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BLUEPRINTS FOR FORESIGHT ACTIONS IN THE REGIONS

FOR-RIS

Experiences and ideas for developing regional foresight in a RIS/RITTS project context

DISSEMINATION CONFERENCE
BRUSSELS, SEPTEMBER 23, 2004

THE FOR-RIS BLUEPRINT

Experiences and ideas for developing regional foresight in a context of RIS/RITTS projects

The future prosperity of Europe will be significantly influenced by the ability of regions to fully develop their potential and to find their role in the emerging knowledge-based economy. A number of European regions have developed innovation strategies recently, and other regions are prepared to launch similar projects soon. Extension of already formulated regional innovation strategies using foresight techniques, or conducting foresight in parallel with future strategic policy activities, can produce new alternatives of regional development and contribute to a better development of regional knowledge infrastructure favouring the development regional economy and quality of life.

This is the preliminary version of the FOR-RIS blueprint produced for the dissemination conference "Building the future on knowledge". The final blueprint will be published after the conference by the Office for Official Publications of the European Communities.

September 2004

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The unit K 2 "Science and Technology Foresight" contributes to the development of policies and policy concepts through Foresight analyses and activities. Together with other Directorates and General Directorates, and specially the IPTS/JRC, the unit develops the co-operation between Foresight practitioners and users in Europe. In addition, it is responsible for the implementation of the respective activities in the 5th and 6th Research Framework Programme.

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Blueprints for Foresight Actions in the Regions expert group

To develop their potential, and find their new role in the emerging EU25+ knowledge-based economy, regions need to widen their focus and go beyond their own innovation landscape to explore the European and trans-regional dimension to the full. Foresight is a key element in the creation of future oriented and outward looking visions and strategies. Many regions considering implementing foresight exercises need help to overcome initial barriers, such as doubts about the usefulness and usability of foresight, problems linking foresight to existing regional mechanisms, as well as simply lack of knowledge on how to set up and undertake foresight activities. Easy to understand practical blueprints on how to set up a foresight activities to suit specific regional circumstances could be instrumental in supporting regions to implement regional foresight.

The blueprints expert group builds upon the existing Foresight knowledge base developed so far mainly at EU level by involving regional experts and policy makers active in earlier exercises, as well as using already available methodological tools and case studies, e.g., the Country specific Guides to Regional Foresight (http://www.cordis.lu/foresight/cgrf.htm).

> Blueprints are practical guidelines to the setting up and planning of foresight. They are manuals or roadmaps, not foresight exercises in themselves. Blueprints build upon real problems in real regions, with strong stakeholder involvement.

The expert group was built around a core group of experts on foresight processes, who steered five working groups with regional partners, chosen because of their capacity to initiate actions and influence policymaking.

The working groups have been open to outside participation, and the resulting blueprints (one for each working group) are being designed so as to provide useful tools for regions not actively participating in the expert group, but facing the same challenges. The resulting blueprints are:

FOR-RIS: Experiences and ideas for developing regional foresight in a RIS/RITTS project context;

UPGRADE: Foresight strategy and actions to assist regions of traditional industry towards a more knowledge based community;

TECHTRANS: Trans-regional integration and harmonisation of technology support mechanisms;

TRANSVISION: Bridging historically and culturally close neighbouring regions separated by national borders;

AGRIBLUE: Sustainable Territorial Development of the Rural Areas of Europe.

The work started in December 2003 and its present stage ends with the dissemination conference on September 23, 2004.

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1. Introduction

In 2003 DG Research established an expert group on regional foresight. Five working groups were created to prepare "blueprints" for how to initiate foresight actions in European regions. The blueprints are meant to be concrete descriptions (or roadmaps) of foresight actions related to a clearly identified and concrete regional need. Each working group has prepared a blueprint structured around a specific regional policy issue. The present blueprint, produced by the 'FOR-RIS Group' is intended for application of foresight in a context of RIS/RITTS[1] projects conducted in a large number of European regions. Under such conditions, foresight may build upon the results of a completed RIS/RITTS exercise, or it can be conducted in parallel with a RIS/RITTS project.

Although there is no universal recipe setting out 'how to conduct regional foresight', the FOR-RIS blueprint is designed to help regional policy-makers to initiate, organise and conduct an exercise and show its role in improving policy design and implementation for enhancing regional competitiveness and social cohesion in a knowledge-based economy. The initial stages of a foresight exercise are emphasised in the blueprint, i.e. it focuses in particular on the key question of 'how to get foresight started'. For better understanding, the text is accompanied by 'boxes' and an annex providing concrete relevant examples from regions that participated in preparation of the blueprint.

The blueprint has been structured as follows. Chapter 2 outlines the rationales for foresight and describes the initial situation in regions that are planning a foresight exercise linked with RIS. Certain developments have been, or will be, achieved in these regions by means of RIS/RITTS projects, and the regions should think about what additional benefits a foresight exercise can provide. The main ways of combining RIS and foresight are also briefly described in this chapter. Chapters 3 – 5 deal with the carrying out of a foresight project in a RIS context. Chapter 3 discusses issues related to planning of the project: identifying the region-specific needs for foresight, defining its scope, finding stakeholders and resources, and selecting the methods. Chapter 4 examines some central questions that usually emerge in the course of the project: including the construction of networks, organisation of the project and selection of experts. This chapter also goes through the main stages of conducting a foresight project. Chapter 5 concentrates on the implementation of the results and on continuation of the work, including the possibility of developing regional foresight into a more permanent, often embedded, activity. The last chapter of the blueprint (Chapter 6) puts the synergy gained from combining foresight and RIS into a broader perspective, with particular regard to the overall development of regional innovation systems as part of the development towards knowledge-based regions.

[1] RIS-Regional Innovation Strategy; RITTS - Regional Innovation and Technology Transfer Strategy. When there is no need to distinguish the two project types, the abreviation RIS has been used to refer to both in this Blueprint.

2. Rationales for foresight in the RIS context

2.1 What have been the main benefits of RIS/RITTS exercises?

Over 100 European regions have been supported to formulate their regional innovation strategies with RIS/RITTS projects funded by the EU. The projects have aimed at supporting regions in optimising regional innovation policy and infrastructure. The RIS projects have been financed by the Regional Policy DG, and have been confined to regions covered by ERDF assistance. The RITTS projects were financed by the Enterprise DG under the Innovation Programme. In 2001/2002, projects aiming at carrying out innovation strategies were launched in the (then) Newly Associated Countries (NACs) Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, Slovakia and Slovenia. The main objective is to develop regional innovation strategies in NAC regions by following the RITTS/RIS project scheme and methodology in partnership with at least one EU region that has already undertaken a RIS/RITTS project.

RIS/RITTS projects have brought many concrete benefits to the regions that have implemented them:

- Analyses made within the projects have increased the awareness of regional actors of the situation in their own region in relation to companies and the state of research activities. It is especially important that an overview of the innovation system and its state in the region has been obtained. The RIS/RITTS projects have encompassed a thorough assessment of the technology transfer and innovation infrastructure in the regions, especially regarding its relevance to the needs of SMEs.
- In connection with the projects, a perspective has been formed of the central problems in the regions, such as the problems experienced by companies, overlaps of the different components of the innovation system and the deficiencies in their interconnections (e.g. the linkages between industry, science and education or linkages between different research fields).
- The projects have promoted cooperation and networking between the key actors within the regional innovation system. They have also clarified the roles and responsibilities of the different actors.
- The analyses made and networks built have served as a basis for strategy work, which has played a key role in connection with the RIS/RITTS projects. Both general regional strategies and more specific innovation strategies and policies have been developed. The elaboration of innovation strategies has included management, financial, commercial, training and organisational issues as well as technical ones.
- RIS/RITTS projects have also promoted generalisation of strategic thinking at various levels, e.g. at the sector/cluster level. They have supported development of a regional consensus, and consensus-based visions of a longer term have also been created for the region in some projects.
- Practical development of the innovation infrastructure has been one of the most important results of RIS/RITTS projects. Pilot projects and support services have been designed and implemented. Development of organisational structures, e.g. setting up the necessary intermediary organisations between industry and research, such as innovation agencies and advisory groups established for regional administrations, has been one of the practical results that the projects have brought about. The projects have also resulted in the introduction of monitoring and evaluation instruments for innovation policy.
- The development of the cross-border perspective is another important achievement of the RIS/RITTS projects. A view about the position of the region in the international context has been formed, and new contacts and cooperation have been created.

It can be concluded that the RIS/RITTS projects and foresight projects have pursued many the same goals. Why regions with a finalised or planned RIS/RITTS exercise anyhow should launch foresight activities will be discussed below (2.2).

2.2 What are the additional benefits that can be gained from linking a foresight exercise to RIS?

Foresight is a systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process. There are five essential elements in foresight: anticipation, participation, networking, vision and action. (FOREN 2001) The previous chapter concluded that systematic analyses of the regional situation, construction of networks, and efforts to improve the efficiency of practical activities have also been the characteristics of RIS/RITTS projects. The factor that most distinctly differentiates foresight projects from RIS projects is *the time horizon*, which is clearly longer in the case of foresight as compared with RIS. The main specific strengths of foresight are connected, in one way or another, with this longer time horizon. The following points can be brought up as rationales for conducting foresight either consecutive to, or in parallel with RIS:

- Although some RIS projects have included visionary thinking, most projects have examined the current status and problems of the regional innovation system. However, many problems are by nature such that a solution cannot be found for them here and now. Foresight provides the possibility of examining the issues within a time horizon in which the solutions become possible.

- Systematic use of the methodology of futures studies has not been part of the RIS/RITTS projects. In the foresight framework both quantitative and qualitative methods have been developed. A key principle is to provide methods by which progress can be *understood*, and which allow consideration of several *alternative* development possibilities.

- A long time horizon often makes examination of issues more neutral and in this way facilitates the cooperation between regional actors with different kinds of interests, as well as building up of a consensus. A foresight project also enables the continuation, expansion and establishment of the dialogue and collaboration among the main stakeholders in the innovation system (public research institutions, private companies, intermediary institutions and regional administrative bodies) that have been started in connection with RIS/RITTS projects.

- RIS/RITTS projects have examined regional development from an innovation system perspective. The scope has varied by region while the innovation system can be seen as a narrower or a broader one. If the examination has focused mainly on research and technology, it can be supplemented with a foresight project where the scope includes a broader regional development perspective. A foresight study can assist decision-makers in the identification of the competitive advantages of a region, highlighting the regional dimension of EU integration.

- The operational aspect occupies a central position in foresight. RIS/RITTS projects, too, have often included concrete development measures regarding the innovation infrastructure. Innovation policy is, however, linked to other policies in the regions (industrial policy, labour policy etc.) and the development measures related to these can be promoted by foresight projects. There are also regions where a RIS/RITTS project has been practically oriented only to a minor extent and mainly focused on analysing the regional situation and identifying problems. In these regions the progression from the 'what' orientation to the 'how' orientation may occur through a foresight project.

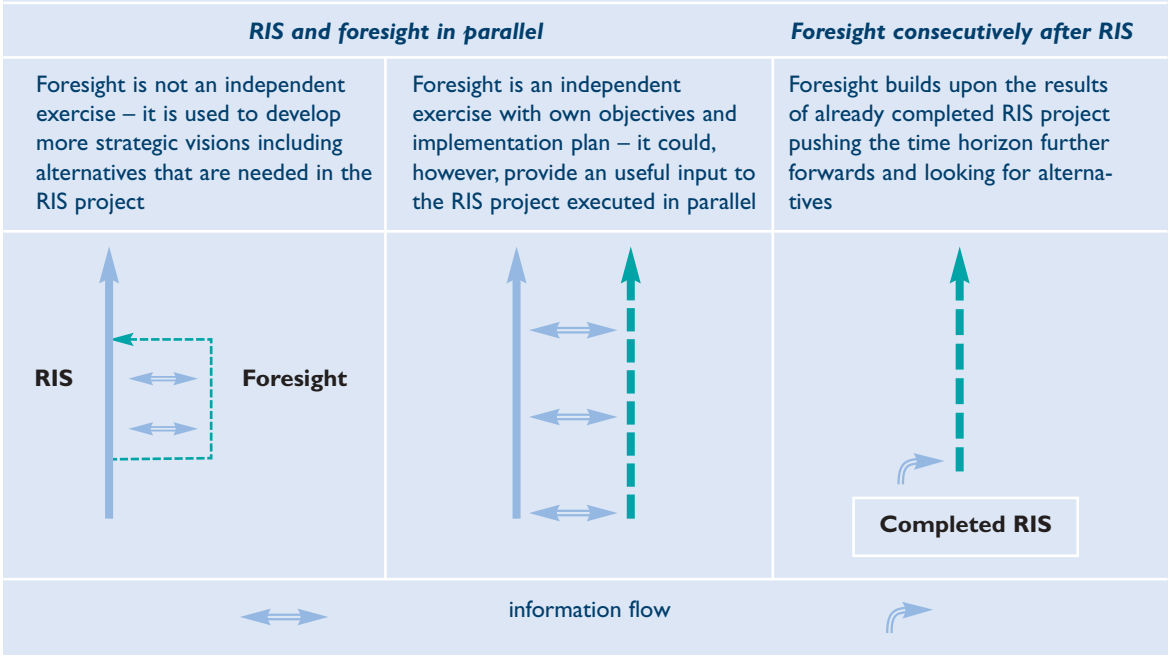
2.3 Different possibilities to combine RIS and foresight

There are two main possibilities to combine RIS and foresight. Foresight may be conducted:

1) consecutively after a completed RIS/RITTS project, pushing the time horizon for regional innovation strategy further forward;
2) in parallel with a RIS/RITTS project profiting from direct synergy effects and mobilising business to participate in foresight through the RIS/RITTS.

