schemes, sector road-maps or foresight as a basis for future technology programmes, etc.).

The continuously increasing shift towards innovation in Cohesion Policy comes up against **ever-more complicated formal administration and legal uncertainties for LRAs implementing regional programmes.** More flexible and risk-tolerant practices in the implementation of the instruments are required. The Member States in partnership with the Commission are urged to radically

simplify existing procedures (at least for smaller programmes), if European regional programmes are to achieve their potential.

The contribution of LRAs to improving coordination between regional Knowledge- and Innovation-related programmes.

In medium to large Member States with several regional innovation programmes, there is a clear need for LRAs to improve coordination between regional programmes and policies, both horizontally between regions and vertically with central government departments. Activities such as policy benchmarking, foresight initiatives and interregional co-operation programmes can create a voluntary exchange of know-how.

The need to considerably broaden the evaluation culture of LRAs in order to measure and demonstrate the effects of LRA activities.

There is a significant deficit in understanding the effects of the LRA activities over time. Only a few regions offer open and transparent information about their activities and there is hardly any information available as on the success of their initiatives. For example: how many enterprises have been created, or how many had access to the initiative, how many improved their sales or opened new production centres or improved products' quality, and so on. Evaluation is an essential element of good corporate governance applied by learning organisations. It serves basically two purposes: (i) Accountability: It provides knowledge on the performance of activities in meeting their objectives, and (ii) Learning: It helps to improve the quality of measures supported by LRAs.

The exploitation of new opportunities to address Knowledge and Innovation offered by the new generation of Transnational Cooperation programmes by LRAs.

The new focus on innovation through the Lisbon process has been translated into the **new generation of Transnational Cooperation programmes** (e.g. CENTRAL, South East Europe). Innovation is one of four funding priorities of the Operational Programmes. LRAs should exploit the new opportunities and address the geographical, institutional and capacity gaps in the cooperation areas. Research, technology and innovation investments are heavily polarised in some European regions, diffusion mechanisms should be promoted through transnational action. Joint action, targeted trainings, exchange schemes, mentoring, and visits are the building blocks of transnationality in the field.

Questions open to further debate

Are the proposed policy areas and related areas of action (policy mix typology) appropriate to fully depict Lisbon-related goals to be taken forward by LRAs?

High-level guidelines (Integrated Guidelines, Spring European Councils priorities and a broad-based innovation strategy for the EU) fail to **directly address all actors**: Member States, Commission **and** the local and regional level. To **bridge the gap** between high-level guidelines and the regional level, it is of pivotal importance to define an **appropriate set of main issues** within the priority area Knowledge and Innovation to bring the discussion to a **practical level** that LRAs can respond to. **8 policy areas and 16 related areas of action** have been **proposed** and may need further **consideration** as to their appropriateness. A discussion of the proposed areas could be a fruitful contribution to strengthening the transfer of the Lisbon goals to the regional level. An agreed set of policy-related action areas could be used in the Lisbon Monitoring Platform as a systematic grid in both reports as well as on the website, to collect and reflect contributions from LRAs.

How can joint inventories on EU level on instruments funded primarily from local and regional sources be improved?

In addition to EU co-financed innovation support programmes and measures throughout Europe, **hundreds of mainly nationally or regionally funded policy measures** and support schemes aimed at innovation have been implemented or are under preparation. The joint inventories[16] focus primarily on national level instruments, while the **regional level is poorly covered.** It is very difficult to develop a systematic picture of Lisbon-related contributions of all the instruments funded primarily from regional sources.

Critical debate on the importance of R&D in the economic development of regions.

Increasing R&D investments is only one way to generate jobs and wealth. For the majority of regions a **high R&D intensity may be out of range**. Furthermore, many of the new knowledge sectors do not declare significant R&D investments, such as the creative industries. Should regions be more concerned with other types of policy challenges than with issues related to scientific research and technological development? Does employment growth

[16] ERAWATCH, INNO-Policy TrendChart annual country reports, 2006 Country Reports of the Strategic Evaluation on Innovation and the knowledge based economy in relation to the Structural Funds and the Cohesion Fund for the programming period 2007-2013.

owe anything to RTDI policies? Are R&D measures appropriate ways to assess investments in knowledge economy activities?

