



FOREN

Foresight for Regional Development Network

A Practical Guide to Regional Foresight

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FOREWORD

Foresight involves constructively bringing awareness of long-term challenges and opportunities into more immediate decision-making. Foresight has attracted a great deal of attention in recent years, and this Guide should be useful for many readers seeking to brief themselves as to what Foresight is, and is not, or to judge whether a particular Foresight activity is really relevant to their interests. This Guide has been produced bearing in mind especially the needs of those involved in forward planning and strategy development at **regional** and other sub-national territorial levels. It is aimed more specifically at potential Foresight **practitioners** and users. It sets out to explain **how** Foresight (also known as *prospective* or *prospective territoriale*) **can be implemented** so as to provide valuable inputs to strategy and policy planning in regions, municipalities or localities, as well as to mobilise collective strategic actions.

One of our objectives is to explain *why* you may wish to use Foresight at the sub-national level. Despite some significant regional activities, to date, the use of Foresight has been mostly visible at the national level. Another objective is to provide you with helpful orientations on how to go about undertaking a regional Foresight activity, to point out where the pitfalls lie, as well as the merits, and to explain how regional Foresight may need to be differentiated from national-level Foresight. This Guide, therefore, tries to navigate you through the considerations you need to take into account in order to decide what is best for your particular context. It is neither a recipe book nor a toolbox. We do not claim to provide all you need to know about choosing and implementing particular Foresight methods – though the Guide does point to where you can obtain such information. After reading the Guide you will not be an instant expert in Foresight methodology. Rather, you will understand:

- How and why regional Foresight can be used,
- What the different approaches to Foresight are,
- When and where they may be appropriate, and
- How your own regional or local situation has to be taken into account in the design of a Foresight process.

The authors of this Guide - drawn from both the Foresight community and the world of regional development planners - are all convinced of the need for wider use of Foresight approaches. We are equally convinced of the need to undertake adequate preparation before launching Foresight, to learn from each other's experiences, and to achieve much better links between the technical elements of Foresight and its practical application. Foresight tools are highly relevant to a fast-changing, knowledge-driven world: they can help policymaking be better-informed and more proactive. In order to do this, we need strategic use of Foresight, and this Practical Guide is intended to help this be the case.

We welcome feedback on your experiences in using it.

For further information on the project behind this Guide, see:

<http://foren.jrc.es>

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EXECUTIVE SUMMARY

The overall purpose of Regional Foresight is to provide valuable inputs into strategy and policy planning in regions, municipalities and localities, while also mobilising collective strategic actions. This “Practical Guide” aims to explain how Foresight can be used at regional and other sub-national territorial levels. It sets out different approaches to Foresight, when and where their use may be appropriate, and how local conditions have to be taken into account in the design of a Foresight process.

Part I: Introducing Regional Foresight

Foresight is a **systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process** aimed at present-day decisions and mobilising joint actions (Q1.1). Foresight arises from a convergence of trends underlying recent developments in the fields of ‘policy analysis’, ‘strategic planning’ and ‘future studies’. It brings together key agents of change and various sources of knowledge in order to develop strategic visions and anticipatory intelligence. Regional Foresight is the implementation of the five essential elements of Foresight - **anticipation, participation, networking, vision and action** - at a reduced territorial scale where proximity factors become determinant (Q1.2).

Foresight tools and techniques which have been used extensively since the early 1990s at national level may also apply regionally, but the overall process design will strongly depend on specific regional characteristics (e.g. its degree of autonomy, financial competence, infrastructure endowments, business profile, etc. (Q1.3). “Region” may refer to a federal state, a metropolitan area or some other sub national aggregation with an historical, economic identity or a distinctive geographical dimension. The validity of Regional Foresight depends on the existence of a minimal degree of political, economic or cultural leverage to enable initiatives and actions arising. It can also help to compensate for the often unevenness, and under-development of, regionally based institutions for informing decisions and developing policy (Q1.4)

The difference between Foresight and other planning activities relates to the participative dimension of Foresight, which is well adapted to the regional level (Q1.5). On the other hand, Foresight demands orientations to policymaking that may be unfamiliar to regional actors who are used to working within compartmentalised divisions. Foresight seeks to break down such barriers (Q1.6). However, Foresight is only worthwhile when there is a possibility to act on the results that it will generate (Q1.7).

Foresight can be applied to a huge range of topics (scientific, industrial, demographic, social, political, cultural factors) (Q2.1). While it can be used to **inform policymaking, build networks, and enhance local capabilities for tackling long-term issues** it is not a magic solution that can solve all social, economic or political problems of regions (Q2.2).

There are different types of Foresight. A first distinction can be made between activities that are more or less **bottom-up** or **top-down**. The top-down exercises place less stress on interaction and involve highly formal methods such as the Delphi method (see Annexe). The bottom-up exercises are more interactive - they take into account a greater number of views, increase legitimacy and yield more process benefits but are more time consuming and more

difficult to organise (Q2.3). A second distinction refers to activities that are more or less **product or process-oriented**. A mixture of both activities is often present: product orientation is necessary if there is a need to inform specific decisions (a report, list of priorities); process orientation is more suitable when there is a lack of networking between key actors (Q2.4). A third critical distinction can be made between methods that centre on examining and articulating the views of **experts**, versus those rather based on investigating the consequences of **assumptions**: a combination of both types is generally desirable (Q2.10).

Common features of Foresight include: a long-term orientation, the examination of a wide range of factors, the drawing on widely-distributed knowledge, the institutionalisation and creation of networks and the use of **formal techniques/ methods** (Q2.5). Formal methods provide more operational results, assess the consistency of different aspects of the vision, help to identify where more knowledge is needed and legitimise the exercise (Q2.6). They are valuable to structure and stimulate parts of the more interactive Foresight process (Q2.7).

Exploratory methods (“outward bound”) begin with the present as a starting point and move forward to the future whereas **normative methods** (“inward bound”) start with a view of possible futures asking what trends and events would take us there (Q2.8).

Quantitative methods give a great deal of weight, an ability to examine rates and scales of changes but they limit the comprehension of social and political variables and are not always reliable. **Qualitative methods** are used when data are hard to collect or not available. Foresight can never be completely dominated by quantitative methods: the mix depends on the access of relevant expertise and the nature of the issues (Q2.9).

The choice of the appropriate balance between the various approaches will be influenced by the problems at stake, the resources available and the political context (Q2.11).

Part II: Implementing Regional Foresight

Carefully scoping a Regional Foresight activity is necessary and can help to clarify regional challenges that may often not be obvious at the outset. For example, problems may be related to different types of ‘critical resource’ (**local institutions, business structure, knowledge infrastructure, social capital**) on which local and regional development depends (Q3.1). In scoping, it is necessary to assess whether challenges can be fully, or only partially, addressed by regional players (Q3.2).

The objectives of Regional Foresight can be quite variable, but they should be clearly defined at the outset (Q3.3). Regional Foresight activities tend to have multiple orientations, rather than just one, which we have called **social, science and technology, business dynamics, territorial vision**. However, it is not uncommon for one of these dimensions to predominate in any given exercise (Q3.4).

Regional Foresight can be arranged as an **autonomous** exercise or as a set of activities that **accompany** or are **embedded** in existing policies, programmes and strategy-making processes (Q3.5). Foresight is also of more value to a region if it is ongoing rather than a one-off activity. Ways to ensure continuity include fostering and embedding a “Foresight culture” in

a broad-based manner across all sectors of the regional community, through ongoing 'centralised' activities, and by reinforcing local sources of Foresight expertise (Q6.7).

The **themes and sectors** covered in regional Foresight are quite variable, with choices tending to depend upon the objectives and orientation of the exercise. Some exercises have covered around 20 areas, although fewer than 10 is more typical (Q3.6). The time horizon of regional Foresight exercises tends to vary from around **5 to 20 years** (Q3.7), whilst their duration is typically between 6 months and 3 years (although it can become a continuous activity) (Q3.9). **Costs** depend upon a number of factors, including the location of activities, the scope of the exercise, the number of people in the project management team, the organisation of events, and the selected approach (Q3.10). **Sponsorship** can come from both the public and private sectors and can be very diversified (Q4.4).

Carrying out a Foresight exercise involves many participants – the number can vary widely from some tens up to thousands – including representatives of regional governments, universities, businesses, chambers of commerce, local media, industry associations, NGOs and citizens (Q3.8). The identity of key players will depend upon the objectives and orientation of Foresight activities. As a general rule, the more **leading local players** that can be mobilised the better. Three approaches for recruiting potential participants are commonly used, namely personal contacts, nominations from stakeholders', and more formal (transparent) processes, such as co-nomination (a variation of snow-ball sampling) (Q4.1). Players will need to be convinced of the worth of regional Foresight, so arguments in its favour should emphasise the potential benefits to be gained through such activities (Q4.2). Various tools can be used to promote regional Foresight more widely, including publications and traditional communication tools (database, newsletters...), forums, participative events (hearings, seminars, conferences, workshops, meetings...), and illustration of Foresight success stories in other regions (Q4.3).

There are three main organisational dimensions in any Foresight activity that need to be considered: its formal structure (roles and responsibilities), the decision processes (management style), and resource procurement (sponsorship) (Q5.1). A number of formal and informal roles can be discerned in regional Foresight, including promoters, stakeholders, sponsors, steering committee, project team, champions, experts, process experts, monitoring groups, etc. (Q5.2). Formal roles and responsibilities require careful definition so that players know what they need to do and by when. Players should be frequently consulted throughout the course of regional activities, although Foresight offers many 'natural' opportunities for doing this. Consultation is important, since it gives participants and wider stakeholders a sense of ownership of the process and its outputs (Q4.5).

More embedded-type Foresight activities are not as challenging to manage as a more autonomous and distributed exercise, which will require the deployment of project management tools, such as the classical PERT (Q5.3). Whatever the type of exercise, it is important to collect all the **existing information (passive)** before producing new material through experts and networks (**active information**) (Q5.4).

Regional Foresight exercises produce formal outputs (reports, website, press articles...) and informal outputs (development of new networks...) (Q6.1). Members of various user-groups should be involved in the Foresight process throughout and can help define the different types of outputs that may be needed to target key groups (Q6.2).

Although largely absent in the cases we have examined, evaluation of regional Foresight activities has the potential to allow for an assessment of whether objectives were met, to learn lessons on how the exercise was managed, and to define follow-up activities. Evaluation can be conducted in **real-time** or **'post hoc'**, with both approaches having their pros and cons (Q6.3 - 6.4). In any evaluation strategy, it is important to recognise that benefits from Foresight tend to become apparent at different points in time and at different levels. It is also important to keep an eye on unexpected benefits and to identify 'success stories' as possible 'demonstrators' of positive outcomes (Q6.5). But expectations of Foresight can vary between different players and are sometimes rather unrealistic. It is therefore helpful to have a clear notion of the sorts of benefits that can reasonably be expected and to communicate these to participants beforehand (Q6.6).

In conclusion, **Foresight** is a very evocative label for the rise to prominence of participative methods and long-term strategic futures techniques, in the wake of more traditional ways of informing policy planning. It is currently highly-topical, but whether or not the label persists is irrelevant to the real trends which are radically changing delivery-timescale and format requirements for information on future threats and opportunities which decision-makers require. Foresight, as a means to an end, is well adapted to these changing requirements. It has proven itself at national level, and has begun to do so too at regional and other territorial levels.

However, Foresight is likely to develop in a much greater variety of ways regionally than it has at national level, and hence the need to stress what the essential features it should fulfil are. This Guide has been drafted with all of this in mind. – It makes the case for regional foresight without offering it as a panacea; it asks questions and *suggests* ways of answering them rather than offering turn-key solutions which won't always work; it gives case descriptions and illustrations to demonstrate the high variability of regional Foresight in format and utility, but not to offer 'best-practice' benchmarks or models.

But the Guide cannot substitute for the experience of actually getting involved in a Foresight process, understanding how it works, deriving value from it, and ultimately acting on the resultant knowledge and learning. The Guide will serve its purpose if it encourages more regions to embark on such adventures and expedite the decisions and actions that need to be taken along the way.

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INTRODUCTION - PRESENTING THE GUIDE

Q1.1 Why has this "Practical Guide" to Regional Foresight been produced?

Foresight, as it has emerged in recent years, has mostly manifested itself in the form of large-scale national exercises. However, such national Foresight tends to skate over many issues of central interest to regions. Where it does take up relevant topics, it is often too highly aggregated to give regions enough information to make their own decisions. Regional Foresight can fill this gap, going where national Foresight (if it exists) has held back. It can be justified in its own right as a means of effecting better-informed and future-proofed regional decisions and actions, which is the same rationale behind national Foresight. The particular combinations of Foresight tools and techniques that work at national level may not be automatically appropriate at regional level. We can learn from the experience of national Foresight, and from the pioneering exercises in regional Foresight, but we need to be sensitive to the diverse requirements of different regions, and the ways in which national and regional experiences can diverge. This Guide seeks to crystallise available knowledge about the issues confronting regional Foresight, and the practical implications that follow from these.