In the latter case, there are still two alternatives: foresight activities can be an integral part of the RIS project, or foresight and RIS can be conducted separately but in close interaction.
Figure 1 illustrates the basic idea.

Figure 1: A foresight exercise in the context of a RIS project



The benefits and ways of linking foresight with RIS will be considered in more detail in the following chapters, which examine the carrying out of a foresight project in practice in a RIS context. Chapter 6 analyses the interconnections of foresight and innovation systems from a more theoretical standpoint. In conclusion to the chapter in hand, an example is given of how the regions themselves have analysed the synergy to be gained from combining foresight and RIS – the example comes from Bulgaria.

Box 1: Complementarity of RIS and foresight as seen by the South-West region of Bulgaria (for more information, see Example 1 in the Annex)

The South-West region of Bulgaria, which includes the capital city of Sofia, is the motor of the national economy. Foresight in this region will be linked with RIS both to create a long-term innovation strategy and to strengthen regional identity. Applying foresight using the RIS interim results as input ensure that more companies are involved – RIS exercises usually enjoy a stronger involvement of industry than foresight. In addition, foresight gives the RIS outputs a longer time horizon, building a vision for the overall economic development of the region. The synergetic RIS/foresight approach will produce innovative mechanisms to address the problems and opportunities identified.

3. Planning of a foresight exercise combined with RIS

3.1 How to identify the region-specific needs for foresight?

In the former chapter the benefits of combining foresight with RIS are described at a general level. When entering into the practical planning of a regional foresight exercise, the special characteristics of regions have to be taken into account, as well as the specific goals that are pursued through foresight. Thus, in addition to general rationales, the region-specific and situation-specific rationales have to be made clear from the outset of each foresight exercise. Both the commitment of the stakeholders and successful selection of the scope and methods of the exercise depend on careful considerations made at this stage. Foresight should always start from real regional needs, identified and recognised by the regional stakeholders themselves.

The regions that participated in the FOR-RIS group had identified different region-specific rationales for initiating foresight activities. Prosperous regions having versatile industrial structure and abundantly business activities wanted to strengthen their position through a longer-term innovation strategy. Correspondingly, regions that during a RIS exercise had perceived their competitiveness weaker than in comparable regions sought to strengthen their position by mapping promising opportunities for innovations in the future. In some regions the motivation behind foresight activities was focused on the development of some specific sectors that had been perceived to be of key importance.

In the identification of region-specific needs for foresight, it is often reasonable to begin with those existing documents in which the regional characteristics and regional goals have been described and analysed. Before the more detailed planning of a regional foresight exercise, the central issues and challenges in the region must be clarified in order to specify the scope of the exercise. This requires an overall picture of the economic and societal situation in the region: population, industrial structure etc. In addition to the analysis of the current situation, some analysis of the past development in different sectors has to be included too. Positioning the region in a broader context taking into account the manifestations and reflections of the global trends and drivers in the region is also important.

Regions that have not conducted foresight activities have, however, usually made this kind of overall description in some other context. These earlier analysis form the basis for regional description needed for foresight. Updating and complementing the already existing work is more reasonable than beginning the work all over again. Regions that plan a foresight exercise consecutively after RIS/RITTS have usually made quite a profound analysis of their operational environment for the development of innovation system. Also regions, in which both RIS and foresight are still at a planning stage, have often made analyses of their central issues and challenges in the framework of strategic planning. As a result of RIS and strategic plans, the regional issues are often crystallised in the form of a SWOT analysis. These analyses are one useful starting point in the identification of the aims and scope of a foresight exercise. Lower Silesia's regional description and SWOT analysis presented in the Annex (Example 2) serve as a useful example.

Many regions not familiar with foresight have often made systematic work for specification of the goals of territorial development. These goals provide an important starting point for the discussion on the objectives of foresight. In the framework of strategic planning, visionary work might also have been done. An example of this kind of work is the strategic plan of Region Capital City Prague.

Box 2: Strategic plan and innovation strategy as starting points for foresight in Prague City Region (for more information, see Example 3 in the Annex)

The development of Prague is based on a strategic plan developed in 2000. One of its priorities is to identify ways of ensuring the long term future competitiveness of the city in the 'new Europe' particularly by promoting innovation and SMEs, encouraging better use of science and research capacities and strengthening the knowledge-based character of the economy. The interconnection of the future-oriented strategic plan, innovation strategy (BRIS project) and Prague SPDs (Single Programming Documents for EU Structural Funds) has created a 'technological line' which will produce positive results in the future.

In RIS/RITTS projects, regional goals have been considered from the innovation perspective and regional innovation strategies have often been the end results of the RIS exercises. These strategies form a good starting point for a more long-term approach including the examination of several alternatives and systematic network building for joint actions. The idea of the progression towards a more knowledge-based region was in these cases included right from the beginning. On the other hand, it needs to be emphasised that the transition from traditional strategic planning (including the traditional way of developing innovation strategies) to foresight is an essential change in the approach to regional development.

3.2 How to define the scope of a foresight exercise?

The above-mentioned documents – regional descriptions, SWOT-analyses and strategy documents (general strategies and innovation strategies) – provide a good basis for a more detailed discussion in regions about the scope of a foresight exercise. There are basically three main approaches in deciding the scope of the exercise:

- regional development in general
- development of some specific industries
- issues defined on non-industrial basis

Where the region lacks a general vision about its future development, it is often preferable to undertake a foresight with a general orientation. The selection of topics for industry- or issue-specific exercises can usually be made more successfully on the basis of an overall view of regional development. It is also possible that visionary work with a broad scope has been done, but some essential element of foresight is lacking – e.g. visions may have been constructed as a desk-work without networking and broad commitment of regional stakeholders. 'A new round' of visionary work may then be necessary; if necessary with an extended time-horizon. For regional development in general, the time-horizon may well be 20-30 years. I more specifically focused exercises – especially involving SMEs – such a long perspective is often difficult to achieve. Nonetheless, the exercise should aim at ten years time horizon at a minimum.

The RIS/RITTS work often identifies some specific issues that are crucial for the future of the region and may need special developmental efforts. These issues may concern the development of some individual industries with promising prospects, or which are underdeveloped in the region but essential from the viewpoint of global trends. The issues may also be cross-sectoral, broader issues. In the regions participated in the work of the FOR-RIS group, the developmental needs of SMEs were one very common theme that had come up in the RIS projects and around which the regions planned foresight activities. The Lower Austria region serves as an example.

Box 3: Identifying the scope of a foresight exercise within RIS – future markets for SME's in Lower Austria (for more information, see Example 4 in the Annex)

The RIS project in Lower Austria revealed that SMEs in Lower Austria are not putting sufficient emphasis on future market trends and their business of tomorrow. Therefore Lower Austria is planning to carry out a regional foresight project on shaping the vision for the future markets for SMEs and on developing firms' own capabilities for strategic business planning in order to strengthen their mid-term and long-term competitiveness.

A central result of a foresight exercise should be an improved understanding about what are the major challenges (problems, opportunities) in the region, and a thorough evaluation of what are the means to respond such challenges. Typically, foresight should produce outputs addressing the major regional challenges related to innovation. The following list gives some examples of questions which a foresight exercise may seek to answer:

- what are the possible futures of the region regarding its strengths and weaknesses?
- what sectors, technologies and industries should be promoted to enhance regional competitiveness?
- what are the likely prospects for regionally important markets in general?
- what are the likely changes affecting the market important to a specific regionally significant industry?
- what are the likely development trends in central social issues?

In a theoretical sense, the outcomes of foresight exercises form the basis for the formulation of regional strategies, which in turn provide the basis for immediate actions. In practice, however, the development of foresight activities is usually started in a situation where regional bodies already have some kind of strategy guiding their everyday operations, as has been seen above. Thus, it is more a question of developing more efficient strategies than about making something totally new. The same holds true also in the case of more specific development methods: There are, for example, abundant SWOT-analyses made in the RIS projects. These analyses have, however, often suffered from insufficient inputs of time and hence are more or less superficial. This is one argument for conducting foresight. Foresight methodologies can be used to gain in-depth understanding for specific topics (sectors, technologies, environment, social aspects etc.) and their future.

3.3 Who should be the initiator and which stakeholder groups should be included?

When the potential actors for a foresight exercise are being considered, there is reason to consider separately those actors who could be the champions and initiators for the exercise, and those actors who form the broader network of stakeholders. It is also important to differentiate two types of foresight exercises: top-down projects and bottom-up projects. If foresight is conducted in the RIS context, the approach usually is more or less up-to-down, because most RIS projects have been of this nature. This means that it is reasonable to seek initiators for a foresight exercise among leading regional organisations. However, one has to take into account that there are several leading organisations in most regions, and the organisation which is interested to take initiative in a foresight exercise may not necessarily be the same which has been the leader of the RIS project. This may be the case, for example, when the foresight exercise concerns general regional development or issues not directly linked with innovation topics. In addition, it must be taken into account that not all RIS/RITTS projects are widely known in their regions. The RIS/foresight combination may promote information dissemination and important new contacts.

Regarding the broader group of actors, it is important that representatives of both public organisations and enterprises are included. It is also important to get support, not only from the regional level, but also from the nation-wide level. If the region has already conducted a RIS/RITTS project, it probably has abundant contacts, which are useful to a foresight exercise. Forming the contacts can be started from people who were active participants in the RIS project. Systematic approaches for finding the champions, supporters and initiators for foresight activities can also be used. As an example of this kind of an approach, the principles used in the stakeholders mapping in Latvia can be presented.

Box 4: Principles of stakeholders mapping in Latvia
(for more information, see Example 5 in the Annex)

When mapping stakeholders for a foresight exercise, a systematic approach is highly beneficial. The mapping of stakeholders can also be used for awareness raising and for the development of foresight mindset. Stakeholders should be selected for the value that they will bring to the foresight process. For example, they might be selected to help manage change in their institutions, to help bring about a paradigm shift in thinking to respond to future challenges, or to influence politicians. The stakeholders as a group should also have financial, budgetary and knowledge management competences and should be independent experts in their fields.

3.4 Where to find resources?

Possible sources for financial support include the region's own resources, national sources, and EU-funding. If a foresight exercise is conducted consecutive to RIS/RITTS, the experience gained is very helpful, as the same types of funding models are used in these projects. The contacts already formed can be used, too, in the planning of the funding. Ljubljana region provides an example of how future-oriented development activities can be developed on the basis of a RITTS project and be funded by EU funds.

If a foresight exercise is conducted in parallel with a RIS project, some concrete synergistic benefits may be achieved regarding, for instance, the costs of project management. However, it is important that the resources needed are not underestimated. At the regional level, the time required for a foresight exercise usually is at least one year – often two years – and from one to two full-time employees are needed. In addition, resources for questionnaires, interviews, workshops etc. have to be taken into account.

Box 5: RITTS-based future-oriented activities and their funding in the Ljubljana region
(for more information, see Example 6 in the Annex).

Over 70 small project ideas were drawn together under the SLORITTS project (the Slovenian RITTS project) to create a critical mass of future-oriented innovation development activities. The projects were divided into three thematic umbrellas (Technology, Tourism and Health Care) and are managed by the Ljubljana Innovation Development Council which was established as a result of the RITTS project. The portfolio of projects will be funded from the Cohesion and Structural Funds.

