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The Regional Dimension of the European Research Area

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1. BACKGROUND

In its Communication "Towards a European Research Area" of January 2000¹, the Commission outlined the objectives and the scope of a new strategy. The vision of having a fully developed, functioning and interconnected research space, in which barriers would disappear, collaboration would flourish, and where a functional integration process would take place, was thus clearly expressed.

The European Research Area concept was welcomed by the European Council in Lisbon² and subsequent European Council meetings and endorsed specifically by the Research Council when ministers met in June and November 2000³. Its strategy was also praised by the March 2001 Stockholm⁴ Summit conclusions, that placed once again science and technology on top of European priorities. In the fast changing environment of science, technology and innovation, its messages touching upon the organisation of research, the role of the players, the distribution and co-ordination of research efforts, its economic aspects, as well as the take up and integration of results, have found widespread support.

It was also well received by the European Parliament, the Economic and Social Committee⁵ and the Committee of the Regions⁶. Both the latter have emphasised the important role regions⁷ can play in mobilising research and innovation efforts for bringing Europe faster into the knowledge based economy. In particular the Committee of the Regions, had stressed the significance of the role that could be played by the local and regional authorities *"in training, (providing) assistance to laboratories, support for researchers and links with the expectations of local populations"*.

With a view to the application of the subsidiarity principle, the Committee of the Regions even suggested that *"Community programmes devoted to research and regional policies must be co-ordinated to promote projects for the development of research which are as close as possible to the citizen"*. Furthermore, by adopting a favourable opinion to the Commission Communication of October 2000 on the "Guidelines for European Research", it also stressed the importance of the bridging role of regions between the European and local level, in research and innovation efforts, including strengthening international cooperation by mobilising the potential of local universities together with regional and local authorities.⁸

¹ "Towards a European Research Area", COM(2000)6, 18 January 2000.

² "Presidency Conclusions–Lisbon", <http://ue.eu.int/en/Info/eurocouncil/index.htm>

³ "Presidency Conclusions – Santa Maria da Feira", <http://ue.eu.int/en/Info/eurocouncil/index.htm>

⁴ "Council Resolution of 15 June 2000", OJ C 205, 19.7.2000, p.1.

⁵ "Council resolution of 16 November 2000", OJ C 374, 28.12.2000, p.1.

⁶ Press Release: Stockholm (24.03.2001) - Nr: 100/1/01 See also: <http://ue.eu.int/en/Info/eurocouncil/index.htm>

⁷ CES 595/2000 INT/054 Brussels 24 May 2000.

⁸ Committee of the Regions CdR 33/2000 fin, Brussels 18 April 2000.

⁹ Throughout this Communication the word "region" is used to describe a specific territorial entity, that has definite boundaries, which is part of a country that has been divided up for administrative purposes. It conforms to the NUTS (Nomenclature of Territorial Units for Statistics) classification scheme established by Eurostat and widely used in Community legislation since 1988. NUTS has no legal value per se.

¹⁰ Committee of the Regions CdR 63/2001 (Rapporteur: M.Torchio).

Globalisation, rapid technological change and extensive information and knowledge exchanges mark today the transition to a knowledge-based economy. At the Lisbon European Council in March 2000, Europe's Heads of State and Governments set an ambitious objective: over the next ten years, Europe should become the most competitive and dynamic knowledge society in the world, capable of sustainable economic development, accompanied by a quantitative and qualitative improvement in the level of employment, and greater social cohesion. In its Communication entitled "Innovation in a knowledge-driven economy"⁹ the Commission set guidelines for supporting the development of innovation in the EU, against the background of the Lisbon messages.

The importance of actions at regional level in order to encourage the creation and growth of innovative enterprises and to improve the operation of key interfaces in the innovation system was recognised in the Communication, that urged a coherent approach to the strengthening of these interfaces in Member States' regional innovation strategies. This Communication was also well-received by other Community bodies, the Committee of the Regions noting that "local government should actively be encouraged to mesh their policies with policies operating at national and European levels to ensure a strong, united and transparent framework for the promotion of innovation".¹⁰

The Lisbon summit, introduced the so-called "open method of co-ordination", an original concept of loose bottom-up co-ordination coupled with a continuous benchmarking of different relevant national policies. Resulting from this, an examination of the way research, technology and innovation policies articulate with other policies, and in particular with those which focus on integrated development -including at the regional level- becomes essential. This is because the ability of the Union to advance in the field of research and innovation will decidedly influence its capacity to stay competitive in world markets, ensure job-creation, sustain prosperity and maintain growth. In the recent past and in many ways, European regions have proved to be important players in this process. At the same time it is widely accepted that the potential of regional economies to face competition and adapt themselves to technical progress is linked to their innovation potential. This varies greatly among regions in quantitative and qualitative terms. Less developed regions have still substantial needs for catching-up in this context.

The European Research Area concept implies that efforts should be deployed effectively at different administrative and organisational layers: at European, national, regional or even local level. In this way, measures would not only be mutually consistent but better adapted to the potential of the regions themselves. By re-examining the role of each of the players (including public and private actors), establishing synergies and taking advantage of complementarities among European, national and regional instruments, a reinforced partnership among all those involved can be achieved.

This Communication addresses the regional dimension of the European Research Area. It focuses on the "motor" role that regions may play in the overall context of economic growth based on research, technology and innovation¹¹. It examines in particular how this influences this strategy, namely how to achieve a real European Research policy for the benefit of citizens, achieving results, stimulating development and generating wealth and jobs. In this

⁹ COM(2000) 567 final.

¹⁰ Committee of the Regions, CdR, 468/2000.

¹¹ The regional dimension of European research policy had earlier been addressed by the Commission through its Communication on "Reinforcing cohesion and competitiveness through research, technological development and innovation" (COM(98)275).

sense it looks into how this process fits in the overall methodology set up in Lisbon, namely adopting an open method of co-ordination of national efforts together with benchmarking policies, against the target of achieving the knowledge society in Europe. It examines how to use best the present and future Community research and innovation instruments and last but not least, how to achieve efficient synergies between the Union's research, innovation and structural policies.

2. THE REGIONAL RESEARCH AND INNOVATION LANDSCAPE

2.1. Research and innovation in the regions

Many European regions today develop their own research, technological development and innovation policies. These are largely autonomous without being out of step with their national counterparts. They generally involve local leadership, provision of financial and material resources, and priorities aiming at exploiting comparative advantage at regional level. Some particularly successful ones engage in innovative experiments such as cross-border RTDI¹² co-operation.

Regional research and innovation activities have a significant influence on the structuring of European research capacity as a whole, for example through the organisation and development of research infrastructure, specialised equipment and facilities; linkages with industrial development zones; development and support of centres of excellence; establishment of science and technology parks; mobility of researchers etc.

Regions which developed such policies in the past, did so to address two objectives: first, to establish a local research and innovation strategy mobilising all available resources and actors; and second, to embark on interregional co-operation schemes, forming networks of various types.

Both approaches have been supported by the Community's RTD Framework Programme (through the Innovation program) or the Structural Funds through their Programming Document tools.

Such policies point to a new development model for the organisation of European research and innovation systems, which is region-conscious. This involves a targeting of economic development through a systemic mobilisation of all resources available in the regions towards concrete goals, harnessing growth, competitiveness and employment, fostering research, technology and innovation at local or regional level.

Because European regions have very different profiles in terms of economic development, especially in relation to their capacity to generate, absorb and integrate technological innovation and transforming it into economic growth¹³, adopting a single development model would be a mistake. Nevertheless the adherence to some general development principles seems useful, particularly in relation to research and innovation policies.

¹² Research, Technological Development and Innovation.