Q1.2 Who is this Guide for?

This "Practical Guide" has been produced as a reference point for those interested and potentially involved in setting up a regionally-based Foresight activity. We hope it helps to lower some of the barriers that have slowed the development of regional Foresight to date. We have aimed to make the Guide appealing and useful for a variety of different readers. Thus, it has been designed so that it can be used in several different ways.

Some of you will be **regional experts** – people who are highly knowledgeable and experienced in the practicalities of local, urban and regional planning and development activities. You know in detail the types of issues your region and similar areas face, the problems of regionally based stakeholders, what sorts of planning processes work or do not work in your context, as well as the wider regional problems and dilemmas. If, however, you do not have much knowledge about Foresight and what it can offer, the Guide will introduce and explain, illustrate and exemplify, the concept for you (Chapter 1).

Others among you may already have encountered Foresight, and this might have been a good experience - or a bad one (e.g. frustrated attempts to translate national Foresight down to regional level). For you, Chapter 1 may still be relevant in that it makes the case for regional Foresight in quite explicit terms, whilst acknowledging its limitations and the circumstances in which it may not be a good idea. But you may equally wish to go straight to Chapter 2, which introduces some of the different 'types' of Foresight that make sense at regional level. This chapter draws on a diverse set of cases and examples, some of which are much more 'hands on' than national Foresight.

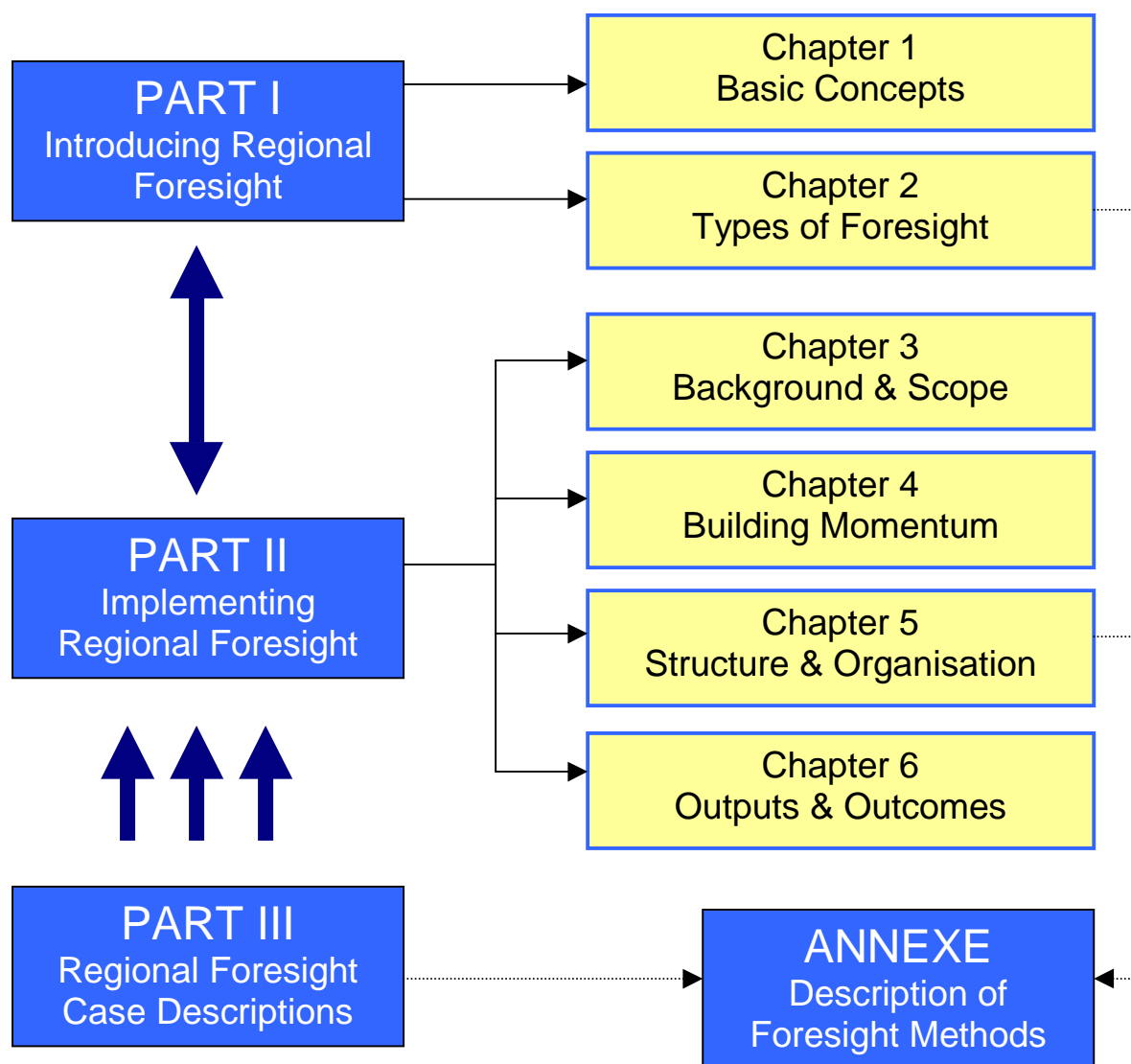
If your interests are more immediately instrumental, and you wish to use the Guide as a reference in setting up a regional Foresight activity, you can go straight to Part II - Implementing Regional Foresight. Here, depending on what stage you are at with your activity, or what your particular task or responsibility is, you may go directly to whichever

of Chapters 3 to 7 seems most relevant to you. In any case - *and the same applies to all other readers and users of this Guide* - cross-references are included throughout to refer you forwards or backwards to other chapters and sections dealing with complementary aspects of given issues.

Those of you that have particular knowledge and expertise in Foresight methods - **Foresight experts** - may choose a number of different entry points. At the time of writing, it will typically be the case that most of your Foresight knowledge relates to national Foresight activities. In this case, the Guide will serve to spell out regional particularities of - where the priorities and the dynamics between citizens, stakeholders and decision-makers are frequently rather different from those encountered at the national level because of the immediacy / proximity of the issues and problems. You may well find that these particularities imply quite different approaches to Foresight than those with which you are familiar.

Q1.3 What is the structure of the "Practical Guide"?

This Practical Guide has been structured as follows:



PART I – Introducing Regional Foresight

CHAPTER 1 – BASIC CONCEPTS

Questions	Summary answer
Q1.1 : What is Foresight?	Foresight is a systematic, participatory, future intelligence gathering and medium-to-long term vision building process aimed at present-day decisions and mobilising joint actions.
Q1.2 : What is Regional Foresight?	Regional Foresight is the implementation of anticipation, participation, networking, vision & action at a reduced territorial scale, where proximity factors become determinant.
Q1.3 : When and for what purposes do I need to structure future oriented thinking?	To systematise the input of anticipatory intelligence to forward planning and policy.
Q1.4 : Why is Foresight important for my region?	Regional politics is on the rise but inclusive policy institutions still underdeveloped and uneven.
Q1.5 : What are the limitations of established planning approaches?	Most planning approaches do not handle well long-term prospects and multiple stakeholder views
Q1.6 : How can Foresight be used to do things better?	Foresight breaks down barriers, articulates long-term visions and interprets their present-day implications.
Q1.7 : Why and when should the decision be taken to undertake Regional Foresight?	Foresight can be proactive or reactive, or arise from a special combination of circumstances, but is only worthwhile when it can be tied to action.

Q1.1 What is Foresight?

Foresight is a systematic, participatory, future intelligence gathering and medium-to-long-term vision-building process aimed at present-day decisions and mobilising joint actions.

In recent years, the term 'Foresight' has become widely used to describe a range of approaches to improving decision-making. As the term implies, these approaches involve thinking about emerging opportunities and challenges, trends and breaks in trends, and the like. But the aim is not just to produce more insightful "futures studies", more compelling scenarios, and more accurate econometric models. Foresight involves bringing together key agents of change and sources of knowledge, in order to develop *strategic visions* and *anticipatory intelligence*. Of equal importance, Foresight is often explicitly intended to establish *networks* of knowledgeable agents, who can respond better to policy and other challenges. This is made possible not only by the improved anticipatory intelligence they have developed, but also through the awareness of the

knowledge resources and strategic orientations of other members of the network. The key actors involved can include firms, governments, business sectors, voluntary organisations, social movements and technical experts. The contexts in which Foresight can be employed are equally wide-ranging: much work to date has focused on national competitiveness and especially the prioritisation and development of strategic goals for areas of research in science and technology. But Foresight can and does also deal with issues like demographic change, transport issues, environmental problems and other social, political and cultural factors. Indeed, one of the main lessons of Foresight exercises to date is that science and technology issues are inextricably linked with a wider range of social factors – and vice versa. Social forces shape the development and use of science and technology and the social implications associated with this.

Foresight involves five essential elements:

- Structured anticipation and projections of long-term social, economic and technological developments and needs.
- Interactive and participative methods of exploratory debate, analysis and study, involving a wide variety of stakeholders, are also characteristic of Foresight (as opposed to many traditional futures studies that tend to be the preserve of experts).
- These interactive approaches involve forging new social networks. Emphasis on the networking role varies across Foresight programmes. It is often taken to be equally, if not more, important than the more formal products such as reports and lists of action points.
- The formal products of Foresight go beyond the presentation of scenarios (however stimulating these may be), and beyond the preparation of plans. What is crucial is the elaboration of a guiding strategic vision, to which there can be a shared sense of commitment (achieved, in part, through the networking processes).
- This shared vision is not a utopia. There has to be explicit recognition and explication of the implications for present day decisions and actions.

Q1.2 What is Regional Foresight?

Regional Foresight is the implementation of anticipation, participation, networking, vision, and action at a reduced territorial scale, where proximity factors become determinant.

Regional Foresight is the application of Foresight methods (involving some combination of the five essential elements mentioned in Q1.1 above - **anticipation, participation, networking, vision, action**) to inform and orient decisions that are taken at sub national level. This may be a region of a federal state or otherwise, a metropolitan area, or some other sub national aggregation or local system of actors. The important thing is for there to be a minimal degree of local identity and political leverage available.

Box 1. Foresight - an approach arising from the convergence of three trends

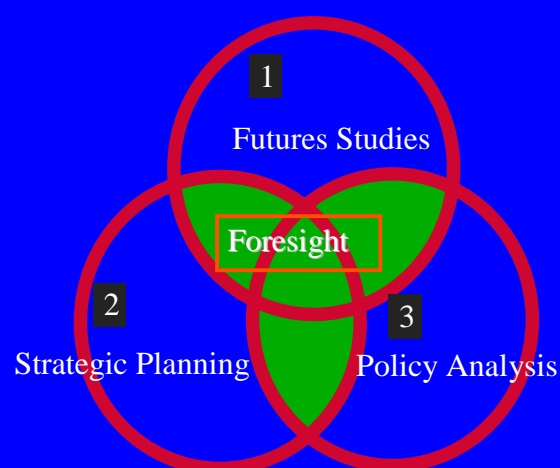
Interest in Foresight from the mid-1990s on has been fuelled by three converging trends:

1. In policy development, the shift from an elite-driven / top-down to a broader, more participatory approach. In part, this reflects desires for greater democratisation and legitimacy in political processes. Also, it builds on the increasing awareness that no single body (especially not a government agency!) can know everything that needs to be known in order to effect desired changes. Knowledge is distributed widely, and as the world grows more complex (through advances in science and technology, through greater social differentiation, etc.), this is becoming ever more apparent. Decision-makers have to live with this, and develop their intelligence-gathering methods accordingly.
2. In strategic planning, there has been a move from a “rational” approach aimed at achieving equilibrium and stability, to more evolutionary approaches. This is conditioned by the discovery that high levels of uncertainty are the norm, not the exception. Economic progress seems to be more a matter of disruptive innovations than of the pursuit of equilibrium. Qualitative changes frequently undermine the assumptions (built into most models, for example) that we can grasp the dynamics of social and economic life on the basis of quantitative changes within stable structures. “Long-term planning” has been discredited. But the long-term still has to be taken into account in many decisions, and planners have sought better ways of so doing.
3. In futures studies, too, there have been several important developments. One is a shift from emphasis on predictive approaches to more exploratory studies, and from one-off studies to more continual iterations of the process of envisioning future challenges and opportunities. Equally important is increasing recognition of the need to involve “users” in the process of study, rather than to present them with a vision or set of visions of the future that descends from “on high”. Part of the reason for this is that “futures researchers” have found that such involvement is often essential for the messages of their studies are absorbed into policymaking in a systematic – and ongoing – way.