3.5 Which factors influence the selection of the main approach and methods?

Methodology is one issue in which RIS and foresight differ quite clearly from each other. Foresight applies systematic methods of futures studies; in RIS, rigorous future-oriented scientific methods are less common.

The large number of different approaches and methods applied in foresight can be categorised in into quantitative vs. qualitative and exploratory vs. normative methods:

- *Quantitative* methods involve numerical presentation of future developments. They often include forecasts and use modelling techniques.
- *Qualitative* approaches vary from methods focusing on the encouragement of creative thinking to the use of systematic qualitative techniques. Combinations of quantitative and qualitative approaches are also common.
- *Exploratory* methods start from the present and examine what kinds of alternative future developments can lead to. These methods often ask questions about the implications of possible developments or events that lie outside the familiar trends (the 'what if' questions).
- *Normative* methods involve the creation of a preliminary view of a possible (often desirable) future, or set of futures that are of particular interest. After that it an analysis is made of how these futures might or might not grow out of the present – how they might be achieved, or avoided (the 'how' questions).

Where a region already has conducted a RIS/RITTS project, it may have quite a clear view about the desirable future, this view being developed in the context of an innovation strategy. In these circumstances a normative approach will help the identification of the means and milestones. When RIS and foresight projects are conducted parallel or when the picture about the desirable future is vague, an explorative approach may be more suitable.

In the information gathering process, both foresight and RIS lean heavily on *expert opinions*. *Interviewing* and *workshops* are commonly used in both. Using expert opinions is not, however, a simple method, and careful considerations are needed, especially when the futures views are being explored. Important questions are: who is an expert and how the relevant experts for each exercise can be found; how the expert opinions are elicited; how the opinions are combined, weighted and integrated into a whole, and how the conclusions are drawn on the basis of opinions. In the foresight context, it is especially important that expertise is understood in a wider sense than scientific expertise.

In foresight methods, interaction and participation play a key role. Besides the workshops mentioned above, the *Delphi method* based on 'anonymous interaction' is typical of foresight. The Delphi method has is a questionnaire-based technique, including several survey rounds, between which respondents obtain feedback from the results of the previous round. In this way the respondents can compare their own opinion to the commonly prevailing views, and decide whether they want to change their opinion on the basis of the information received. The Delphi statements on which the respondents take a stand usually describe the probability and time frame of the phenomena studied as well as their importance; a specific scale for the judgments has been drawn up in advance. Arguments for or against the opinions can also be asked.

Where a foresight exercise concerns regional development in general or some other broad issues, the results of the exercise are often presented in the form of *scenarios*. However, if the scope is narrower and more accurate results are needed, presenting the results in the form of trends and weak signals is often a good alternative. These two concepts can be defined as follows:

- A trend is the general direction found in the long-term development of the phenomenon studied. In the foresight context the question is specifically about *prospective trends*.
- *A weak signal* is the first indication of change. When occurring, a weak signal may not necessarily seem important or be extensive, but it may have a decisive impact on the formation of the future.

Through the analysis of trends, the main lines of future development of the phenomenon studied can be mapped out. By means of weak signals, issues and development phases with unexpected outturns can be identified.

Methodological similarities and dissimilarities between RIS and foresight are discussed at a more practical level in the Annex, based on the experience of Hungarian regions. A summary of this discussion is given in the following box.

Box 6: RIS and foresight methods used in Hungarian regions (for more information, see Example 7 in the Annex)

Five Hungarian regions have conducted RIS projects. Influenced by a successful national foresight exercise, foresight at the regional level has also been started. One region is already making good progress in this respect. It is carrying out situation analyses and sectoral surveys, and building scenarios based on them. These activities will be followed by workshops. The RIS projects have used methods, which are partly similar to regional foresight. A longer time span, qualitative focus, importance of scenarios and the wide range of actors participating in the work are the distinguishing characteristics of foresight.

4. Operational issues and procedures

The main objective of a RIS exercise is to develop a strategy that provides a framework for optimising innovation policies and infrastructure at regional level, particularly with regard to the needs of SMEs. The innovation strategy should promote co-operation between the private sector, SMEs in particular, the regional research base and public administration with an ultimate goal to enhance regional innovation capacity and competitiveness in knowledge-based economies.

Foresight is capable of providing an important additional strategic dimension to an ongoing RIS project: Alternatively it can build on the results of a completed RIS exercise expanding its time horizon further. Foresight brings also a view of 'alternative futures', which can be considered in a context of regional development. Such an approach may help to identify 'the optimum (realistic) regional future'. Policy decisions following a completed RIS project should enable development in such an optimum way. Mobilisation of stakeholders is also usually broader in foresight, as the goal is to produce a genuinely common vision and build today's strategies and actions on it.

The following sub-sections deal with basic operational decisions that have to be taken when conducting a foresight project – including types of awareness and networking, organisation and management, remarks on conducting foresight, selection of consultation scheme and method of identifying experts for panels, workshops and surveys. Pre-foresight stages were described in the previous chapter 3; implementation and dissemination of foresight results are discussed in the subsequent chapter 5.

4.1 How to achieve the goals of awareness raising and network building?

Awareness raising and networking are key elements of any foresight exercise. They should not be limited only to initial information about the project but should include intensive continuous dialogue among different stakeholders and project participants. A detailed knowledge of the project planning and interim results, as well as sharing a 'foresight language' are important prerequisites of consensus building and imperative condition sfor successful implementation of foresight results.

There are several means to raise awareness about the foresight project and keep it high during the whole exercise. Information seminars, flyers and brochures, special web pages and articles in a regional press are the most frequently used.

The RIS projects have often clarified the roles and tasks between the actors of the regional innovation system and thus reduced the competition between the different organisations. As a result of RIS there may already be a strong networking between the actors allowing a better customer orientation and more efficient use of public money for innovation support. Regional foresight can build on these existing networks.

Awareness and networking actions are usually targeting very wide groups of regional policy makers, representatives of industry, research and business, financial circles, significant regional business confederations, associations of SMEs, influential NGOs and other interest groups. The basic rule is simple – keep everybody informed who is, or could be, in any way influenced by the foresight outcomes. Particular attention should be paid to groups and individuals capable of influencing the implementation of the results. An example of network building is provided by the Lombardy region.

Box 7: 'Innovation exchange groups' in the Lombardy region
(for more information, see Example 8 in the Annex)

The RITTS East Lombardy project created new networks involving SME clusters, research institutions, innovation service providers and the regional government. As part of this activity, 'Innovation Exchange Groups' have developed foresight strategies to assess trends in international competition and propose ways of dealing with the risks identified. Participation of the SMEs, which normally focus on the short term, in the creation of these forward-looking strategies is especially worth noting. The work has led to pilot projects aimed at introducing innovations necessary to help ensure future competitiveness.

4.2 How to build an effective organisation and structure for the exercise?

The structure of a regional foresight activity is determined by the type of exercise, and by its objectives and desired outputs. Common organisational elements include:

A Client, that is, a regional body 'buying' foresight results. It could be any regional authority responsible for policy decisions. It usually covers at least a part of the project expenses.

A Steering Committee that, in addition to the Client, should consist of top representatives of key regional stakeholders. The Committee should be chaired by an influential and widely respected person. The main task of the Committee is to evaluate the project progress, comment on its results, provide input on project modification and facilitate a broad consensus, thus enabling the implementation of the project results.

A Project Executive Team is responsible for conducting the project on a daily basis, performing the executive management of the project, maintaining regular contacts with Experts, keeping records of project costs and reporting. The Team is headed by the Project Manager who reports directly to the Steering Committee.

Experts are usually working in panels or working groups, sometimes they prepare individual expert surveys and studies. The number of experts depends on the type of consultation scheme deployed (see section 4.3). A basic task of the experts is to bring together the relevant information and knowledge needed for the achievement of the project objectives.

The previously mentioned example from Lower Austria includes some experiences of how the management structures of RIS can be used in the foresight context.

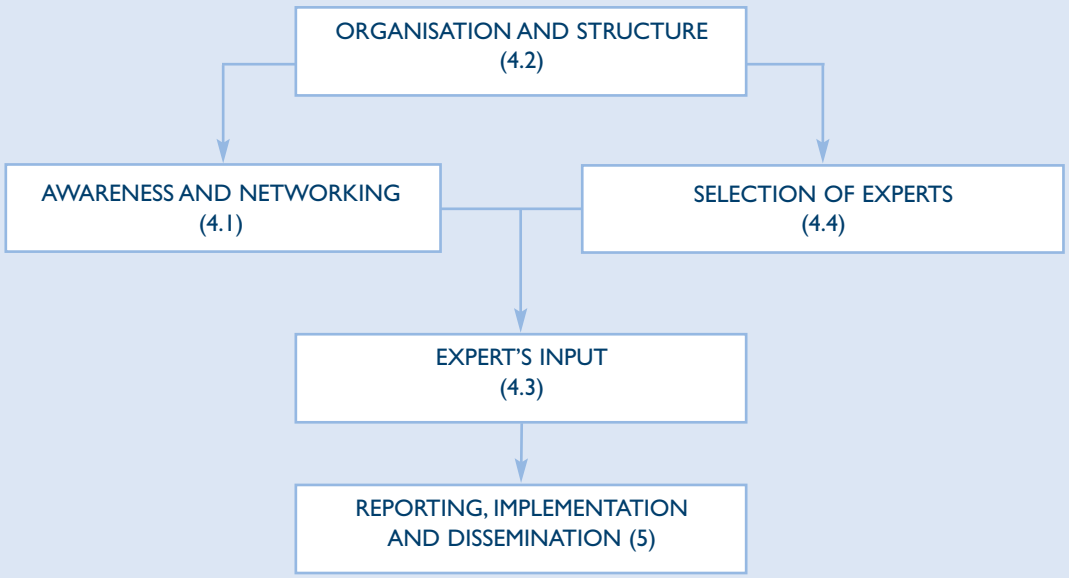
Box 8: Using management structures of RIS for a foresight exercise – Lower Austria
(for more information, see Example 4 in the Annex)

The RIS project of Lower Austria was an extensive project with a great number of actors, stakeholders and advisors/consultants. Thus it required strong management in order to assure appropriate results and its successful finalisation. This management experience will be used in regional foresight, and the responsible organisations/persons in RIS will be also involved in foresight. A permanent communication and steering platform was established during the RIS project. Today this Steering Committee is an acknowledged platform for consensus building on regional innovation and research policy in the region, and appropriate, with some enlargements, to be the steering committee of an industry-oriented foresight exercise, too.

4.3 What are the basic steps in the actual conduction of a foresight exercise?

There is no a single universal recipe setting out 'how to conduct foresight'. Each individual situation determines what sequence of steps will be used for regional foresight, including foresight made in a RIS context. However, there are some basic steps that are usually taken in a foresight project and these are illustrated in the following scheme:

Figure 2: Conducting foresight – basic steps
(numbers of corresponding sections are in brackets)



Expert's input is influenced by the choice of project dimension (which in turn will determine the number of experts involved). Basically, two types of input are used based either on 'broad' or 'narrow' consultation scheme. The former type involves hundreds or even thousands experts (e.g. Delphi studies) the latter type uses relatively small number of experts gathered in an 'expert committee'. Both types have some advantages and drawbacks.

Both consultation schemes are managed by the Project Executive Team, which also ensures awareness, networking and reporting.

	Broad consultation scheme	***Narrow consultation scheme***
Advantages	great number of experts involved transparent procedure	quick relatively inexpensive
Disadvantages	costly and lengthy procedure	small group of experts may have specific interests danger of dominating 'opinion makers'

4.4 How should the experts be selected?

Selection of experts may be based on existing databases or that source may be combined with nominations submitted by key regional research institutions, universities, industrial companies, professional associations and other stakeholders. Regional input could be reasonably combined with nominations from the national level. A detailed description of reasons why the respective experts were recommended should always be required.

Nomination of experts may turn into a 'hot topic' very quickly. Therefore, the final composition of experts participating actively in the foresight project should cover all possible critical aspects like balanced representation of relevant key stakeholders and reasonable ratio between academia, public organisations and industry (including SMEs). The most important selection criterion is the level of expertise of the representatives, but for the sake of consensus, other considerations also have to be made.

5. Implementing the results and continuation of the work

5.1. How to disseminate the results and put them into practice?

Successful implementation of foresight results is the most important indicator of a success. The most sophisticated foresight exercises producing results without practical consequences for improvement of the regional innovation system have a particularly discouraging effect. Perhaps the most important message to regional foresight organisers is therefore: foresight has to be linked to actions.