¹³ The Second European Report on Science and Technology Indicators (REIST-2, 1997), classified European regions in a typology according to their economic and technological advance and growth. Four main categories were identified. First, the most performing form the technological heart of Europe: their prosperity is closely linked to their technological leadership. The second category regions form Europe's economic core. The third category is made up of regions with a big potential for technology adoption (the report suggested that innovative SMEs in these regions could be the engines

Thus, the self-organising capacity of regions becomes an important growth factor: technological capacity and objectives, “connectivity” and openness to the external world are key requirements. Successful cases in Europe, such as the network of the four so-called “motor regions”¹⁴ offer development models that are not always easy to reproduce. However, to various degrees, similar examples can be found in other regions¹⁵.

2.2. A role for the regions in the European Research Area context

Regions emerge as dynamic players in developing and structuring the European Research Area. In supporting the transition of the Union to a knowledge based economy, regions may initiate focused efforts. Here the concept of “territorialisation”, meaning a tailor-made research policy approach to address specific territorial conditions, may provide an effective answer.

Research policy territorialisation addresses two main issues : first, increasing regional awareness of national research and innovation policies and tuning them towards the socio-economic needs of the regions; and second, directing these policies to build research and innovation capacity in the regions, enhancing their ability to act as drivers for economic and technological development. This may be achieved through:

- Establishing research and innovation strategies to develop material and human resources such as supplying research infrastructure and equipment, local university and training facilities, support structures to foster creation and growth of innovative enterprises, efficient interfaces within the innovation system linking, for example, researchers, innovators and sources of finance, science and technology parks, research programmes, initiatives to attract researchers locally or promote staff exchanges.
- Fostering partnerships between the public and the private sector in order to contribute to the European knowledge-based economy and stimulate knowledge creation and diffusion.
- Promoting an environment conducive to research and innovation, through the introduction of accompanying legal, financial and fiscal conditions, that would prove necessary.
- Stimulating experience exchange with other successful regions in specific fields.
- Contributing actively to an integrated strategy for sustainable development

Streamlining the efforts of regions in an European Research Area mind-set should have two clear objectives both with a distinct added value for European research and innovation policies : first, to stimulate a better uptake of research results into the local socio-economic fabric (especially vis-à-vis small and medium size enterprises, SMEs) and help translate them faster into economic growth; and second, to increase public and private investment in research and innovation in the regions, thereby stimulating economic and social development.

behind a development process). The last one (mainly agricultural zones) includes those where potential technological and economic growth prospects were virtually absent.

¹⁴ (Baden-Württemberg (D), Rhône-Alpes (F), Lombardy (I) and Catalonia (E)).

¹⁵ The Brussels Region, for example, already co-operates in a “Euroregion” context with Flanders (B), Kent (UK), Wallonia (B) and Nord / Pas-de-Calais (F).

2.3. Regions as drivers for economic development

In the past, interventions to support regional development were mainly based on the provision of capital and support for physical infrastructure. Recent economic research however suggests that upgrading “knowledge” and increasing technology diffusion at regional level may prove one of the most efficient routes for economic growth.

Regional Innovation systems may arise when a number of factors are in “proximity”, perceived mainly in geographical terms, although this is now beginning to change thanks to advances in information and communication technologies¹⁶. Nevertheless, geographical proximity remains one of the most powerful factors in favour of intellectual, commercial and financial exchanges, heavily influencing the innovation process. In this sense regions are important because they form the spatial basis of groupings of research and innovation operators which have come to be known as “clusters”, often considered as the main drivers of regional development.

Clusters are formed by groups of innovative enterprises, academic and research institutions, local development agencies and/or other supporting organisations. Their structures embody a developing knowledge base, enabling infrastructure as well as a cultural dimension. Clustering is networking at large, with constituent parts developing strong, interdependent links. Interaction flow patterns vary, representing knowledge transfer, financial transactions or simply, increased personal contacts. In such a case, knowledge “spillovers” become ultimately the most important cluster “by-products”. Research and technological development lie at the heart of such knowledge spillovers and form part of the key components of successful regional clusters.

Efficient clustering involves multi-sectoral linkages and organisations with different profiles. In its most successful expression, clustering combines industry, government and non-governmental organisations, together with a number of knowledge-specific players (universities, research centres, science and technology parks and technopoles, innovation agencies acting like service, competence and diffusion centres).

Of particular importance in the dissemination of results and the process of commercialisation is the interplay with scientific activities and “openness” in terms of exposure to changing markets. University-industry links play here an especially important role. Co-operation between academic spin-offs and their “parent” organisations is often a model of effective regional co-operation. University-industry relations can strengthen the fabric of weaker regions where more traditional industries can turn to universities to investigate and meet their requirements¹⁷.

2.4. Schemes and support structures

Achieving the Lisbon objectives will clearly be facilitated by the strengthened involvement of regions in science, technology and innovation across the Union, on the basis of efficient regional strategies and the involvement of dynamic operators, coming together in partnerships.

¹⁶ Car design and production is one example, prototyping and producing high-end electronics may be another, as are global service industries like banking and financial services.

¹⁷ For example, in Austria, the research expertise in mining/metallurgy located at the Montanuniversität in Leoben has led to a high intensity of joint research projects in this field in the Styria region.

The new European economy has an important local and regional dimension and it is therefore essential to ensure that local responses are coherent with the global approach. Local action should start from a shared diagnosis of the territory and the definition of common strategic objectives. All local players should be integrated in the regional strategy, including the regional authorities, the private sector, academic and RTD institutions, social partners and the civil society.

Both the public and the private sector can play constructive roles in this context. As far as the public sector is concerned, regional authorities, academic institutions and public RTD centres have proven their potential in many cases. Universities and their networks form nodes of regional research and innovation partnerships, taking different forms, ranging from nurturing links with the local SME community (Aalborg University, Denmark / University of Strathclyde, United Kingdom) to broader approaches in a regional context (Université de Technologie de Compiègne, France)¹⁸. Businesses, whether through day-to-day operations or through corporate R&D centres also bring experience to such partnerships, especially in technology development or Intellectual Property Rights (IPR) management. Bridging the gap between the public and the private sector, start-ups and spin-offs are especially interesting operators in a regional context.

Such partnerships help develop regional scientific and technological competence, in particular in fields where a region possesses a comparative advantage. In addition, local research and innovation mechanisms can be strengthened: exchanges between local academic and industrial laboratories are intensified and transferability of best practice promoted.

Dedicated Science and Technology Parks are long-established in Europe. Hosting a large number of innovation "prime-movers" together (universities, R&D organisations, multinational corporations, dynamic SMEs or public research laboratories) helps to create and reap the rewards of a cluster-like structure. The same applies to incubators for new firms¹⁹ where specialised new technology based firms can grow without being fully exposed to market constraints for a certain period of time.

Technopoles, similar to science parks but on an urban scale, form another model of support to regional S&T growth. The concept, if successfully applied²⁰, is able to drive the formation of regional clusters.

¹⁸ An example of an emerging positive interrelation between universities and their "hinterland" is the so-called European Consortium of Innovative Universities (ECIU). Founded in 1996 by the University of Twente (Netherlands) it comprises now 10 of Europe's most innovative and entrepreneurial universities. Its objective consists of developing dynamic interactions with the surrounding environment in such areas as education, research, Information Technology uptake, adult education, regional development and various service functions. In itself it forms a model for the next generation of university networks. Source: F.Schutte and P.C. van der Sijde (eds)."The University and its region. Examples of regional development from the European Consortium of Innovative Universities". Twente University Press (2000).

¹⁹ A typical case is the one of Martinsried, the actual centre of the Bio-Tech-Region München, where some 47 biotech companies have been established by the end of 1999. Since the inception of the BioRegio initiative of the German Federal Government in 1996, based on a competition among regions, a dynamic process of innovation has been marked with increased company and employment creation: in the BioTech-Region München alone, from an initial set of 300 employees a peak of 1500 has been reached in December 1999 (the respective number of companies created ranges from 35 in 1996 to 93 in 1999).