Foresight thus occupies the space in which planning, futures studies, and policy development overlap.

It is not a matter of academic or consultancy-based forecasts of the future (although it should take these into account).

It is not planning, it does not define policy, nor does it displace existing decision-making and planning processes. Rather, it complements them and increases their effectiveness.



Regional Foresight is a means for those who share a common territory, to control their future development better. For Foresight to be worthwhile, ***they must want to do this, and be empowered with at least some of the means for effecting it.*** A major distinguishing feature of regions as compared to other territorial levels is the geographical proximity of actors and the limited spatial range. (Of course, some regions – especially in more outlying areas – can be vast, and sparsely populated; and regions in some of the larger countries may be of equivalent size and population to the whole of some smaller countries. All of these characteristics are relative ones.) Proximity can make the networking elements of Foresight easier to implement. In some cases it may appear that all key players are already familiar with each other and the resources they have to contribute to Foresight – although so far, experience in small countries, as well as in regions and cities, suggests that established networks can be valuably infused by new knowledge and new members. However, some sorts of expertise and knowledge relevant to regional issues may be hard to access from within the region, so the question of links to parties outside the region is an important one for planning regional Foresight.

The different formats / types of regional Foresight that can be envisaged are described and illustrated in Chapter 2. There, you will see that notwithstanding the jurisdictional regional context, individual Foresight activities do not have to be all embracing. It is quite possible for Foresight activities to engage quite specific groups of actors (e.g. clusters of SMEs, or certain segments of the population). This will reflect the resources that can be brought to bear, and, of course, the objectives of the activity, the features of the issues being tackled, etc.

Q1.3 When and for what purposes do I need to structure future-oriented thinking?

To enhance and systematise the inputs of anticipatory intelligence to forward planning and policy.

Future-oriented thinking is intrinsic to any forward planning or policy activity. What Foresight should accomplish is to enhance such thinking, by drawing on a broader range of knowledge sources, and to systematise it and its links to decision making in structured, explicit ways. In regions, as at any territorial level, the desire to anticipate what will happen in the future covers all fields from the socio-economic (science and technology, economy), socio-political (globalisation, governance, gender) to the socio-cultural (arts, ethics, philosophy, religion, ethnicity). Foresight has tended to be more prevalent in those socio-economic fields where an empirical basis of indicators and data can be built on, and where established (or at least, widely perceived) trends and countertrends are the basis of long-term investments. However, there have been many efforts to bring Foresight approaches to bear on other sorts of problems, where it is more the difficulty of grasping long-term possibilities than a lack of need to do so that has tended to limit efforts.

Box 2. What do we mean by 'region'?

For the purposes of this Guide, we consider regions to cover sub-national areas where the essential criterion is 'geographical proximity' and 'limited spatial range'. This covers rural communities, town- and city-regions, historical regions, regions marked by specific economic activities or cultural identity, and political regions (autonomies, counties, provinces). The discussion is also relevant to cross-border regions, though there are particular difficulties associated with the division of political and administrative jurisdiction in such cases.

Different types of European 'regions' include
Large regions like the autonomous regions in Spain or Länder in Germany
Large regions with limited political autonomy as in France, UK, Italy
Large regions with a strong economic identity but transcending political and administrative boundaries like the area around Aachen, Maastricht, Liege
Large city regions like London, Paris, Berlin
Rural / small town regions - Macedonia (EL), Alentejo (P), Savoie (F)
Regions with a strong historical / cultural identity - Wales, Basque Country, Flanders
Regions with a distinctive geographical dimension - Alpine regions like Tirol, Island regions like Corsica or The Canary Islands

The aim here is not to pin down precise definition(s) of 'region(s)' or create a general-purpose typology of regions. The objective is to highlight key factors that you can use to characterise your region and its development problems, and to identify where, and in which circumstances, specific types of Foresight actions might be beneficial. It should also help you relate your regions to others so as to better judge how relevant their Foresight experiences may be to you. Some important characteristics are:

Governance. This refers to the centres of competence for public and private intervention in regional affairs, and for support for regional economic, technological and social development. Successful regional Foresight requires political leverage and levels of governance that can enable initiatives and proposals arising to be acted on. Following Cooke et al. (1998)¹, we can distinguish between **Grassroots** (local co-ordination of actors, highly applied orientation of technology-related activities), **Network**: (high co-ordination between networked actors including firms, funding organisations and research organisations) and **Dirigiste** (high co-ordination & central management of key assets such as funding and research competence) types of governance.

Budget/ Finance competence. *Regional Financial Competence* - private and public – relates to the degree of local control over major financial issues. For example, are there local capital markets, local credit-based systems involving regional administration in loan-guarantees, regional public budgets, etc.? *Budgetary competence* can take various forms. For example, regional government may administer decentralised spending (channelled from central government) as in Italy, France, and Spain. More autonomous spending competence, where regions determine how to spend a centrally allocated block grant, is the case in Scotland and Wales; while regional taxation authority exists in, for instance, Scotland (again) and the Basque Country.

Infrastructure. Regions vary immensely in the control and influence they can exert over “hard infrastructure” (transport, telecommunications) and also “soft” or “knowledge infrastructures” (universities, research institutes, science parks and technology transfer centres).

¹ See *Regional Innovation Systems - The role of governances in a globalised world* (UCL Press Ltd.) eds. Phil Cooke et. al. 1998

Institutions and Social Capital. This refers to the types and strength of "informal" institutions within regions (as distinct from "formal" institutions- the "soft infrastructure" - together with laws, regulations, etc.) We can distinguish between² *Institutional capital* - the capacity of the formal institutions in a region to concentrate on problem-solving, capacity to act, speed in decision making, organisational flexibility and intelligence and inter-organisational relations; *Cultural capital* - the heritage of traditions, values and beliefs, language, social relations, etc.; *Symbolic capital* - the potential to mobilise energies to the task of region building, generate self-references, build corporate territorial images; *Psychosocial capital* - of which a key element is trust - trust in the community and in its development potential, and in enabling co-operation in setting up groups and associations; *Cognitive capital* - the collective know-how (as opposed to individuals' human capital) much of which resides in the knowledge infrastructure organisations (universities, research centres) and firms. There are various ways in which such social capital may be organised – at extremes we could point to co-operative versus competitive cultures; interactive versus individualistic modes of learning; associative consensus versus polarised interest groups.

Business postures. Firms in the regional economy are likely to have distinctive orientations both towards each other and the outside world, as well as with producers and consumers in the market place. Regions vary in terms of the role of lead firms, the global versus local reach of innovation activities, the balance between in-house versus public and co-operative research, and the disposition to networking and clustering. Cooke et al. 1998 again identify three stereotypical regions, focusing particularly on innovation dynamics. The **Localist** type has few if any large indigenous firms, or branches of externally controlled firms; few if any local research organisations capable of combining with regional industrial clusters; few public R&D/innovation resources, though perhaps some small private ones; and there will often be high "associationalism" among entrepreneurs and between them and regional policy-makers. The **Interactive** type features more of a balance between large - indigenous or inward investing - and small firms; and widespread access to regional R&D resources and to outside sources when required; there is also a balance between regional government promoting innovation and large private firms with laboratories; and high "associationalism" between- local and regional networks, fora and clubs. The **Globalised** type features a significant presence of global corporations, often supported by (supply-chain dependent) SMEs; R&D is largely internal to firms and private though there is some SME-oriented public innovation infrastructure; The local "associationalism" is heavily influenced by the needs of larger firms.

² F. Alburquerque, P Rodríguez, R. Ruiz & C. Román *Learning to Innovate - Knowledge and Cultural Capital Regions*, Background paper for the OECD Seminar "The impact of cultural capital and knowledge upon social and economic development", 30 Sept - 1 Oct 1999 Malaga, Spain (Institute for Regional Development, University of Seville, 1999)

The following table shows a tentative grouping of some exemplary European regions in terms of two of the factors outlined above:

		Governance of firm innovation support		
		Grassroots	Network	Dirigiste
Business posture	Localist	Lombardy industrial districts Andalusia Flevoland Castilla y Leon	Flevoland South-East Bari Neubrandenberg	Western Trans-Danubia North & Central Macedonia
	Interactive	Lombardy Casarano	Stuttgart Uusimaa Valencia Limburg	Overijssel
	Globalised	Lombardy-Milan Yorkshire & Humber Catania	North-East England Wales Yorkshire & Humber	Greater Dublin Western Trans-Danubia

The decision to use Foresight approaches when confronting such issues is one that cannot be taken lightly, and later sections of this Guide will provide further orientation as to when and how this may be taken further. However, we should remember that, as mentioned earlier, even the more narrowly science and technology-focused Foresight activities have found it necessary to take broader economic, social and cultural factors into account. One problem that then arises is that the activities were usually designed without building in expertise in such issues. The situation faced then is either one where experts try to apply their intelligence to fields that are far removed from their own specialisation, or one in which there has been a hasty effort to recruit appropriate expertise at a late stage, tacking it onto an existing set of activities and processes. Neither option is very satisfactory. The lesson is that it will be important to consider the relevance of such broader issues, and the ways in which these may be effectively handled in Foresight, at the beginning of the activity.

Orientations of Foresight and related “futures “ activities and future-oriented thinking			
	Field	Use of Foresight	Availability of indicators & statistical data
Socio-economic	Science & technology Education Business & competitiveness Services Crime Employment Demographics	National and regional activities are most common in these fields	Good - anticipatory intelligence can combine reasonable volumes of both quantitative and qualitative information.
Socio-political	Governance Globalisation Gender & equality Social Exclusion	Less prevalent but increasingly the focus of exercises	Careful handling of qualitative conjectures is necessary; politicised debates may rage; expertise may be hard to assess and/or extremely partial.
Socio-cultural	Arts Ethics & morality Race & ethnicity Philosophy & religion	Rare - not unknown, but generally undertaken by independent bodies rather than national or regional government or firms.	As above, if anything more so.
Wild cards	Conflicts/ Wars Disasters (man-made/ natural) Migration	Very difficult to handle - sometimes used to generate wild card scenarios in more common Foresights. Military, defence and emergency planning authorities have sometimes done so.	As above, though for internal purposes some authorities have developed elaborate and sophisticated methods and analyses. A problem here is that there may be high confidentiality, and considerable selectivity in what is made available to outsiders.

Q1.4 Why is Foresight important for my region?

Regional politics is on the rise - but inclusive policy institutions still underdeveloped and uneven.

It is widely argued that the nation-state is not best equipped for dealing with many of the challenges and opportunities of the twenty-first century. In many countries there has been a high level of disenchantment with national politics, and a sense of alienation from the core metropolitan areas is expressed in more remote regions. This has often been reflected by a growth in regional sentiment. Such sentiment also, perhaps, reflects our era of rapid change and globalisation – forcing people to consider what elements of their historical traditions and culture they wish to retain. Regional disparities remain important in many countries, too –

indeed, they are sometimes growing. Finally, many economists and geographers argue that it is at the regional level that we find innovative clusters and growth poles – that the national level is ineffective when it comes to stimulating new regional poles of activity. National innovation and growth policies often seem to reinforce existing uneven development.

For these, and other reasons, regional economic and development policymaking have been rising in importance in recent years. However, despite several important initiatives, the level of development of regional-based institutions and processes for informing decisions and embedding and enhancing policy processes remains very uneven. Foresight is by no means the complete answer to such problems, but it can contribute to their eventual resolution.

Q1.5 What are the limitations of established planning approaches?

Most planning approaches do not handle long-term prospects and multiple stakeholder views well.

Foresight is different from most planning activities (see Box 3), even those that are strategic and long-term focused. Part of the difference lays in the principal characteristic of Foresight, which is based on participative methods. Foresight encourages the active involvement of stakeholders with the aim of sharing knowledge (and knowledge of who can supply knowledge!), gradually to build a vision of possible futures for the region.

Hopefully it will be possible to establish some consensus around this vision. But even where such consensus is lacking, the Foresight process should contribute valuable learning about possibilities and the positions of key stakeholders. Most current policy-making practices, even when based on participation of different actors in the region are in contrast short term and limited in scope. This is not to say that they are *wrong* – decision-makers do need to respond to immediate contingencies - but they are limited and insufficient. In addition, being often led by funding opportunities, they may be less capable of building an approach that is derived from the region's needs.

Q1.6 How can Foresight be used to do things better?

Foresight breaks down barriers, articulates long-term visions and interprets their present-day implications

Regions are arguably well-suited to the participative and vision-building Foresight approaches. The stronger links between regionally-based actors, the immediacy and sensitivity of people to changes in their region, and a heightened level of awareness and commitment to community, should all render such approaches valuable in regional settings.