Basically, foresight is capable of providing additional strategic information in a context of ongoing RIS activity (then foresight supplies information used as an input for RIS) or in a context of completed RIS project (in such a case foresight can expand the time horizon of regional strategic thinking further forward). Some examples of foresight topics in a context of RIS objectives include:

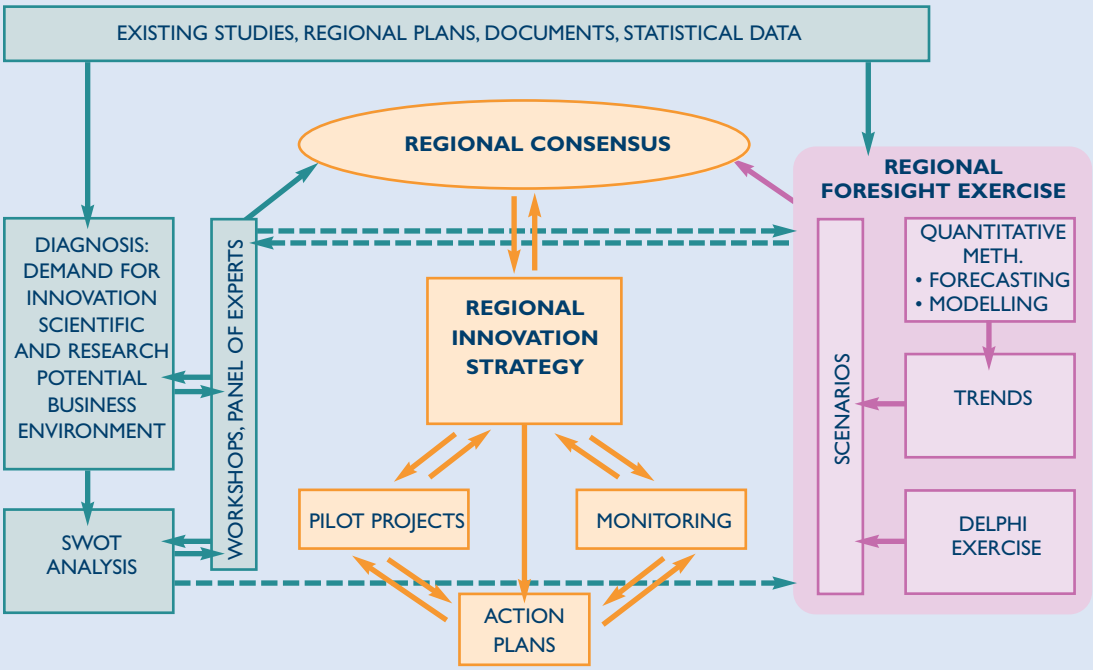
- dynamics of markets important to regional industries
- likely changes of main products and production chains
- expected development of key regional industrial sectors/clusters
- main technology trends
- identification of key technologies affecting the market

A foresight exercise should result in identification of existing problems, consideration of 'possible alternative futures' and in particular formulation of an implementation plan – a sequence of steps (measures) that should follow the exercise to solve the problems and to support the development of regional innovation system in the most desired and feasible way ('a preferred future'). The implementation plan should also formulate dissemination initiatives to ensure a full understanding about the foresight initiative and its results among the stakeholders not participating in the exercise actively. The key points of an implementation plan include:

- What are the practical activities to which the results will be applied, especially as regards the development of the regional innovation system (financial support, business guidance, innovation services, education etc.)?
- What concrete measures should be taken to achieve the desired changes in the regional innovation system?
- Which organisations are or should be involved, and who will take the responsibility for the application of results?
- How are the connections to the relevant users of the results created, taking into account stakeholders other than those who have participated in the exercise?

Implementation also means a shift of the exercise from the experts' level to the engagement of policy makers. In most cases, successful implementation involves new organisations and individuals that may not have been involved in the exercise. Experience shows that it is very useful to keep these actors informed from the beginning of the exercise even before they enter the project formally. The following Figure provides a scheme of the planned implementation of the results of foresight activities – the example comes from the Lodz region (for more information, see Example 9 in the Annex).

Figure 3: The scheme of implementation of foresight activities in the Lodz region:



Before considering how to make foresight a continuous activity, the importance of evaluation in the foresight context needs to be stressed. The success of a foresight exercise should be evaluated both regarding the outputs and the process (networking). There are systematic methods by means of which evaluation can be carried out step by step. Evaluation experience gained in the RIS/RITTS projects is also applicable in the context of regional foresight.

5.2. How to make regional foresight a continuous activity?

The combination of RIS and foresight can make a single exercise more continuous. It is possible to begin the project by regional analyses within RIS, continue it by futures studies and then again use RIS measures to carry out practical development activities. The earlier mentioned example from Bulgaria illustrates this approach.

Box 9: RIS – foresight – RIS as successive activities in the plan of the South-West region of Bulgaria (for more information, see Example 1 in the Annex)

The combined foresight/RIS initiative in the Sofia and South West region of Bulgaria is planned to start with the RIS approach to identify the sectors which drive the regional economy and to study the needs of the regional businesses. Then the exercise would continue with the foresight approach to build a 10-15 years vision for the development of the region. Once the foresight exercise is finalised and recommendations for policy actions are produced, these will be translated into concrete actions and projects under the RIS Action Plan. This more continuous approach will also allow for development of a monitoring and evaluation system.

Continuous activities can, however, play a central role in the development of foresight. This means that some regional organisation(s) considers foresight to be one of its essential, relatively permanent functions, and on this basis is committed to develop its foresight activities in the long-term. Usually foresight conducted in this kind of a situation is more or less embedded in everyday activities. A great benefit of continuous activities is that foresight expertise can be built to gradually become more and more ambitious. This approach also supports the creation of a genuine foresight culture in regions.

Currently there is not much practical experience of the continuous foresight activities at the regional level. As resources in regions are often scarce, the responsibility of this kind of activities usually needs to be divided between several organisations. At least two organisational models may be envisaged:

- different regional organisations establish a common foresight unit
- each regional organisation has its own employees for foresight and an efficient network organisation is established.

One important benefit of continuous foresight activities is the possibility for developing an interregional collaboration culture. The RIS projects have already fostered the emergence of this kind of culture. The collaboration within the IRE network has increased the acceptance of regional innovation policy and enabled European-wide information exchange of good practice cases regarding the development of innovation supporting infrastructures. Collaboration in the foresight context will benefit from these already existing interregional relationships.

6. A broader perspective to the development of regional innovation systems and foresight

Until now the Blueprint in hand has been practically oriented: it has discussed the benefits to be gained from a combination of RIS and foresight, and provided some advice how to conduct a foresight exercise in the RIS context. The RIS/RITTS projects funded by the EU are, however, one of many alternative initiatives to aimed at the development of innovative, knowledge-based regions. Thus, a brief discussion about the relation between combined foresight/RIS initiatives with this broader framework is appropriate. In the following, the concept of the knowledge-based region and its relationship to the development of regional innovation systems is first explained. The contribution of foresight to the development of innovation systems is then considered at the general level. Finally, the linkages between regional foresight and innovation development initiatives are summarised. The specific role of RIS/RITTS projects and the position of the FOR-RIS work are also depicted.

6.1 Towards knowledge-based regional economies

The significance of innovation activities for economic growth has become more and more pronounced during the past few decades. Innovativeness increases competitiveness, and it has been argued that through a growth strategy based on innovation it is possible to spread employment and welfare on a larger scale. There are several global drivers that increase the need and opportunities for innovativeness. The most central of them can be summarised as follows:

- Tightening competition at a global scale necessitates continuous renewal at national, local and enterprise level.
- The development of ICT has created new possibilities for dissemination of knowledge and innovations from global to national and local levels and vice versa.
- Due to the effective new means for the circulation of information, rapid and continuous learning has become a critical issue, closely interlinked with innovation.
- Information markets have grown tremendously and provide opportunities for innovation.

In respect to these changes regions must become more innovation-driven. This at the core of the concept of knowledge-based regions. Through an innovation-oriented approach, not only the rich, but also the average and poor regions strengthen of their own position, and need not base their development only on outside help. On the other hand, it is important that there is an active interaction between regional, national and international levels. A knowledge-based region is a region, which is competent in combining the local and the global perspectives.

In addition to the widespread understanding of the importance of innovativeness, new insights about the nature of innovation have developed, often referred to as 'the broad view of innovation'. Central arguments of this view are that there are many kinds of innovations – both radical and incremental; both manufacturing-based and service-oriented, both technological and social. Innovations do not belong to the scientific context only, but are embedded in the everyday work of companies and organisations. Innovation is a complex process, not an event or an effort of a few extraordinary individuals. This has led to the conscious development of innovation systems: cooperation between different stakeholders who can promote the benefits of innovation activities. The importance of regional innovation systems stems from the nature of interactive learning that plays a crucial role in innovation processes. Know-how sharing often requires physical proximity; learning-by-doing and learning-by-using serve as good examples of this. Although the new information technology increases the possibilities for codifying many parts of the innovation process

and transferring them over long distances, much of what needs to be communicated remains tacit in nature. Regional *innovation systems* are crucial arenas for tacit know-how sharing.

The opportunities for contacts and informal linkages provided by spatial proximity constitute the first point in favour of considering innovation systems at the regional level. Another important aspect is that the nature of the institutional fabric varies not only between nations, but also between regions. In addition, firms' decision-making is often located at the regional level. Furthermore, there are often localised pools of specialised expertise for certain industries. Finally, actors in the same region share, at least to some extent, common perspectives, norms and culture, which help in creating an atmosphere of trust and confidence. All these factors contribute to the emergence of innovative milieus at the regional level.

The building blocks of a regional innovation system to be taken into account depend on how broadly it is defined. In a narrow sense, a regional innovation system only includes those organisations that are directly related to the process of searching for new knowledge, such as firms' R&D departments or public innovation support organisations, especially technological institutes and universities. Broader definitions also include those public institutions and policies that support innovation indirectly, as well as innovation networks between companies. The central stakeholders according to the broader view are:

- universities and other educational institutions of higher degree
- research organisations
- enterprises (both big multinationals and SMEs)
- public organisations supporting the development of enterprises
- knowledge-intensive business services (KIBS)

The significance of the last group, KIBS, has been increasingly emphasised in recent years. Due to their versatile contacts with different firms, KIBS are considered to be important carriers of innovations. They are considered to constitute the 'second knowledge infrastructure' in society, the 'first knowledge infrastructure' comprising education and research institutions.

6.2 Linkages between foresight and innovation

In recent years the significance of futures thinking has been increasingly emphasised in innovation policy. When developing and supporting innovation activities, information on the future prospects of different sectors is needed, especially on promising new opportunities. As the society and economy are nowadays developing in increasingly faster cycles, comprising a number of uncertainty factors, the conventional forecasting and planning methods have proved insufficient in acquiring futures intelligence and in preparing for the future. The approach in which the primary object is not to identify the most probable future state of affairs, but to understand the processes shaping the future has gained more and more ground. The central ideas of this approach called 'foresight' are:

- There are *multiple futures*, not a single development possibility.
- We cannot predict the future, but we can deepen our *understanding* about present future-oriented processes and prepare ourselves for unexpected turns and totally new phenomena; in other words, we can acquire anticipatory intelligence.
- Future is not there to be discovered, but we can *construct the future*; i.e. future is not written, but we create future through the actions we choose to take today.

Foresight differs from forecasting, in that it aims to understand, not to predict. However, forecasts are often useful inputs in foresight: numbers are one concrete way to stimulate discussion. Foresight also differs from futures studies. It includes research and the use of scientific methods, but it is not a mere academic exercise – it is orientated to practical activities and networking is an inherent feature of it. Foresight also clearly differs from traditional strategic planning; especially in the following four respects:

- Foresight involves a more flexible approach than strategic planning by involving the concept of preparing for multiple futures.
- Foresight is a more systematic approach than planning and aims at deeper understanding of futures phenomena by using specific methodologies.

- The perspective in foresight is longer-term.
- In foresight it is essential to 'come back' from future visions to actions that are required today; foresight calls for commitment from the stakeholders in making the future together, which may not be required in conventional planning.

Foresight combines elements from academic futures studies (including forecasting), and from strategic planning, but it combines these approaches in a new way and brings network building as an essential element into the whole process. Networking is essential both for a common vision and for effective actions. All in all, foresight means a new attitude to futures issues; it includes futures tools but it is much more than a tool.