²⁰ Sophia Antipolis (F) remains one of the flagship European (and even world-wide) technopoles, generating by itself some 21.000 highly qualified jobs. (Office parlementaire d'évaluation des choix scientifiques et technologiques; Rapport sur les programmes multilatéraux de soutien à la recherche et à

Levels of co-operation and the sharing of research results between research centres across Europe in the socio-economic domain are still very low compared with other research fields. The potential added value of the European support in research efforts in this field is very high and related scientific work would substantially contribute to developing new strategies for regional research and innovation.

Local and regional authorities can act as facilitators and catalysts in this process. In partnership with national authorities they can help bring together the appropriate actors. In addition, transnational organisations that associate regions together have a significant role to play as enablers in an international context.

2.5. Research governance in the regions

Governance reform is one of the Commission's strategic objectives. The debate has recently gathered pace with the publication of the White Paper on European Governance²¹. Particular attention is paid within that paper to enhancing the Union's dialogue with regional and local actors in order to improve the policies which affect them, as well as strengthening contacts with non-governmental organisations.

Research policy governance in the regions has three aspects: policy shaping, policy making and policy implementation. Policy shaping is important, because it can be very efficient, while kept relatively informal and open. There exist already many consultative mechanisms, both formal and informal, which afford opportunities, including for regional actors, to contribute to research and innovation policy inputs. The White Paper has nevertheless highlighted the need to review current consultative structures with a view to streamlining their input in order to enhance the impact of the input provided.

Community policy making follows the institutional steps foreseen in the Treaty and is as a rule open to extensive debate between the European Parliament, the Economic and Social Committee and the Committee of the Regions. This ensures a fruitful exchange of views with a wide range of representatives of stakeholder groups in the Member States and the regions, thereby ensuring networking and added value to regional aspects.

Implementation of Community research is already decentralised at the level of individual projects (research operators have a direct link with the European Commission). In the Commission's view, it seems important to maintain the distinct character of Community research activities in terms both of their specific European added-value and of their complementarity to national (and regional) activities.

²¹ l'innovation: perspectives pour les petites et moyennes entreprises françaises" par M. Pierre Laffitte, sénateur. Tome II : Actes du colloque du 27 janvier 2000 « L'avenir de la recherche industrielle européenne: les perspectives des partenariats publics-privés ».

COM(2001) 428 25.07.2001: *European Governance: A White Paper. Communication from the Commission*. The White Paper proposes opening up the policy-making process to get more people and organisations involved in shaping and delivering EU policy. It promotes greater openness, accountability and responsibility for all those involved. It proposes a series of actions. Some of these should help the Commission to concentrate its action on clear priorities within the tasks conferred on it by the Treaty: right of initiative, execution of policy, guardian of the Treaty and international representation. These will be taken forward immediately. The paper also launches a consultative process which will run until the end of March 2002 on the need for action by the other Institutions and Member States. By the end of 2002, the Commission will report on the progress it has made and draw lessons from this consultation. This should establish a basis for taking the governance agenda forward with the other Institutions.

As it is the case with other policy areas under a rapidly changing Union, the European institutions, the Member States and the regions will have to go through a mutual learning process in order to address issues of apprenticeship, co-ordination and monitoring in this new area of responsibility.

3. PROMOTING SYNERGIES BETWEEN RESEARCH, INNOVATION AND COHESION POLICIES

3.1. Regional disparities of knowledge

The Second Report on Economic and Social Cohesion adopted by the Commission in January 2001 shows that significant differences remain at the national and regional levels in terms of technological development and innovation, as well as in terms of human resources. The first outline European Innovation Scoreboard, annexed to the Commission's September 2000 Communication "Innovation in a knowledge-driven economy", confirms the overall picture of disparities in innovation performance between Member States. These overall disparities may impede the process of transition of the Union to a knowledge-based economy. Serious efforts have to be targeted on enhancing knowledge diffusion, upgrading human resources and promoting organisational changes that will drive science, technology and innovation efforts further.

These efforts aim on equipping less favoured regions with the appropriate capacity in order that they engage successfully in collaborative research endeavours throughout Europe, achieve a better transfer of research results in their economic fabric, help reducing the existing economic and technological gap with the most advanced regions and thus integrate better in a developing European research space.

Data and analyses indicate that the technology gap between the less favoured regions and those in the Member States where research and innovation related expenditure is highest (Germany, France, Sweden and Finland) has widened rather than narrowed (with the notable exception of Ireland). This technology gap is reflected at the level of the regions.

Disparities in economic performance remain as well as the available capacity to innovate between different parts of Europe, particularly between central and peripheral regions. These differences are also illustrated by the latest available statistics on Science, Technology and Innovation produced by the Commission²². These indicators provide useful hints on basic facts that can be further analysed and interpreted. An interesting point for example is that, while there are significant differences among the EU countries²³, some of the Northern ones score even better than the United States in some domains.²⁴

²² "Towards a European Research Area, Science, Technology, Innovation, Key Figures 2000, EUR 19396, ISBN 92-828-9755-9, EUROSTAT, DG Research and Key Figures 2001 Special edition "Indicators for benchmarking of national research policies", (2001). See also "Statistics on Science and Technology in Europe, Data 1985-1999, Eurostat, ISBN 92-894-0176-1" (2000).

²³ These "innovation" disparities match those observed in terms of economic performance. For example, GDP per head is typically half to two-thirds of the EU average in the southern periphery, stretching from Greece through southern Italy to southern and western Spain and Portugal, and around 60% of the EU average in most of the former East Germany. In all of the EU's outermost regions, except the Canary Islands, GDP per head is around half the average, or even less. There are also clusters of poorer regions in the Northern periphery, particularly in northern and eastern Finland and the north and west of the UK. By contrast, GDP per head is well above average in the more central area extending from the

One of the most important gaps between Objective 1²⁵ regions and those located in the rest of the EU Member States, remains business expenditure for RTD and innovation. While this may be partly explained by the reticence of firms in these regions to engage in medium or long term investment in areas that do not promise a secure return, it also indicates a serious bottleneck in terms of developing real players in the knowledge economy. This may also reflect the industrial structure of these regions which is characterised by a prevalence of SME's. The technological absorption capacity of these regions is thus weakened by a generalised non-participation in the new knowledge flows between the main RTD operators. This is also linked to the technological absorption capacity of the human resources present in the region and to the development of appropriate capital markets for innovation (notably venture capital).

Facilitating Objective 1 regions to take part effectively in collaborative research projects at national or European level, develop their human S&T resources, take more advantage of the opportunities offered by venture capital provision and thus integrate faster at the European research community, remain primary targets of Community policy. The Commission will continue its efforts to support regions to make the most of the possibilities offered by the Community RTD Framework Programme and thus broaden their technological absorption and creative capacity. It is in this context, and in line with the principle of the regional dimension of the European Research Area that a special Conference targeted to Objective 1 regions is to be organised by the Commission in early 2002.

3.2. Structural Funds and RTD

Within an integrated approach to regional development, research and innovation at the regional level needs to be coherent with the other policies and initiatives, in particular the Structural Funds.

Initially, Structural Funds activities in less favoured regions were concentrated on physical infrastructure. This was essential to build capacity in terms of laboratories and equipment. Today, despite the fact that critical infrastructures are still important for enabling the transition to a knowledge-based society and economy (for example the availability of modern telecommunications and data networks), the growing importance of intangible investments in education, training, research and innovation priorities is widely acknowledged.

24 north of Italy through southern Germany to Austria as well as in the Benelux countries and northern Germany.

