



Regional Policy and Innovation

EoRPA Paper 05/5

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This paper has been prepared for the 26th meeting of the EoRPA Regional Policy Research Consortium at Ross Priory, Loch Lomondside on 2-4 October 2005. It should not be quoted without permission.

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Preface

This paper explores how regional policy is responding to recent thinking on the importance of innovation for regional development. The paper has been prepared by the European Policies Research Centre (EPRC) under the aegis of EoRPA (European Regional Policy Research Consortium), which is a grouping of national government authorities from countries across Europe. The Consortium provides sponsorship for the EPRC to undertake regular monitoring and comparative analysis of the regional policies of European countries and the inter-relationships with EU regional and competition policies.

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The research for this paper was undertaken by EPRC in consultation with EoRPA partners. It involved a programme of desk research and fieldwork visits among national and regional authorities in Member States during Spring/Summer 2005.

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Many thanks to everyone who participated in the research. The European Policies Research Centre also gratefully acknowledges the financial support provided by Sponsors of the EoRPA Consortium.

Disclaimer

It should be noted that the content and conclusions of this paper do not necessarily represent the views of individual members of the EoRPA Consortium.

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1. INTRODUCTION

In recent years, innovation has increasingly been regarded as an important factor for regional growth.¹ In a rapidly globalising world, with increasing competition and rapid changes in technology, innovation is seen as critical to achieve and maintain competitive advantage on the part of businesses, countries and also regions. Although science and technological advances have long been a priority of national policies in most countries, there has recently been increasing awareness of the regional dimension of innovation activity. Specifically, policymakers have begun to recognise that innovation is a spatially uneven process and the importance of region-specific factors in explaining patterns of innovation. Further, physical proximity is important as a factor associated with interaction among firms and other organisations and the existence of an innovation culture. It also influences the broader innovation 'milieu' in terms of how intermediaries facilitate knowledge flows and technology transfer, as well as social capital.

The policy response is evident in the way that regional development policies have incorporated innovation-related objectives, priorities, instruments and targets. This trend has been associated with a parallel process of regionalisation under research, technological development and innovation (RTDI) policies, with a regional focus in the design and/or delivery of interventions. However, these trends are by no means universal or identical across countries.

The regional policies of different countries have taken differing approaches to support for innovation. In some cases, innovation is at the heart of regional policy, with the emergence of 'regional innovation policies'; in other cases, regional policy undertakes selective intervention in support of certain aspects of innovation; and in yet other cases, the role of regional policy restricts itself to assisting a supportive business environment as a framework for regional innovation activity (which is directly aided by other organisations).

The following paper examines the nature of regional policy support for innovation in selected countries – Austria, Finland, France, Germany, Italy, the Netherlands, Norway, Sweden and the United Kingdom. It begins by discussing the policy context in terms of the rationale for regional innovation support and the main policy concerns of national governments. It then considers the different innovation-related objectives of regional policy in the nine countries and some of the definitional differences between the approaches taken. The paper then provides a detailed country-by-country review of the implementation of regional policy support for innovation and a comparative assessment of some of the main points to emerge. The final section identifies some questions and issues as a starting point for discussion.

¹ Bachtler J and Brown R (2004) *Innovation and Regional Development: Transition Towards a Knowledge Based Economy*, OECD Background Paper, November 2004.

2. CONTEXT - REGIONAL POLICY AND INNOVATION

2.1 The Rationales for Regional Innovation Policy

Analysts from a number of different disciplines and viewpoints emphasise the role of technological innovation in economic development. This section provides a brief overview of theoretical and empirical studies in economics, as well as in the field of regional geography.

2.1.1 Economic growth theories

While a number of early political economists recognised the role of technological change in driving capitalist development, contemporary economic analyses of the role of technology in the economy usually take the work of Robert Solow as a starting point. Solow developed a model which disaggregated growth in output into the following components: increases in the number of workers, increases in the amount of physical capital and a residual, which he argued could be understood as qualitative improvements in the efficiency with which labour and capital inputs were used (or total factor productivity), whether due to technological progress or other factors, such as organisational improvements. Because increases in capital per worker are subject to diminishing marginal returns (i.e. the benefits from adding to the amount of capital per worker are finite), this model implies that long run economic growth is ultimately driven by population growth and by total factor productivity. However, Solow's model does not explain the reasons for either of these factors, and thus ultimately does not explain the sources of economic growth.

Although numerous studies had analysed the reasons for differences in countries' growth performance, it was not until the 1980s that economists succeeded in providing formal theoretical models of the contribution of human and knowledge capital to economic growth, where technical change is seen as the result of the decisions of profit-seeking agents. A variety of models were developed, all of which rely on the possibility that aggregate returns to certain types of capital (notably human and knowledge capital) may not diminish over time due to positive spillover effects from the investment of one firm or worker on the productivity of other firms and workers. This implies that there may be market failures; for example, as firms cannot appropriate the full benefits of their investments in knowledge capital, they may invest at a lower level than would be optimal from an aggregate viewpoint, so that policymakers may be able to increase efficiency by enhancing incentives to businesses to invest in R&D.

These models all aimed to explain the roots of economic growth in order to explore economic differences between countries. They assume, for example, that spillovers will diminish over distance and international borders, so that investment in knowledge and human capital may reinforce virtuous cycles of development, potentially leading to widening income differences between countries. This view is supported by the 'new economic geography' which emphasises that, once the forces of agglomeration (including technological spillover effects) take root, they tend to become self-reinforcing, leading to widening geographical disparities. Other models, however, have shown that this is not inevitable, as openness to international trade and investment in education and training are

seen to enhance the flow of ideas and new technologies across borders, allowing lagging countries to imitate and thus catch up with more advanced locations.

2.1.2 Evolutionary and institutional economics

Some economists take a different approach to the analysis of technological development. They emphasise that technological change is conditioned by uncertainty and tends to follow trajectories that may lead to non-optimal outcomes which nevertheless are not easily reversed and yet condition future possibilities for development. They argue that technological change depends on the routines that determine the firm's capacities for decision-making and acting, as well as on the external institutional context (not only in terms of formal regulatory frameworks, but sometimes also in terms of shared belief- and value-systems).

One influential example of this approach focuses on 'systems of innovation', which are seen to include all those institutions that influence technological development. Studies typically aim to identify all relevant actors, not only enterprises, but also banks, policy agencies, universities, socio-economic partners and so on, and to map their activities and interactions. While early studies focused on the national level, others have taken a regional or a sectoral approach.

2.1.3 Regional geography

A number of different concepts have been put forward since the 1980s in support of the view that technological innovation is driven by factors at a regional level, including 'innovative milieux', 'learning regions', and 'industrial districts'. These regional factors are sometimes seen in terms of cultural commonalities or repeated face-to-face interactions between businesses and other actors, leading to trust-based relations. At other times, they are argued to be based on enhanced access to formal and informal sources of knowledge from organisations located nearby, or on particular policy institutions and programmes undertaken by regional authorities.

One interesting feature of these studies is that, like recent models in mainstream economics, they derive their ideas from Alfred Marshall's analysis of agglomerations. Marshall argued that firms choose to locate close to one another because this reduces the costs of market transactions, promotes access to skilled labour, and facilitates the exchange of technological and other information. Economists draw the conclusion that an increased emphasis on R&D and technological innovation tends to lead to a widening of geographical disparities, as the advantage of leading locations is further reinforced, while the diffusion and imitation of existing technologies tend to reduce inequalities. By contrast, geographers argue that the experience of the most dynamic agglomerations can be replicated in lagging regions, and perceive innovation policies as solutions to the economic development of all regions. In part, this divergence is due to the tendency for geographers to use a very broad definition of innovation that includes not only 'the commercialisation of new products and processes', but also any form of technological or organisational improvement within an enterprise, as well as broader processes of socio-institutional or policy change.

2.1.4 Empirical studies

A number of studies have drawn on econometric models to assess empirically the impact of public subsidies and incentives on business R&D expenditure. A macroeconomic approach that takes account of economy-wide interactions can provide information on social - rather than simply private - returns. For example, a recent panel data analysis of nine OECD countries in 1979-97 finds a positive and significant correlation between R&D tax credits and rises in business R&D expenditure, controlling for country-specific fixed effects and world macroeconomic shocks. It calculates an impact elasticity of around -0.1 in the short run, rising to around unity in the long run. This indicates that a ten percent reduction in the cost of R&D would lead to a one percent increase in the amount of R&D in the short run, and a ten percent increase in the long run. Another study of 17 OECD countries in 1981-96 shows similar results, but also finds that direct subsidies may be more effective than fiscal incentives in the long run, and that the two instruments tend to substitute for one another. This study also found that stable policy regimes have stronger results, and that the returns to R&D subsidies follow an inverted U-shape, increasing up to an aid rate of around 15 percent, and decreasing thereafter.

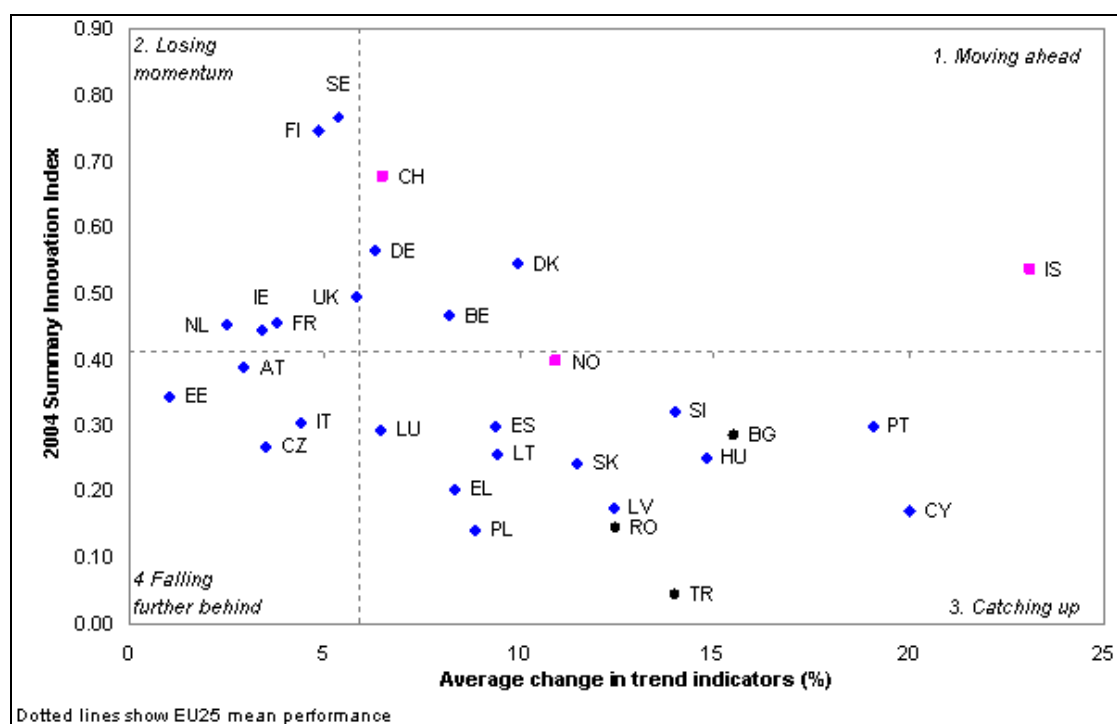
Some studies also note, however, the need to take account of other factors when deciding whether the benefits of increased public spending on R&D would outweigh the costs, such as the administrative burden; the difficulties in designing efficient aid systems; the risk that increased subsidies may simply lead to a relocation of R&D rather than an aggregate increase in R&D output; and the possibility that increased R&D spending is translated into salary increases for R&D staff, rather than increased output. There may also be other means of enhancing the efficiency of business R&D expenditure (and thus incentives for firms to invest), notably steps to enhance market integration and patent protection.