Futures issues are in many ways relevant for innovation activities, and consequently foresight is considered to be an important means in 'wiring up' innovation systems:

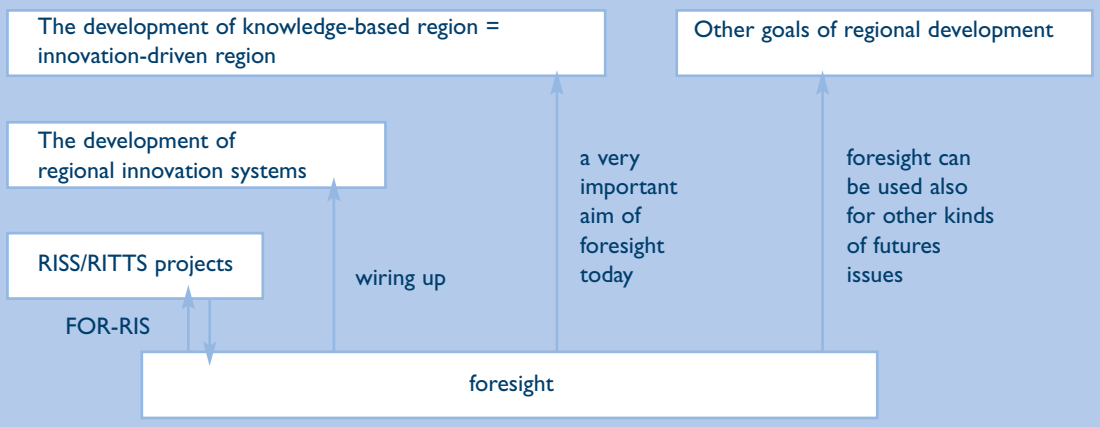
- As innovation activities are targeted to finding new products, processes and other novel solutions, future-orientation is an inherent dimension in them.
- Innovation involves a fundamental element of uncertainty. The outcomes searched for and the procedure leading to a solution cannot be precisely known beforehand. Future intelligence gathering in the form of foresight can facilitate innovation activities.
- Future-oriented information is needed in practical decisions concerning innovation support. Strategic choices related to the development of individual innovation projects presuppose anticipation of the significance and effects of these efforts.
- When creating preconditions for innovation activities and undertaking measures supporting innovations, it is important to gain the commitment of all relevant stakeholders: universities, research institutes, public organisations and enterprises. As network building is an essential part of foresight, foresight is a very useful mechanism for this kind of 'wiring up' of the innovation systems.

6.3 Foresight and regional innovation systems

The linkages between foresight and the development of innovative regions, between foresight and regional innovation systems, and between foresight and RIS are summarised in figure 4.

As illustrated in the figure, one of the main goals of most regional foresights is the development towards knowledge-based regions, i.e. innovation-driven regions. Individual foresight exercises may focus on other issues, such as specific social problems. Those regions striving for increased innovativeness apply innovations systems thinking and consciously aim at developing their regional innovation system. Some of these regions may have used, or will use, RIS/RITTS, and have been the primary focus group of the present Blueprint. Linking foresight and the development of regional innovation systems to each other is an approach whose significance probably will increase in the future. New ways in which these two activities are linked together may emerge. The analysis of the synergy between RIS and foresight can be used as a starting point also for these more general considerations about the relationship between foresight and regional innovation.

Figure 4: Linkages between foresight, the development of innovative regions, the development of innovation systems and the RIS/RITTS projects



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Annex

Linking foresight and RIS – practical examples and experiences

Example 1: RIS and foresight as complementary exercises – Sofia and the South West region of Bulgaria

The South West planning region in Bulgaria encompasses the capital city of Sofia and four other districts. (All in all, there are six planning regions in the country in terms of the implementation of regional policy.) The economic characteristics of Sofia city differ clearly from the remaining of the region: the city holds 75% of the region's GDP. Further, Sofia is the engine of the economy and the focal point of RTDI efforts and performance not only for the region, but for the country as a whole. It covers nearly 29% of the national GDP and enjoys the highest concentration of foreign direct investments in Bulgaria. The city is situated on one of the European crossroads and plays a key role in the domestic and the foreign policy of the country as all the national institutions are situated here. It has a tradition of excellence in education, and its 27 universities and colleges represent the highest concentration of universities and research institutes in the country. The Bulgarian Academy of Sciences and the National Centre of Agrarian Sciences are situated here. There is also the highest number of citizens with university and higher degrees (41% of the Bulgarian population with university degrees are employed in the South West region).

The concentration of resources described above provides the opportunity to achieve efficiency and economic growth based on new technologies, as well as the opportunity to define long-term goals and coordinate the efforts of all stakeholders towards technology and innovation. Regional foresight has been considered to be one important means in using these opportunities in the Sofia region. Foresight is needed for building a long-term consensus-based vision for the economic development of the region founded on technologies, innovation and knowledge.

More concretely, the foresight approach is meant to outline those development options for the region that are based on technology- and innovation-driven sectors with the largest share in the regional GDP. The long-term vision resulting from a foresight exercise can also be the basis for the development of new economic activities with a special emphasis on research and technology development and innovation. Foresight can also be a tool to devise the identity of the region, especially in countries where regions have been administratively set up rather than having emerged as historical entities.

The application of foresight is linked in the Sofia region with a RIS exercise. The RIS exercises usually enjoy a strong involvement of industry, which is not so common in foresight initiatives. This weakness in foresight can be balanced by launching a RIS initiative as an input to a regional foresight exercise. The Applied Research and Communications Fund is exploring the possibility of launching a pilot initiative for the city of Sofia, in which the synergies between RIS and foresight would be exploited under the umbrella of the RIS initiative for the whole South West region of Bulgaria. The initiative would build upon the know-how and experience of the organisations and regions that have already been involved in both RIS and foresight initiatives. The ultimate goal of this pilot initiative for the application of RIS and foresight approaches is to achieve knowledge-based economic development for the city of Sofia.

The initiative would start with the RIS approach to identify the sectors that drive the regional economy and to study the needs of the regional businesses. Then the exercise would continue with the technology foresight approach to build a 10-15 years vision for the development of the region based on innovation and knowledge in the priority sectors of the regional economy. Once the foresight exercise is finalised and recommendations for policy actions in the region are produced, these will be translated into concrete actions and

projects under the RIS Action Plan. This more continuous approach will allow for development of a monitoring and evaluation system, and also for analytical comparison of regional foresight exercises with the aim of developing recommendations to the European Commission on how to link RIS and foresight projects.

The RIS approach in the beginning would produce an analysis of the 'state of play' in the region regarding technologies, innovation and knowledge, and of the effectiveness of the operation of the regional innovation system. The foresight will build upon the RIS interim results, developing a long-term vision for regional development that will provide policy options and build the backbone of the regional innovation strategy. The RIS project, on the other hand, will translate the recommendations stemming from the foresight exercise into the RIS Action Plan and pilot projects. This approach is expected also to prepare the region to work with the financial instruments of the Cohesion Policy after 2007.

Example 2: Use of a SWOT analysis as a starting point in regional foresight – Lower Silesia, Poland

When establishing the rationale for foresight, the decision makers in the Lower Silesia region examined first the existing documents that had been developed by the regional authorities over the past few years. The most relevant documents are the Strategy of the Lower Silesia Region in the framework of the Integrated Operational Programme of Regional Development, and the SWOT analysis of the socio-economic situation. Currently there are also available first results from the analyses of the Lower Silesia RIS exercise, which was set up in 2003. The Ministry of Science and Information Technology financed a national initiative in supporting regional innovativeness, and this has resulted in setting up of regional analyses with regard to innovation potential and strategy building: ten Polish regions have started a RIS exercise.

The goals of the development in the region identified in the Operational Programme are:

- increase in the competitiveness of the regional economy in comparison with other Polish and European regions, increase in innovativeness, and promotion of the spirit of entrepreneurship
- development of SMEs in order to create new work places in the region
- creation of an innovation system and institutional support for the development of the region and the removal of obstacles that prevent the development of businesses
- modernisation and extension of the transport infrastructure and water transport systems
- support for pro-employment activities in order to secure existing jobs, create new jobs and reintegrate people outside the labour market
- creation of highly qualified human resources
- harmonisation and implementation of the laws regarding access to natural resources and their economic exploitation
- development of rural areas in order to prevent migration: modernisation of agriculture, development of other activities besides farming and food production
- maintaining and developing the viability of urban areas
- prevention of natural catastrophes, particularly floods
- creation of conditions for stable development of research activities and development of linkages between R&T institutions and businesses.

The SWOT analysis showed the following strengths, weaknesses, opportunities and threats:

Strengths - high GDP per capita compared to the national average - significant amount of economic activity: high number of companies, dynamic industrial districts - high number of companies with foreign capital (10% of all registered in Poland) - stable employment and good salaries in certain sectors - experienced and qualified labour force - extensive investments budget compared to the national average - relatively high share of innovation - expenditure allocated to R&D (18% in Lower Silesia, 10% in the whole country)	***Weaknesses*** - very high unemployment rate and low productivity - low, often negative profitability of regional enterprises - minimal share of investments used for the purchase of devices and existing technologies - very bad state of the infrastructure; bottle-necks on the North-South and East-West transit routes
Opportunities: - free flow of capital, people, products and services in the European Union - territorial location of Lower Silesia in the Pan-European transport passage joining the newcomers to the EU - transregional cooperation, e.g. Polish-Czech-German cooperation in the textile industry - modernisation and development of the mining industry in the whole region - commercialisation of hospital medical care	***Threats***: - tightening competition in the European market - indebtedness of the region which can be an obstacle to the efficient use of the European Funds

On the basis of the analyses made in the RIS exercise, some preliminary conclusions can be drawn about the situation of regional enterprises and about the innovative potential in Lower Silesia. The situation and needs of enterprises are different in the modern sectors and in the traditional sectors. The modern sectors include automotive production, production of medical, optical and precision instruments, clock and watch production, and chemicals production (including production of pharmaceuticals). Characteristic to these sectors in Lower Silesia are dynamic growth, increase in employment, high share of the nation-wide production, but relatively high innovation costs. To the traditional sectors belong machines and devices industry; textile industry; energy, gas and water supply; and mining industry. Machines and devices industry indicates the highest innovation costs among all industries; in addition, restructuring and cut off personnel characterise this branch. In the textile industry, important phenomenon is the creation of a euro region on the Polish-Czech-German border. Energy production and supply of gas and water are strategic for other branches; in the European context, search for alternative sources of energy is an essential development. Mines are the biggest employers in Lower Silesia. Mining industry uses advanced technologies having a potential for transfer abroad; there is also the possibility for the creation of a SME network cooperating with mines.

Concerning the innovative and scientific potential in Lower Silesia, the analyses made in the RIS exercise show the following:

- There are 27 high schools and universities in Lower Silesia; 8.5 % of the total number of students in Poland is found in this region. Technical-engineering subjects dominate among the branches of study.

- R&D has crucial impact on the increase of innovation. As the major part of R&D personnel works in the institutions of higher education, the quality of these institutions is a matter of great importance.
- Institutions of higher education carry out education on one hand, and research and development on the other hand. They are not always well prepared for this dual responsibility. They also lack market and business oriented professional services.
- R&D activities are focused on the traditional sectors. There is low engagement of R&D institutions towards modern, prospective sectors, with the exception of some projects targeted to energy issues and environmental protection.
- The competitiveness of the regional economy could be increased by using R&D in informatics, optoelectronics and material engineering as a support for the traditional sectors.

Regional foresight in Lower Silesia is understood as a tool by means of which the actions needed for favourable regional development can be identified. Regional foresight helps to evaluate the results of RIS and to adapt to changing economic conditions. Decision makers need a wide overview of the regional potential in the long term in order to satisfy the objectives of employment and welfare. Views of promising sectors and new possibilities in the future are needed. The importance of foresight and its role in the modern economy has been noticed also at the national level in Poland. A pilot project 'Health and Life' has been started; the project concerns the production of chemicals and pharmaceuticals, food safety, and medical technology. Both the national and the regional foresight activities can be supported through the projects from the Structural Funds budget, namely Sector Operational Programme, priority 'Increasing of Competitiveness of Enterprises', and the activity 'Strengthening the Cooperation between R&D and the Economy' The projects are targeted to monitoring and foreseeing technology development, and furthermore to the creation of strategies for economic growth based on the development of science and technology both on the macro and the micro economic level. In the further specification of the regional foresight exercise, the expectations of the regional authorities have to be kept in mind. These expectations include influencing the National Programme of Development and using comprehensively the opportunities provided by the Structural Funds through detailed action plans of projects. The topics on which foresight will focus will be chosen from those issues which the SWOT analysis and the RIS study have shown important.