With reference to the global economic crisis which dramatically developed since 2008 the following questions arise:

- Expenditure in research and development is a common indicator for interpreting a region's attitude toward inventive activities. The regional R&D intensity is strong inter alia in regions where transport manufacturing is particularly important. However the automotive sector is one of the sectors particularly affected by the global economic crisis and it requires persistence to invest in knowledge and innovation even when the economy is weak. Will **investments in R&D be dramatically reduced** in such regions with a heavy dependence on negatively affected sectors?
- Regional RDTI initiatives where private funding plays a major role, such as venture capital funds for financing innovative enterprises or competence centres building industry-science links are threatened by the withdrawal of private money. Furthermore, RTDI infrastructures and capacities have been developed across the regions during the economic boom in recent years. Will a **devolution process** take place weakening regional RTDI infrastructures and capacities? Will LRAs be forced to **provide considerably more public money** to safeguard existing initiatives and infrastructures?

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7. Annex

Table 1. Number and types of programme (R= Regional, S= Sectoral) by Objective, 2000-2006, for New Member States (NMS) 2004-2006

	Number									%					
	Obj.1			Obj.2			Total			Obj.1		Obj.2		Total	
	R	S	Total	R	S	Total	R	S	Total	R	S	R	S	R	S
AT	1		1	8		8	9	0	9	100.0		100.0		100.0	
BE	1		1	7		7	8	0	8	100.0		100.0		100.0	
LU					1	1	0	1	1				100.0		100.0
DE	6	3	9	11		11	17	3	20	66.7	33.3	100.0		85.0	15.0
ES	12	11	23	7		7	19	11	30	52.2	47.8	100.0		63.3	36.7
FR	6	2	8	21	2	23	27	4	31	75.0	25.0	91.3	8.7	87.1	12.9
GR	13	12	25				13	12	25	52.0	48.0			52.0	48.0
IT	7	7	14	14		14	21	7	28	50.0	50.0	100.0		75.0	25.0
PT	7	13	20				7	13	20	35.0	65.0			35.0	65.0
UK	6		6	14		14	20	0	20	100.0		100.0		100.0	
IE	2	4	6				2	4	6	33.3	66.7			33.3	66.7
DK					1	1		1	1				100.0		100.0
NL	1		1	3	1	4	4	1	5	100.0		75.0	25.0	80.0	20.0
FI	2		2	3		3	5	0	5	100.0		100.0		100.0	
SE	2		2	4		4	6	0	6	100.0		100.0		100.0	
EU 15	**66**	**52**	**118**	**92**	**5**	**97**	**158**	**57**	**215**	**55.9**	**44.1**	**94.8**	**5.2**	**73.5**	**26.5**
CY					1	1		1	1				100.0		100.0
CZ		5	5	1		1	1	5	6		100.0	100.0		16.7	83.3
EE		1	1					1	1		100.0				100.0
HU		5	5					5	5		100.0				100.0
LT		1	1					1	1		100.0				100.0
LV		1	1					1	1		100.0				100.0

Table 1. Number and types of programme (R= Regional, S= Sectoral) by Objective, 2000-2006, for New Member States (NMS) 2004-2006

	Number									%					
	Obj.1			Obj.2			Total			Obj.1		Obj.2		Total	
	R	S	Total	R	S	Total	R	S	Total	R	S	R	S	R	S
MT		1	1					1	1		100.0				100.0
PL		7	7					7	7		100.0				100.0
SI		1	1					1	1		100.0				100.0
SK		4	4	1		1	1	4	5		100.0	100.0		20.0	80.0
NMS	**0**	**26**	**26**	**2**	**1**	**3**	**2**	**27**	**29**		**100.0**	**66.7**	**33.3**	**6.9**	**93.1**
EU 25	**66**	**78**	**144**	**94**	**6**	**100.0**	**160**	**84**	**244**	**45.8**	**54.2**	**94.0**	**6.0**	**65.6**	**34.4**