2.2 National policy concerns

Reflecting some of these rationales, there is a high-level political and policy concern with national innovation performance in every sponsor country. This derives partly from the growth in globalisation and international competition and the implications for future economic growth in individual countries. It is also associated with the debates about growth at European level, the importance accorded to innovation and the knowledge economy, and the attempts to measure and monitor national innovation performance.

The annual reports on Lisbon and the European innovation scoreboard play a significant role in national thinking (see Figure 1). Although there are big differences between countries, in terms of their scores on the annual innovation index, and the average change in trend indicators, there is an almost universal concern that the current situation, recent progress or future prospects are deficient in factors such as R&D expenditure, business R&D expenditure, number of researchers, number of patents etc.

Figure 1: Average Country trend by Summary Innovation Index, from the European Innovation Scoreboard 2004



Source: <http://trendchart.cordis.lu/scoreboards/scoreboard2004/index.cfm>

It is interesting to review the specific concerns of individual countries, since they reveal an extremely broad agenda for policy action, ranging from fundamental structural weaknesses to systemic concerns about supply-side issues or the operation of the institutional infrastructure and policy management. This outline is not intended to be comprehensive but is illustrative of the different dimensions to the policy agenda.

2.2.1 Structural weaknesses

The most common policy concern is to increase the amount of R&D expenditure, in particular by the business sector, but there are generally underlying structural weaknesses that need to be addressed.

The UK is typical in this respect. Productivity growth has been relatively low by international standards and some aspects of innovation performance (such as R&D expenditure) have been below average. In 2004, the UK government published a long-term framework for science and innovation; one of the key concerns was that the reformed and relatively positive economic environment was being insufficiently exploited by the business sector, in terms of investment in capital, skills and innovation. Research underpinning the framework revealed the structural nature of the challenges facing innovation policy in the UK context.² First, innovation performance has been hindered by poor skills and the UK is particularly weak in basic and intermediate skills. This delays innovation and investment programmes and hampers the transfer to full product development. Second, weak

² DTI (2003) *Competing in the Global Economy - The Innovation Challenge*, DTI Economics Paper No. 7, Department of Trade & Industry, London.

competition policies in the past have put UK firms under less pressure to use new technologies and find ways to improve their performance. Third, the lower levels of innovation expenditure and investment in R&D, evident in the UK context, are probably as much the result of a lack of incentives and capacity to innovate as a lack of funding, although there are clear gaps in the provision of early stage finance. Finally, although UK firms appear to have many network relationships, there is strong variation between sectors and business engagement in R&D generally has to be increased.

In Germany, there are concerns over the country's position relative to other OECD countries, not only due to its general macroeconomic difficulties, but also because its innovation activities continue to focus on sectors, such as machinery and automobiles, where it has a traditional strengths in terms of exports - rather than in new activities which are driving international innovation e.g. ICT and biotechnology.³ A recent OECD survey of Germany emphasised the need to: (a) reform the taxation of capital in order to remove disincentives to take risks and to provide capital to new rather than to established firms; (b) raise the efficiency of the higher education sector, inter alia by improving access and giving universities more autonomy and incentives to attract students; (c) evaluate government-funded innovation programmes more consistently in order to increase efficiency and eliminate ineffective subsidies; and (d) remove hurdles to firm creation by reducing the complexity of the tax system, taking further steps to reduce administrative opacity and further reducing the costs imposed by employment protection.

The UK and German examples indicate that simply increasing the level of public spending on R&D (whether in the form of public R&D or incentives to businesses) is unlikely to be sufficient to enhance innovation activities. This reflects a wider European issue that, if Lisbon is to achieve its aims, there is a need - at least in some Member States - to address various structural issues, rather than simply raise public (especially EU) spending on R&D.

2.2.2 Systemic problems

Even in countries which have been regarded internationally as 'good performers', there is concern that the innovation system may not be efficient enough to meet future challenges. In Finland, for example, a recent report on the innovation support system focused on the need to ensure better coordination and synergies between the national, regional and local levels. From a regional perspective, it mentions a potential new role for polytechnics to help in the development of SMEs, especially in the less-developed regions. With respect to innovation-related intermediaries, four recommendations were made which are of relevance for regional development: first that strategies should be developed to connect regional and local actors and innovation environments more closely with national innovation policy; second, that knowledge and technology transfer services should reach the local level more efficiently; third, that the Centre of Expertise Programme should be targeted more at top-level knowledge and that, in the next programme period, it should be integrated more closely with national innovation policy; and, fourth, that there should be

³ Fuentes, A., Wurzel, E. and Morgan, M. (2004) Improving the capacity to innovate in Germany. OECD Economic Department Working Paper No.407.

more cooperation and networking amongst intermediaries, more stress on strengthening their knowledge base and more assessment of their impact.

2.2.3 Innovation bottlenecks

Related to the systemic issues identified in Finland is a concern that future innovation performance may be constrained by specific bottlenecks in the system. In the case of Austria, for instance, it is striking that the country has been able to increase its R&D expenditure (as a share of GDP), significantly - from 1.91 percent in 2000 to 2.35 percent in 2005. However, there is concern that some indicators point to possible future problems. One issue is the availability and quality of human capital: the availability of skilled labour has been perceived by the Council for Research and Technological Development as a possible bottleneck in achieving higher R&D output. Another issue is the quality of basic research: on the basis of the number of high-tech patent applications submitted to the European Patent Office (per million inhabitants), Austria falls below the EU average.⁴

By contrast, in the Netherlands, innovation surveys have shown that the country has been performing well in terms of fundamental research (on the basis of indicators such as patents recorded etc), but that there are problems in adapting the results of basic research for the market place. It is in this area that the role for government has been highlighted.

2.2.4 Regional disparities

Most of the policy debate about innovation performance has focused on national issues - in particular where fundamental structural or systemic issues are involved. For the smaller EU countries, with a limited innovation infrastructure, the key issue is how to mobilise centres/sectors of excellence most effectively. However, among the larger EU countries, there is a clear regional dimension to the innovation policy agenda. This is evident in the use of national innovation scoreboards to measure and monitor regional innovation performance as well as regional strategies and measures (discussed in Sections 4 and 5 below).

In the United Kingdom, recent processes of devolution and decentralisation of the regional policy framework have given the nations and regions of the UK more scope to develop their own development plans, including innovation strategies. As a result, improvements in the gathering and analysis of regional-level information has increased awareness of the importance of innovation-related measures in regional growth and, equally, their role in the persistence of regional productivity and employment differentials. More productive regions in the South East of England have a significantly higher level of R&D as a proportion of GVA than lagging regions and a higher level of private sector expenditure in R&D. Less prosperous regions are particularly dependent on the public sector for R&D investment and job growth.⁵

⁴ European Trend Chart on Innovation (2004), p. i.

⁵ 'Knowledge jobs 'prop up North' *Regeneration and Renewal* 29/10/04.

In Italy, the comparative European position of the country, as summarised by the Innovation Index of the European Innovation Scoreboard 2004, shows that the country is not only below the EU25 average (and just above the majority of new Member States) but, more importantly, is facing a worsening situation. A particular concern is the critical position in the *Mezzogiorno*: according to Svimez,⁶ expenditure on R&D in the regions of the *Mezzogiorno* is just 60 percent that of the Centre-North, i.e. 0.8 percent of GDP compared to 1.3 percent in the Centre-North (2002 data). In addition to this, the *Mezzogiorno* is still characterised by a productive structure focussed on “traditional” sectors, with less innovative potential.

2.2.5 Policy coordination

In response to the issues outlined above, most countries have identified a need for more effective policy management, involving better coordination or even integration of different policy areas, both within and outside government. In part, this can be seen as a way of giving innovation a higher political priority, but it can also involve more substantive measures. In Germany, for instance, the federal government launched an Innovation Initiative in April 2005, set in the context of the broader Agenda 2010 reform process. The Innovation Initiative brings together around 250 experts in a wide range of fields (business, R&D, public authorities, etc.) to develop major projects that raise the visibility of Germany's high quality innovation and contribute to a new innovation culture. There is a particular focus on ICT, energy technologies, healthcare, mobility and logistics, and innovation in SMEs. The Initiative also aims to develop strategies that improve the exploitation of research potential, as well as enhancing the availability of risk capital for new technology-oriented enterprises.

Another example is Sweden, where the government initiated a process in Spring 2002 to create a new policy field - innovation policy. This involved a process of integrating parts of industrial and research policies, and demanded an associated integration of relevant departments within the ministries of education and research and industry, employment and communications. The outcome was the Innovative Sweden strategy⁷ which attempts to achieve better synergies in the inter-play between different policy areas. The most significant policy areas that are stressed to be important players in the innovation strategy are regional development policy, transport policy, industrial policy, and labour market policy; the key words in the Innovative Sweden strategy are ‘co-operation between policy sectors’.

3. TRENDS IN REGIONAL POLICY AND INNOVATION

The previous sections indicate the profile of innovation at the national level and the policy issues dominating the national policy agenda. The following section considers how the relationship between regional policy and innovation has evolved.

⁶ Svimez (2005) *Rapporto 2005 sull'economia del Mezzogiorno*, p. 415.