Example 3: Strategic plan and innovation strategy as starting points for foresight – Region Capital City Prague, the Czech Republic

Prague, the capital of the Czech Republic is one of the few regions in Central Europe whose development is regulated by a Strategic Plan based on the principles of regional foresight and wide participation of the key elements of the Prague community. The Strategic Plan document was approved by the political representation of the city in 2000. It is being gradually implemented and the progress towards reaching the strategic objectives of the city is evaluated and updated in the form of annual monitoring reports.

A significant part of Prague's Strategic Plan is the section on implementation ('From Strategic Vision to Reality'), which lays out seven strategic priorities and a set of programmes and projects for the first implementation period (2000 – 2006):

- integration of Prague into the European structures
- Prague – a centre of innovation and skilled labour
- support for the housing market and the provision of affordable housing
- a reliable transport friendly to the environment
- effective and sustainable management of energy, water supply and other resources
- improvement of the city administration
- transition from a monocentric to a polycentric city.

The second strategic priority emphasises the significance of innovation. Even though Prague is a relatively successful and prosperous city at present, it has to take into account the changes that the accession of the Czech Republic to the European Union has brought with it: besides a number of advantages, the competitive environment has become much more challenging. Thus, one of Prague's long-term objectives is to increase the performance and effectiveness of the local

economy, improve its competitiveness, and take into account all the other factors that influence the long-term economic stability of the city. Prague has an opportunity to utilise its 'human capital' for economic advantage – the educated, qualified, flexible, and still relatively cheap work force – as well as the outstanding value of the city setting. The relations between industry and research institutions located in the city must become a pillar for the development of a 'new economy'.

The city's innovation programme, based on the second priority of the Strategic Plan, includes the development of innovation support services for small and medium-sized businesses, the creation of integrated scientific and technological workplaces and the stimulation of lifelong educational programmes. These measures are expected to lead to a better utilisation of the economic and human potential of the city within the context of global markets, to the restructuring of the Prague industry, and to investments in new technologies and 'know-how'. To date, however, the preconditions for raising Prague's potential for innovation have been established only in part. Therefore Prague supports, among other things, the Bohemian Regional Innovation Strategy – project (the BRIS -project) focused on elaboration of the city's innovation strategy. The city is starting the preparation of areas with full infrastructure for the establishment of new innovative firms, and the provision of an information service for new entrepreneurs. One problem is that Prague lacks the active involvement of hi-tech firms and of scientific and research organisations, and it is important that their requirements are more clearly expressed in the future.

Regional foresight, which has not been adequately developed yet in the area of innovations in Prague, should become an important instrument in the transformation of the Prague economy towards a 'knowledge-based economy'. One of the pilot projects by means of which the BRIS project has been planned to enter its implementation stage is the establishment of a 'Centre for regional foresight'. This Centre could focus on the preparation and elaboration of strategically significant information on the possibilities to use the scientific potential of the city for the improvement of the competitiveness and efficiency of the regional economy. As both of the Prague SPDs (Single Programming Documents, concerning Objective 2 and Objective 3), prepared before the accession of the Czech Republic to the EU, contained measures to take full advantage of the scientific and technical potential of the city and to support small and medium-sized businesses, it will be possible to use EU Structural Funds for the implementation of innovative projects in 2004 to 2006.

The interconnection of the Strategic Plan for the city, the innovation strategy (BRIS project) and the Prague SPDs thus create a 'technological line', which might produce interesting results in the future. An adequate support for them is needed from Prague politicians, state and regional administrations, R&D organisations located in the city, and from other partners.

Example 4: Utilising RIS for the definition of the scope of foresight and for establishing its management structures – an example from Lower Austria

The RIS project in Lower Austria (Nieder österreich – the project abbreviated in the following RIS NÖ) was conducted from 1997 to 1999. During the project, a comprehensive 'needs analysis' in companies was carried out by means of a large-scale questionnaire survey (approximately 4.000 questionnaires were sent out, and more than 600 completed questionnaires were returned). In addition, there were complementary interviews and workshops with about 60 firms. These analyses revealed that the regional SMEs do not put sufficient emphasis on future trends and tomorrow's markets. The lack of entrepreneurial culture is one main reason for this, and the situation is reflected in the fact that regional SMEs mainly stick to traditional industries and make traditional products with very little innovation. There is also lack of skills with respect to business development, and this phenomenon is also rooted in the regional economic structure. The findings described above were confirmed again in 2003 by a questionnaire with 700 responses; this survey was completed in the RIS++ innovative action program.

Due to the fact that most of the firms in Lower Austria are small and located in rural areas, the companies have not sufficient human resources to provide themselves with the necessary skills and

tool sets for strategic thinking. At the same time it is also very difficult to employ staff qualified and experienced in strategic development. Most regional SMEs have also neglected the opportunities provided by the enlargement of the European Community, or they have not had the necessary financial basis to make use of these opportunities. The situation of regional firms was found to be a major barrier for innovation and increasing economic activity in Lower Austria.

The Lower Austrian government reacted immediately to the barriers identified by the above-mentioned studies, and set up during the first RIS project a 'first aid' response in the form of a new funding scheme for regional SMEs called 'opening up new markets'. The monitoring of the project confirms that not only is the awareness of the regional SMEs for their new geographical and technological markets increasing, but also private initiatives to enter new markets are evolving.

In the follow-up projects of RIS, the so called RIS+ NÖ and RIS++ NÖ projects, the Department for Economic Development of the Lower Austrian government has established additional innovation supporting services. The purpose has been to stimulate innovation activities and to increase the strategic capabilities of firms in the region. 'Innovation assistants' – co-financing for hiring highly qualified staff from universities and universities of applied sciences – and technology monitoring can be mentioned as examples.

Even though the toolbox for innovation support has become much more versatile in Lower Austria, a comprehensive approach is still lacking. A more full-scale approach is needed in order to strengthen the mid- and long-term competitiveness of regional firms. It means stimulating and increasing the strategic thinking of firms by shaping their vision for their (potential) future markets. This kind of an approach includes analyses of existing information, trend spotting and scenario construction as well as strategy development both at the level of regional innovation policy and at the level of individual firms. It should not only involve regional firms but must also involve technology providers and the whole regional innovation system.

This will be the point of departure for the project 'Foresight Action on Future Markets for Lower Austrian SMEs' (the FAFuM project), which aims at being a sustainable and mid-to-long-term push for the improvement of all aspects of regional competitiveness and social and economic welfare.

The management experience of the former large and successful regional innovation projects in Lower Austria will facilitate the set up of the organisational structures for the regional foresight project. The management of the FAFuM project will rely on the management experiences gathered during the RIS NÖ project. These experiences will ensure the set-up of a target oriented and determined management team.

The integration of regional stakeholders, firms and actors is crucial for the regional consensus building on foresight findings and derived activities. This integration can be achieved in the FAFuM project by developing further the RIS NÖ Steering Committee. The Committee was established at the beginning of the RIS NÖ project in 1997 as a communication and steering platform for the time of the project. This Steering Committee is today an acknowledged platform for consensus building on regional innovation and research policy in Lower Austria. Its work continues in the framework of the ongoing follow up project of the RIS NÖ, which aims to develop the Lower Austrian regional innovation system. The Steering Committee holds one meeting every three months and thus ensures continuous information exchange on the activities relevant from the viewpoint of innovation and continuous offering of recommendations as regards regional innovation policy. The Committee consist of approximately 20 organisations, including several departments of the Lower Austrian government; the Lower Austrian chamber of commerce and other representative organisations of regional firms; public technology and knowledge providers like research organisations, universities and universities of applied sciences; intermediaries like regional development agencies and incubators; and innovation financing organisations. Due to the broad approach in foresight, it is planned that further organisations will be invited to become members of the FAFuM Steering Committee.

Example 5: Stakeholders mapping as a means for finding the champions, supporters and initiators for foresight activities – Latvia

Latvia has a highly educated population, fairly good communication links with the outside world, and an acceptable economic incentive regime. But Latvia's fundamental weakness is the lack of innovation systems both at the national and at the regional level. Latvia does not yet have an effective system for converting knowledge – domestic or foreign – into wealth. In the creation of innovation systems, futures thinking is essential. In fact, the Latvian science and technology community has committed itself to create a set of new mechanisms for long-term research and innovation. The development of foresight activities and innovation can also make use of the European Commission's initiatives, programmes and projects aimed at the development of the knowledge-based economy (the European Research and Innovation Area, the 5th and 6th Framework Programmes, the RIS/RITTS projects, the European Foresight Area, etc.).

In the development of foresight activities, it is not enough to have participants from science and technology organisations, but it is important to involve all interested public and private organisations and individuals in the process of building new scenarios for economic development. Therefore Latvia has started the preparation of its foresight activities by mapping systematically which organisations could be the relevant stakeholders. At the same time, the mapping of stakeholders is used for awareness raising and the development of foresight mindset. The process can be described as 'learning/debating by doing with the stakeholders'. A combination of the following approaches based on personal contacts and formal techniques are applied:

- face-to-face interviews
- various kinds of conferences and workshops, where European Foresight Guides and other foresight information and material have been disseminated
- informing about European experience and the EUROFORE database
- Entrepreneurial Foresight Network
- analysis of feed-back from readers to Latvian foresight websites and e-publications
- dialogue utilising 'learning CD' with international best practice and Latvian foresight projects' materials, as well as the examination of foresight projects and other material provided by on-line links (EUFORIA, FOREN, the ESTO network)
- development of brainstorming, Delphi, etc. methods in regional research, where thinking and debating about the future take place.

At a more detailed level, the following concrete activities can be mentioned: In 2004 a foresight project 'Latvia towards the Knowledge Societies of Europe: new options for entrepreneurship and employment achieving the goals of the Lisbon strategy' has been started. The leading organisation in the project is the Forward Studies Unit, and the financial support is provided by the Latvian Council of Science. The project contributes to the identification of research capacity, to foresight understanding and to knowledge dissemination for policies and strategies; its particular task is to foresee the development of innovative enterprises (in a broad sense). Creation of an 'Entrepreneurial Foresight Network' has been shown necessary in order to identify both national and international experts and practitioners who can consult in entrepreneurial foresight exercises at the regional and local level – including the mapping of stakeholders for these exercises. In the RIS context, typical cases for the stakeholders mapping are the meetings of the Steering Committee and the brainstorming sessions with local authorities and leading entrepreneurs. Workshops and discussions on the results of the surveys made by different international organisations – as World Bank, IKED, UNDP, etc. – are also efficient tools in finding out the champions, supporters and initiators for foresight activities. For the next year, the Forward Studies Unit has launched a project 'Innovative Learning Society – Foresight in Latvian RTD community', and one of its panels is to address regional issues with 5 – 10 years' time horizon.

In the stakeholders mapping, the ability of different groups and persons to provide valuable and substantial inputs into the planned foresight activities is evaluated, and the stakeholders are selected on this basis. They must be able to promote the foresight process, to manage necessary changes, to contribute to a paradigm shift in thinking about the future, and to increase the validity of the results. Important issues to be taken

into account are political influence, finance and budgetary competence, deployment of infrastructures, knowledge management, and broad consensus on strategic goals. The stakeholders selected should also be independent experts and authorities in their fields; personal characteristics needed are creativeness, open-mindedness and flexibility in decision-making.

Many organisations and individual experts have been involved in activities, where relevant experience from the viewpoint of foresight accumulates. Thus, the champions, supporters and initiators for foresight may be searched for in the context of these kinds of activities. In Latvia, such activities include:

- strategic planning of the implementation of the Lisbon strategy (reorganisation of the research financing system)
- elaboration of the Latvia's economic development plan (SME development and export strategy)
- implementation of the National Innovation Programme (preparation of the yearly Action Plans)
- development of the strategic plan for science and research (elaboration of the Master Plan for research)
- implementation of the recommendations of the RIS LATVIA project (implementation of pilot actions and preparation of the draft of the regional innovation strategy)

The mutual agreement has been achieved that the core group, which acts as the champions for the foresight exercises in Latvia, could be formed from following organisations and experts: The Futures Subcommission at the Saeima (Parliament) of the Republic of Latvia, The Council of the National Innovation Programme, The Economic Council at the Ministry of Economics, The Steering Committee of the RIS LATVIA project, and Latvia's foresight experts community participated in various European foresight activities; leaders of local municipalities would also be involved. These champions can help to translate foresight concepts, processes and results into frames and forms that make sense to governmental structures and decision-makers, and to business people and other practitioners.