24 Research, technology and innovation, whether measured by expenditure, personnel or patent outputs are even more divergent than GDP. RTD expenditure and employment are very much concentrated in a band stretching from the south and south-west of Germany, Flanders in Belgium, the Netherlands, south-east England and Ile de France. The south-east of France and the north-west of Italy show smaller but significant levels of expenditure. Patent applications are similarly concentrated in comparatively few regions, each being specialised in different areas of technology. (However for patents distribution one has to be cautious, in the sense that patents are usually registered with companies' headquarters which may considerably differ in location from the regions where the original research took place. EUROSTAT data strive to correct this point).

25 Objective 1, refers to regions whose development is lagging behind. Supporting them means providing them with the basic infrastructure which they continue to lack or encourage investments in business economic activity and improve the human resources. About fifty regions, home to 22% of the Union's population, are concerned, as they receive 70% of the EU funding available from the Structural funds.

Over the last decade, some EUR 12 Billion have been allocated to these regions in terms of RTD-related investments. This amounts to the same order of magnitude as the Community RTD Framework Programme overall, but it is important to understand the difference in focus between these instruments. The European Social Fund (ESF) in particular, as well as the European Regional Development Fund (ERDF), fund activities which are relevant to the knowledge-based society. Put in global terms, the Structural Funds supported research capacity building in the regions focusing on the material conditions of the research environment, while the Community RTD Framework Programmes supported transnational research projects built on scientific and technological excellence with a specific socio-economic impact.

But priorities are changing: for the period 2000-2006, the Structural Funds explicitly place the promotion of research, innovation and the information society as a priority. In their guidelines, based on broad principles of identification of integrated strategies for development as well as of the establishment of a decentralised and wide-ranging partnership, encourage regions to undertake actions on innovation promotion strategies, on building partnerships between universities and industry and on developing specific RTDI skills in terms of human resources.

Building effective partnerships and developing human resources for RTD remains instrumental for an effective deployment of collaborative research projects in the context of national or European research programmes. In this respect, data indicate that the less favoured regions had in general good results as far as their participants are concerned in the context of the 4th Community RTD Framework Programme, with entities coming from Greek, Irish and Portuguese regions ranking high (1994-98). This participation by Objective 1 region entities has grown during the second half of the '90s. A more systematic examination reveals a strong correlation between participation rates and RTD capacity indicators such as RTD expenditure and human resources, on a common regional reference basis.

In stepping up its efforts for the establishment of a real community for science and technology in Europe, the Union substantially backed the national and regional initiatives in the research field in the less favoured regions and the candidate countries. Despite the fact that detailed statistics on the allocated funds are missing, increase of the number of projects in which entities coming from Objective 1 regions participate, as well as increased participation of researchers coming from these regions in mobility programmes, indicate a net and substantial contribution towards reduction of regional disparities.

The programming exercise for Structural Funds activity 2000-2006 revealed the strong weight devoted to RTDI and the information society as a central axis in development plans for Objective 1 regions. The role of RTDI and the information society as structural factors for competitiveness and thus in long-term economic growth was translated into integrated strategies for innovation and for interaction between universities, research centres and the enterprise sector, as well as to support international integration. Information Society Technology research services and applications for SMEs form an important part of this activity. It is clearly visible that many regional strategies already take due account of the policies for realising the ERA and intend to make use of the new possibilities in this respect, thus playing an active role within the given frameworks.

3.3. Innovative Actions

Since 1994, Regional Innovation Strategies (RIS), under the European Regional Development Fund (ERDF), as well as Regional Innovation and Technology Transfer Strategies (RITTTS), under the third activity of the fourth and fifth Community RTD Framework Programmes, have served as policy tools for developing innovative capacity in the regions.

Originally introduced as Regional Technology Plans for eight European regions, the concept has since been widely applied. There are currently more than 100 regions in Europe that have participated in the RIS/RITTTS schemes. In 1998 the concept was further developed by the Commission through the "RIS+" initiative, aiming to ensure that the work begun under the RITTTS/RIS projects moves beyond the strategic framework for action towards a concrete implementation of new measures and projects.

The objectives have been to stimulate regional innovative activity and capacity through a process of consensus-building among the key actors²⁶. Strategy development and exchange of best practices remain key.

Further developments include the *Transregional Innovation Projects* and the *Transnational Innovation Strategy Projects* under the 5th Community RTD Framework Programme, aiming to encourage the transfer of experience from RIS/RITTTS regions to partners in the accession countries. To encourage networking between the regions involved, the Commission also contributes to the funding of the *Innovating Regions in Europe Network*²⁷.

Evaluations²⁸ show that the RIS/RITTTS approach has been an important tool in increasing regional innovation policy capacity by creating new regional partnerships and joint working methods and by launching new innovation projects within firms²⁹. The partnerships and the strategies formulated within the RIS projects have had a strong policy impact, not least through their inclusion in broader regional economic strategies (that in turn have provided the basis for the formulation of many Structural Funds program proposals for the period 2000-2006).

A similar initiative on a smaller scale is the *Regional Information Society Initiatives (RISI)*³⁰ jointly funded under Article 10 of the European Regional Development Fund and Article 6 of

²⁶ A recent interesting example (on grounds of regional technology auditing) is the PROMÉTHÉE project of which Phase I was recently concluded for the Walloon Region (Belgium).

²⁷ Further information on the RIS/RITTTS approach and on the Innovating Regions network can be found at <http://www.innovating-regions.org>.

²⁸ European Commission, 1997, "External evaluation of the Regional Technology Plans", Technopolis Ltd. in co-operation with the University of Athens (Greece). European Commission, 1999, "On-going evaluation of the Regional Innovation Strategies Under Article 10 of the ERDF", ECOTEC Research and Consulting Ltd. European Commission, 2000, "Assessment of the Regional Innovation and Technology Transfer Strategies and Infrastructures (RITTTS) Scheme" CURDS, MERIT, PAR & OIR. European Commission, 1999, "The Evaluation of the Inter-regional Information Society Initiative (IRISI)", Technopolis Ltd.

²⁹ See for example the RIS Yorkshire & Humber (UK): the project developed 15 business-led sector networks operating with a focus on the supply chain relationships. Within each network, audits of business features and needs and of existing support provision have been carried out. An outcome, common to several networks, of these audits has been the setting up of sector-specific knowledge centres, either physically or in a virtual format. Another outcome is the finance2Business.com web portal which has as its main aim to reduce transactions costs of accessing and providing finance for business.

³⁰ RISI had two elements, RISI 1 for the development of a regional partnership in the elaboration of a regional information society strategy and action plan, and RISI 2 for preparing and launching a cross-

the European Social Fund. The essential idea has been to assist less favoured regions in making the Information Society concept an integral part of regional development and employment policies. The main objectives of RISI are to develop consensus and partnership amongst key regional players around a Regional Information Society Strategy and to promote the commitment and co-operation of the key players in order to develop a Regional Action Plan.

Cross-border regional co-operation has been a major theme of the EU Structural policies for many years in the form of the INTERREG³¹ part of Community initiatives. These schemes continue in the medium term. INTERREG III (2000-2006) has three strands, two³² of which address RTDI related activities.

In the area of innovation on human resources development, regions have received support under Article 6 of the European Social Fund in order to develop their capacity in promoting business innovation, competitiveness and entrepreneurship. In addition, the regional capacity for innovation has been enhanced through activities conducted under further Community pilot programmes dedicated to employment, human resource and local development.

In order to raise the impact and the qualitative aspects of regional development initiatives the Commission has set to support novel ideas which would provide regions with real innovative approaches. Thus the so called Innovative Actions were introduced, with a view to develop new methodological concepts for regional policy, building on models and schemes of the knowledge economy.