However, Foresight does demand orientations to policymaking that may be unfamiliar to regional actors, and may prove difficult to accommodate in emerging regional institutions. Regional actors are liable to be entrenched in a compartmentalised division of responsibilities, with “turf wars” about who is responsible for this or that issue. Foresight necessarily seeks to break down such barriers. This may be resisted, even by new incumbents of policy positions.

Box 3. Foresight - enhancing & extending traditional policy and strategy planning

Planning: A (supposedly) rational process of decision-making and control focused on the allocation of resources with respect to fixed objectives by systematic and transparent procedure. Actual practice yields closer or further approximations to this idealised description.

Strategic Planning: A process of managing organisational change focused on the development of an organisation and its human resources, structures and systems.

Forward Planning: The process of exploring the future, usually with the help of probable scenarios, by including analysis of the socio-economic impact of firm decisions and objectives, and defining key elements likely to give rise to sudden deviations or changes in trends. Unlike planning, this approach is directed much more towards strategic questions than towards operational problems.

Foresight: has the same orientation as forward planning, and also likely to employ scenario analysis and other exploratory methods to produce insights into the challenges implied by prospective technological, economic and societal developments. But it is also highly participative seeking to stimulate networking among key actors (i.e., policy-makers, researchers, enterprises, other stakeholders) and to translate prospective analysis into implications for present-day decisions - i.e. with more-or-less explicit feedback into "planning" and "strategic planning".

Source: Adapted from: EURYDICE Report "Forward Planning in Education in the Member States of the EU" 1999 and the FOREN Report "Reconciling Foresight with Policy Making at Regional Level" December 2000
<http://foren.jrc.es>

Q1.7 Why and when should the decision be taken to undertake Regional Foresight?

Foresight can be proactive or reactive, or arise from a special combination of circumstances, but is only worthwhile when it can be tied to action.

Regions can have very different reasons to undertake a Foresight exercise. These will depend upon their characteristics, priorities and objectives (see Part II - Chapter 3). The motivations may be mainly reactive:

- A national agency has requested that you contribute your region's views into a national exercise, or
- You may have learned of the results of a national exercise, and be concerned as to what their implications are for your region.

At the other extreme, much more proactive reasons may be involved:

- In the absence of a national Foresight approach, you want to make use of this set of policy tools.
- You may be concerned about the future prospects for a particularly important sector of your economy, and wish to gain insight on the challenges and opportunities it may face in the future.
- You may be interested in building a future vision for your region, because you are dissatisfied with the perspectives on regional development that emerge from other levels of government.

The particular style of Foresight (Chapter 2) you adopt will be shaped by the objectives (Chapter 3) you are pursuing, and this “Practical Guide” is intended to help your choices here.

Independently of these considerations, the decisive factor in launching a Foresight exercise - especially one involving a range of societal and economic sectors - can also stem from a fortuitous or special combination of circumstances that spell either a **major threat** or **major opportunity** for the stakeholders concerned. Examples of these could include:

- An external (i.e. national government) threat to reconfigure regional / local government institutions and reallocate competencies.
- A threat to the local economy, for example, the decline of a local industry, the withdrawal of a major inward investor, etc.
- For less-favoured regions, the need to prepare for the major impact of EU enlargement on structural and cohesion funds.
- For rapidly developing regions, there may be a desire to avoid falling victim to the problems that come with rapid success and growth, such as infrastructural bottlenecks, skill shortages, wealth imbalances, etc.

Foresight should not be used when there is no possibility to act on the results that it will generate. A minimal degree of political, economic or cultural leverage is required (c.f. Q1.2) – even if it is recognised that the Foresight activity is likely to have to battle with entrenched opposition to achieve any significant impacts.

Neither should "wishful thinking" nor "me too" regional Foresight be embarked upon. The simple imitation of issues and methods (not to mention the uncritical “borrowing” of results) from elsewhere is liable to be counterproductive. For example, a predominantly rural agricultural region cannot "Foresight" its way to becoming a high-tech nanotechnology or even biotechnology hub. Neither can a Foresight activity that has been designed for a region which is accustomed to wide public participatory debates necessarily be (immediately) deployed in one which public opinion is handled through more traditional routes - surveys, press, political party representation, etc. (More on this in Part II).

If there is no possibility for careful preparation and tailoring of regional Foresight to specific regional characteristics, then it probably should not be implemented. Political discretion also needs to be exercised in cases where conflict is inevitable between certain sectors on highly contentious issues. Where there is a strong probability that the conflict-resolution powers of Foresight methods will be outweighed by the chances that conflict is exacerbated, then again, Foresight should not be undertaken, or at least taken up in a very cautious way. An example might be a case where a regional Foresight exercise might address long-term water management in a context of scarcity and competition between industry, agriculture and households – or different sub-regions. Stalemate could easily result, and perhaps stem from the inability to address completely the supply-side of the problem, for instance if the region in question shares its water basin with other territories.

CHAPTER 2 – TYPES OF FORESIGHT

This section of the 'Practical Guide' goes further into the question of just **what** Foresight is. Later sections will concentrate on **how** to set about doing it. For now, we will focus on the defining characteristics, and the main varieties, of Foresight.

There is a wide range of activities that can constitute Foresight. Being aware of this should help you to decide just what types of Foresight you may wish to undertake or participate in. However, it is important to be aware, too, that many activities are being marketed as Foresight nowadays. It is an appealing term, and all sorts of activities are seeking to re-brand themselves and gain its status. Not all of these really meet the core requirements of Foresight – for example, some of these are simply conventional forecasting studies carried out by consultancies using expert teams. There is nothing intrinsically wrong with such studies, and indeed they can be very useful inputs to Foresight. But to suggest that such studies are sufficient to constitute Foresight in a region is very misleading.

Questions	Summary answer
Q2.1 : To which issues can Foresight be applied?	Foresight can be applied to a huge range of topics, and activities may concern embedding Foresight capabilities as well as working through a single large programme.
Q2.2 : How can Foresight be used at Regional level?	Foresight can be used to inform policymaking, build networks, and enhance local capabilities for tackling long-term issues.
Q2.3 : What are the main types of Foresight?	A first distinction is between Foresight activities that are more or less bottom-up or top-down.
Q2.4 : What other main types of Foresight are there?	A second distinction is between Foresight activities that are more or less product- or process-oriented.
Q2.5 : So, what do these different approaches to Foresight have in common?	Foresight features a long-term orientation to examining a wide range of factors, drawing on widely-distributed knowledge, in an institutionalised way, and using formal techniques
Q2.6 : How can formal methods be used in Foresight?	While the results of formal methods can be fed into Foresight as “forecasts”, it is more valuable to relate the design and implementation of such methods to the interactive Foresight process.
Q2.7 : What are the advantages and problems of using formal methods in Foresight?	Formal methods provide results which can communicate key Foresight conclusions, check the consistency of different aspects of the vision, help identify where more knowledge is needed, and legitimise the exercise.
Q2.8 : What is the difference between exploratory and normative	Exploratory methods begin from the present, and see where events and trends

methods?	might take us; normative methods begin from the future, asking what trends and events would take us there.
Q2.9 : What weight should be put on quantitative as opposed to more qualitative methods?	Foresight usually draws on both approaches, which provide distinctive inputs into grasping the problems we are dealing with: quantitative data are often given a great deal of weight, but they should not be allowed to dominate.
Q2.10 : Are there other important variations in approach underlying the formal methods used in Foresight?	The use of expert opinion may be contrasted with analyses based more on following through assumptions – again the approach used is determined by the problem and context confronted.
Q2.11 :How can I go about identifying the Foresight approach appropriate for my situation?	The appropriate balance of approaches will be influenced by the problems at stake, the resources to hand – and the political context.

Q2.1 To which issues can Foresight be applied?

While most often applied to hard” scientific and industrial topics, Foresight can be applied more widely – and the aim may be more that of developing general Foresight capabilities than of working through a single large programme.

Foresight can be applied to any topic where significant changes are anticipated – or desired – in the long-term. Chapter 1 stresses that there needs to be a link to practical action for Foresight to be more than just forecasting. The sorts of Foresight an organisation undertakes will reflect its interests, capabilities and competencies. The focus on Science and Technology (S&T) developments that is common in national Foresight may be less relevant to a region with little in the way of R&D allocations, for example. Such a region will have little need for Foresight to inform research prioritisation. Of course, some S&T issues in Foresight may still be relevant to the region. Even if it is not so concerned with technological frontiers, it is quite likely to want to facilitate more rapid uptake of available technologies in the region, for example. It may seek to enhance links between Universities and other research performers, on the one hand, and local business and welfare institutions on the other; it may seek to forewarn local employers of challenges to the sorts of products they develop or processes that they use; and so on.

The wave of interest in Foresight that began in the mid-1990s has so far mainly resulted in studies and programmes that are:

- Commissioned by and focused on the nation-state
- Largely focused on bringing together knowledge about scientific and technological (S&T) developments on the one hand, and social needs and market opportunities on the other.
- Aimed at networking stakeholders in the context of a major Foresight Programme oriented (at least initially) towards producing particular reports, informing particular decisions, or building particular networks.

But the basic principles, and indeed many of the specific methods and tools, of Foresight can also be used in other ways and by other actors. Indeed:

- Many large commercial organisations, and a number of regional authorities - and also voluntary associations and charities - have undertaken (or commissioned) Foresight programmes and exercises. (Sometimes these have been described through other terms such as “futures studies”, “strategic visions” or “prospective”).
- Areas of focus also range widely. Many formal techniques have their origins in defence planning; military agencies still use such tools to examine emerging threats, antagonists, emergencies, and strategies. Infrastructural decisions – building and siting of dams, power stations and transport networks, for example – are also typically informed by appraisal of long-term developments. Currently, climate change issues are being examined closely by insurers, land-use planners, and others, often using scenario analysis and related approaches. Some work is conducted very narrowly, by extrapolation or modelling of simple demographic or economic trends, for example. But many agencies do undertake more substantive and wide-ranging Foresight, involving much more participation and network building.
- National Foresight exercises have sometimes been impelled to expand their focus. Organisers of national exercises often seek to *disseminate* their results to regions, cities, etc. They have also sometimes found it necessary to involve these actors in ongoing Foresight. This may have been to gain access to knowledge and political leverage from these actors, or to help institutionalise and activate a “Foresight culture” on a broader base. A focus on S&T has often been found insufficient for such deepening of Foresight: issues concerned with entrepreneurship, regional disparity, demographic change, environmental problems, and public acceptance of innovations have surfaced repeatedly in Foresight – a feature common to many early national exercises (e.g. in the Netherlands, Sweden, the UK – even in France’s “key technologies” exercise).
- Despite the predominance of major Foresight programmes, there are numerous smaller exercises. Furthermore, some approaches to building “Foresight culture” do not depend upon a central programme aimed at informing particular decisions. Some approaches, for example, are much more oriented toward generating the skills and capabilities for a wide range of regional actors to define and embark upon their own Foresight activities. An example of this is a “Foresight embedding” (*Foresight for Real*) exercise being proposed for North-East England by one of the participants in the FOREN network.

Finally, let us return to the question of what areas to focus upon. It is usually going to be of considerable benefit to situate Foresight activities within a wide-ranging appraisal of future developments. It may well be that the key players in Foresight are mainly interested in particular areas of industry, technology, social welfare, or some other specific topic. But their understanding of long-term issues is bound to require some analysis of the background within which these areas are developing, and the factors that may impinge upon their areas of interest from adjacent and even from more remote areas.

Having said that, it is quite logical for Foresight activities to focus on those areas that are of most concern within the region, and where there is most scope for regional actors to influence the course of development. This will often involve areas of concern other than the S&T field that was central to most early national Foresight programmes – and may accordingly require very different inputs of expertise to achieve useful results.

Q2.2 How can Foresight be used at Regional level?

Foresight can be used to inform policymaking, build networks, and enhance local capabilities for tackling long-term issues.

In Part III, a number of regional Foresight activities are described. Reading through these you will probably be struck by how very different they are. They vary in terms of the resources committed to them and their scale of activity, in the topics focused on and the methods used. Thinking about what topic to address and what types of method to use are addressed later in this section. Here we want simply to outline some of the main reasons for undertaking regional Foresight exercises – and some of the things they cannot do. We will talk about “policymaking” below, but the general arguments will apply to other sorts of decision making – for example the strategies of firms and voluntary associations.