Source: Applica et al (2008), Calculations based on DG Regio data

Table 2. Allocated Structural Funds by field of Intervention in EU15 countries (% total)

	AT	BE	LU	DE	ES	FR	GR	IT	PT	UK	IE	DK	NL	SE	FI	EU 15	EU 25
Agriculture	1.9	2.8		2.8	3.9	2.4	5.3	6.5	6.0	1.0	3.6		0.1	6.0	5.3	4.3	4.7
Forestry	0.6	0.2		0.3	2.0	0.5	0.5	1.0	2.0	0.5	0.7			0.7	1.3	1.1	1.1
Rural areas	1.7	1.8		10.8	5.4	5.4	5.4	6.4	5.5	3.2	1.3	1.3	9.2	5.6	6.4	6.1	6.0
Fisheries		0.1		0.3	3.3	0.6	1.4	1.2	1.1	0.9	3.1		0.6	0.7	0.6	1.6	1.6
Assisting large business	17.7	6.8	0.7	3.6	2.8	2.4	0.7	2.7	4.3	1.5		4.0	0.5	0.1	5.4	2.7	2.7
Assisting SMEs	28.8	22.8	0.7	15.9	6.9	12.1	5.9	16.0	7.3	36.4	9.4	14.4	22.0	29.8	25.6	12.6	12.2
Tourism	18.8	10.8	14.2	2.9	1.3	11.7	2.6	7.5	3.8	3.5	1.4	17.5	12.9	8.2	4.3	4.1	4.1
RTDI	13.6	13.6	10.5	8.9	6.7	5.8	1.8	4.3	4.6	6.4	6.7	15.7	2.0	11.1	13.7	5.8	5.6
Productive Environment	**83.1**	**59.1**	**26.0**	**45.6**	**32.2**	**40.8**	**23.6**	**45.5**	**34.7**	**53.3**	**26.1**	**52.9**	**47.2**	**62.2**	**62.5**	**38.3**	**37.9**
Labour market policy	4.9	2.8		9.9	9.9	1.9	4.5	4.8	2.4	4.8	1.1		3.7	1.2	5.1	6.2	6.2
Social inclusion	0.5	4.3		4.8	1.3	3.0	3.6	0.8	3.6	5.9	6.3		3.0	1.3	2.3	2.9	2.8
Education and training	0.3	8.4		3.5	2.9	11.0	6.6	6.2	13.8	4.8	15.4		0.9	5.5	7.2	6.2	6.4
Workforce flexibility, ICT	2.3	8.2		4.3	6.7	3.5	3.5	2.9	1.4	6.4	4.0	26.8	2.1	7.8	9.0	4.4	4.4
Actions for women	0.3	0.1		2.8	0.6	0.7	1.9	1.2	0.3	1.0	0.3		0.7	1.4	2.1	1.2	1.1
Human resources	**8.3**	**23.7**		**25.3**	**21.3**	**20.1**	**20.1**	**15.9**	**21.4**	**22.9**	**27.2**	**26.8**	**10.3**	**17.3**	**25.6**	**20.9**	**21.0**

Table 2. Allocated Structural Funds by field of Intervention in EU15 countries (% total)