The supporters that can provide both intangible and material assets for futures research can be found in Latvia in the following organisations: the Ministry of Economics, the Ministry of Education and Science, The Economic Council at the Ministry of Economics (an initiator as well), the Municipality of Riga and the Riga Region, and The Latvian Academy of Sciences. Different types of activities – conferences and workshops, brainstorming sessions, joint innovative projects, publications etc. – have been already undertaken in cooperation with these organisations.

Organisations that have actively involved in strategic planning, futures studies as well as in the elaboration of development projects could be considered as relevant candidates to be the initiators for foresight, as the activities mentioned include many elements of the foresight methodology. In Latvia the following organisations, among others, have carried out such activities during the recent years:

- The Latvian Investment and Development Agency
- The Latvian Technological Centre
- The Forward Studies Unit, Latvian Union of Scientists
- Riga Region Development Council
- Riga City Development Department
- The Latvian Council of Science
- The University of Latvia
- The Banking Institution of Higher Education
- The European Movement in Latvia

Both the public bodies and the research organisations in Latvia have expressed their willingness to participate in foresight activities. The main impediment to the development of national and regional exercises is the lack of public funding.

Example 6: RITTS-based future-oriented activities and their funding in the Ljubljana region, Slovenia

The main result of the Slovenian RITTS project (SLORITTS) was a large number of practical project proposals. During the project, the project management team identified and collected together more than 70 proposals on the basis of regional visits, interviews and presentations made at various conferences and seminars. After reviewing them, the proposals were organised under three thematic umbrellas: technology, tourism and health care.

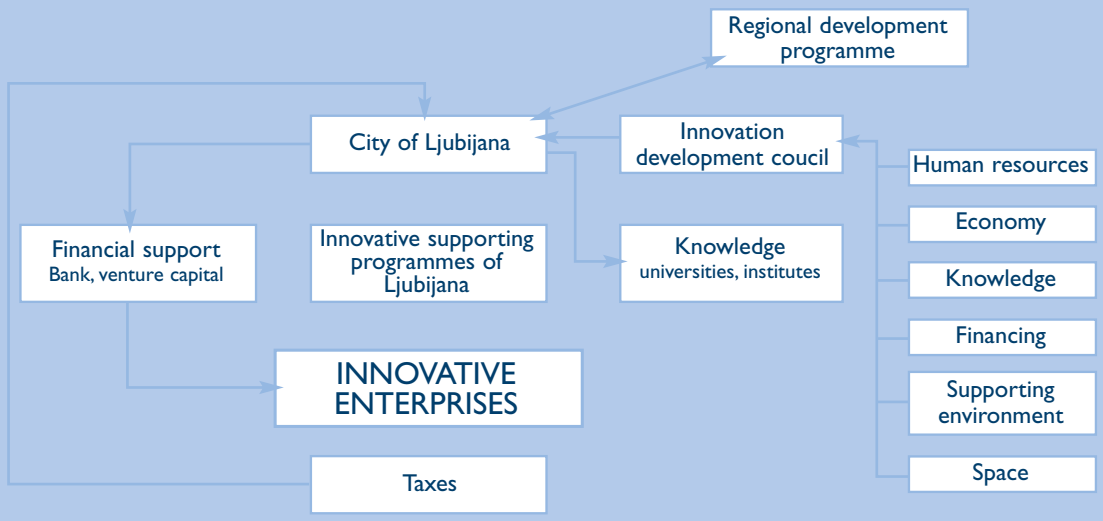
The reasons behind the selection of these specific umbrellas and the benefits expected of their use are the following:

1. The three umbrellas represent a significant level of concentration of human and material resources in Slovenia. Thus they can create a critical mass with a view of achieving common goals identified on the basis of the SWOT analysis.
2. The umbrellas integrate and connect regional initiatives at the level of national and interregional objectives.
3. The umbrellas may function as an 'engine' which propels and draws together all key players in Slovenia. They can also attract other similar initiatives in Slovenia and ensure support for them, especially for activities which do not reach the critical mass on their own.
4. Through focusing on these three themes, the innovation capacity of the economy can be increased in the key areas and improvements in the transfer of know-how, technology and good practises can be achieved both among the players within the country as well as between Slovenia and other countries in the EU.
5. Under these umbrellas, establishing a range of services is planned for the provision of innovation support for small and medium-sized enterprises, larger companies and regional communities. The aim is that these services are accessible to the same extent in all the regions of Slovenia.

All the three umbrellas represent a good opportunity to be candidates for EU funding.
The practical development activities conducted so far are the following:

1. In order to implement the three umbrellas, the Innovation Development Council was founded; this Council was one concrete result of the SLORITTS project. Ljubljana is used as a pilot region, because it is the most developed region in Slovenia and has also a great developmental potential. There should not, however, be any problems in transferring the model and experiences to other regions inside the country at a later stage. In the Council all the key areas of society are represented: economy (industry and SMEs), knowledge, finance, human resources, innovation support providers, space, environment and cultural heritage. Thus, the members of the Council are representatives of companies, universities, institutes, administration, and of other organisations that are responsible for the enhancement of the innovation capacity of Ljubljana. The task of the Council is to use its experience and knowledge in the utilisation of the budget and the funds from the Cohesion and Structural Funds as efficiently as possible. A core team was formed on the basis of the SLORITTS project management team. This core team will be the main operational body of the Council and will be responsible for the preparation of all the documents necessary for EU tenders. The following figure summarises the idea of the Innovation Development Council:

Innovation development council position in city of Ljubijana



2. The responsible organisation for each umbrella has been identified; the main role of these organisations is to co-ordinate the implementation of the action plan, i.e. the activities conducted for the development of the respective umbrellas. The technology park of Ljubljana is responsible for the Technology Umbrella, the Consortium SPOT- Slovenian Power of Tourism is responsible for the Tourism Umbrella, and the University Clinic Golnik is responsible for the Health Care Umbrella. There are also three persons appointed as co-ordinators. At the moment they are coordinating all the activities necessary for getting financial resources from the Structural Funds. Letters of intent for participating in the umbrellas have already been received from the four main cities that have universities or high schools: Ljubljana, Maribor, Novo mesto, and Koper. The Ministry for Regional Development and Structural Policy and the Ministry for Economy have also signed a letter of intent. These actions assure that important national measures will be focused on the implementation of the three umbrellas in the future.

3. Financing schemes for the implementation of practical projects are mapped. Existing funding sources are – besides Structural Funds – the financial support for clustering on the local and national level and other national schemes for increasing the competitiveness.
Support systems planned are, among others, scholarships for students who want to establish a company, scholarships for researchers who want to transfer knowledge from academic spheres to companies, and pre-seed and seed capital.

4. Technology Agency has been set up. Through the establishment of this agency an increase in the public funds fostering the technological development is pursued. There is also an aim to increase the market-driven orientation in technological research – instead of mere academic curiosity, i.e. the enterprises and business sector should be more involved.

Parallel with the above-mentioned practical development work, foresight activities have been started. On the basis of the results of the SLORITTS project, Slovenian government launched in 2003 the first foresight study in the country. The study encompassing eight broad areas (ICT, biotechnology, advanced materials, sustainable building and construction, environmentally friendly manufacturing, medicine for elderly people, transport and lifelong learning) tries to foster constant dialogue and collaboration among the main stakeholders in the innovation system (public research institutions, private companies, intermediary institutions and govern-

ment). The foresight study will assist decision makers to identify competitive advantages, anticipate the research priorities and highlight the regional dimension of the EU integration. Because of the strong concentration of R&D and innovation capacities in the Central Ljubljana region, the main findings of the study (priority fields) will relate to this region.

Example 7: Methodological similarities and dissimilarities between RIS and regional foresight – experiences from Hungarian regions

Foresight projects in Hungary

Hungary was the first country in the Central and Eastern Europe which carried out a National Technology Foresight Programme. Compared to other available methods of strategy development, its outstanding characteristics were the use of evaluation, extensive data on which the analyses were based, systematic explanation of preconditions for development and the organisation of comprehensive consultancy studies and professional debates. Not only the public administration and experts participated in the work, but also a wider range of professionals. Besides professional analyses, the programme had the important task of stimulating communication and co-operation between researchers, managers of firms and governmental experts. Two basic methods were used: analyses made by workgroups (situation analyses, future prospects and recommendations) and a Delphi survey.

The national technology foresight has inspired activities also at the regional level. As an independent local initiative, the West Transdanubian Region in co-operation with the Centre for Regional Studies of the Hungarian Academy is formulating the first regional foresight exercise in Hungary. This exercise is based on normative analyses and primarily on qualitative and deep information. It will determine a number of selected programmes on the basis of the future prospects of different sectors (the sectors about which there is a consensus). At the moment, the project is carrying out situation analyses, sectoral surveys, and future development scenarios based on them; these will be followed by workshops. Once the more specific aims and the expected results of the project have been formulated, the main approach for the further work will be selected. This depends heavily on the target audience and the focus points, and will determine the methodology including the general project planning and project management methods.

Compared to the earlier technology foresight, regional foresight stresses primarily territorial characteristics and has a wider focus than technology-policy. An essential aim of regional foresight is to provide information for planning, but also for decision making and for the working out of policies at the regional level. It includes preparing of different scenarios regarding the future and some elements of forecasting – correspondingly, forecasting realised at the regional level has included foresight elements. Besides the national technology foresight methodology, the short, medium and long term regional development planning approaches are closely connected with regional foresight; regional foresight uses the methodology of policy analysis and strategic planning. Foresight brings together the key agents of change and various sources and approaches to knowledge processing in order to develop strategic visions and anticipatory intelligence.

RIS exercises in Hungary

In five Hungarian regions (South Transdanubia, South Great Plain, Central Hungary, Central Transdanubia, and West Transdanubia), regional innovation strategies (RIS) have been developed using methods that are partly similar to regional foresight. The RIS processes, which aim at the development of regional innovation systems, are bottom-up, build on practical activities, involve a wide range of stakeholders, and use information about the future development of the regions in a structured way. In Hungary, the methodology usually used by the RIS exercises has been a combination of established qualitative and quantitative techniques, based on external professional evaluation. They have used formalised approaches, and sometimes learning processes based on interactive participative information sharing techniques (workshops and panels). As the time span adopted in RIS processes has been quite short, they have not concentrated very much on drawing scenarios.

In a more detailed level, the characteristics of the methods can be described as follows:

- *Exploratory starting point:* Most RIS projects have chosen the 'outward bound' exploratory approach instead of the normative one. They considered that a precondition for a successful futures analysis is to base the extrapolation of the future on past trends or causal dynamics which determine possible developments. However, the projects did not want to force their analyses into a pre-established model, but emphasised the creation of the model according to the demands, necessities and obstacles found during the RIS survey.
- *Combination of quantitative and qualitative methods*: All the RIS projects which used quantitative methods focused on analyses which provide opportunity for detailed explication of rates and scales (statistical data, econometric models and cross impact analysis). However, the quantitative methods are less applicable for exploration of the socio-economic background of innovation and the related key players. Therefore interviews, mindmapping and brainstorming events were also used. The primary target of the RIS analysis is not exact data collection and representativeness, but the survey has a qualitative focus. The real aim of the work is to identify and understand the key factors influencing the strategy from an overall, high level perspective. At the same time, it is important to note that qualitative information can be successfully used only with efficient checking and updating, which means the use of additional information sources including earlier studies, analyses and documents to be found in different organisations. The supply-demand gap analysis and the mismatch analysis have been commonly used approaches in Hungary; comparing and contrasting the findings of these two types of study have proved to be especially useful. In the selection of the applied methods, it is necessary to take into consideration not only the expected results but the types of actors involved (e.g. distinguishing between entrepreneurs and academics).
- *Issues of expert knowledge*: In the RIS exercises, the techniques based on expert knowledge have been commonly used. These techniques were introduced in Hungary already by the Technology Foresight Programme, and its experts together with a wider range of professionals have been consulted, interviewed and have regularly participated in the RIS work. One of the most widely used approaches has been the focus-group discussion, often related to sectoral and horizontal working groups. Working groups have been considered to be a very effective way of gathering a lot of information in a relatively short time. These groups provide a lively local view that written documents cannot provide, and they are often more effective than official surveys. Further, face-to-face discussion between various actors can provide better insights than individual interviews. On the other hand, discussion sessions may also generate very general and vague conclusions that need to be interpreted carefully. The sessions have to be well prepared so as not to let the members drift away from the core issues.
- *Time-horizon*: Since the RIS projects were very busy during their three years of action and worked with a middle-term time horizon, the future trends analysis and scenario making have not played a very significant role. Assumption based techniques were adopted only in some RIS cases and were implemented by an expert group; the research practitioners of the Centre for Regional Studies constructed scenarios based on assumptions of particular trends and events.