Three main rationales for Foresight activities are as follows:

- To inform policymaking, so that decisions taken by key actors in the commissioning body are more aware of longer-term developments and how these are liable to interact with current policy decisions. Often a Foresight exercise will be stimulated by the need to take a particular decision, admittedly. But the knowledge developed, and the Foresight capabilities that have hopefully been embedded in the organisation, should have a wider significance.
- To help build networks among the people centrally involved with shaping the future of a particular topic. They will be brought together to work on their visions and assessments of the future. The purpose of this is to help them become better able collectively to understand the challenges and opportunities that they are liable to confront, and the strategies and objectives that others might pursue.
- To develop capabilities widely throughout a region, to facilitate the development of a “Foresight culture”. The aim of this is for people of various kinds to be able to define and embark upon their own Foresight activities, to forge their own Foresight networks.

In practice a mixture of these three reasons is often in play. The third rationale is probably the one that has been slowest to be recognised as a practical goal, but is often very relevant at regional level. In practice, too, there may be other goals that stimulate regional interest in Foresight. It may be kicked off by a national exercise, or an effort to make the region’s voice heard within the context of such an exercise.

What Foresight cannot do is to solve all of the social, economic or political problems that beset a region. Foresight can generate visions. Ideally large elements of these will be shared visions, and ones that are well-founded on knowledge of the relevant developments in social or technological affairs. This ideal is not as utopian as it may at first seem; some national and regional exercises have succeeded in achieving quite widespread consensus behind their results. But Foresight is not a magic wand with which to impose consensus where there are profound disagreements. While it may help find areas of agreement shared between opposing factions, it may also become mired in disputes between entrenched antagonists. Such risks are greater where the focus of Foresight is on topics that divide these groups – which will often involve issues of social welfare, governance, and the like.

Furthermore, Foresight should not be seen as a “quick fix”. A Foresight exercise may provide the information (e.g. a priority list) needed for a particular policy to be implemented. But the sorts of longer-term analyses that Foresight involves, and the new networks and capabilities

that it can forge cannot be expected to achieve results overnight. Often the processes of interacting around ideas of what opportunities might be seized, how particular challenges might be confronted, etc. will take a long time to result in widely-accepted notions of the way forward. The problems we wish to address have often matured over many years – effecting significant change is often going to require long preparation, and considerable groundwork to prepare people for the change.

A regional Foresight activity will, of course, exist in the context of activities undertaken in other regions and quite possibly at the national level. It will almost always be desirable to make use of Foresight outputs and experiences from such other sources. The exceptions may be where there is a radically different Foresight philosophy being adopted elsewhere, or where there is a strong need to differentiate regional activities – for instance where a national programme is seen as not paying sufficient attention to regional issues. There may be sensitivities involved where the networks established in different exercises overlap, too.

Beyond using outputs from other exercises (and supplying outputs to them, as well), other types of link may be fostered. Liaison with other exercises may be a means of learning good practice, practical problems of using specific approaches in specific contexts, scope for pooling resources, and so on. To date there has been limited experience of active regional exercises being strongly linked to active national ones. Unless the region is in a high degree of conflict with national authorities, this can nevertheless often be an ideal to aim for. Finally, international organisations can play a role in collating information about Foresight and fostering its use in particular settings. FOREN itself derives from the European Union's interest in supporting regional Foresight, of course, as do several other recent projects. Such activities may be sources of information and practical help for new Foresight activities.

Q2.3 What are the main types of Foresight?

First, Foresight activities can be more or less bottom-up or top-down.

Foresight activities vary in the extent to which they are “*top down*” or “*bottom up*”, and emphasise the *products* or the *processes* of interaction and networking. Before turning to Foresight proper, it is worth noting that the popularity of the term “Foresight” has meant that it has often been applied to rather more traditional and less participative forms of futures study: This sort of heavily top-down, product-oriented activity, which is at best really only quasi-Foresight, comes in two main varieties.

- **The Select Panel.** Here, a small expert panel weighs available evidence and generates a vision of the future, a list of priorities, etc. The panel may commission new studies or mainly draw on its internal expertise. The renown of the experts will largely determine the impact of the work; often it may be dismissed as the product of special interests – other experts, it will be alleged, could be found to give other views. (Thus the dismissive acronym BOGSAT is sometimes applied to this approach – it's just a “Bunch Of Guys Sat Around a Table”.)
- **The Model.** This involves using a technically sophisticated procedure – simulation modelling is an outstanding example. But since such models are inadequately developed for dealing with many topics. As a result, there will also be a rather looser way of combining together different trends and issues, extending the study beyond the narrow parameters that can be properly addressed by the model. The vision(s) of the future that result from this will come with the legitimacy accorded to the techniques and fields of study employed. Often techniques such as computer simulation are treated

with awe. But there is increasing awareness that they depend on assumptions about the object of study that may be contested. (The phrase “Garbage in, Garbage Out” has been used in critique of particular modelling exercises, to indicate that their results are only as good as the underpinning assumptions and data.) Such models’ usefulness for addressing long-term developments is also limited by their being better equipped for dealing with quantitative trends within unchanging structures than with qualitative developments and structural discontinuities.

These approaches may not be full-fledged Foresight, but they can be useful aids to planning, decision-making, and thinking about the future – and they can be helpful inputs to exercises that are more appropriately termed Foresight. (Forecasting studies can, of course, equally draw on reports and data produced in the course of Foresight activities!).

Foresight activities vary considerably in how top-down or bottom-up they are. At the extremes:

- Some exercises are **top-down** and place little stress on interaction. To be Foresight proper, inputs will have been sought from a wide range of sources, but these are mainly processed by a small expert group. The group should have been constituted to include a range of interests – not just futures and domain specialists – and in particular to link together researchers and practitioners (active businesses and/or policymakers) in the field. The group will seek inputs of evidence and views from the wider community. Often this will involve highly formal methods such as Delphi questionnaires, but also public seminars and the like can be used. This material informs the results generated by the expert group, and these consultations are also part of spreading the Foresight “message”. Often, too, there will be several expert groups working in parallel on different topic areas, with another group charged with drawing together their conclusions. This resembles a more open version of the Select Panel approach described above. It differs from such narrower forecasting exercises in terms of its scope, its openness to inputs from a wide range of contributors, and its linkages to decision-making.
- Some exercises are more **bottom-up** and place high stress on interaction. They solicit inputs about how to conduct the Foresight activity. They may ask for views about its design, about the content (e.g. the range of topics to cover), about how to address messages to what groups, etc. A wide range of methods can be used to ensure that these are forthcoming – discussions on websites, meetings in localities and with special interest groups, presentations at a wide range of fora. A need to pull such diverse contributions together is usually recognised, of course, and some panels or teams will be entrusted with the task of preparing syntheses and action plans. But there is ample opportunity for other participants to reach their own conclusions, appropriate to their own organisational requirements and opportunities.

These extremes are manifest in several exercises. But also we find many Foresight exercises that fall between them, with a mix of top-down and bottom-up elements.

Bottom-up approaches have considerable advantages – they allow for wider gathering of intelligence, increased legitimacy for the activity, and are liable to yield more process benefits (see below). However, they take time and careful planning to organise, meaning that they cannot be undertaken lightly or in haste. Furthermore, they are inevitably “hard to control” – running the risk of generating or airing views and ideas that are politicised or potentially subversive of the Foresight exercise itself, its design, or its potential impact on

decision-makers. This is of course an “inconvenient” feature of democracy in general, and bottom-up Foresight can be considered to be an attempt to help democratise more areas of policymaking.

The extent to which bottom-up approaches are employed, and the ways in which they are implemented, requires careful planning. Problems encountered elsewhere need to be considered seriously. Nevertheless, it will be rare circumstances – e.g. the need to obtain insights to feed extremely rapidly into urgent policy decisions, and perhaps those rare circumstances where high confidentiality is required (e.g. some sorts of emergency planning) – that demand exclusively top-down approaches. And even here, we should be aware that some sorts of policymakers reflexively prefer to opt for more closed, rapid and “efficient” approaches, remaining unconvinced of the network and knowledge benefits of wider participation. We can choose to accede to these preferences – or we can challenge them.

Q2.4 What other main types of Foresight are there?

A second distinction is between Foresight activities that are more or less product- or process-oriented.

The focus on products or processes is related to the top-down/bottom-up distinction. In practice Foresight activities vary in the extent to which they emphasise:

- **Formal Products.** These include reports, videos, lists of priorities and action points, and the like. Foresight exercises vary not only in the emphasis given to these, but also in terms of the extent to which the products are on the one hand, more visionary, stimulating, challenging ones (e.g. scenarios), or on the other, more practical, concrete, action-oriented ones (e.g. checklists). Likewise, they vary in how far such formal products are aimed at or disseminated to wide audiences, or destined simply to be inputs for use by a narrow circle of decision-makers.
- **Learning Processes:** these include network building and the embedding of Foresight culture in organisations and constituencies engaged in the process. The “product” here is less an action plan than a preparedness for action. The goal is achieving increased receptivity to signals of change, and an enhanced understanding of how and where to access critical resources. Most often, the activities around which such learning is accomplished involve a Foresight programme - some effort to create products, be they consensus visions of the future, or Foresight reports or priority lists. Such activities have proved to be useful means for establishing or reinforcing networks, as different types of actor are encouraged to share their knowledge and strategic thinking.
- But some Foresight activities place even more stress on **developing capabilities**. Such activities are more oriented toward enabling participants to develop their own Foresight procedures for their own organisations, to form their own networks, etc. The emphasis will here lie more on training them in the sorts of method that are used, and providing awareness about the sorts of practical issues that this ‘Practical Guide’ discusses.

Of course, a mixture of product and process orientations is often pursued in practice, and they can be mutually reinforcing. Capabilities, too, should always be developed as a by-product,

but it is possible to build these in an explicit objective of the activity, and design specific activities with this in mind.

The specific circumstances determine what mix is going to be most feasible to implement, and which may be most effective in terms of meeting its objectives. Many national Foresight programmes have been predominantly product-driven. The reports and other outputs from such programmes are usually fairly easy to find, which has perhaps contributed to a misapprehension that these form the Foresight approach. But much more process-based exercises also exist. While these can be much harder for outsiders to access and assess, they may have been important in helping to develop capabilities for bringing longer-term perspectives into play in decision-making. Approaches centred on developing capabilities may be problematic in terms of evaluating their final impact, but immediate outputs in terms of people having undergone training (etc.), and their own evaluations of its value, are easy to obtain.

A **product** orientation may be particularly necessary if there is a need to inform specific decisions, where inputs such as reports and priority lists are required. A **process** orientation will be particularly relevant where there is seen to be a lack of networking between key actors. One of the aims of several S&T-oriented Foresight programmes was to help strengthen “national systems of innovation”, for example, linking researchers, policymakers, and industrialists. In some circumstances where the creation of enhanced networks is not seen as a priority – for example, in some regions most of the key decision-makers may know each other already. Here the task may be more one of introducing “Foresight culture” into existing networks, by providing incentives for people to develop and exchange ideas about longer-term issues, and by enhancing their capabilities to develop such perspectives. Some Foresight activities focus on **Foresight culture** by emphasising training, dissemination of skills in Foresight methods, etc. These latter activities may be assessed in terms of credentials such as diplomas awarded, numbers of people being trained, etc.; “product-oriented” exercises are assessed in terms of the timely delivery of high-quality reports, etc. But more process-oriented, network-building exercises are much harder to assess, and their impacts may be fairly invisible in the short term. This can make it difficult to win support for such approaches from policymakers and funding sources who do not fully appreciate the goals and principles of Foresight.

Q2.5 So, what do these different approaches to Foresight have in common?

Foresight features a long-term orientation to examining a wide range of factors, drawing on widely-distributed knowledge, in an institutionalised way, and using formal techniques

The discussion above has highlighted a number of ways in which Foresight exercises vary one from another – in terms of area of focus, type of actors involved, extent of interaction, “bottom-upness”, and focus on product or process. It is appropriate to remind ourselves at this point about what is common to Foresight, as we understand it. Q1.1 stressed that Foresight involves **anticipation, participation, networking, vision, and action**. These common features imply that, despite the range of types and methods of Foresight, we can expect that Foresight activities will:

- Have a long-term orientation, not a short-term focus, even though the objective is to inform current decisions. Long-term generally refers to periods over ten years ahead, though there may well be insight generated as to much more immediate

developments, and Foresight approaches are sometimes applied to generating shorter-term visions.

- Examine a wide (but not diffuse) range of factors. This means that Foresight requires interdisciplinary approaches, with the pooling and sharing of very different kinds of expertise. This is a marked contrast with, say, conventional long-term economic or demographic modelling.
- Be interactive, drawing on knowledge and views that are distributed across many sectors and organisations, and helping to build links between these. It will typically seek to involve both researchers and actors such as policymakers and entrepreneurs in the field of concern, so that knowledge of long-term developments can be fused with the strategic thinking of decision-makers.
- Also generally be institutionalised, creating networks and channels of communication between these different actors. In many cases there will be an intention that these should be sustainable networks, continuing to function (and engage in sharing longer-term analyses) after the initial Foresight activity has been completed. Practical steps may be taken to ensure that this intention is realised, that the networks do not collapse when a round of activity is over.
- Employ formal techniques. Free-ranging discussion and debate are valuable, but alone they are not enough. Ways of eliciting, structuring and synthesising different points of view and sources of information are critical to Foresight.