The guidelines for the new Innovative Actions (2000-2006) under the European Regional Development Fund (ERDF) were adopted by the Commission in January 2001³³ and the respective Call for proposals already launched with a deadline set for May 2001. The aim of this activity is to initiate innovative practices to improve structural interventions co-funded by ERDF in Objective 1 and 2 regions. Their total budget is approximately EUR 400 million of which 94% is destined for co-financing *regional programmes of innovative actions* as well as *projects deriving from these programmes*, while 6% will be devoted to *the organisation of competitions of best projects deriving from a regional program*, as well as *networking and exchange of experience between regions* respectively. Networks are foreseen to be of thematic as well as geographical nature. Proposals were expected to be submitted directly by the competent Regional Authorities.

There are three themes³⁴ in the Innovative Actions, of which the first one (*Regional Economies based on Knowledge and Technological Innovation*) is particularly significant for the accomplishment of the objectives of the European Research Area. This theme aims to

regional pilot application for demonstrating best practice in the regional deployment of the Information Society. Up till today, 22 regions have participated in RISI 1 and 9 regions in RISI2.

³¹ A number of research and innovation related actions occurred under INTERREG II (1994-98). These addressed several research priorities (e.g. agriculture, medical technology, or new manufacturing technologies), involving research centres and industry.

³² Strand A (Cross-border cooperation) foresees activities aimed among other objectives to promote sharing of human resources and facilities within a number of areas to increase productivity and help create sustainable employment. Research, technological development, and education fall among the areas mentioned in its guidelines. Strand C, (interregional cooperation) covers also cooperation actions related to research, technological development and SMEs.

³³ COM(2001) 60 of 31.01.2001, "The regions in the new economy" - Guidelines for Innovative Measures under the ERDF in the period 2000-06.

³⁴ The other two are: "eEurope-Regio: The Information Society at the Service of Regional Development"; "Regional Identity and Sustainable Development".

enable regions to build competitiveness based on the creation of regional research and innovation systems. To achieve this, regions are encouraged to formulate regional programmes with the objective of increasing and reinforcing the co-operation and interaction between public research and the business community. RTD related guidelines in the Innovative Actions cover the following eligible activities for co-financing :

- Creation or reinforcement of co-operation networks between firms or groups of firms, research centres and universities, organisations responsible for improving the quality of human resources, financial institutions and specialist consultants, etc.;
- Staff exchanges between research centres, universities and firms, particularly SMEs;
- Dissemination of research results and technological adaptation within SMEs;
- Establishment of technological strategies for the regions, including pilot projects;
- Support for incubators for new enterprises with links to universities and research centres; encouragement for spin-offs from university centres or large companies oriented towards innovation and technology;
- Schemes for assisting science and technology projects carried out jointly by SMEs, universities and research centres;
- Contribution to the development of new financial instruments (venture capital) for business start-ups.

In defining the above guidelines, the Commission has considered the overall European Research Area strategy as a priority concept, to which the new Innovative Actions fully adhere. Their scope underlines the importance of creating synergies between regional and research and innovation policies.

3.4. Facilitating the less favoured regions to participate in the European Research Area

3.4.1. Investing in S&T human resources through the Framework Programme

The Lisbon European Council of March 2000, invited the Commission to make it possible to remove remaining barriers to researchers' mobility in the Union, before the end of 2002. Following a Resolution of the Council in June 2000, the Commission established a High Level Group that tackled the topic and came up with specific proposals. Four problem areas were identified, i.e. legal and administrative barriers, cultural and social issues, career structures in relation to mobility and problems in intersectoral mobility, notably between academia and industry. These problems are more pronounced in the less favoured regions, and the same applies for the regions of the candidate countries.

On June 20, 2001 the Commission adopted a Communication entitled "A Mobility Strategy in the European Research Area". This foresees concrete actions towards improving the mobility of researchers, having particularly in mind the problems of researchers in remote or less favoured regions. This includes: (1) improving information available on mobility opportunities through creation of a special Internet portal, including statistics (2) creation of mobility centres for provision of practical assistance to researchers and their families during installation in the host country (3) emphasis on quality issues, through best practice exchange and benchmarking (4) improvement of the fiscal, employment and social conditions of the

researcher under mobility³⁵. Through this comprehensive package of measures, a significant step to improve conditions of mobility for researchers of less favoured regions would be accomplished, since this covers all EU regions including those of the candidate countries.

The Community's RTD Framework Programme has functioned on the basis of shared-cost activities, established directly between the European Commission and participant organisations. These projects' compulsory transnational structure, consisting most of the time of consortia has set up a process of knowledge and idea sharing, as well as joint development of new technologies and know-how transfer. Participation to these activities from entities coming from less favoured regions proved to be an instrument of choice for knowledge diffusion, innovation building and integration of research results to the regional socio-economic fabric.

Achieving the transition to the knowledge economy will depend a lot on the Union's capacity to effectively pull human resources together, producing and exchanging scientific experience. For this to happen, the Commission's proposal for the new Community RTD Framework Programme (2002-2006) foresees an increased activity in the area of Human Resources focusing on training and mobility, by almost doubling the previous budget foreseen for the same purpose in the 5th Framework Programme and by multiplying the opportunities for grants, covering many specific cases, particularly interesting for the less favoured regions (as it is the case with the re-integration grants). The aim would be to create efficient mechanisms to fight the brain-drain effect, still occurring in the less favoured regions of the Union. In addition, support would be provided to scientific excellence and training of researchers from the candidate countries (as well as from those coming from the Member States) as a priority issue.

Thus the proposed **Marie Curie Host Fellowships for the Transfer of Knowledge** scheme should be particularly stressed here. These would be directed at European organisations (universities, research centres, enterprises, etc.) in need of developing new areas of competence, as well as at furthering the development of research capabilities in the less-favoured regions of the EU and Associated countries. Knowledge transfer fellowships would allow experienced researchers to be hosted at such organisations for the transfer of knowledge, research competencies and technology.

Equally the proposed **Marie Curie Re-integration Grants** scheme is of particular importance to researchers from less favoured regions working abroad. These would be directed at researchers from the EU and Associated countries who have just completed a Marie Curie fellowship of at least two years. It would consist of a lump sum in the form of a personal grant to be used within one year. It would be allocated to the fellow on the basis of the submission of a defined project, which would be evaluated on its own merits. The re-integration would not be restricted to the researcher's country of origin. A similar mechanism (but covering a period of re-integration of up to two years) would apply to European researchers who have carried out research outside Europe for at least 5 years.

³⁵ Currently, Commission's DG Taxation and Custom Union is conducting a study on Company taxation under a mandate from the Council. The report is divided into two parts, one of which focuses on the remaining tax obstacles to the economic activity in the Internal Market. Among other things, the final document will deal with problems related to double taxation agreements and will suggest possible further action.

3.4.2. Proposed financial incentives

The less developed regions have few chances catching up with the prosperous regions if they do not perform RTDI strategies comparable to the prosperous regions. Basically, they are equally exposed to all challenges stemming from globalisation and competition. Therefore, they have to pursue genuine RTDI approaches if long-term perspectives are sought. Thus, a cohesion policy that does not manage less favoured regions progressing fast on this track will fail in the long run. Only by fully exploiting the synergies between cohesion and research policy this goal could be achieved.

In accordance with the Research Area strategy and the developing priorities in the Structural policies of the Union, an increased synergy is foreseen within the next edition of the Community RTD Framework Programme. Thus the Commission's proposal for the new Framework Programme (2002-2006) foresees a reinforcement of the effort deployed by research operators from Objective 1 regions. Whenever a project funded by the Framework Programme includes a participant originating from an Objective 1 region, in accordance with Regulation 1260/99³⁶, funding of the part of the project that applies to that participant can be completed by co-funding through the Structural Funds, while fully observing the existing legislation for state aids. This supplementary funding is allocated through one or more measures decided upon by the competent managing authority for the implementation of intervention in favour of the region concerned.