⁷ Innovativa Sverige. En strategi för tillväxt genom förnyelse. Ds 2004:36

The starting point for understanding the relationship between regional policy and innovation is the process of convergence that has taken place over the past 10-15 years in the aims of regional policy and RTDI policy.⁸ Three decades ago, these policy areas were entirely separate in almost every country. The task of regional policy was to promote economic development in the less-favoured areas of the country, mainly through general investment and employment creation measures. The role of research and technology policy was to promote the technological development of the country, often focusing on key sectors, major firms and research institutes, many of which were (and are) concentrated in the core regions of the country.

The result has been a convergence of the two policy areas: regional policy has incorporated innovation-related goals and measures; while national RTDI policies have developed regional measures. In the most advanced cases of policy convergence, as in Austria and Sweden, there is a highly coordinated or integrated approach to regional innovation.

3.1 Trends in regional policy

The trend towards bringing innovation into regional policies can be traced back to debates in the 1970s which argued that inadequate innovation and investment in new technology was responsible for the economic decline or stagnation of depressed regions. Over the subsequent decade, several countries began to take more account of innovation with several types of measure. Initially, research or technology-oriented elements were incorporated within regional aid programmes. Eligibility criteria were adapted to finance investment in the costs of technical studies for plant and R&D, the acquisition of patents and licences, the introduction and application of new technology, and the development of prototypes, products and processes. Preferential regional assistance was also provided for RTD, for example through investment in: specified '*high-tech sectors*' such as biotechnology, micro-electronics, software production, telematics or aerospace (Ireland, Italy); designated research *growth poles* - key locations in the problem regions where research projects qualified for generous award conditions (France); and the creation of *technical jobs* by subsidising investment projects that employed high-grade professional or technical personnel (Germany). In addition, there were examples of regional innovation programmes created under regional policies, such as the Regional Innovation Grant in Britain, National Programmes for Regional Development in Norway or the Austrian Programme for Endogenous Development. In each case, the measure was designed to improve the rate of technology and innovation investment in the problem regions.

During the 1980s and 1990s, regional policymakers also promoted RTD through investment in the local technology infrastructure. Some countries provided regional policy funding for research and technology centres in the problem regions, mostly for dissemination media or technology transfer services. In Sweden, regional policy resources were used to invest in regional universities and research institutes; in Germany local authorities used regional policy grants for the creation of telematics facilities in the assisted areas. These initiatives were, however, generally limited in scale, which limited their effectiveness in some cases.

⁸ Bachtler J and Brown R (2004) *op. cit.*

A common problem was that regional policy and innovation policy were operating with separate objectives and implementation systems. National RTDI policymakers were rarely prepared to incorporate a regional orientation within their programmes, concerned that their main policy priority – promoting national RTD excellence – might be weakened. For their part, regional policymakers lacked the budgetary resources to make a major impact on regional disparities in RTDI performance.

During the past 10-15 years, there has been a significant change in the regional policy approach to innovation, part of the change in the ‘paradigm’ of regional policy observable in several countries. Three aspects are particularly worth highlighting.

1. Regional competitiveness has become almost universally the overriding objective of regional policy, with the promotion of regional innovation at the heart of policy goals. The 2001 UK White Paper was typical of the regional development policy objectives of other EU countries in having the aim of ‘boosting regional capacity for innovation, enterprise and skills development’.
2. Major changes in the governance of regional policy have taken place. The devolution and deconcentration of regional policy responsibilities have given regional authorities and institutions much greater scope to design and/or deliver region-specific strategies and instruments to promote regional growth.
3. The regional policy ‘paradigm change’ noted above has shifted the emphasis of policy instruments away from support for investment and employment in problem regions (although not in all countries) to give more weight to human capital, ‘soft’ production factors and behavioural issues in an attempt to improve the business environment or capabilities of regions, by upgrading their institutional infrastructure and the levels of networking between actors. Some policies are addressing the operation of regional systems of innovation, i.e. not just addressing the needs of individual actors (such as firms), but attempting to improve the relationships or interactions between organisations, such as inter-firm cooperation, technology transfer and information flows.

3.2 Trends in RTDI policy

In parallel with the changes taking place in regional policy, the past three decades have also seen major changes in the objectives and delivery of technology and innovation policies. Whereas in the past, national RTD policies focused on core research and science in public sector institutions (eg. universities, government research laboratories) and large national and multinational companies, the period from the 1970s to the present has seen a progressive change in the goals, measures and spatial scale of policy.

First, national RTDI policies have placed more emphasis on SMEs and entrepreneurship. Recognising that much innovative activity takes place in smaller, flexible and specialist firms, policy has attempted to promote the creation and development of technology-based firms and to facilitate the relationship between entrepreneurs/SMEs and sources of technology, finance and information.

Second, there is greater strategic direction to RTDI policy. With a view to concentrating resources more effectively, policy measures have attempted to 'map' the innovation process and focus intervention on critical areas where the market is perceived to be failing – particularly in the early stages of the innovation process, between research and commercialisation. At the same time, the strategic direction has sought a 'joined up' approach to ensure that different sectors – business, industry, finance, government – are working together in a more coordinated way.

Third, as under regional policy, there has been a shift in the types of measure being used. Although grant aid is still common, RTDI policy measures are focusing on 'soft factors' that play a part in the innovation process. This is reflected in the increased use of support for venture and risk capital funds, business angels, personnel transfer programmes, interface organisations and links, and networking between firms and between firms and research sources.

Lastly, these RTDI policies have incorporated a regional dimension. In response to the awareness that region-specific factors can significantly influence innovation, policymakers have either regionalised their support programmes (particularly those involving competence centres etc., allowing regional institutions to determine the design and implementation of the interventions), or national programmes are delivered through the regions.

4. THE IMPORTANCE OF INNOVATION WITHIN REGIONAL POLICIES

There appears to be a broad distinction between countries in the priority accorded to regional innovation. It is mainly the smaller countries which give a high profile to innovation within regional policy, either because regional disparities are smaller or because competitiveness is the main goal for all government policies. By contrast, in the larger EU countries, innovation tends to be subordinated to other or broader regional policy goals. It should be noted that the outcome 'on the ground' may not differ greatly – the difference is the degree to which there is top-down prescription of the approach to be taken by the regions, or whether the role of national government is to set the business framework, leaving the weighting placed on innovation to be determined by the regions. Subject to this caveat, the following sections provide a typology of regional policy approaches to innovation in selected countries.

4.1 Regional innovation objectives of regional policy

The first group of countries have regional policies with strong and explicit objectives regarding regional innovation, and a significant top-down steering or directive role for central government in promoting innovation activity in the regions.

Regional innovation is at the heart of the contemporary regional policy in *Sweden*. This derives from the 2000 Parliamentary Commission on regional policy which stressed the importance of inter-firm cooperation, entrepreneurship and new technology for economic growth. The subsequent 2001 Government Bill for Regional Policy highlighted the need for regional policy to take a holistic approach to regional development, with a key role for

regional innovation systems. In parallel, a process was initiated to integrate industrial, education and research policies with a cross-departmental approach to innovation policy that resulted in the launch of the 'Innovative Sweden' strategy. The delivery of these objectives in the regions is partly being delivered by national innovation measures oriented towards the regions, and partly by the Regional Growth Programmes, which are seen as the 'platform' for the implementation of Innovative Sweden; innovation policy measures are major components in the regions' growth strategies.

In **Norway**, the 2005 White Paper on Regional Policy also accords considerable importance to innovation as one of the policy areas that contribute to balanced population and wealth creation. The overall aim of the White Paper is that regional policy instruments should 'release the growth potential' of the country's regions. The role of regional policy instruments is to promote competitive advantage by breaking down the barriers to innovation throughout the country. Three specific areas are identified in the 2005 White Paper that are deemed important to a regionally oriented innovation policy:

- (i) strengthening and developing internationally competitive business/industrial clusters that are locally/regionally embedded by mobilising important actors and resources for cooperation;
- (ii) strengthening entrepreneurship and commercialisation with the aim of stimulating more innovation in all parts of the country, focusing in particular on areas that have a vulnerable industrial structure and need more robust industrial and employment foundations; and
- (iii) ensuring access to different forms of capital for businesses and entrepreneurs that are facing extra challenges to innovation

Austria is another example of a country with a close relationship between regional policy and innovation policy; indeed, it is arguable that a significant part of regional policy intervention is in fact a regional dimension of innovation policy. This is discussed further below.

4.2 Selective intervention in regional innovation by regional policy

In a second group of countries, regional policy clearly recognises the importance of regional innovation, with a number of regional policy instruments specifically oriented towards promoting innovation activity in the regions, but where the regional level is expected to take the lead in developing region-specific strategies.

The **United Kingdom** exemplifies this approach. Over the past decade, UK Government policy has placed increasing emphasis on productivity as the main 'driver' of regional and national economic development. Policy in this area has been informed by recognition of the need not just to ensure a strong science sector but also a 'competitive and forward-thinking business community' able to exploit the science base. The regional dimension has clearly been recognised in this process, in particular the importance of regional strategies for university-business collaboration.

The main responsibility for regional innovation is devolved or decentralised to the nations and regions of the UK. Each of the devolved administrations (Scotland, Wales and Northern Ireland) has its own regional innovation strategy: A Smart Successful Scotland, Wales for Innovation, and the NI Regional Innovation Strategy. In each of the English Regions, the regional development agencies (RDAs) have been required by central government to develop regional innovation action plans, and, while the RDAs have gained increasing flexibility over the use of their central government funding, their activity is subject to government targets. Part of the RDA regional economic strategies also incorporate innovation measures devised by central government under regional policy (selective financial investment, to improve productivity and skills) or RTD and SME policies (SME R&D grants, SME-university links, knowledge transfer funding).

The approach to innovation in *Finland* has similar objectives. The main aim of the 2002 Regional Development Act is to strengthen regional competitiveness, which covers a broad spectrum of activity including intensifying regional innovation policy, strengthening entrepreneurship, improving the operation of local labour markets and enhancing communications infrastructure. There is an important 'top down' component to the approach to regional innovation: one of the four special regional policy programmes is the Centre of Expertise programme; another is the Regional Development Programme which supports regional innovation networking. However, there is also an important bottom up component, since innovation is a key theme of the strategic regional development programmes developed by the Regional Councils.

To a certain extent, the same is true for *Italy*. The goal of regional policy is to promote endogenous development in the regions, which encompasses innovation among other objectives. Regional innovation is heavily supported under the 2000-06 CSF for the *Mezzogiorno* which includes an Operational Programme for Scientific Research, Technological Development and Higher Education (co-funded mainly through innovation and education policies), and other regional OPs. Also, most of the regions have their own regional laws for innovation and technology transfer. However, national regional policy also includes some innovation support; Law 488/1992 provides research grants for firms in designated regional aid areas, and some national industrial technology and applied research funds provide specific resources for firms in the assisted areas.