These features are displayed to a lesser or greater extent in different Foresight activities: all of them need to be present to some degree for the activity to be reasonably described as Foresight in the sense used in this 'Practical Guide'.

Q2.6 How can formal methods be used in Foresight?

While the results of formal methods can be fed into Foresight as “forecasts”, it is more valuable to relate the design and implementation of such methods to the interactive Foresight process.

Any Foresight exercise will involve a range of methods. Some of these will relate to the management of the process, the securing of requisite support from its constituencies, and achieving results among its intended “users”. The next main section of this 'Practical Guide' addresses such management issues and tools. Other methods are used for the generation of informed visions of long-term futures, and various formal techniques are used for this purpose. More detail on these methods is provided in the Annexe. Here we briefly outline the rationale for using such formal techniques for generating informed visions of long-term futures.

These techniques were mainly developed in more narrow forecasting and futures studies. The **results** of such studies can form inputs to the more interactive processes that characterise Foresight. The usefulness of the techniques, and the usability and relevance of the forecasts and other results they produce, are typically much greater if they actually form **part of** the interactive Foresight process. Their value is lower where the techniques are used solely to produce forecasts that the Foresight process can assimilate (useful though this may be). If the design and implementation of the formal method has not been closely related to the wider Foresight process, its results and the form that these outputs take are liable to have a greater or lesser mismatch with the requirements of other parts of the process. Furthermore, valuable opportunities for mutual learning will have been lost.

For example, consider a Foresight exercise where it has been decided to use such methods as a Delphi questionnaire or computer simulation. Certainly these approaches demand specialist expertise and a good deal of detailed labour to implement successfully. But this does not mean that they are stand-alone activities. Those responsible for implementing the Delphi or simulation (let us call these the “methodologists”) could meet with a large range of participants in the Foresight process more widely. Such meetings can help inform the methodologists as to what should be asked in the survey, what should be modelled in the simulation, into the process. Inputs from the Foresight process more widely will thus be built into the methods. The results of the methods are thus more likely to be attuned to the process more generally, dealing with relevant parameters and other considerations; and the methodologists will have a better understanding of the communication needs of other participants in Foresight.

Such interactions can also have considerable functionality for the Foresight process even before any “results” are forthcoming, in the sense of forecasts from the model or survey. This is because the act of trying to generate, identify, and select among Delphi questions or model parameters is in itself an important process. It is a valuable opportunity for learning, for sharing views, for discovering areas of mutual interest and points of disagreement between worldviews. It is a practical task which can help focus the attention of members of panels of expert groups, requiring them to start considering which topics deserve priority attention, where there are factors which are outside the scope of present work, and so on. It has been reported that having such a task can be extremely telling in terms of getting a group of participants to really concentrate their efforts, rather than “talk around” the subject with no clear trajectory to their discussions.

Some other formal methods, of course, like scenario construction workshops, are more routinely a matter of engaging participants overtly in sharing their knowledge and views. Often such activities can valuably inform the narrower formal methods. As in so much of Foresight, the information flows are two-way.

The use of formal techniques, then, is not only a source of helpful information inputs into Foresight, but can also be a valuable aid to structuring and stimulating parts of the more interactive Foresight process. This can sometimes be their most important role!

Q2.7 What are the advantages and problems of using formal methods in Foresight?

Formal methods provide results which can communicate key Foresight conclusions, check the consistency of different aspects of the vision, help identify where more knowledge is needed, and legitimise the exercise.

In addition to providing a useful focus for some efforts within Foresight, the use of formal methods has other benefits. Some of the results of these techniques can be valuable communication devices. For instance, some formal methods yield graphs as outputs, others produce bullet-point lists or narrative visions of scenarios. Such outputs can help users assimilate and respond to the messages of a Foresight exercise. However, a note of caution should be sounded: lay people may be confused or alienated by lengthy reports, by statistics and complex diagrams. There may also be a tendency to place too much weight on quantitative outputs, as if data that can be represented as numbers or graphs are more real than trends and issues which we can only grasp qualitatively.

Another role of formal tools is in testing, and identifying weaknesses in, the internal coherence of Foresight. These tools can sometimes help point out inconsistencies that may exist between different parts of one vision. For example, when an effort is made to provide a quantitative framework for an exercise, it may reveal that several different candidates reckon that the same resources are going to be devoted to their region, their field of R&D, etc. This sort of “accounting” task may be rather disappointing to those hoping for rapid progress on all fronts, but can help validate the Foresight effort to sceptics in policymaking and elsewhere.

Formal tools are also often valuable in identifying points at which further knowledge is required – there is nothing like trying to model a relationship to tell us how well (or badly) the underlying processes are understood. Priority areas for better statistics and new analyses of social dynamics may be rapidly encountered in Foresight studies – so we find the Uusimaa exercise in Finland early on determining that new research was needed into the increasingly critical role of Knowledge-Intensive Business Services in that region.

Finally, formal methods can help lend an exercise more legitimacy than is forthcoming for material that is presented simply as a synthesis of expert views. As we have already noted, the outputs of formal methods always depend on non-technical assumptions and approaches. This means that there are dangers of unexamined political ideologies and inadequate analysis of underlying processes being incorporated invisibly into such outputs. Even the most sophisticated method is only as good as the assumptions fed into it, and it is important that Foresight employs a variety of methods, and that they are properly scrutinised. Ideally, Foresight will help demystify these formal methods, and make participants far more aware of both their strengths and their limitations. This is liable to be a by-product of involving a wide range of Foresight participants in discussions with the methodologists about design and implementation, as recommended above.

Except in the cases of rapidly conducted panel-based exercises, or programmes with a strong emphasis on large-scale face-to-face interaction and bottom-up approaches, formal methods are likely to be quite prominent in Foresight. The question is not so much *whether* to use such methods, as *which* to use, and *how* to use them. There are few general rules here, but some points to bear in mind are:

- Some formal methods are more suitable for particular topics. For example, economic and demographic modelling is well-established, more sociological and political issues are harder to address in models. Similarly, experts who can provide intelligence on S&T developments for Delphi analysis are typically easier to locate than those who have equivalent knowledge about social trends and innovations, etc.
- Formal methods vary considerably in costs – large-scale modelling or surveys are fairly expensive, for example. Formal methods can provide impressive output, and are often very persuasive – sometimes to the extent of unhealthily stifling debate, or forestalling wider participation in the Foresight process.
- Methods that can be used to facilitate workshops and meetings and the “capture” their results are still in their infancy. Individual Foresight experts are often tied to particular tools, having limited experience of other approaches. It is worth considering and experimenting with the use of such methods, since experience suggests that at least some of them can be very helpful.

Q2.8 What is the difference between exploratory and normative methods?

Exploratory methods begin from the present, and see where events and trends might take us; normative methods begin from the future, asking what trends and events would take us there.

There are many tools in use, and some of these come in many variants. Our bibliography provides references to some major directories and guides to these tools, and an Annexe also provides more detail. Here we provide a brief guide to some of the main characteristics of different tools.

A fundamental distinction in futures and forecasting studies is commonly drawn between exploratory and normative methods. This terminology is well-established, but rather misleading (since both approaches involve exploration, of course, and both call into play questions about norms and values). Still, the distinction is useful:

- **Exploratory** methods are “outward bound”. They begin with the present as the starting point, and move forward to the future, either on the basis of extrapolating past trends or causal dynamics, or else by asking “what if?” questions about the implications of possible developments or events that may lie outside of these familiar trends. Trend, impact, and cross-impact analyses, conventional Delphi, and some applications of models are among the tools used here. The majority of forecasting studies are mainly exploratory, though when these result in alarming forecasts, there may well be an effort to locate turning points or policy actions that could create a more desirable future.
- **Normative** methods are, in contrast, “inward bound”. They start with a preliminary view of a possible (often a desirable) future or set of futures that are of particular interest. They then work backwards to see if and how these might futures might or might not grow out of the present – how they might be achieved, or avoided, given available constraints, resource and technologies. The tools used here include various techniques developed in planning and related activities, such as relevance trees and morphological analyses, together with some uses of models and some less conventional uses of Delphi such as “goals Delphi” methods. A fairly recent development is the use of “success scenarios” and “aspirational scenario workshops”, where participants try to establish a shared vision of a future that is both desirable and credible, and to identify the ways in which this might be achieved.

There is little evidence as to when each of these approaches is most valuable, and again in practice we often find Foresight involving a mixture of the two. It may be that more normative approaches are most likely to be effective where there is a widely shared goal already in existence, and where Foresight can then help put flesh on the implicit vision of the future. For example, a common long-term regional goal will be for more rapid and equitable economic development in the region; or where S&T issues are at stake, it may be to achieve a secure grip on at least some niches of technology innovation, production and use. In such cases, normative approaches can be powerful inputs into priority-setting and other elements of decision-making (and help provide road-maps and indicators that can be used to monitor progress towards the desired future). In other cases, normative approaches may be considered insufficiently objective, or there may be a lack of consensus as to shared goals, at least in early stages of the Foresight process. Exploratory methods can then be expected to dominate.

Q2.9 What weight should be put on quantitative as opposed to more qualitative methods?

Foresight usually draws on both approaches, which provide distinctive inputs into grasping the problems we are dealing with: quantitative data are often given a great deal of weight, but they should not be allowed to dominate.

Another important distinction is between quantitative and qualitative methods:

- **Quantitative** methods place heavy reliance on numerical representation of developments. These have considerable advantages (ability to examine rates and scales of change, to engage in basic accountancy-type testing of the consistency of different elements of the whole). They also have notable disadvantages (limited grasp of many important social and political variables, dangers of spurious precision, problems of communicating with less numerate audiences). Often quantitative methods implicitly or explicitly use simple models of some sort. For example, time series extrapolations of trends imply a model in that use time as the “independent variable” – really, as a proxy for unmeasured processes that take place in time. More complex models relate variables together so their mutual influences can be tracked. In so-called dynamic models this is tracked over time, whereas the sort of equilibrium models often employed by economists assume a move from a present state towards a (allegedly more balanced) future state. Some quantitative approaches involve experts putting numerical values to developments, or creating such values on the basis of the numbers of people agreeing with particular statements or forecasts (as in Delphi).
- **Qualitative** methods are, of course, often employed where the key trends or developments are hard to capture via simplified indicators, or where such data are not available. In addition, various forms of creative thinking are encouraged by such qualitative approaches as brainstorming, utopian writing and science fiction. Methods for working systematically with qualitative data are becoming more widely available with the development of Information Technology – tools for “mind mapping” and “conversation analysis”, etc. – which can also be helpful devices for facilitating meetings and workshops. For many years the development of qualitative methodologies in social science, as well as in forecasting and Foresight, has lagged behind that of quantitative approaches, and there has often been an explicit or implicit reliance on an expert figure to pull together the strands of qualitative analyses and come up with a synthesis by more or less intuitive means. In the last decade or so this situation has improved considerably, and a great many tools – often computer-based – for capturing and analysing qualitative data, and processing and representing results of such analyses, have become available. (For example, mind-mapping and conversational analysis have been employed in some Foresight studies.)

The exact mix of methods is highly dependent on access to relevant expertise, and on the nature of the problems being studied. They represent different approaches to handling information, and can contribute powerful insights in their own ways. There is a strongly-rooted tendency to place more weight on statistical information (or quantitative data that may not really merit the term “statistical”). This is misguided: such data can be invaluable in giving a broad overview, in demonstrating the incidence of phenomena, the representativeness of case studies or opinions, and the like. But they can rarely probe the dynamics of a phenomenon in any depth, and are restricted to concepts and indicators that are usually quite limited and liable to give only a partial hold on the issues at stake.

In practice Foresight work can never be completely dominated by quantitative methods and their results. The task is to establish an appropriate role for such methods.

Qualitative approaches may well, incidentally, involve some quantitative elements. For example, in a scenario workshop participants may be asked to vote on, or rate, topics to be considered in more detail. Statements about factors that need to be taken into account may be captured and grouped according to the frequency with which they have been voiced (for example in conversational analyses, or via the use of computer-conferencing techniques). Equally, qualitative judgements will necessarily inform quantitative activities – the definition of a parameter, the interpretation of a questionnaire item involves qualitative judgements. But perhaps the major issue differentiating the approaches is that qualitative methods still remain less well-documented than quantitative ones, and it can be harder to establish what good practice in applying them to Foresight is. This is particularly true of some of the newer computer-based methods for group-working, and it is likely that most Foresight designers will want to use these in an experimental way only, for the immediate future.