3.4.3. Promoting synergies between less developed and advanced regions through the introduction of coordination and networking activities

Achieving greater cohesion in the Union, depends directly on the creation of the necessary conditions for the integration of research capabilities existing in less favoured regions in the European research fabric. The next Framework Programme intends to contribute to networking of regional capacity with a view to stimulate the setting up of real networks of scientific and technological competence and thus facilitate knowledge transfer. Activities supported under this strand of the Framework Programme will have a real Community added value, by virtue of their contribution to economic and social cohesion.

This activity intends to encourage and support synergies between existing research activities in several regions through coordination activities at implementation phase, their mutual opening and mutual access to research results. It would also cover the definition and execution of joint activities. The Framework Programme could contribute to the coordination of research activities among research operators located in less developed regions and those located in the other regions of the Union, with a particular focus for those of them located in cohesion countries and in the outermost regions.

To this end the Community could support initiatives aiming towards networking activities by these regions, in accordance to rules foreseen for strengthening the foundations of the European Research Area. These would cover in particular targeted coordination actions, aiming at stimulating and supporting co-ordinated initiatives by different research and innovation operators in the countries and regions concerned. By way of example, they could comprise activities such as the organisation of conferences, meetings, studies, staff exchanges, exchange and diffusion of good practice, the setting up of information systems

³⁶ Council Regulation (EC) N° 1260/1999 of 21 June 1999 laying down general provisions on the Structural Funds, OJ L 161, 26.6.1999, p.1..

and expert groups and also, if need be, provide support to the definition, organisation and management of joint or common activities.

The goal here would be to encourage and support initiatives undertaken by several countries with a particular focus on partnerships between advanced and Objective 1 regions. These would cover areas of common strategic interest, and would aim at developing synergy between existing activities through coordination of their implementation, mutual opening and mutual access to research results, as well as the definition and implementation of joint activities. The activities concerned must be understood as programmes or parts of programmes, instruments, plans or other initiatives undertaken at regional level and involving public funding to support RTD work, the development of research capabilities, and the promotion of innovation. The activities may be undertaken directly by public authorities or research agencies at regional level (including research centres and other research operators) or through European co-operation frameworks (but with a wider regional focus).

For this purpose, the Community could support proposals selected following their submission in response to open calls. Where appropriate, calls for expressions of interest, followed by targeted calls for proposals may be published. This would facilitate targeting of activities towards countries hosting in particular Objective 1 regions. In addition to that, specific supporting activities could complement the above actions through conferences, workshops, studies, working groups as well as information diffusion activities.

It is understood that these networking activities would be extended to countries that would join the Union, as of their accession, following the same principles adopted for the present 15 Member states.

In addition to activities mentioned above, support is foreseen for the coordination and support (including funding) to activities aiming at establishing synergies or at reinforcing exchanges and cooperation mechanisms between national or regional programmes, in the field of human capital and mobility.

These initiatives would be targeting notably the opening of national or regional programmes whose objectives are similar to those of the activity on "Human resources and mobility", to researchers coming from other Member States or from countries associated to the Framework Programme. They would also ensure to these researchers the provision of any necessary practical assistance (of a legal and administrative nature).

3.4.4. The case of the EU outermost regions (RUP)

The European territory comprises seven outermost regions³⁷. These enjoy a special status according to art. 299(2) of the Treaty, because they share a series of unique characters, impeding their development and the catching up with other regions of the Union: they are remote and landlocked, have a tropical or sub-tropical climate, while their neighbour countries belong to the less developed ones. With a high population density, a young and fast growing population and a per capita GDP among the lowest in the Union, the outermost regions form a special target group in the Union, for which the European Council has showed repeatedly its close interest.

³⁷ The 4 French departments of Guadeloupe, Martinique, Guyane and Réunion; Canary islands (Spain) and the autonomous Portuguese regions of Açores and Madeira.

Thus, the Cologne European Council had asked the Commission to initiate measures and report back³⁸. Following a co-ordinated effort, the Commission came up with a comprehensive package of policy measures in their favour, presented at the Göteborg European Council (15-16 June 2001). Reinforcing research, technological development and innovation strategies for these regions is now earmarked as a priority for the Commission.

Despite all socio-economic and other difficulties outermost regions have a specific potential for research and development which might turn some of their deficiencies to advantage, by adopting appropriate integrated regional research and innovation strategies, taking due account of their unique geographic, climate and specialisation characters. These strategies are now being developed in the framework of the Structural funds and would strive to make research operators from these regions capable to achieve a better participation in the Community framework programmes on RTD³⁹. A significant research potential generated by local efforts in conjunction with support by the EU related metropolitan centres provides for specific perspectives, customisable for each region.

The Commission and the outermost regions are currently preparing in close partnership, a consistent framework of new activities, in order to integrate the efforts of the outermost regions in the field of collaborative research with the rest of the European territory as well as among themselves, thus reaping faster the benefits of the knowledge economy. This includes an exhaustive inventory of possible research fields - particularly those for which regional specialities promise a comparative advantage – and of existing research assets and structures (in terms of human capital, infrastructure, and institutional schemes). The Commission supports this first comprehensive inventory by a specific study on the R&D potential of the outermost regions, as well as with an (ongoing) study for their Information Society dimension. In this context a special workshop addressing these issues would be organised by the Commission services.

These works will provide the outermost regions with the necessary background for developing appropriate scientific co-operation activities and will help them to valorise their potential in order to be better integrated in the developing European Research Area. They could thus exploit better their sometimes unique environment for research objectives (for example focusing on tropical medicine or agriculture) or their already developed technological capacity (in fields such as aeronautics and space technology). It could also allow for scientific contributions to issues such as sustainable development and global change, with a particular value added for the less developed counties in the Southern Hemisphere. For these particular countries they could develop as real scientific portal.

This way, the foundations for a strengthened inclusion of the outermost regions in the developing European Research Area are laid, consisting of a host of policy measures foreseen in the next framework Programme, the specific provisions of the Structural funds for outermost regions⁴⁰ and other relevant measures in the context of the art. 299 exercise (e.g. on renewable energies. The 7 outermost regions could thus undertake a concertation activity between them for agreeing on an appropriate use of their programmes funded under the Structural Funds, in order to stimulate this cooperation and seize the different opportunities offered by the Union (Research Framework Programme and Structural Funds initiatives,

³⁸ Commission report on the measures to implement article 299(2) – the outermost regions of the European Union, COM(2000)147 final.

³⁹ COM(2000)147 final.

⁴⁰ The outermost regions enjoy the highest possible rate in Community financing of investments (e.g. research infrastructure), ranging up to a maximum of eligible cost.

including the new innovative actions (2000-2006)), to foster a really integrated regional strategy for development.

3.5. The enlargement challenge

Enlargement has been earmarked as one of the highest priorities of the Union. The progressive integration of the scientific communities of the candidate countries is underway as they are fully associated to the Fifth Community RTD Framework Programme. Addressing the regional dimension of this integration essentially means applying the majority of the concepts developed in the context of the European Research Area to the candidate countries. Since research is one of the areas that contributes substantially to the accession strategy, synergies should be developed and lessons learned elsewhere transferred.

The aim should be to strengthen not only the research capabilities but also the research administration capacities of the candidate countries, including at the regional level. This can be done by mobilising and sharing the expertise of national, regional and European research administrations.

Since 1994, the candidate countries (but equally Russia and the New Independent States) have been covered by the Community RTD Framework Programme⁴¹. The potential of these countries in the field of science and technology calls for providing them with specific support, which make them largely comparable with Objective 1 regions. It is in this context that the candidate countries have been associated fully with the Fifth Community RTD Framework Programme, allowing them to nurture active relationships with the scientific and technological community of the Union (with the specific support of the PHARE program) and continue this way their related modernisation efforts.