4.3 Setting the framework for regional innovation

In a third group of countries, the promotion of regional innovation is not specifically considered to be a task of regional policy, and there is no funding or direction for the regions - by regional policymakers - that is specifically innovation-oriented. Instead, regional policymakers focus more on ensuring that appropriate conditions for growth are provided in the regions.

In *the Netherlands*, for example, the overall aim of regional policy is relatively general: "to stimulate economic growth in all regions by exploiting region-specific opportunities of

national significance”.⁹ The task of regional policy is to improve the climate for business growth in the regions which, *inter alia*, will be conducive to innovation. The approach is to support selective policy measures proposed by the regions which are in line with national priorities. In a number of regions, these proposals are likely to have an innovation element, as evidenced by the different strategies being employed in various parts of the country. In the east (Twente, Arnhem/Nijmegen), the emphasis is on developing clusters in three innovation ‘valleys’ (food, technology and health); in the northern and southern parts of the Randstad, there is a more general approach to inter-connecting and exploiting the advanced knowledge infrastructure (eg. links between world-class research institutes and businesses); and in the south-east, the focus is on the cross-border development of innovation through links with Belgian and German firms and institutes.

Likewise in **Germany**, the goal of regional policy is not to promote innovation *per se* but instead to focus on supporting growth and employment in the regions. In practice, regional policy measures for capital investment provide support for innovation (since the investment aid finances new production processes and/or products), but this is not the explicit purpose of the GA instruments. Innovation activity in the regions is mainly supported by the *Länder* from their own resources and through federal RTDI schemes, some of which are regionally oriented (in particular in the new *Länder*).

Lastly, in **France**, innovation is generally not regarded as being part of regional policy. The goal of regional development is to improve the business environment with a view to enhancing territorial competitiveness and attractiveness. Innovation in the regions is driven primarily by measures under the policies of national research and innovation agencies (which have a significant regional dimension) combined with complementary action on the part of the regions. In addition, DATAR is involved in a number of regional innovation initiatives, such as ‘competitiveness poles’ (discussed further below).

It should be emphasised that, in France, Germany and the Netherlands, there is a strong commitment to innovation at the regional level, but this is not a specific task of regional policy. Instead, regional innovation is the responsibility of the regions and the regional dimension of central government support is delivered primarily through national innovation policy measures.

4.4 Definition of innovation for regional policy purposes

Reflecting on the above discussion of regional policy approaches to innovation, it is interesting to note that there has been little attempt to define ‘regional innovation’ for regional policy purposes. For the most part, regional innovation is seen as a sub-national version of national innovation policy, which is the subject of a broader debate about how to define ‘innovation’ for policy purposes.

The traditional approach is to consider innovation in linear terms as one stage in a process which begins with pure research, continues into development, the application of the R&D

⁹ Ministry of Economic Affairs, Peaks in the Delta: Regional Economic Perspectives, The Hague, July 2004, Section 1.2

to a product or process (innovation), market-testing of the innovative product or process, and ending with commercialisation and production. This approach is typified by the definition of innovation used for innovation policy in Norway:

“Innovation can be understood as a new product, a new service, a new production process, adaptation/usage or organisational form that has been launched in the market or used in production to create economic values”

The UK has also tended towards this linear approach (although a broader concept is currently being discussed):

“For the UK economy to succeed in generating growth through productivity and employment in the coming decade it must invest more strongly than in the past in its knowledge base, and translate this knowledge more effectively into business and public service innovation”.¹⁰

The same linear thinking could be said to underpin the discussion of innovation in Italy.

A more contemporary approach is to consider innovation in systemic terms. The concept of the innovation system emphasises the interrelationships between actors and the flows of knowledge between them. Innovation systems theory underpins the approach to innovation in Sweden – starting with the name of the agency (VINNOVA – Swedish Agency for Innovation Systems) and its definition of innovation:

“Innovation is understood in the broadest sense, as productive renewal in the form of new goods, new business models or markets, new processes or organisation or production, new competences or input sources.....[the innovation system is] the network of organisations, individuals and institutions which determine and shape the generation, diffusion and use of technology and other knowledge, which, in turn, explain the pattern, pace and rate of innovation and the economic success of innovation.”¹¹

The Swedish 2001 regional development bill makes clear that there is a regional dimension to the innovation systems approach, in that relationships between innovation actors depend significantly on proximity:

“Firms’ innovation and learning ability is developed to a great extent as an interplay between different actors and geographical closeness is important to this.....The policy initiatives for business development should increasingly be characterised with a consideration of businesses as part of a system – innovation system and cluster”.¹²

¹⁰ Science and Innovation Investment Framework, 2004-2014, p.15.

¹¹ Marklund G et al (2004) *The Swedish National Innovation System 1970-2003. A Quantitative International Benchmarking Analysis*, VINNOVA Analysis VA 2004:1, Stockholm, p.3

¹² Regeringens proposition 2001/02:4 En politik för tillväxt och livskraft i hela landet, p.163

The concept of a systemic 'innovation-oriented regional policy' is particularly advanced in Austria, where regional development is seen as being determined by path-dependent innovation dynamics, resting upon inter-organisational interaction and feedback mechanisms and being heavily affected by, and itself affecting, the respective regional context. Ways of knowledge production, dissemination and adoption within such a 'Regional System of Innovation' are central to this policy approach

This distinction is not just an academic issue since it has implications for the allocation of resources. The linear view of innovation is research-driven and leads to the majority of funds being allocated to R&D (eg. investing in laboratories, research grants, R&D application support etc) and to support to facilitate the speed or intensity of transfers from one stage to the next. By contrast, a systems approach places emphasis on networking and multiple forms of engagement among all actors in the system.

The different perspectives also influence the perceived role for regional policy. In the Netherlands, intervention through regional policy is seen to be justified only in the 'later' stages of the RTDI process, whereas in Sweden the approach is to promote effective regional and local cooperation between companies, R&D organisations and the political system (termed the 'Triple Helix' model) with the aim of achieving dynamic regional innovation systems.

5. IMPLEMENTING INNOVATION WITHIN REGIONAL POLICY: NATIONAL PRACTICES

Having outlined the broad strategic objectives of regional policies with respect to innovation, this section discusses those innovation measures found within the regional policies of the countries under review. It begins with a country-by-country overview of the regional policy-related innovation measures in each of the nine countries. The subsequent section then provides a comparative analysis of the types of measure found.

5.1 Austria

The sole federal regional aid scheme is the ERP regional programme. This is an investment-oriented soft loan scheme available within the designated aid areas. Its innovation component lies in the fact that funding depends, amongst other things, on the innovation potential of the aided investment; in addition, many ERP-supported projects have previously received assistance from the Austrian Research Promotion Agency (*Forschungsförderungsgesellschaft*, FFG). The FFG was set up in June 2004 to bring together advice, support and promotion in the field of business-related research and innovation.

Next to the ERP fund, a variety of measures exist at the federal and *Land* levels which support research and innovation. These have grown in importance over the past decade. Although not part of national regional policy *per se*, the federal measures have significant regional elements in the form of *Land* (co-)funding and, for some measures, delivery. In addition, economic development policy in the regions also has a significant innovation orientation.

One of the key federal schemes is the RIF 2000 programme which, by providing support for and/or through regional technology centres (known as impulse centres) aims to improve the innovation and technology infrastructure of a region and to upgrade the innovation potential of SMEs within the region. As with many innovation measures in Austria, support is provided on a competitive call-for-tender basis. Other federal programmes of significance at the *Land* level are: the *Kplus* programme (and the related k-net and k-ind initiatives) which, by supporting so-called competence centres, aims to build up long-term cooperative initiatives between high-level public and private research; the *AplusB* scheme, which provides professional support to scientists to turn ideas into viable businesses; *Protec 2002+* which aims to stimulate innovation in SMEs, by improving innovation management, facilitating access to external (research) resources, stimulating science-industry co-operation, supporting new SME networks, and improving technology transfer processes; and *FHplus* which has the goal of enhancing R&D capacity and competencies within polytechnics (*Fachhochschulen*). In addition, more recently-introduced measures have aimed: to improve cross-border cooperation in innovation and research with central and eastern European countries (CIR-CE); to support universities in commercialising their results (Uni:invent); and to increase the R&D potential of SMEs (PROKIS04). And there is also a general measure to reduce the tax burden of innovative enterprises (*Forschungsfreibetrag für Innovation*).

The *Länder* are closely involved in the funding of most of these programmes and also in the implementation of the federal competence centres. As spending on these measures has grown rapidly in recent years, *Land*-level funding has also increased significantly. In addition, *Länder* such as Lower Austria and Styria have invested in science parks and innovation and technology centres (often co-financed by the federal level and the Structural Funds). Styria has placed particular stress on five cluster initiatives (automotive, human technology, materials, wood and ecological-technology), all of which have innovation and technology goals. Lower Austria first developed a regional innovation strategy in the late 1990s and, more recently, has also been following a successful cluster strategy. It should be noted that most *Land*-level innovation projects and competence centres are in central locations, reflecting the importance of critical mass to the release of innovation potential.

5.2 Finland

The promotion of innovation plays a significant role in domestic regional policy in line with the key policy objective of strengthening regional competitiveness. The main policy measure (from an innovation perspective) is the Centre of Expertise (CoE) programme, though a number of other initiatives are also of relevance: the Regional Centre Development (RCD) programme, support for major urban centres (funded through the CoE and RCD programmes), the strategic regional development programmes of the 19 Regional Councils and the regional development activities of national sectoral ministries.

The Centre of Expertise programme uses competitive tenders to identify high level knowledge and skills in specific regional centres. Its objective is to improve regional competitiveness throughout the country by encouraging the development of regional networks among key research providers and users in different sectors. For each selected centre of expertise, the programme aims to pool the resources of the regional

administration, cities and municipalities, universities and research institutes, science parks and companies in relation to particular regional strengths and knowledge specialisation. The programme is moving towards becoming a regional innovation policy and its linkages with national innovation policy are due to be strengthened post 2006.

The Regional Centre Development programme supports the regional policy goal of achieving a balanced regional structure by helping to strengthen 34 regional centres selected on a competitive tender basis. Over the 2004-06 period, it has taken on a particular innovation orientation by supporting the establishment of an innovation network amongst 25 medium-sized and small cities. Alongside this, nine major urban centres have been identified as being of particular importance to the continuing competitiveness of the country due to their levels of innovation, knowledge and expertise. They are to receive differentiated support under the CoE and the RCD programmes to, amongst other things, develop their innovation strategies in the context of national innovation policy. Related policy efforts are being made to increase the international competitiveness of the Helsinki metropolitan area by developing its innovation potential.