Q2.10 Are there other important variations in approach underlying the formal methods used in Foresight?

The use of expert opinion may be contrasted with analyses based more on following through assumptions – again the approach used is determined by the problem and context confronted.

A third critical distinction is between methods that centre on examining and articulating the views of experts, and those based more on investigating the consequences of assumptions:

- ***Expert-based*** techniques seek to draw out informed opinion and the evidence that underlies expert judgements. They seek to articulate views about the future, of the trends and contingencies that may give rise to alternative futures, and of goals that should be striven for and the critical priorities and strategies here. The approach may involve large-scale surveys of opinion (such as Delphi), or much smaller and more detailed elaboration of visions (such as cross-impact analysis, scenario workshops, etc.). Where the issues tackled in Foresight are ones of wide concern, and especially where they deal with social change, the “experts” may be effectively the whole population - representative views may be developed from samples of the general public. Results may be presented in quantitative form (e.g. Delphi estimates of the date at which particular developments will manifest), or qualitatively (e.g. narrative scenarios).
- ***Assumption-based*** techniques are ones that elaborate visions and priorities on the basis of knowledge that is usually already public (available statistics, published analyses of what likely breakthroughs or other developments and contingencies). Sometimes shortage of relevant data may lead to a special activity to generate relevant statistics – for example, we have already noted how in Finland, interest in the role of Knowledge-Intensive Business Services led to a specific study of these firms in the Uusimaa region. Assumption-based techniques are often more reliant on expert practitioners (described earlier as “methodologists”) than on more interactive approaches. For instance, technical expertise is required to set up a simulation model to describe an issue of interest. (Here the model will calculate the results of variables influencing each other – relevant data has to be used to “calibrate” the parameters, and critical assumptions are required to involve the relationships between these variables - and no assumptions are more critical than the selection of appropriate variables in the first place. As argued above, it is quite possible – and often desirable -

for these “technical” steps to be highly influenced by interaction with a broader set of actors than just the technical experts in such a methodology, for example. A more qualitative (but more expert-based) approach would be to involve a small team in constructing scenarios based on assumptions that particular events or causal sequences will unfold, that particular worldviews adequately describe the course of events, etc.

It would be easy to imagine that assumption-based methods are mainly quantitative in form – but Delphis are expert-based and yield quantitative results, and some sorts of scenario work are mainly qualitative but highly assumption-based. The key issue at stake here is how far we are able to rely upon data and knowledge of processes and relationships that has already been codified and subject to some scrutiny, as opposed to having to elicit opinions and guesstimates from experts as to what might be the state of affairs now and in the future. The nature of the topics considered in Foresight is such that a combination of the two will almost invariably be called for. Expert judgements have to be deployed where we are considering rapid change, qualitative breaks, social and technological innovations. The questions that arise are more those of *how* to use such opinion than *whether* to. The issues that arise are:

- Can we locate relevant expertise? Can we remain within the region to do so, or do we have to draw on external sources?
- Do we aim to sample views from a wide range of experts, or concentrate on the in-depth analyses of a smaller number – or to combine both approaches?

Q2.11 How can I go about identifying the Foresight approach appropriate for my situation?

The issue is one of choosing the appropriate balance of approaches, and this will be influenced by the problems at stake, the resources to hand – and the political context.

This discussion has not tried to explain “how to” utilise particular methods in any detail. Rather, its purpose has been to characterise different methods, and to indicate some of the main features that differentiate among methods. For more information on specific methods, consult the Annexe. We have also avoided saying that you **should** use one or other approach; rather we have attempted to pinpoint critical issues that you will need to take on board in planning which mix of approaches to use. And, to tell the truth, it is almost always going to be a mixture of the different approaches – the big question is just what sort of balance will be struck.

The particular balance of approaches to Foresight that will be chosen should depend, of course, on the specific circumstances that are confronted. This may seem to be an obvious point. Nevertheless, there have been several cases of an approach simply being copied from one context to another, without adequate appraisal of how the approach might need to be modified or restructured to deal with the new circumstances. In some of these cases this has led to major failure in the Foresight process, and a loss of political support for Foresight.

What can be chosen, in practice, is going to depend upon various political circumstances. It may be that senior policymakers have an entrenched idea of what Foresight should be, they may even be seeking to “keep up with the Joneses”, to emulate the impressive programmes that have been tried elsewhere. There may be high-level doubt that a broad public could have anything of value to say about important topics, or it may be feared that a process of wide

consultation could exacerbate existing ethnic, political or civil strife. Results may be required to inform extremely pressing policy decisions, or to convince international aid or loan agencies that serious strategic analyses have been conducted. We discuss some of the challenges to implementing Foresight in the discussion of implementation of Foresight in Part II of this 'Practical Guide'. This highlights, among other things, the need for scoping and feasibility studies prior to embarking on a major exercise. Such studies will often be required to arrive at an exercise 'plan', and they are also important for convincing actors of Foresight's merits - as can other strategies, such as soliciting contributions from international experts to pre-Foresight meetings.

We may have to accept that something less than the ideal is all that can be achieved in current circumstances. To the extent that we do a good job now, explain as far as possible why particular choices have been made, and make our case for doing things differently in the future, there may be hope for continuous improvement in Foresight in our regions.

The presentation of outputs from a Foresight exercise also needs to be planned. It should be tailored to the needs of its target audience, which may require the use of a number of different formats. Linked to this, consideration needs to be given to follow-up activities – the available resource base (financial, human, infrastructural and cultural) will be an important factor enabling you to do some things, but equally limiting what you can aim for. These considerations are the focus of later chapters in this Guide.

PART II – Implementing Regional Foresight

The purpose of Part II of this Practical Guide is to enable you to begin to appreciate the steps involved in organising a regional Foresight exercise, and its structure should provide you with a useful framework within which a Foresight blueprint can be developed for your region. Throughout, we offer you possible options to consider within the context of your own region, options that are based upon the latest understanding of the conduct of Foresight in regions.

Before making any considerations of the structural and planning aspects of Foresight, Part II begins (Chapter 3 – **background**) by asking you to consider a number of key baseline aspects that will determine at a substantial level the overall thematic orientation that your regional Foresight effort should take, and which will fix at a macro-level the boundaries and ambitions in terms of the impact that can be expected. These background considerations will be highly dependent on your region.

Chapter 3 continues by asking you to think about the **scope** of your regional Foresight exercise – for example, what will be the focus, who will participate, how much do you plan to spend, and how long will the exercise last? You may have some answers to these questions, but you will probably need to convince others of your arguments. This is the subject of Chapter 4, which provides you with some pointers on how to **build momentum** behind proposals for a Foresight exercise in your region. Here, we also provide some options for you to consider when trying to secure sponsorship for the exercise.

Once financial and political support has been secured and the scope of the exercise finalised, you will be able to determine the **structure and organisation** of your Foresight activities (Chapter 5). For example, will you set up panels? How will you deal with cross-sectoral issues? A fully developed (though flexible) blueprint should now be the aim, which should detail the inputs that will be required, and the processes and methods to be used to systematically think about the future. The shape of the desired **outputs** and the way in which you could **take action** on the findings of Foresight in your region are the subject of Chapter 6, which also considers how you might **evaluate the outcomes** of your Foresight activities and establish Foresight as a **continuous** regional activity.

CHAPTER 3 – BACKGROUND AND SCOPE

A lot of Foresight and strategic futures activity tends to emerge in response to perceived moments of social or political crisis or at some critical break point in established trends. For Foresight, it is important to interpret the prevailing situation in terms of **challenges**. Critical challenges must be identified and expressed in an unambiguous way to serve as a touchstone as a Foresight activity unfolds. The critical challenges should thus set the main thematic orientation of the Foresight exercise. However, before beginning an implementation plan, it is equally important to measure these challenges against regional actors' and institutions' remit and decision-making powers. This will help to temper the expectations of participants and will make it easier for you to identify which Foresight outputs can be followed up locally and which will require action at other territorial levels.



Questions	Summary answer
Q3.1 : What challenges will my region have to face over the coming decades?	Regional challenges are not always obvious, but Foresight can be used to identify some of these
Q3.2 : What is the role of the different players located in the region in the face of these challenges?	It will be necessary to assess whether challenges can be fully addressed by regional players
Q3.3 : What will be the objectives of Foresight in my region?	Many objectives can be set for regional Foresight, but these need to be clearly stated from the outset
Q3.4 : How could I choose the focus of Foresight in my region?	Regional Foresight exercises tend to have more than a single focus, although it is not uncommon for there to be a predominant orientation towards a particular set of issues
Q3.5 : How could Foresight be 'positioned' vis-à-vis existing policies and programmes?	Foresight activities can be arranged as relatively 'stand-alone' exercises organised by regional public authorities or they can be embedded in existing policies, programmes and strategy-making processes
Q3.6 : What types of themes and/or sectors should my exercise cover?	Themes and sector coverage depends upon objectives and foci of the exercise. Some of the more grandiose exercises have covered around 20 areas, although fewer than 10 is more typical
Q3.7 : What would be the most suitable time horizon for my regional Foresight to adopt?	Time horizons tend to vary from 5 years up to 20 years, reflecting, for the most part, the varying identities of projected beneficiaries from Foresight products and processes
Q3.8 : Who should be involved in my regional Foresight exercise?	Regional actors such as regional governments, universities, businesses, chambers of commerce, local media, industry associations and NGOs are often involved in regional Foresight
Q3.9 : How long will it take to conduct a Foresight exercise in my region?	An exercise lasts typically between 6 months and 3 years
Q3.10 : How much will it cost?	Costs can vary. They will depend on location of activities, scope of the exercise, number of people in the project management team, organisation of events, approach selected, etc.

Q3.1 What challenges will my region have to face over the coming decades?

Regional challenges are not always obvious, but Foresight can be used to identify some of these.

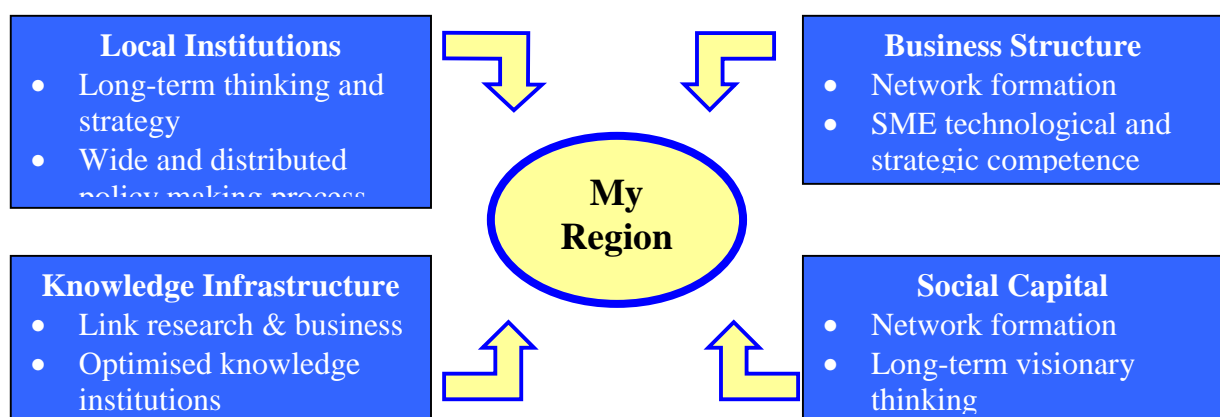
This is perhaps the most important question to pose before beginning to scope your regional Foresight activities. The notion of what constitutes a challenge is obviously very subjective. Externally driven examples could be of a political (e.g. EU enlargement implications for regional development funding, central government decision to change devolution of power) or economic (e.g. global competition threats to local firms, sectors and employment) nature. Internal examples could relate to inefficiencies in the economic and innovation systems, or gaps in hard (e.g. logistics) or soft infrastructure (e.g. technology centres).

Sometimes the main challenge to a region is clear and unambiguous. If it is not, then its identification can become the first step of the Foresight process itself. It is difficult for this Guide to prescribe types of challenges or ways to identify the most important ones (although earlier sections have highlighted some of the common challenges currently facing regions). Brainstorming approaches are often one way to leverage ideas guided by the criterion of thinking about what will matter in the long term. If such an approach is to be followed, you will need to think about who should have a say in framing and articulating the main challenges facing the region.

One stimulus used in a regional Foresight simulation conducted within FOREN was to consider issues and problems relating to four critical resources on which local and regional development arguably depends:

- **Local Institutions** (i.e. governance issues relating to policy, political competence, efficient administration, sophistication of public debate on policy and development issues)
- **Business Structure** (main economy related features and business issues)
- **Knowledge Infrastructure** (R&D, education & training, technology transfer)
- **Social Capital** (informal relationships and networking, trust, solidarity, etc.).