This way, candidate countries have been able to profit from the experience of Union countries for the set-up and management of RTD consortia, as well as to enter into research partnerships with other entities in the Union. Despite a participation rate which for the moment is somehow more of an academic nature, there is hope that industry and the private sector will play its part in the future, because of related exposure to activities and exchanges linked with the Framework Programme.

4. ENABLING THE EUROPEAN RESEARCH AREA REGIONAL APPROACH

4.1. Seizing the opportunities of the New Community Research Framework Programme (2002-2006)⁴²

The new Community RTD Framework Programme, presents regional bodies with a host of new opportunities, offering them diversified possibilities of participation and faster integration in the emerging European knowledge-based economy and society. These range from the newly introduced instruments of the Community RTD Framework Programme to activities that foster networking, transregional co-operation and a broadening of our knowledge-base concerning the regions' potential in terms of science, technology and innovation.

⁴¹ INCO-COPERNICUS (INCO contribution to Central and Eastern European countries has reached EUR 78,3 Million in the 4th Community RTD Framework Programme).

⁴² COM(2001)94, 21.02.2001.

4.1.1. *Taking advantage of the New Instruments*

The new funding instruments for Community research actions emerge as key factors for structuring the European Research Area. In increasing the transparency and legibility of Community Research, they are expected to act as catalysts for the development of regional strategies, oriented on the one hand towards the regional economic fabric while remaining open to the European and international dimensions.

- Networks of excellence (to be set-up through calls for proposals), will allow for the reinforcement and integration of existing or developing scientific excellence in all EU regions. Bearing a strong programming character, they are expected to be particularly well adapted to regional research and innovation actors, allowing better connectivity between central and peripheral hubs of scientific competence, thus offering increased opportunities for collaboration, staff mobility, information and knowledge exchange as well as positive spillovers to the local and regional economies. In addition, efficient networks of excellence are expected to function as strong barriers against interregional brain-drain (scientists moving from less favoured to richer regions). They could contribute to build multi-polar areas of innovation and excellence, supporting indirectly local development and economic growth, thus contributing to regional population stability and acting against interregional brain drain
- Integrated projects, to be equally set-up through calls for proposals, will allow regional bodies to cooperate on a transnational basis around specific scientific and technological objectives, aiming at concrete results. Regional bodies may be associated here in transnational partnerships to develop specific projects, of a substantial scale, aiming at integrating scientific and technological efforts.

Networks of excellence have as an objective the durable integration of research activities of participating organisations. Integrated projects will consist of a number of research components, executed in a co-ordinated fashion and allowing to partners to respond to societal or competitiveness problems. They will be managed in a flexible way and they will be open to participation to new partners. Both instruments aspire to drive the totality of European territory towards excellence, through association of all meritorious teams as well as the diffusion of research results.

Managing the new instruments within the context of priorities set by the Commission will be coupled with a number of consistent accompanying measures, ensuring that the funded activities will be in the service of a global strategy of progressive integration of European research.

Regions may also take advantage of the new coordination-type activities foreseen under the topic of "Strengthening the foundations of the European Research Area". Detailed reference to these measures are made earlier in this text (cf. 3.4.3. *Promoting synergies between less developed and advanced regions through the introduction of co-ordination and networking activities*).

4.1.2. *Link more Research and Innovation at regional level*

Encouragement and validation activities targeting local and regional initiatives will be developed, to promote development of new innovating businesses, transfer and exchange of best practice, as well as establishment of an environment more conducive to research and innovation.

- Trans-regional cooperation will be encouraged, to facilitate the development of research and innovation strategies as well as the initiation of programmes involving local actors. These activities will be developed in close coordination with those of the Union's Regional Policy and the Structural Funds.
- Particular attention will be paid to the participation of candidate countries' regions to this activity type, notably in relation to the transfer of schemes that have proved to be successful at Union level to those regions. Moreover, innovative approaches and experiences will be introduced at national or regional level to study further the complex process of innovation.

The development of research and innovation strategies, as well as inter-regional technology transfer, have greatly benefited so far from significant assistance from the Community^{43 44}. The new Community RTD Framework Programme will be an important tool in continuing this effort. The European Investment Bank (EIB) and the European Investment Fund (EIF) may also prove instrumental, especially after their recent initiatives (I2I, Innovation 2000) and the mandates provided by the Stockholm, Nice and Lisbon European Councils for support to local and regional innovation initiatives through the provision of venture capital. The recent joint initiative between the Commission and EIB for reinforcement of RDT and Innovation initiatives by mutual supporting activities will also play in this respect an important role⁴⁵.

4.1.3. *Develop more and better trained S&T human resources*

Within the context of research training networks and the knowledge transfer fellowships to be developed under the context of Marie Curie human resources and mobility actions, opportunities will be offered to researchers originating from the less favoured regions, including re-integration grants. These very measures would also apply to researchers originating from regions of candidate countries.

Mobility and training schemes thus will focus on the development and transfer of research competencies, the consolidation and widening of researchers' career prospects, and the promotion of excellence. As the activity is in principle open to all fields of scientific and technological research that contribute to the Community's RTD objectives, accessibility is by definition guaranteed to all Union's researchers. However, the possibility of refining priorities, as regards for example, disciplines, participating regions, types of research organisations, and

⁴³ Recognising this need for enhanced localised networking and information flows, the Innovation Programme of the Community RTD Framework Programme has established Innovation Relay Centres (IRC) (68 active centres including the EEA countries and NAC; they are financed by the Innovation Programme and aim at informing and assisting the local user community on innovation and trans-national technology transfer. The Structural Funds have promoted Business Innovation Centres (150 BICs in 20 countries, including some EEA countries) focused mainly on the creation of new innovative SME's. Both BICs and IRCs can help interested businesses to participate in the EU RTD Programmes or in ERDF funded actions, as they can provide initial information on the possibilities offered by the FP and have established close links with the network of National Contact Point providing locally assistance for preparing proposals. In addition BIC's have a supplementary role in facilitating cross-border interregional co-operation (under Interreg).

⁴⁴ Also under the Innovation Programme of the Community RTD Framework Programme, the PAXIS scheme (Pilot Action of Excellence for Innovative Start-Ups) networks economic areas providing good environments for start-ups and spin-offs. Launched in 1999, the scheme at present involves 15 economic areas which identify, exchange and disseminate good practice with a view to promoting positive conditions for the creation and growth of innovative firms throughout the Member States.

⁴⁵ EIB/Commission DG Research, Common Press Release, Brussels, 7 June 2001" An agreement to boost European research and innovation"

the level of experience of the targeted researcher populations, will be retained, in order to respond to the evolution of relevant European requirements.

Special attention will be paid to a number of factors affecting the socio-economic conditions of researchers, notably gender equity, linguistic balance and career structure. The development of research activities in the less-favoured regions of the EU and associated Countries will be taken particularly into account, complementing the efforts made in the context of the Structural Funds.

With a view to further reinforcing the human potential for research in the regions, HR and Mobility actions will aim to attract the best and most promising researchers from third countries, promote the training of European researchers abroad and stimulate the return of European scientists established outside Europe in their home regions (cf. point 3.4.1. above *Investing in S&T human resources through the Framework Programme*)

4.1.4. Support the development of scientific infrastructure in a regional context

Specific attention will be paid to the valorisation or the development of new scientific infrastructure in the regions, in collaboration and synergy with activities of the Structural Funds and the European Investment Bank. It has to be noted that modern scientific infrastructure is a key enabler of regional economic development (for example science and technology parks for efficient clustering and cooperation between academia and industry, or high-speed electronic networks and related facilities as a key gateway to the information economy).