Two final aspects of regional policy of relevance to innovation remain to be mentioned. One concerns the four-year strategic regional programmes of the 19 Regional Councils. Each includes development targets based on the region's potential and needs, the most important projects in terms of regional development, and other essential measures to implement and finance the planned programme. In most regions, the promotion of innovation plays a significant role in these programmes. The other relates to the sectoral policies of national ministries. Ten ministries are explicitly required to take regional development targets into account in their regional plans and budgets. Such targets include the intensification of innovation policy in the regions to allow all regions to benefit from increased R&D funding and to make universities and polytechnics more accountable for their regional roles and impacts. In addition, although regional aid policy is primarily investment-oriented, it has been increasing its innovation orientation and, post 2006, seems likely to focus more on start-ups, growing companies and innovation and technology.

5.3 France

Innovation has not traditionally been regarded as a component of regional policy in France. However, regions are increasingly supporting innovation-related activities, in part by assisting the development of innovation networks at the regional level and in part through their ongoing efforts to help improve the business environment. In addition, the regional component of innovation policy is growing with, for instance, access to innovation aid being enhanced by a network of local support agencies (*OSEO anvar*). Further, the 2004 Finance Law has conceded an important role for regions in the reorientation of public policy for innovation. Moreover, as part of the broader decentralisation process, regions can now provide aid to enterprises, create technology poles and establish innovation and technology transfer centres. They can also exercise an indirect influence on innovation activities through the state-region planning contracts, the formulation of regional plans and the financing of universities.

In the regions, there are two important innovation initiatives that involve DATAR and other relevant ministries. The first concerns the development of “local productive systems” (SPL, *Système productif local*). These are based on a notion of networking comparable to that found within “industrial districts” or clusters; they support links between firms located on the same territory and specialising in the same field of production. By involving other territorial actors, they help to develop a supportive and animating structure within the locality.

The other concerns so-called competitiveness poles (*pôles de compétitivité*) which have recently been introduced. These bring together notions associated with other forms of centres of technological excellence highlighted in the past: “excellence poles”, concentrations of specialists in the field of scientific research; “competence poles”, based on technological platforms linked to an educational institution within an industrial district; “technopoles”, conceived as science zones which bring together territorial development and innovation policy; and “scientipoles”, like excellence poles but focusing on dissemination and technology transfer. Competitiveness poles involve all of these aspects. They bring together industry, research and higher education in specific locations to enhance the role of industrial innovation in economic development. As well as representing a significant component of regional policy, they respond to concerns about ongoing industrial relocation processes. In July 2005, the CIADT selected 67 poles, six of which were regarded as of international rank, with nine others having the potential to join this group. The remainder are national in focus. All benefit from exemptions from fiscal and social charges, the development of economic intelligence and the combining of resources. The six main poles receive priority treatment, including from the recently-established Agency for Industrial Innovation (AII) and additionally benefit from the targeting of new research jobs.

Finally, support is available for the establishment of regional incubators under the 1999 Innovation Law. These aim to create efficient interfaces between public research and the business sector. Their legal form is not further defined though partnership arrangements have to include universities, research bodies and specialised consultants.

5.4 Germany

Three broad forms of support comprise the innovation component of regional policy: measures financed by the joint Federal-*Land* coordination framework for regional policy (the GA); federal innovation measures which favour the new *Länder*; and interventions by the *Länder* themselves.

A basic point to make about the GA is that, through its business aid, it supports innovation and technology transfer by facilitating product innovation and the upgrade of production processes. More specifically, a number of aspects of the GA have an explicit innovation orientation. For instance, with respect to investment aid, the GA finances business investment in R&D laboratories; enterprises that are intensively active in research and technology have easier access to GA funds; and maximum award rates apply for investment that strengthens regional innovation capacity and has a specific structural effect. In addition, the GA supports start-up and technology centres which provide affordable accommodation and common services to SMEs in innovative sectors. It can also assist

interventions aimed at raising the skills of entrepreneurs and workers in SMEs, as long as those individuals are engaged in R&D activities or in activities related to the translation of R&D results into commercial products. Further, it can provide wage subsidies to businesses which are highly intensive in human capital and can offer maximum aid rates to innovation-oriented SMEs. The GA can also support applied R&D; up to €200,000 can be provided for projects that aim to develop new products, product processes or services. Finally, a new GA instrument, "Cooperation networks and cluster management", was introduced from January 2005 to support regional and supra-regional cooperation between businesses and other relevant partners.

Both the Economics and Labour Ministry (BMWA) and the Education and Research Ministry (BMBF) provide federal funding for innovation measures targeted at the new *Länder*. Three BMWA schemes are: INNO-WATT (Support for R&D in growth drivers in disadvantaged regions), which assists the development of new products and processes and the transfer of research results in SMEs and industrial research institutes; PRO INNO II, which supports national or transnational R&D cooperation projects between SMEs or between SMEs and research institutes; and *Netzwerkmanagement-Ost*, which provides aid for building regional networks in the new *Länder* involving SMEs and applied R&D institutes. The BMBF finances four programmes under an umbrella initiative called "Unternehmen Regionen" (Enterprise Regions). This provides comprehensive regionally-oriented innovation support in the new *Länder* including east Berlin, particularly with a view to building regional networks and clusters. The four programmes are: InnoRegio, which funds network/cooperation-building projects that aim to develop regional potential for innovation; Innovative regional growth poles (*Innovative regionale Wachstumskerne*), which funds projects with medium/long term market potential; Centres for innovation competence (*Zentren für Innovationskompetenz*), which promotes interdisciplinary centres of excellence in universities and research institutes; and Interregional alliances for tomorrow's markets - Innovation fora (*Interregionale Allianzen für die Märkte von morgen - Innovationsforen*), which provides limited funding for new regional networks or fora that aim for knowledge exchange and contact building.

The *Länder* draw on both federal and EU funding streams, combined with their own funds. By way of example, innovation is an important dimension of economic policy in Freistaat Sachsen, allowing the *Land* to build on existing strengths, notably in terms of skilled staff, universities with R&D expertise, and specific sectors (e.g. microelectronics). Overall, some 90 percent of Sachsen's spending on innovation takes the form of business aid, with the remaining 10 percent for technology centres. Under the GA, Sachsen has recently introduced lower investment aid ceilings in its two main cities (Dresden and Leipzig). These ceilings do not apply, however, for R&D- or technology-oriented projects. In Sachsen, the main RTDI interventions are financed under the SF Operational Programme (OP). The two most important OP-funded schemes provide aid to individual firms and cooperation projects respectively. The OP also finances an Innovation Assistants' programme which funds the staff costs of a person from an R&D centre or a new graduate to work in an SME for two years.

5.5 Italy

In Italy, there are a number of innovation-related measures that are implemented as part of regional policy. The 2000-06 Objective 1 CSF, which covers much of the south of the country, includes an OP for “Scientific Research, Technological Development and Higher Education”. Further co-funded, innovation-oriented measures are found in the regional OPs and SPDs (for the Centre-North regions) and in the Objective 1 OP for Local Entrepreneurial Development. Additionally, particularly in the Centre-North regions, there are a number of non-co-funded innovation instruments. Overall, about half the Italian regions have introduced laws to support innovation though it has not, thus far, been a major priority. A study by the Ministry of Productive Activities calculated that all R&D policies - whether national, devolved or regional - accounted for less than one-quarter of all grant support over the 2000-04 period.¹³

The type of innovation support on offer is varied: aid for innovation-related investments by private sector firms (not only grants but also tax relief); the creation of networking opportunities between the scientific and productive sectors and within research organisations; support for research providers, such as research centres, innovation centres and technology parks; aid for the start-up of companies operating in innovative sectors; and support for improving the qualification levels of human resources.

From an explicit regional policy perspective, two main measures can be highlighted. First, Law 488/1992, the main regional aid legislation, has a “research” strand which provides grants for projects involving industrial and competitive research implemented in designated regional aid areas. It operates on the basis of a budget-limited call-for-tender system, similar to that which applies to aid for productive investment. Second, under the Objective 1 Local Entrepreneurial Development OP, the so called PIA (Integrated Assistance Package - *Pacchetto Integrato di Agevolazione*) is available. One component, PIA Innovation, brings together support under Law 46/1982 (innovation aid) and Law 488/1992 (regional aid) for projects which involve industrial research. By simplifying and unifying application and payment procedures, it aims to support pre-competitive research programmes (*sviluppo precompetitivo*) and the industrialisation of the outcomes of the research (*industrializzazione dei risultati*). Similar forms of aid scheme integration are provided by two related schemes - PIA Training and PIA Networking.

Finally, two other forms of regional innovation support are worth mentioning. One is a pilot project to assist the dissemination of technological innovation within SMEs in designated aid areas. The other is an example of a regional programme for industrial research, innovation and technology transfer (drawn from Emilia Romagna, Law 7/2002). This operates on both the demand and supply sides. Demand-side support includes: actions to increase investment in innovation and the use of skilled R&D human resources; the stimulation of cooperation between firms and research suppliers (universities and research centres); the promotion of innovation processes (from research to patenting); and, support for start-up of companies using research knowledge. Supply-side measures focus on actions to assist industrial

¹³ Ministero delle Attività Produttive (2005) *Sviluppo e innovazione: un approccio integrato*, draft July 2005

research and technology transfer in universities and research centres and to develop a regional network of research laboratories and innovation centres.

5.6 The Netherlands

A new approach to regional policy has just been introduced in the form of the *Peaks in the Delta* White Paper.¹⁴ This takes as its starting point the view that regional policy can be justified only in as far as it promotes regional strengths of national importance. In other words, regional policy is all about selectively exploiting regional opportunities. To identify such opportunities, the Ministry of Economic Affairs undertook a detailed SWOT analysis across six regions into which the Netherlands was divided. In four, there was a clear innovation component to the available opportunities – the north wing of the Randstad (Amsterdam/Utrecht), the south wing (Rotterdam/The Hague), the east (Twente, Arnhem/Nijmegen) and the south-east (Eindhoven/south-east Brabant). *Peaks in the Delta* aims to help regions exploit these opportunities.

At present, there are a number of disparate sources of funding for regional policy in the Netherlands. These include investment aid (the Investment Premium), regional programming in the north (the *Kompas* programme), support for industrial estates, Structural Fund co-finance and big city policy. Over time, the aim is to draw funding from these separate budget heads into a single pot which will support the *Peaks* approach. Since this does not formally start until 1 January 2007, the next two years will be used to pilot some new ideas. With respect to innovation, the piloting will be in the south-east, centred on Eindhoven, and the east (including Arnhem and Twente). The aim is to focus on identifying opportunities to promote innovation in situations where location matters.