	AT	BE	LU	DE	ES	FR	GR	IT	PT	UK	IE	DK	NL	SE	FI	EU 15	EU 25
Transport infrastructure	0.4	4.1	5.4	13.9	23.4	10.1	29.7	14.3	15.7	5.1	35.6	1.8	4.7	6.2	2.0	17.9	18.2
Telecommunication infrastructure	1.3	0.8	5.4	1.1	2.1	3.7	6.5	4.7	2.9	4.3	3.2	8.6	5.9	7.3	2.4	3.4	3.5
Energy infrastructure	1.9	1.0	10.7	0.3	0.5	1.1	0.8	1.1	1.9	0.7	0.7	1.4	0.1	0.6	0.6	0.8	0.9
Environmental infrastructure	1.6	1.7	10.7	5.9	9.7	6.5	4.1	7.3	4.1	1.3	6.8	2.6	0.5	0.4	1.7	6.2	6.1
Planning and rehabilitation	2.1	8.3	39.5	6.3	5.8	12.4	6.2	7.2	8.6	9.5		1.8	26.7	2.7	2.4	7.1	6.8
Social infrastructure	0.3	0.1			4.3	2.7	5.6	1.2	9.0	1.2			2.1	0.7	0.5	3.4	3.6
Basic infrastructure	**7.4**	**15.9**	**71.7**	**27.5**	**45.8**	**36.7**	**52.9**	**35.9**	**42.2**	**22.1**	**46.3**	**16.2**	**40.0**	**17.9**	**9.7**	**38.9**	**39.1**
Technical assistance	**1.3**	**1.3**	**2.4**	**1.5**	**0.7**	**2.4**	**3.4**	**2.7**	**1.7**	**1.7**	**0.4**	**4.2**	**2.5**	**2.7**	**2.2**	**1.8**	**1.9**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: applica et al (2008) Calculations based on DG Regio data

Table 3. Expenditure supported by the Structural Funds relative to allocated amounts (%) Objective 1 (new Member States)

	CZ	EE	HU	LT	LV	MT	PL	SI	SK	NMS	EU25
Agriculture	66.8	83.7	80.9	83.2	92.1	60.2	70.3	54.5	83.4	**74.2**	**80.2**
Forestry	62.5	22.6	91.4	71.8	71.0		68.8	51.4	71.0	**67.8**	**87.9**
Rural areas	64.6	60.8	62.5	57.8	70.7	66.5	47.9	63.3	55.2	**54.8**	**80.4**
Fisheries						2.4				**0.0**	**5.2**
Assisting large business	36.8	71.9	86.3	73.8	64.4		30.0	78.0	64.5	**47.9**	**81.5**
Assisting SMEs	54.3	71.6	78.3	60.0	68.6	82.1	55.6	72.4	60.2	**61.3**	**84.3**
Tourism	75.6	76.5	68.6	32.0	33.0	59.0	63.6	85.2	69.1	**63.5**	**72.7**
RTDI	21.5	61.1	74.2	49.6	33.9	69.7	66.2	74.4	62.1	**63.2**	**79.9**
Productive Environment	**60.1**	**64.4**	**75.5**	**56.9**	**64.2**	**51.8**	**56.3**	**70.8**	**72.0**	**61.3**	**77.6**
Labour market policy	46.6	63.3	69.8	54.8	76.6	64.0	85.7	57.7	82.7	**77.3**	**87.1**
Social inclusion	45.4	63.3	46.0	46.0	55.2	61.6	59.9	33.2	7.2	**51.3**	**91.3**
Education and training	40.8	39.0	45.9	46.6	48.4	70.5	54.9	73.9	35.7	**50.3**	**84.1**
Workforce flexibility. ICT…	36.3	45.2	18.3	44.9	83.2	70.2	38.5	25.5		**37.9**	**77.5**
Actions for women	55.5	63.3	32.7	46.2		54.1	44.4		47.8	**44.9**	**81.5**
Human resources	**42.6**	**49.5**	**48.0**	**47.6**	**64.2**	**65.1**	**59.3**	**56.7**	**59.7**	**55.6**	**84.5**
Transport infrastructure	79.4	97.0	72.0	82.3	67.4	75.4	57.1	71.1	54.8	**61.6**	**86.9**
Telecommunication infrastructure	64.3	53.0	65.4	53.0	31.4	76.6	50.6	56.4	33.8	**52.8**	**74.2**
Energy infrastructure	55.8	88.8	73.4	63.4	33.0	57.4	77.1	71.1	70.1	**67.7**	**71.8**
Environmental infrastructure	77.9	87.4	78.0	53.6	33.0	57.4	79.3	71.1	68.7	**74.9**	**75.2**
Planning and rehabilitation	60.7	89.0	65.7	41.5		70.1	69.0	71.1	65.5	**66.6**	**75.9**
Social infrastructure	96.0	67.8	62.0	53.9	54.4	80.4	99.0		57.8	**73.8**	**90.1**
Basic infrastructure	**75.3**	**76.7**	**68.0**	**65.9**	**52.9**	**66.1**	**62.3**	**65.7**	**58.4**	**64.1**	**82.5**
Technical assistance	**33.0**	**74.3**	**55.3**	**52.9**	**25.5**	**59.6**	**39.2**	**35.6**	**55.2**	**46.4**	**61.1**
Total	**60.8**	**66.6**	**66.1**	**59.1**	**59.6**	**62.3**	**59.3**	**65.0**	**62.0**	**60.8**	**80.8**