A good example in this case is electronic research networking. The EU funded GEANT⁴⁶ broadband electronic interconnection backbone, is expected to be operational in November 2001, linking all European electronic research and education networks with an average bandwidth of 2.5 Gigabit/second (including networks in the candidate countries), thanks to the Community RTD Framework Programme, bringing thus Europe for the first time in the lead in the field of electronic research networking world-wide. Additional support is expected to be provided by the EIB to regional and local upgrade networking initiatives, where appropriate. Researchers from EU less favoured regions and the candidate countries become thus able to cooperate under state-of-the-art conditions with their counterparts in advanced regions as well as with the rest of the world.

4.1.5. Reinforce the regional dimension of the Science and Society debate

The regional level may prove to be appropriate for undertaking support and reflection activities in the context of the emerging debate on Science and Society. Critical questions pertaining on the increasingly complex interactions between science and society can find a most fertile context for being discussed. The advent of the knowledge economy has caught many of the society's institutions unprepared to face the issues rising from several questions, brought specifically to the fore because of the advancement of science: questions around ethics in science, the frontiers of research and the role of science in governance are a few examples of the difficult topics that could be addressed also in a regional context and gain from its richness and diversity.

⁴⁶ Gigabit European Academic Network (<http://www.dante.net/geant>)

4.1.6. Reinforce the Community policy for regional development by undertaking appropriate research

Within the context of the *Anticipation of the Union's Scientific and Technological needs* and to support other Community policies, specific support may be given to research activities in the field of Regional Development. The European Spatial Development Perspective scheme provides the general framework for a vast number of issues open to research opportunities, linked with regional development.

4.1.7. Provide a specific support to the regions of candidate countries

Developing the European Research Area means also implementing inclusion policies towards candidate countries. With this in mind, all the actions foreseen above will also apply to them. Trans-regional cooperation and regional networking will be particularly encouraged, between regions of the candidate countries and those of the EU ones, especially to what concerns good practice transfer and policy modernisation. Specific support will be provided to the candidate countries for setting-up regional research and innovation strategies.

In the case of participation of bodies from the candidate countries, an additional contribution from the pre-accession financial instruments could be granted to successful partnerships⁴⁷.

4.2. Increase the Science and Technology knowledge-base in the regions

In addition to activities foreseen from the regional actors' side, the Commission services will develop a pro-active policy in order to better develop understanding and knowledge about the different dimensions of research and innovation at regional level. This will aim in particular to:

4.2.1. Offer research and innovation services to the regions

Regional technology audits will be organised, with a view to better guide regional policy makers in their choices in terms of research and innovation. This proven method would provide analyses on the comparative advantages of regions and would allow policy makers set-up alternative scenarios in strategic terms.

The Commission will integrate the regions in its already undertaken benchmarking exercise in terms of performance of research and innovation policies. Extension of the scoreboards for research and for innovation to the regional level may also prove beneficial. This would be completed by the analysis of the context of regional research and innovation policies and the diffusion of best practice (synergies will be developed with similar ongoing exercises in this field e.g. RINNO⁴⁸).

⁴⁷ Proposal for a Decision of the European Parliament and the of the Council concerning the Multiannual Framework Programme 2002-2006 of the European Community for Research and Technological Development and Demonstration Activities aimed at contributing toward the creation of the European Research Area , COM (2001) 94 final, 21.02.01, Annex III: Instruments and detailed rules for Community financial participation, heading (2) "Detailed rules for financial participation by the Community", p.42, alinea 3.

⁴⁸ RINNO stands for Regional Innovation. It is a database on the Web sponsored by the Commission (Enterprise DG and Research DG). The purpose of RINNO is to share the innovation experiences and use electronic media to allow regions to get practical help on improving their innovation practices. (<http://www.rinno.com>)

Designing successful policies requires sufficient backing from statistics; working on the regional dimension of the European Research Area would require adequate work on S&T statistics and indicators at regional level. In the past, the relevant Commission services have been active in the general area of regional statistics and a lot has been achieved but there's still work ahead in regional Science and Technology statistics: better methodologies, better concepts and a systematic incorporation of the regional dimension in the current surveys and data collections. The statistical results achieved during the last decade are promising however it's clear that statistical indicators able to describe the characteristics, the structure and the performance of the Knowledge Based Economy are still lacking both at the national and regional levels. Based on such statistics appropriate science and technology indicators should be developed, at regional level.

The Commission will launch studies and analyses as appropriate, in the field of regional research and innovation strategies (a study is already ongoing on the topic "Involving regions in the European Research Area"). Topics would cover several related areas, for example industrial clusters, research infrastructures, but also legal, institutional and regulatory aspects, touching thus on policies and strategies related to regional development.

In this context a specific study would be launched on the particularly innovating RTDI clusters in Europe and their spatial distribution.

4.2.2. Improve communication between experts and policy and makers

The Commission will support the establishment of joint work and communication platforms between experts and policy makers at regional level. For example, groups of experts could be established in the field of technology foresight at regional level. The existing experience of projects like FOREN⁴⁹ could be used to guide further exercises in this direction.

4.2.3. Introduce a regional dimension in research and innovation information systems

The Commission will develop an integrated information system covering national and regional research and innovation programmes, targeted at policy and decision makers as well as researchers. This system, for which a feasibility study has already been launched, is a response to a specific demand by the Council and is expected to improve substantially the conditions for transregional / transnational cooperation in the areas of research and innovation, as well as the process of transferring best practice.

Moreover, the Commission will launch information campaigns targeted to the regions, with a view to help them to better seize the opportunities offered by the Community RTD Framework Programme, as well as establish synergies in the field of RTDI with similar activities of the Structural Funds.

⁴⁹ FOREN (<http://foren.jrc.es>), is a thematic network under the Commission's RTD Framework Programme (STRATA, Strategic Analysis of specific policy issues) that aims at promoting effective integration of Foresight processes into regional development policy and strategy planning. It consists of a platform of experts and policy makers composed of representatives from two communities which are not used to work closely together: the technology Foresight community and the regional development policy community. Its objective is to create and exploit synergies and action-oriented co-operation between actors in the two fields, primarily through the simulation of Foresight-type activities. Experts and decision-makers representing both communities come from universities, research centres and other Foresight centres, as well as policy/decision makers from regional development agencies, regional/local authorities.

In conjunction with the different reporting tasks of the European Research Area process, developments associated with the regional dimension should be monitored. A chapter on the regional dimension of research could be added to the Commission's annual report on the implementation of research policy.

5. TOWARDS MORE INTEGRATED STRATEGIES

Regions have by now come to be recognised at large as significant players in the drive-up to the knowledge-economy in Europe. Building on their developing qualities, experience and commitment, they will be increasingly present in Europe's efforts for growth and competitiveness. Enhancing this capacity and equipping them with the appropriate tools and strategies remains a challenge for the Union.

Regions are supported in their efforts by an increasing number of European policies, of which research and innovation and cohesion ones, emerge as decisive. While there is no doubt that cohesion policy is playing a major role for the regions, research policy remains instrumental for creating the necessary conditions for advancing the regions in the knowledge-based economy. Together with innovation and education and training, research brings a new message to regional economies, allowing for new forms of advancement, that keep pace with local but also international developments⁵⁰. Beyond regional development, regional research and innovation policies and initiatives may provide the essential ingredients for the emergence of agglomeration economies and of successful industrial clusters.

The key message of this Communication is thus, that European regions may now prepare to fully play their part in the new European and global economy, by developing consistent agendas in research and innovation. To this end, integrated strategies supported by relevant Community policies (as it is the case with research and cohesion policy) will bring faster results, interconnecting regions into the fabric of a truly European Research Area.

⁵⁰ The International Dimension of the European Research Area, Communication from the Commission COM(2001) 346 final 25.06.2001