5.7 Sweden

The overall approach to innovation aims to integrate industrial and research policies (under the Innovative Sweden concept). At the regional level, there is a cluster focus which manifests itself in a stress on partnership and cooperation. The synergy effects of cooperating with other policy sectors, the business sector and academia are viewed as central to the promotion of regional competitiveness. This approach underpinned the 2001 regional policy bill and the introduction of Regional Growth Programmes in 2004. These offer a platform for the implementation of Innovative Sweden in the regions. They provide a region-specific focus on RTD activities, technology diffusion institutions and sources of venture capital, geared towards regional industrial strengths.

The Regional Growth Programmes do not provide the funding to operationalise the programmes: instead, this is drawn from regional, national and EU sources. Two particular national programmes have an innovation orientation – VINNVÄXT and VISANU. VINNVÄXT aims to promote regional growth through dynamic innovation systems. It has a long-term perspective, is process-oriented and has a competitive selection procedure. Its aim is to

¹⁴ Ministry of Economic Affairs, *Peaks in the Delta: Regional Economic Perspective*, The Hague, July 2004 (Ministerie van Economische Zaken, *Pieken in de Delta: Gebiedsgerichte Economische Perspectieven*, The Hague, July 2004). This policy memorandum is available in English at <http://appz.ez.nl/publicaties/pdfs/04126.pdf>

increase growth and innovation activities in selected functional regions through increased co-operation between universities, companies, and public organisations. The concept of the programme is the promotion of effective local co-operation between companies, research and development organisations and the political system (Triple Helix model) within each region, with the aim of achieving dynamic regional innovation systems that will allow the region to be competitive at an international level within specific areas of growth.

VISANU is a national programme for the development of innovation systems and clusters in fields with good future prospects. The programme is a co-operation between ISA (Invest in Sweden Agency), NUTEK (Swedish Business Development Agency) and VINNOVA (Swedish Agency for Innovation Systems). The aim is to strengthen and complement existing activities at the regional level with a view to strengthening regional competitiveness. Target groups are companies, the higher education sector, non-profit technological and innovation centres, and trade unions. Aspects of innovation that are addressed are: the promotion of entrepreneurship and start-ups (including incubators); innovation awareness raising amongst firms; and the promotion of co-operation and clustering. Central aspects of the programme are process support; knowledge development; and international marketing.

5.8 The United Kingdom

Recent processes of devolution and decentralisation of the regional policy framework have given the nations and regions of the UK more scope to progress their own regional development plans, including innovation strategies. At the UK level, the innovation focus is on supporting collaborative R&D activities (involving collaboration between businesses, universities and others) and on knowledge transfer networks (supporting intermediaries which bring together businesses, universities and those with an interest in technology applications in networks). The DTI also administers the Higher Education Innovation Fund (to increase the capacity of the higher education sector to provide industry with technical expertise and business-aware graduates) and has responsibility for the Research Councils which fund academic research.

Given devolution, it is below the UK level that there has been a growing stress on innovation policy as part of regional policy. This can be clearly seen in the expanding portfolio of RDA services in this field. All of the English RDAs were required to develop innovation action plans as part of their initial guidance from government, building upon existing innovation strategies developed through the government regional offices. In this early phase, RDAs were very limited in their use of funds from central government due to the funding streams being locked into central government programmes delivered in the regions. However, over time, the single pot approach to funding has increased the flexibility available to RDAs. RDAs currently invest about 15 percent of their budget on innovation, science, engineering and technology-related activities. At the same time, the single pot formula ensures that the RDAs with the greatest need for regeneration are able to deploy the greatest resources towards investment in science and innovation programmes.

The RDAs' Regional Economic Strategies involve a range of activities to increase the level of innovation in their regions. *Selective Financial Investment for England (SFIE)*, the main

regional investment aid, aims to attract high productivity and high skills investments to designated areas, including through facilitating the development of clusters. *Grants for Research and Development* aim to help individuals and SMEs research and develop technologically innovative products and processes. *Fostering/brokering HE-SME links* involves measures to deliver collaboration or the conditions under which collaboration occurs (eg specialist business incubation and support facilities for start-up or early stage micro companies). RDAs also fund sector and cluster networks, innovation promoters and champions to work with them, knowledge transfer websites and networks, and specific regional technology brokerage projects. *Funding of Knowledge Transfer projects between HE and business* enables a university graduate to carry out a research project for a company under the supervision of university tutors. Finally, *Investment in collaborative research facilities & programmes* helps to lever in significant additional expenditure from business.

The devolved administrations are involved in similar initiatives. Scotland, for instance, has a proof of concept programme (to support university commercialisation activities), measures to encourage collaboration between SMEs and public sector research bodies and the creation of Intermediary Technology Institutes to help transform basic research into near-market innovations. Northern Ireland has a suite of R&D and innovation support programmes, its own proof of concept fund, a higher education innovation fund (to help universities respond to the needs of business), the NITECH growth fund (extending proof of concept support to SMEs and public sector researchers) and the establishment of 18 RTD Centres of Excellence. Wales stresses incubators linked to universities, a higher education economic development fund and a knowledge exploitation fund.

5.9 Norway

In Norway, there are seven overriding areas on which national innovation policies are concentrated: the contents and organisation of innovation policies, the general framework conditions for industry, the scale and quality of national research and development, the quality of education, the commercialisation of research results, the level of interaction between industry and institutions for education and research, and the scale of company start-ups. In the 2005 White Paper on regional policy, the Government renewed its commitment to the following initiatives: incubators, business parks/industrial gardens, industrial parks, science parks, knowledge parks, the commercialisation of ideas from higher education institutions, and a new Centre of Expertise programme to be launched in 2006. More generally, the intention is to continue to strengthen the dialogue and co-operation between the industrial sector, academic institutions, regional R&D clusters and public authorities. Policy instruments and initiatives that break down the barriers to innovation will be prioritised, including instruments directed towards the improvement of skills and internal learning in firms, and instruments that aim to make R&D clusters more attractive and accessible to regional businesses.

The core innovation-oriented regional policy instrument introduced in the 2005 White Paper is the Centre of Expertise programme. Based on the Finnish model, it will aim to support the development of businesses and industrial clusters which wish to become global leaders. Industrial clusters with established co-operation relations that have critical mass and growth potential will be supported to improve their co-operation and develop demanding

innovation projects. Initiatives must be long term and involve significant resources. The programme is aimed at small and medium sized cities that have the necessary mix of international-level skills. The selection of Centres of Expertise will be based on a competition in which only those clusters that meet the criteria will be financed. The programme will be run by the business sector but with binding co-operation agreements with the regional R&D cluster. Innovation Norway, SIVA (The Industrial Development Co-operation of Norway) and the Norwegian Research Council are responsible for developing the programme in detail.

Another programme of interest (though not part of regional policy *per se*) focuses on the development of industrial gardens and business parks. This began in 1999 and is expected to run until 2007. The programme covers the entire country and the beneficiaries are SMEs and non-profit technology centres. The latter are eligible for grant funding towards physical infrastructure costs and equipment. For an industrial garden to be established, both local industry and local authorities must be interested in and committed to the project. The idea is, that by sharing premises, firms will collectively establish a professional and social environment that stimulates co-operation, exchange of knowledge, and the upgrading of mutual skills. The aspects of innovation covered by the programme are: the promotion of entrepreneurship/start up (including incubators), innovation awareness raising amongst firms, and co-operation promotion and clustering.

Finally, one other national programme is worth mentioning - MOBI, Mobilization for R&D related innovation (*Mobilisering for FoU-relatert innovasjon*). This is an umbrella programme which provides grant support to promote research-industry linkages. Beneficiaries are SMEs, higher education research centres and other public and non-profit research organisations. Innovation aspects supported include applied industrial research, industrial design and the promotion of co-operation and clustering. Eligible costs are labour costs, training, and the provision of external expertise.

6. IMPLEMENTING INNOVATION WITHIN REGIONAL POLICY: COMPARATIVE ISSUES

There are two main comparative issues that arise from the above review of innovation measures in the context of regional policy. A first question concerns the extent to which innovation initiatives in the regions are explicitly part of regional policy. A second relates to the range of measures found. These are now discussed in turn.

6.1 The role of innovation within regional policy

In reviewing the incorporation of innovation within regional policy, there are four broad approaches, each with a different focus: traditional regional policy; economic development policies in the region; national innovation policies with a regional dimension and regional innovation policies. Given the more detailed country discussion in the previous section, each aspect is considered relatively briefly.

6.1.1 Traditional regional policy

It is clear that traditional regional policy has an innovation impact. Regional investment aids, for instance, facilitate product innovation and the upgrading of production processes. More than this, in countries like Germany and the United Kingdom, the main regional incentives have significant innovation elements, explicitly favouring projects that promote innovation through their award criteria. In the **United Kingdom**, this is enhanced by the importance accorded to the productivity agenda; productivity and skills assessments under the Selective Finance for Investment in England scheme (SFIE) are gradually reorienting projects towards higher skilled, higher value activities. In **Germany**, too, innovation is of considerable significance under the GA regime. Award criteria and rates favour investments that strengthen regional innovation capacity and there is specific support for R&D laboratories, for measures which raise R&D skill levels within SMEs, and for applied R&D. In addition, a new GA instrument, "Cooperation networks and cluster management", introduced in January 2005, supports regional and supra-regional cooperation between businesses and other relevant partners. In **Italy**, the main regional incentive legislation (Law 488/1992) has a distinct research strand. Interestingly, an integrated approach (the PIA: Integrated Assistance Package) has been developed for firms in receipt of both innovation and investment aid in respect of a single project (PIA Innovation). This simplifies and unifies application and payment procedures of aid awarded under Law 488/1992 (regional aid) and Law 46/1982 (applied research and innovation aid).

The provision of economic infrastructure under regional policy can also have an innovation orientation, through support for high-tech industrial estates, incubators and technology centres. This happens explicitly under the GA system in **Germany** (where support is available for start-up and technology centres which provide affordable accommodation and common services to SMEs in innovative sectors) and also in **the Netherlands**, where there is a regional-policy-funded action plan for industrial estates. In as far as regional policy incorporates regional programming and strategy development (as, for example, in the Nordic countries), then this, too, can have an obvious innovation impact. In many regions, the promotion of innovation plays a significant role within regional development strategies. In **Sweden**, Regional Growth Programmes, which are at the core of national regional development policy, provide a region-specific focus for RTD activities, technology diffusion institutions and sources of venture capital, geared towards regional industrial strengths.