Source: applica et al (2008), Calculations based on DG Regio data

Table 4. R&D intensity 2005; R&D expenditures performed by the government and business sector, average of the two years 2000 and 2005

Region Name	R&D intensity (R&D expenditures as a percentage of GDP) Region / Country	Region Government R&D expenditures	Region Business R&D expenditures	Region Government R&D in % of Business R&D
Västsverige (Sweden)	5,33 / 3,81	23,9	112,4	21%
Sachsen (Germany)	2,33 / 2,51	548,4	1025,1	53%
Scotland (UK)	1,59 / 1,85	423,4	764,1	55%
Emilia-Romagna (Italy)	1,17 / 1,11	148,0	814,5	18%
Lorraine (France)	1,04 / 2,17	51,9	242,5	21%

Source: OECD Regional Database, http://stats.oecd.org/WBOS, theme: Regional Statistics.

Table 5. Intensity of R&D expenditure, 1995 and 2005

Country Name	1995	2005
Italy	0,99	1,11
United Kingdom	1,99	1,85
France	2,36	2,17
OECD total	2,09	2,25
Germany	2,14	2,51
Sweden	3,25	3,81

Source: OECD Main Science and Technology Indicators Database

Table 6. Regional concentration of patents, 2005

Region Name	Regional value Patents per million population	Regional value in% of Country average	Country average Patents per million population
Västsverige (Sweden)	308	114%	270
Sachsen (Germany)	75	38%	197
Lorraine (France)	40	41%	99
Scotland (UK)	68	72%	95
Emilia-Romagna (Italy)	91	191%	48
OECD total			108

Source: OECD REGPAT Database and OECD Regional Database, http://stats.oecd.org/WBOS, theme: Regional Statistics.

Table 7. Projects approved in the 'Regions of knowledge' initiative (April 2009)

Year	Call-ID	Area	Topics	Number of projects approved
2007	FP7-REGIONS-2007-1	Analysis, mentoring and integration of research actors	– Bringing the benefits of research to SMEs – Research and rural economies including economies undergoing structural changes	11
	FP7-REGIONS-2007-2	Facilitating the emergence of new clusters and mutual information	– Bringing the benefits of research to SMEs – Research and rural economies including economies undergoing structural changes	5
	FP7-REGIONS-2007-3	Trans-national co-operation among National Contact Points		1
2008	FP7-REGIONS-2008-1	Analysis, mentoring, integration of research agendas and definition of Joint Action Plans	– Maximising the benefits of research infrastructures for regional economic development – Regional contributions to the reduction of CO2 emissions	5 (+6 projects under negotiation)
	FP7-REGIONS-2008-2	Facilitating the emergence of new regional research driven clusters and mutual exchange of information	– Maximising the benefits of research infrastructures for regional economic development – Regional contributions to the reduction of CO2 emissions	4

Source: Austrian Research Promotion Agency (FFG), http://rp7.ffg.at/regionen