Similarities and differences between regional foresight and RIS methods

The methods of foresight and RIS in Hungary are largely similar as regards the aim of strategy development. Both RIS and foresight collect and process information about the future development of regions in a structured way. The analyses of the industrial and technological trends and macroeconomic processes influencing the region's economic growth, as well as the examinations of the future needs of firms operating in selected sectors, are integral parts of both processes, although to a different extent. During the implementation of both regional foresight and RIS, sectoral analyses have been made – and on the basis of these, assessments of future prospects. In the case of RIS, these analyses and assessments are, however, mainly complementary information for the analyses of firms, whereas in the case of regional foresight they are the most important initial documents.

The main differences between RIS and foresight in the Hungarian case are:

- RIS focuses on the region's whole economy: both the analyses and the subsequent programmes and measures cover all economic sectors and activities. Regional foresight concentrates on the key industries of the region's economy.
- The time horizon of RIS is middle term. Regional foresight covers longer term: 10-15 years.
- In the RIS exercises company surveys were completed. During the elaboration of the ongoing regional foresight (West Transdanubia), a company survey was planned but the foresight team decided not to make such an analysis. In the case of RIS, the sectoral studies and future scenarios were made by a research institute. In regional foresight, in which the scenarios are of greater importance, specialists and sectoral professionals have done this work.
- In the case of RIS, a general survey was completed based on mainly quantitative data with statistical and methodological support. In the case of regional foresight, only a small part of the analyses includes statistically measurable data and processes; qualitative information, deeper professional analyses, creative thinking (brainstorming) and learning processes dominate. In the course of RIS, numerous face to face interviews were made, which is not the case for the foresight exercise. In RIS the aim of workshops was the introduction and organisation of the programme developed on the basis of the general survey. In regional foresight the workshops serve a different purpose: the already prepared sectoral studies are tested and future prospects are elaborated by receiving inputs from a wide range of sectoral actors.

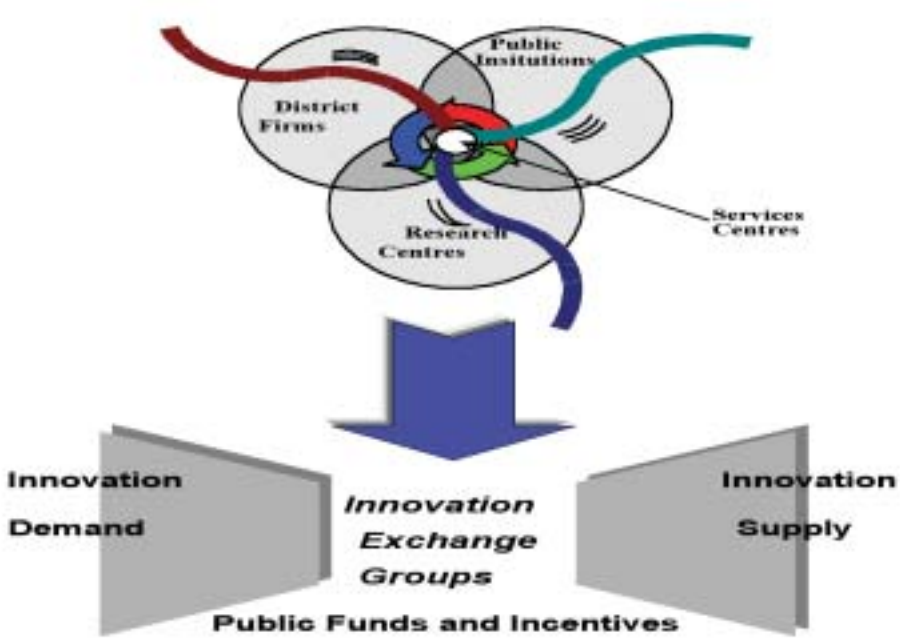
Example 8: Development of the 'Innovation Exchange Groups' within the clusters and the local specialised SMEs in the Lombardy region, Italy

RITTS East Lombardy was launched in 1999 to optimise innovation transfer and to facilitate the emergence of innovations in the region by improving the existing structures and by increasing organised 'information flow'. The project had four main objectives:

- to improve the local innovation infrastructure in order to boost technology transfer in the region
- to build a regional innovation network by bringing together local governments, research centres, industrial development agencies and innovative companies
- to remove barriers to innovation by enhancing communication among institutions involved in technology transfer
- to prepare the launch of pilot projects which would extend the innovation process to a larger number of companies.

A 'bottom-up' approach was adopted in the project. The development of regional innovation strategy was based on inputs from the 'mosaic' of local groups connected in a network. Through this kind of an approach it was possible to single out specific themes and to stimulate the interest of the main companies involved better than through more centralised approaches. The project focused on the region's cluster systems and local specialised SMEs. These 'local production systems' or 'industrial districts' include in East Lombardy wood, hosiery, agro-food, industrial automation, etc.

During the RITTS project, innovation service centres in industrial districts were established. Local agencies were developed in order to make them better capable of mediating between the innovation supply and the innovation demand that come from the companies in the district. One of the most important results of RITTS was the establishment of specialised Innovation Exchange Groups as a part of the planning and matching of the demand and supply in innovation. These Groups are composed of representatives of universities and private research centres, innovation service centres and of companies in the industrial system. The goal of these Groups is to increase interaction between research centres and companies, to reveal and group together the various demands for innovation, and to provide support that the companies can directly use. This development work has paved the way for the creation of 'local strategic innovation markets'. The following figure illustrates the idea of Innovation Exchange Groups:



The requirement for network relationships among a large number of entities across the territory raises the question of an innovation system. In order to be effective, this system must operate at different levels, including 'continuous training', 'individual company consultancy', 'global services', 'integrated innovation projects', etc. It is essential that the roles of the main players are clearly defined. In RITTS East Lombardy these roles were defined as follows:

- Local authorities have the task of creating favourable conditions for strategic innovation. Public intervention must function as a catalyst, create a network which can cushion the effects of market failures, and improve the efficiency of the entire innovation system.
- Advanced research centres, universities and regional technological poles can help industrial districts to explore strategic visions and experiment with completely new forms of innovation, i.e. innovation which represents discontinuity with the past development.
- Local skill centres are required to ensure the dissemination and diffusion of any new findings through their training activities.

The Innovation Exchange Groups were established, not only for improving the innovation infrastructure, but also for developing strategic visions within the clusters. Thus, these Groups have promoted the adoption of foresight thinking in East Lombardy. In order to make the selection of strategic innovation projects in a reasonable way, some futures work is needed. The Groups have to organise more or less extensive cluster-based foresight exercises involving discussion of different strategic visions.

Lombardy Region has also participated in a transnational foresight project, called "FoMoFo" (Four Motors Foresight) in 2002-2002 with Catalonia, Rhone-Alpes and Baden-Wuerttenberg. This project, too, applied the bottom-up approach and was cluster/sector oriented by nature. The experience of the project confirms the benefits of this kind of an approach, and more generally, the benefits of conducting foresight at the regional level. These benefits include:

- commitment of public and private stakeholders to the development of innovation and to the building of strategic visions in consensus
- precise focusing on the problems that the local clusters face and the possibility to develop appropriately targeted solutions
- diffusion of the foresight methodology at the sub-regional institutional level and in partner

economies (provinces and districts), which increases the efficiency of foresight exercises
- possibility to start some operational prototype projects to experiment with strategic innovations derived from foresight exercises; likelihood that such projects will be integrated into the existing regional strategies, which increases their practical impact.

All in all, the foresight methodology can promote the involvement of all local stakeholders and help to create strategic projects that will lead to a longer term increase in the rate of innovation in the region.

Example 9: Implementation of foresight results in the RIS context – the Lodz region, Poland

Foresight in the Lodz region is complementary to RIS. RIS aims to build a durable partnership in the region in order to:
- support the regional government in implementation of an effective system of innovation promotion
- build foundations for sustainable and balanced development
- achieve growth in the competitiveness of the region
- achieve growth in the innovativeness and competitiveness of SMEs
- establish a close cooperation between domestic and foreign innovating regions
- use effectively the Structural Funds and funds coming from other international and national sources of financial resources.

In order to achieve these goals, the Lodz region has carried out activities for building a regional consensus in the field of innovation. In addition, six specific areas of analysis have been scheduled for RIS:
- the diagnosis of regional demand for innovation
- the diagnosis of regional scientific and research potential
- the assessment of innovation potential and of the openness of the regional and local governments to innovation
- cataloguing existing infrastructure for entrepreneurship and innovation support
- the evaluation of the use of ICT
- the identification of opportunities and threats as well as strengths and weaknesses of the region from the viewpoint of the direction of the region's economic development

Parallel to these actions, the first foresight activities have been undertaken. In their initial phase, they have used primarily quantitative methods (input-output analysis and modelling techniques); a Delphi survey is the method of the second stage. The foresight programme is carried out under the responsibility of the University of Lodz in close co-operation with all key regional partners (regional authorities, business organisations, other universities).

The goals of quantitative methods are:
- to use regional econometric models to make forecasts and simulations of economic development on the basis of available time series and pooled data, with special consideration given to the impact of changes in technological activity and in the growth of innovativeness on economic development
- to use input-output models to specify the role played by the Lodz region on the Poland's economic map and to identify those sectors of the economy whose development stimulates most strongly the growth of global production and employment in the region.

The aim of the Delphi survey is to reinforce the process of the social consensus building in the region and to direct it in favour of activities aimed at raising regional innovativeness. For that reason, a draft version of 'Innovation statements' was submitted for discussion and verification in organisations and institutions forming the so called 'consulting structure' (CS). The CS was appointed for RIS and is an instrument of the social consensus building, social promotion and communication and building of the intraregional network. The CS consists of:
- the Regional Innovation Forum composed of public administration and more than 80 institutions and organisations active in the field of innovation and SME development. These institutions and organisations include local business administration, incubators of entrepreneurship, associations and technical organisations, training organisations, trade unions, employers' associations, regional firms, academic institutions, R&D institutions, and business infrastructure organisations.

- six working groups that emerged during the meetings of the Regional and Subregional Innovation Fora (the Lodz region is divided into three subregions). These groups include over 240 persons representing both individual firms (particularly SMEs), organisations of entrepreneurs and regional authorities. Each of six working groups deals with one of the above-mentioned areas of analysis scheduled for RIS, and is headed by mentors – experts in a particular field.
- panels of experts, representing all regional organisations and including those (mainly domestic) active in the field of innovation and SME development support.

Another aim of the Delphi survey is a verification of a preliminary set of futures that are of particular interest from the viewpoint of enhancing the regional innovation capacity and competitiveness and of helping the region to develop into a knowledge-based economy. For that reason the Delphi questionnaire is divided into six thematic chapters:

- Directions of change in the economic structure of the region. This theme contains two sub-themes: firstly, general hypotheses concerning economic growth, structure transformations, decline of certain types of activities and development of others, migrations of industry from region to region, etc. Secondly, the theme includes sectoral hypotheses about the directions of technological change, conditions for the cluster creation, development of the education system etc. within the sectors important for the future of the region. These sectors include textile and clothing industry, food processing, biotechnologies, medical services, construction, tourism, and knowledge intensive support services.
- Sources of innovation in the region (knowledge and know-how resources, intensity of the use of knowledge and know-how resources in the region, sources of innovation, accessibility of innovations and so on).
- Business management and regional management.
- Competitive position of the region in the enlarged European Union (location attractiveness and its sources, labour market, natural resources of the region, human capital and demographic trends, infrastructure, intra-regional polarisation etc.).
- Development of innovation infrastructure (transfer/intermediation etc. in the field of innovation, innovation financing, remaining services, openness of authorities to innovation, openness of society to innovation).

As an effect, foresight activities are designed to:

- assemble the entire regional milieu around common priorities and to help in creating an atmosphere of trust and confidence to contribute to the emergence of innovative milieus at the regional level (social consensus);
- introduce the dynamics into the picture of actual strengths, weaknesses, opportunities and threats of the region to acquire anticipatory intelligence (to deepen our understanding about present future-oriented processes);
- prepare the priorities in the field of innovativeness support in the region for the period exceeding the time horizon adopted for the presently developed RIS;
- prepare long-term, strategic visions and scenarios of the region's development and the use of future visions to actions that are required today (pilot projects and action plans).