6.1.2 Economic development policies in the regions

Although not always explicitly part of national regional policy, economic development policies in the regions can clearly have an impact on both regional development and innovation. The regional-level has always had a significant economic development role in federal countries like Germany and Austria. At the *Land*-level, innovation measures are growing in significance. Many *Länder* in **Austria** have invested in science parks and innovation and technology centres (often co-financed by the federal level and the Structural Funds) and have also placed considerable stress on promoting regional innovation strategies and cluster initiatives. In **Germany**, too, innovation is often an important dimension of economic policy at the *Land* level (as, for instance, in Sachsen). In Germany, *Land* interventions are coordinated with regional policy through the GA mechanism which

provides a broad consensus-based framework within which the *Länder* operate. In Austria, coordination is more informal, based on effective networking and the co-funding of many of the main innovation initiatives.

Economic development policies in the regions have also grown in importance in recent years in countries like France, Italy and the United Kingdom as part of devolution and decentralisation processes. In **France**, regions are increasingly supporting innovation-related activities, in part by assisting the development of innovation networks at the regional level and in part through their ongoing efforts to help improve the business environment. French regions can now provide aid to enterprises, create technology poles and establish innovation and technology transfer centres. In **Italy**, regional programmes for industrial research, innovation and technology transfer are increasingly found. As mentioned earlier, Law 7/2002 in Emilia Romagna supports a range of innovation actions on both the demand and supply side. In the **United Kingdom**, too, recent devolution processes have given the nations and regions of the UK more scope to progress their own regional development plans, including innovation strategies. This can be seen in the expanding portfolio of innovation-related RDA services and in similar developments in Scotland, Wales and Northern Ireland.

Regional-level economic development initiatives are also of growing importance in those countries where there have been moves towards a more programme-based approach to regional development. This is true, for instance, in **Finland** (where strategic regional programmes play a useful coordination role with respect to regional policy), in **Sweden** (where Regional Growth Programmes lie at the heart of the implementation of the new regional development policy) and also in **Norway** (where the new policy approach put forward in the 2005 White Paper emphasises regional-level, programme-based decision-making). In **the Netherlands**, the new *Peaks in the Delta* philosophy similarly stresses region-specific developments and the regional delivery of policy (albeit in line with national strategic priorities).

While regional-level initiatives have been growing in importance in recent years, often with a significant innovation orientation (reflecting the notion of building on regional potential), the strength of the linkages with national regional policy vary. In a number of countries, such regional-level initiatives are related to regional policy through coordination frameworks (like the GA mechanism in Germany, more informal coordination in Austria and the state-region planning contracts in France). In others, they operate in the context of development goals established in a national regional policy context (as in the targets set for RDAs in England, for instance). And in some (Finland, Sweden) coordination with regional policy comes through the mechanism of regional programming. Coordination is also supported through co-funding (important in Austria and also a significant feature of the Dutch *Peaks in the Delta* approach) and, in some countries, through the programming framework provided by the Structural Funds (as for instance in Italy).

6.1.3 National innovation policy with a regional impact

Elements of national innovation policy can have particular regional orientations and, indeed, there is evidence that these have been growing in recent years. However, in most

instances, national innovation policy measures are not closely tied to regional policy *per se*. This is the case, for instance, in **Austria** where regional policy (in the form of the ERP regional programme) is anyway very low-key. National innovation measures like the RIF 2000 programme (which aims to improve the innovation and technology infrastructure of a region and to upgrade the innovation potential of SMEs within the region) are, however, closely linked to regional-level development initiatives, not least through *Land* co-finance. As a result, it is often argued that these “regionalised” forms of national innovation policy represent what is, in effect, a regional innovation policy.

In **Germany**, the link between some national innovation measures and regional development comes from the spatial restrictions imposed on these programmes. Three innovation programmes funded by the Economics and Labour Ministry and four funded by the Education and Research Ministry are available only in the new *Länder*. For the most part, they focus on improving cooperation and networking and the development of centres of excellence. In **Italy**, neither of the two main innovation funds under Law 46/1982 – the FIT: Fund for Technological Innovation or the FAR: Fund for Applied Research – are explicitly limited to the designated aid areas; however, a specific element of both funds is reserved for the regional aid areas.

Finland and Sweden are interesting for the mechanisms they have introduced to try to encourage sectoral ministries (including those involved in innovation) to take regional goals and priorities more into account. That having been said, this has not always proven easy to achieve in practice. Of more significance is the fact that, in **Sweden**, national innovation programmes (VINNVÄXT and VISANU) directly provide the funding to implement the strategies set out in the Regional Growth Programmes which, as mentioned earlier, form the regional core of Sweden’s regional development policy. This brings national innovation policy and regional policy very close together.

Other examples of countries where national innovation policies have been taking on more of a regional orientation are **the Netherlands**, where the 2003 Innovation Memorandum identified regional innovation “hotspots”, **France**, where there is now a network of local support agencies (*OSEO anvar*) which aims to strengthen the regional take-up of national innovation policies, and the **United Kingdom** where there has been a shift from concentrating on a strong science base to developing the extent to which the business community can draw on that base. Combined with broader devolution processes, this has ensured that significant elements of national innovation policy are now channelled through the regional level – the devolved administrations of Scotland, Wales and Northern Ireland and the RDAs in England.

6.1.4 Regional innovation policies

Finally, there are those innovation-oriented policy measures which, at the same time, are explicitly part of regional policy. In **Finland**, the regional policy-funded Centre of Expertise programme directly targets regional innovation potential. By encouraging the development of regional networks among key research providers and users in sectors selected by competitive tender, it aims to develop regional strengths and knowledge specialisation. Elements of the Regional Centre Development programme (also regional policy funded)

similarly have an innovation orientation, as does a new initiative (financed by both programmes) which aims to develop the innovation strategies of the nine major urban centres which have been identified as being of particular importance to the continuing competitiveness of the country. Through such measures, the innovation orientation of regional policy in Finland has increased significantly in recent years.

The Finnish distinction between centres which are competitive internationally and those of importance from a national perspective is also found in **France**. The recently-introduced *pôles de compétitivité*, bring together industry, research and higher education in specific locations to enhance the role of industrial innovation in economic development and also to counter industrial relocation processes. In July 2005, 67 poles were selected, six of international rank, nine others with the potential to join this group, and the remainder national in focus. All benefit from exemptions from fiscal and social charges, the development of economic intelligence and the combining of resources. The six main poles are prioritised, including through the targeting of new research jobs. Also in France there is a specific, cluster-oriented initiative, so-called “local productive systems” (SPL, *Système productif local*). These support links between firms located on the same territory and specialising in the same field of production. By involving other territorial actors, they help to develop a supportive and animating structure for innovation within the locality.

In **Italy**, the point has already been made that there is an innovation component to regional policy through the regional strand to Law 488/1992 and through the PIA Innovation, which simplifies application and award processes when projects receive both regional and innovation support. Similar integration mechanisms are available through PIA Training and PIA Networking. In addition, a pilot project has been introduced to support the dissemination of technological innovation within SMEs in designated aid areas. Also of note in Italy is the role played by Structural Funds programmes; the innovation measures supported by the Structural Funds have significantly strengthened the innovation orientation of domestic regional policy.

In **the Netherlands**, the *Peaks in the Delta* approach to regional policy involves directing national regional policy funding at regional strengths which are considered to be of national importance. In four of the six Dutch regions, there is a clear innovation orientation to the opportunities available at the regional level. The exploitation of these opportunities brings a strong (region-specific) innovation orientation to Dutch regional policy.

In the **United Kingdom**, it is, as has already been noted, below the UK level that there has been a growing stress on innovation policy as part of regional policy, not least in the expanding portfolio of innovation-related RDA services. All of the English RDAs have developed initial innovation action plans to a point where they currently invest about 15 percent of their “single pot” budget on innovation, science, engineering and technology-related activities. The single pot formula ensures that the RDAs with the greatest need are able to deploy the greatest resources towards investment in science and innovation programmes.

In **Norway**, the 2005 White Paper on regional policy saw the Government renew its commitment to a range of innovation-related initiatives including incubators, business

parks/industrial gardens and the commercialisation of ideas from higher education institutions. At the same time, the White Paper announced that a new Centre of Expertise programme would be launched in 2006. Based on the Finnish model, this will aim to support the development of businesses and industrial clusters of international importance, where there are already established co-operation relations that have critical mass and long-term growth potential. The programme is targeted at small and medium sized cities that have the necessary mix of international-level skills.

Three countries remain to be mentioned: Austria, Germany and Sweden. As already noted, in **Austria**, regional innovation is promoted primarily through national innovation measures (co-funded by the *Länder*) as well as by *Land*-level initiatives. Together, these create a form of regionalised innovation policy which has been of growing significance. In **Germany**, the focus is on the traditional GA framework (which makes significant provision for innovation), combined with *Land* measures (which in some *Länder* have a very marked innovation orientation) and also federal innovation policy initiatives which are targeted at the new *Länder*. In combination, this represents a notable innovation orientation to regional development initiatives. Finally in **Sweden**, the national approach to innovation (which aims to integrate industrial and research policies) is translated at the regional level into a cluster strategy based on partnership and cooperation. Central to this strategy are the Regional Growth Programmes introduced by the 2001 regional policy legislation. These lie at the core of regional development policy in Sweden.

6.1.5 Synthesis

The above review makes clear that there are differences between countries in the extent to which, and the way in which, innovation enters into regional policy and, indeed, regional elements enter into innovation policy. In some countries (like Sweden and Austria), regional policy incorporates what can be viewed as the regional dimension of national innovation policy; in others (like the United Kingdom and Finland), regional-level interventions (within the context of national regional policy) introduce important innovation elements to national regional policy; while in others (like Germany and Italy) traditional regional policy benefits innovation more indirectly while elements of national innovation policy are spatially targeted. The Netherlands is also interesting as a case where the regional policy focus on region-specific development opportunities (under the *Peaks in the Delta* approach) will result in support for innovation-oriented measures in four of the six Dutch regions.

Notwithstanding these differences, it is clear that policy is progressing in similar directions in the countries under review. Virtually everywhere, regional policy is becoming more decentralised in its approach, with more reliance on regional-level programming and strategy development. Related, there is a growing innovation orientation to policy as regions strive to develop their perceived strengths. At the same time, there is evidence in a range of countries that innovation policy is taking more cognisance of the relevance of location to innovation. In short, the two policy areas are drawing together, especially at the regional level.

6.2 Innovation measures within regional policy

6.2.1 *Traditional regional policy measures*

All of the countries studied have regional investment aids on offer and, in all cases, these are available to support innovation-oriented projects. More than this, with a view to strengthening regional economic structures, innovative projects are often particularly valued. This is reflected in the skewing of award criteria and rates towards projects which involve innovation (as already discussed, for instance, under both the GA regime in **Germany** and the new SFIE in **England**) and in making provision for the streamlining of application and award procedures (as under the PIA Innovation approach in **Italy**). Certainly over time there have been significant moves in most Member States to enhance support for intangible assets (patents etc) in order to gain enhanced leverage on innovative projects. The extension of support in many countries to include the wage costs of (generally high quality) staff reflects similar concerns. In addition, a number of countries have broadened the types of support available to include financial engineering instruments and other measures to improve access to finance though, for the most part, such aids remain a relatively minor component of the regional aid package.

Alongside regional investment aid, many countries offer support to improve economic infrastructure in the regions, in particular the provision of industrial estates and related facilities. As mentioned earlier, the GA in **Germany** makes specific provision for this. Again, recent developments have seen the innovation component of the provision of economic infrastructure increase, with a particular stress on science parks and technology centres and, as for instance in **the Netherlands**, especially on facilities which can be considered to be internationally competitive (not least from a technological perspective). Often such facilities have associated technical support involving business advice and access to research and brokerage services.

A third component of domestic regional policy concerns regional programming and strategy development. This has become of increasing importance in recent years. In many countries, regional programmes have a strong innovation component, not least in **Sweden** where the Regional Growth Programmes are the regional embodiment of the national Innovation Sweden concept.

6.2.2 *Economic development measures in the regions*

It was noted earlier that regional-level initiatives are becoming of increasing importance. In some countries, this reflects the federal system under which policy operates and the fact that policy delivery is largely regionally-based. In others, it is a consequence of devolution and decentralisation processes which have shifted many economic development competences to the regional level. And in many of the remainder, it is due to the move towards more programme-based policy developments at the regional level. In virtually all cases, regions are encouraged to develop economic development strategies which build on their strengths and thus which, given their future-orientation, often have a strong innovation component.

The Emilia Romagna example in **Italy** covers many of the initiatives found more generally at the regional level. As already noted, on the demand-side, there were actions to increase investment in innovation and the use of skilled R&D human resources; the stimulation of cooperation between firms and research suppliers (universities and research centres); the promotion of innovation processes (from research to patenting); and support for start-up of companies using research knowledge. On the supply side, the focus was on actions to assist industrial research and technology transfer in universities and research centres and to develop a regional network of research laboratories and innovation centres.

The listing of the activities undertaken at the regional level in **France** (see Section 5.3) covers similar ground. It mentions aid to enterprises, the creation of technology poles and the setting up of innovation and technology transfer centres. French regions can also exercise an indirect influence on innovation activities through the state-region planning contracts, the formulation of regional plans and the financing of universities.

A final example of regional-level activities comes from the **United Kingdom**. In developing the innovation component of their Regional Economic Strategies, English RDAs make use of regional aid (the SFIE), grants to help individuals and SMEs research and develop innovative products and processes, measures to promote higher education-SME collaboration, the funding of cluster and sectoral networks and other regional technology brokerage projects, the transfer of knowledge from universities to SMEs (through graduate employment schemes) and investment in collaborative research facilities and programmes.

6.2.3 National innovation measures with a regional impact

In considering the use of national innovation policy measures to regional development ends, three examples seem particularly relevant. One is Austria where a host of such measures form a regionalised innovation policy, a second is Germany where, as mentioned earlier, there are numerous federal programmes which aim to improve the innovation potential of the new *Länder*, and the third is Sweden where the VINNVÄXT and VISANU national innovation programmes are central to the implementation of the innovation ambitions of the Regional Growth Programmes.

In **Austria**, the available schemes provide support for technology infrastructure at the regional level (via impulse centres), and for helping to upgrade the innovation potential of SMEs. They also aim to build up long-term cooperative initiatives between high-level public and private research and to help scientists turn academic ideas into viable projects. A further measure focuses on the stimulation of innovation within SMEs, facilitating access to external research resources, promoting science-industry cooperation and improving networking and technology transfer processes. A final scheme aims to improve the R&D competencies and capacities of polytechnics.

In **Germany**, the federal programmes provide support for the development of new products and processes and for the dissemination of research results to SMEs and research institutes; promote R&D cooperation projects between SMEs and amongst SMEs and research institutes; help build regional networks between SMEs and applied research institutes; fund network-building projects which enhance the innovation potential of the region; support

projects which develop innovative growth poles; assist interdisciplinary centres of excellence in universities and research institutes; and provide funding for regional networks aimed at knowledge exchange and contact building.

Finally in **Sweden**, the VINNVÄXT programme aims to increase growth and innovation activities in selected functional regions through increasing cooperation between universities, companies and public organisations. Ultimately, the objective is to create a dynamic regional innovation system which will allow the region to be competitive at the international level within specific areas of growth. For its part, the VISANU programme is a national programme for the development of innovation systems and clusters in fields with good future prospects. The particular focus is on entrepreneurship and start-ups, the raising of innovation awareness amongst firms and the promotion of cooperation and clusters.

6.2.4 Regional innovation measures

This last section focuses on innovation measures in the regions which are part of or closely related to national regional policy. It discusses a range of initiatives in Finland, Norway, France and the Netherlands.

In **Finland**, the Centre of Expertise programme uses competitive tenders to identify high level knowledge and skills in specific regional centres. Its objective is to improve regional competitiveness throughout the country by encouraging the development of regional networks among key research providers and users in different sectors. For each selected centre of expertise, the programme aims to pool the resources of the regional administration, cities and municipalities, universities and research institutes, science parks and companies in relation to particular regional strengths and knowledge specialisation. The programme's linkages with national innovation policy are due to be strengthened post 2006. Building on the Finnish model, a Centre of Expertise programme is also being developed in **Norway**. It is expected to be launched in 2006.

In **France**, there are two interesting initiatives to mention. One is the cluster-based SPL which aims to bring together firms in a given locality and specialising in the same field of production with other territorial actors which can support and promote their activities. The other concerns the recently-introduced *pôles de compétitivité*. These aim to place innovation at the heart of development strategies,¹⁵ by bringing together industry, research and higher education in specific locations to enhance the role of industrial innovation in economic development. The poles have to fulfil four major conditions: they have to ensure the creation of wealth and high-quality jobs; they must be competitive in world markets and have a high growth potential; they must be based on strong partnerships and structured modes of governance; and they must follow an effective economic development strategy.

Lastly in **the Netherlands**, the *Peaks in the Delta* approach aims to use national regional policy funds to influence regional priorities in the national interest. In four of the six Dutch regions, innovation projects provide the focus for *Peaks in the Delta* support.

¹⁵ CIADT, 12.07.2005

6.2.5 *Synthesis*

In reviewing regional policy-related innovation support in the nine countries under study, similar types of measure tend to be highlighted - whether as part of national regional policy or the economic development policies of the regions or the regional component of national innovation policy. They can be divided into a number of categories.

First, there are measures (generally aid schemes) which assist firms to invest in and improve their innovative capacities. Many of the standard regional aids play this role. In addition, aid provision often encourages the development of new products and processes and innovation more generally. In Italy, it is interesting that there is a specific mechanism to streamline application and award procedures for projects in receipt of both innovation and investment support. Aid-based support is often also available to help increase the use of skilled R&D resources within firms, either through wage subsidies (under the regional aid regime) or, particularly for SMEs, by facilitating the employment of graduates. There is also growing provision of financial engineering instruments and other measures to improve access to finance for innovative projects.

Second, there are a range of measures to improve innovation infrastructure at the regional level. This may come, for instance, through standard regional policy provision of industrial estates and business and science parks. As regional aid policy has become more constrained, international competition for mobile investment has led to increasing regional policy attention to the quality of economic infrastructure. In a number of countries, innovation policy also stresses the importance of infrastructure provision - for instance, by creating networks of regional technology centres to raise innovation awareness and help in dissemination activities.

Third, there is the issue of public investment in R&D, part of traditional innovation policy. In recent years, this has taken on more of a regional orientation in a range of countries with particular consideration being given to the role of universities, polytechnics and research centres in a regional development context. In some countries, this extends to how universities are financed, with for instance particular support for interdisciplinary centres of excellence in universities and research institutes. There has, moreover, been a move in a number of countries to improve the R&D competencies and capacities of polytechnics and their relationships with innovative SMEs. Related, there are a variety of measures to stimulate cooperation between firms and research suppliers (universities and research centres) and to facilitate and promote the commercialisation of research results and ideas.

Fourth, policy consists of more general dissemination and technology transfer activities. There are numerous initiatives to assist industrial research and technology transfer in universities and research centres and to develop regional networks of research laboratories and innovation centres. Improving networking and technology transfer processes is very often central to innovation policy in the regions, particularly in the context of SMEs. A number of countries provide networking support between SMEs and applied research institutes and also fund regional networks aimed at knowledge exchange and contact building. In Sweden, specific mention is made of the fact that networking should not be

limited to the higher education sector and firms but should also extend to the political system within each region (the Triple Helix).

The importance attached to regional networking and the synergies associated with cooperative approaches at the regional level has led to support for spatially targeted collaboration mechanisms built around centres of expertise. These aim to bring together all the relevant players in a given location with international-level expertise in a particular field. Assistance tends to focus on the funding of networking and technology brokerage plus support for cooperation and clusters.

In a number of countries, many of the above initiatives have been targeted explicitly at SMEs (and innovation-oriented start ups) which are seen to be especially disadvantaged and in need of specific policy provision. This includes measures to stimulate innovation within SMEs, R&D cooperation projects involving SMEs, initiatives to promote higher education-SME collaboration, the transfer of knowledge from universities to SMEs (through graduate employment schemes), the facilitation of SME access to external research resources and investment in collaborative research facilities and programmes for SMEs.

7. QUESTIONS

This review of regional policy support for innovation across nine countries shows a trend towards support for regional innovation but marked differences in the objectives, organisation and measures of policy. To a certain extent, the differences reflect national institutional and policy practices: in different countries, the same types of regional innovation support may be implemented under the headings of regional policy, national innovation policy or the economic development policies of the regions. As a basis for discussion at the Sponsors' Meeting, three sets of questions are proposed:

1. What has been the experience with regional innovation support to date? Are there identifiable achievements? Is there a clear added value associated with regional innovation support?
2. Which types of policy instrument have proved particularly effective in meeting the innovation goals of regional policy in individual countries, and what kinds of factors have determined success or failure?
3. The paper has indicated a degree of coming together between the innovation components of regional policy and the regional elements of national innovation policy. To what extent is this reflected in the experiences of individual countries? Have any specific policy mechanisms proved successful in moving towards a more "joined up" approach to managing and delivering regional innovation policy?