The diagram below provides a sample of some issues relating to each of these critical resources.



Q3.2 What is the role of the different players located in the region in the face of these challenges?

It will be necessary to assess whether challenges can be fully addressed by regional players.

Once you have identified the challenges, it is important for you to consider the extent to which the organisations based in your region, be they public or private, are able to influence or respond to such challenges:

- Some issues are best addressed by the private sector, but this does not preclude public administration from leading or facilitating a Foresight exercise as a forum for private businesses, for example, to help them reach consensus on what actions they might need to take.
- Other issues will have a national or global reach and therefore the crux will be to identify the appropriate perspective to take at regional level, and consider how regional Foresight considerations might be linked to those at higher territorial levels.
- The challenges to address may be highly pertinent to your region, but the political competence to deal with the issues may or may not reside in your organisation.

These are just a few of the considerations to bear in mind. However, the underlying questions of competence, prerogative and authority, are absolutely vital. Since Foresight is a participatory process involving time and commitment from stakeholder representatives, your activities must carry a stamp of approval strong enough to assure participants that they are engaged in a worthwhile endeavour. This in turn implies that Foresight findings and outputs must be followed-up and acted upon. Otherwise, stakeholders will not give you a second chance.

Q3.3 What will be the objectives of Foresight in my region?

Many objectives can be set for regional Foresight, but these need to be clearly stated from the outset.

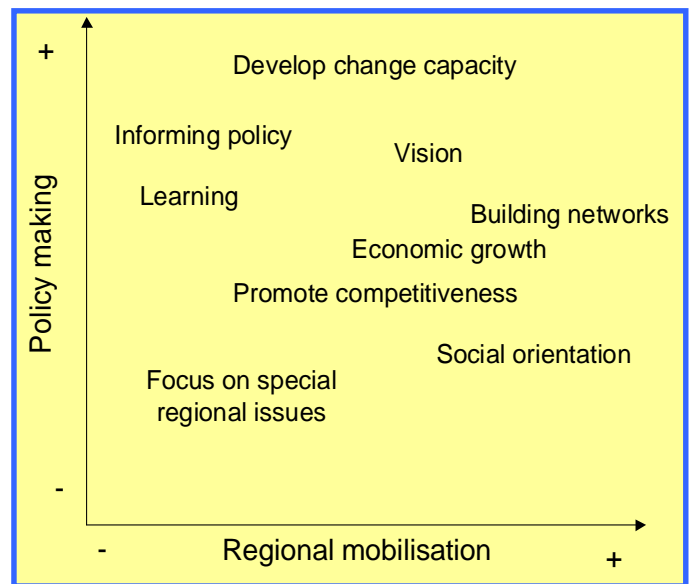
Objectives should be clearly stated, internally consistent, and, at least in the first instance, should avoid being too specific. The latter is important to gain widespread support for your activities early on, although care must be taken not to promise too much to too many regional players. Ideally, objectives should be debated amongst key regional players in order to ensure early buy-in to the exercise.

Part I of this Guide has set out some of the reasons why regions undertake Foresight, and you might want to refer back to this when thinking about setting objectives for your own Foresight activities. The case description chapters also illustrate formal objectives adopted in other regions, some of which are shown in the table below.

Region	Objectives
West Midlands	To support SME competitiveness through the demonstration and uptake of Foresight best practice
Nord – Pas de Calais	To initiate a more strategic approach in the elaboration of the council's regional plan
Province of Liege	To build a consensual view amongst experts on the region's prospects for taking advantage of the opportunities offered by the Information Society
Lombardy	To identify the level of technological competitiveness of the region's most important sectors

When done well, regional Foresight is more a process than an academic study, and the involvement and mobilisation of regional actors is one of the key success factors and can be seen as an objective in itself. One can plot some typical objectives set for regional Foresight, shown here using the axes:

- The mobilisation of regional actors and consensus building
- The ability to inform and shape policymaking and decision-making processes.



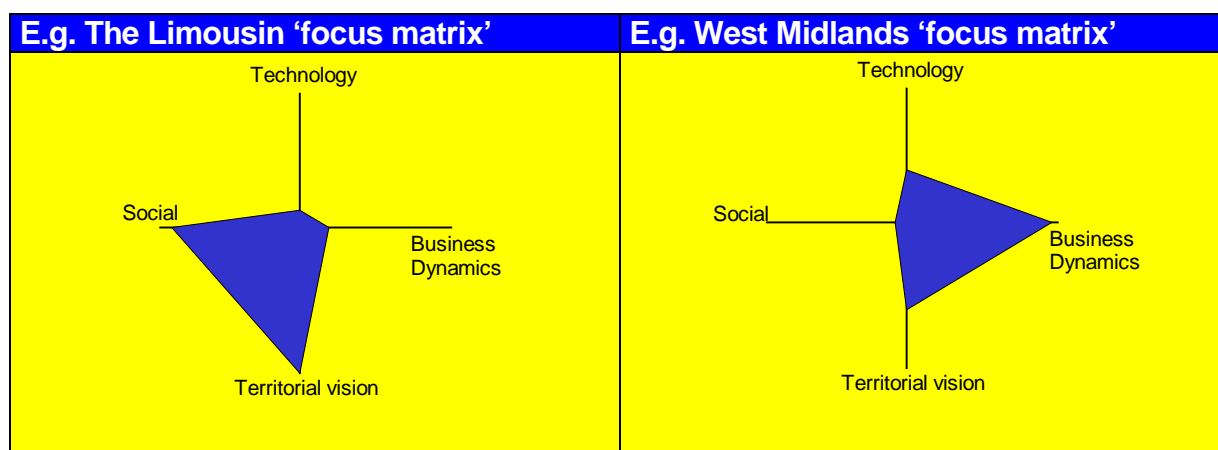
Q3.4 How could I choose the focus of Foresight in my region?

Regional Foresight exercises tend to have more than a single focus, although it is not uncommon for there to be a predominant orientation towards a particular set of issues.

There are undoubtedly a number of ways to think about the focus of any Foresight activity, but this Guide has chosen the following classification in the regional context:

- **Social**, where the emphasis is on human development, covering issues such as demography, settlement, mobility, identity, sense of belonging, citizenship, networks, human capital, education and training, and healthcare.
- **Science and Technology**, where the emphasis is on technological developments on the one hand, and market opportunities and social needs on the other. This has been the most common focus at the national level, but is where results at the regional level are often less relevant.
- **Business Dynamics**, where the stress is on economic development, with activities often focused upon enterprise clusters, SMEs, industry associations, etc.
- **Territorial vision**, where the region is considered as a whole as the nexus for four main global issue areas: geography (resources, environment, etc.), geopolitics, economy and human development.

In fact, most regional Foresight exercises do not have a single focus, but a combination, as shown in the matrix diagrams below. Here, two regions are shown, one in France (Limousin) and the other in the UK (West Midlands). It is interesting to note the contrast in Foresight focus between these two regions, a situation that can be largely explained by the extent of regional devolution in both countries. In France, 'territorial prospective' has become firmly established over the last fifteen years, and there is a strong territorial and social agenda that reflects the development of regional devolution during this time. In contrast, there has been little devolution to English regions such as West Midlands, other than the recent establishment of Regional Development Agencies (RDAs), which have a predominant business focus. It is therefore unsurprising to see that the English region's Foresight activities are skewed towards business dynamics.



These two examples illustrate the importance of considering what power and competence regional-based institutions and processes have to influence or respond to particular challenges. Such an assessment will need to be made, preferably in consultation with major regional players, prior to any decision on the focus of regional Foresight activities. The history of Foresight in the region should also be considered, as well as any existing activities, since these could suggest important lessons to be learnt.

Q3.5 How could Foresight be 'positioned' vis-à-vis existing policies and programmes?

Foresight activities can be arranged as relatively 'stand-alone' exercises organised by regional public authorities or they can be embedded in existing policies, programmes and strategy-making processes.

In some regions, Foresight activities have been managed as relatively 'stand-alone' exercises organised by regional public authorities. This is perhaps most evident in France, where a number of regions have organised grand-style territorial prospective exercises with the objective of generating overall territorial visions. Such exercises are often located away from service delivery centres and are instead situated in strategic positions, e.g. central planning departments or other central positions, such as the office of the regional 'governor'. By virtue of their broad focus and central position, these exercises often address cross-thematic and cross-sectoral issues, which can be missed by existing institutions and processes. This semi-detachment can also make their results difficult to implement, especially if regional government and/or business are organised along 'traditional' lines.

For this reason, some people believe that regional Foresight should not be a detached activity, but rather an activity that should be embedded in existing policies, programmes and strategy-making processes. This requires a quite different mode of organisation from a more centralised exercise, and is likely to be more discrete, using existing policy or business support programmes and frameworks. Such approaches also tend to be more process- than product-oriented, explicitly seeking to influence processes and behaviour at the micro-level. The UK approach to regional Foresight is perhaps closest to this model, as exemplified by the NE England and West Midlands case studies provided in later sections of this Guide. However, as the Uusimaa case study suggests, there is a danger that Foresight activities can become totally subordinated to everyday information needs, whereas Foresight should really be about thinking 'outside of the box'.

Q3.6 What types of themes and/or sectors should my exercise cover?

Themes and sector coverage depends upon objectives and foci of the exercise. Some of the more grandiose exercises have covered around 20 areas, although fewer than 10 is more typical.

The answer to this question mostly depends upon the objectives and foci of your Foresight activities, although the inability to cover all possible regional themes and/or sectors must be recognised from the outset. For example, if a predominantly sector development focus is to be followed, are all business sectors in the region to be covered? This is highly unlikely, not least due to the costs and co-ordination efforts involved, and so some form of selection will be necessary. The same selection challenge will apply where themes or problems are taken as the starting point, as in the more territorial and social type exercises. How this selection has been done within regions is often unclear, but existing strategic priorities, SWOT analyses, lobbying by interest groups, and even fads and fashions all seem to have played an important part. Again, this is an area where consultation of key regional players is likely to pay dividends, since it increases the likelihood of firm commitment to later stages in the exercise. Nonetheless, it is possible that there will be demand for more themes and/or sectors to be addressed than resources or time will allow, and some difficult decisions will perhaps have to be taken.

As for the number of areas to cover, some of the French exercises we examined (e.g. Limousin, Grand Lyon) have set up around 20 working groups, with each looking at a particular theme or sector, whereas in other places, perhaps only 5-10 such groups have been established. In fact, there are often attempts to tackle cross-sectoral and/or cross-thematic areas, where some of the most interesting synergies are thought to lie. The table below shows that a broad range of themes and sectors, both emerging and long-standing, have been addressed by regional Foresight activities.

Region	Examples of Themes or Sectors Addressed
West Midlands	Creative Industries Medical Technologies Engineering Design
Limousin 2017	Services Agriculture Identity, Images and Creativity
Catalonia 2010	Telecommunications External transport links Catalan identity
Uusimaa	Knowledge Intensive Business Services (KIBS) Employment in voluntary sector
Nord – Pas de Calais	Waste Materials New Services Urban Structure

At first sight, most of these remarks on coverage would seem to concern relatively centralised regional Foresight activities, where logistical and co-ordination concerns naturally limit the scope of activities. Indeed, more distributed Foresight activities, initiated and co-ordinated by a wide variety of regional players, would seem to overcome many of these limitations, at least in theory, thus allowing a whole multitude of themes and sectors to be simultaneously addressed. This is a state of affairs that many regions would like to achieve, but, of course, its realisation often requires initiation efforts to catalyse the start-up of Foresight activities. Perhaps inevitably, these initiation efforts must be targeted, given resource constraints, bringing you back to the original selection challenge. This situation is perhaps best illustrated by the UK regional Foresight experience, where the emphasis has been on facilitating other regional players to initiate and organise their own Foresight activities. Even here, it has proved impossible to select and target more than a handful of business sectors (often clusters) for attention at any one time. Another way to deal with this selection challenge would be to put in place a 'rolling' programme of regional Foresight activities, with perhaps 4-5 different themes and/or sectors addressed each year. We will discuss this more fully in Chapter 6 when we come to discuss 'continuous' regional Foresight.

A key disadvantage of these more distributed and often-piecemeal activities is that they are poor at providing regional 'vision'. This is because they tend to focus on a small number of themes and/or sectors, they often lack region-wide visibility, and they tend to miss cross-cutting issues. This is not to say that they are ineffective. On the contrary, some people would argue that this more modest and targeted approach has longer-lasting impact than many of the more grandiose exercises initiated by other regions. Very little research has been conducted to test this hypothesis, but it would seem that both approaches have some role, which could certainly be complementary.

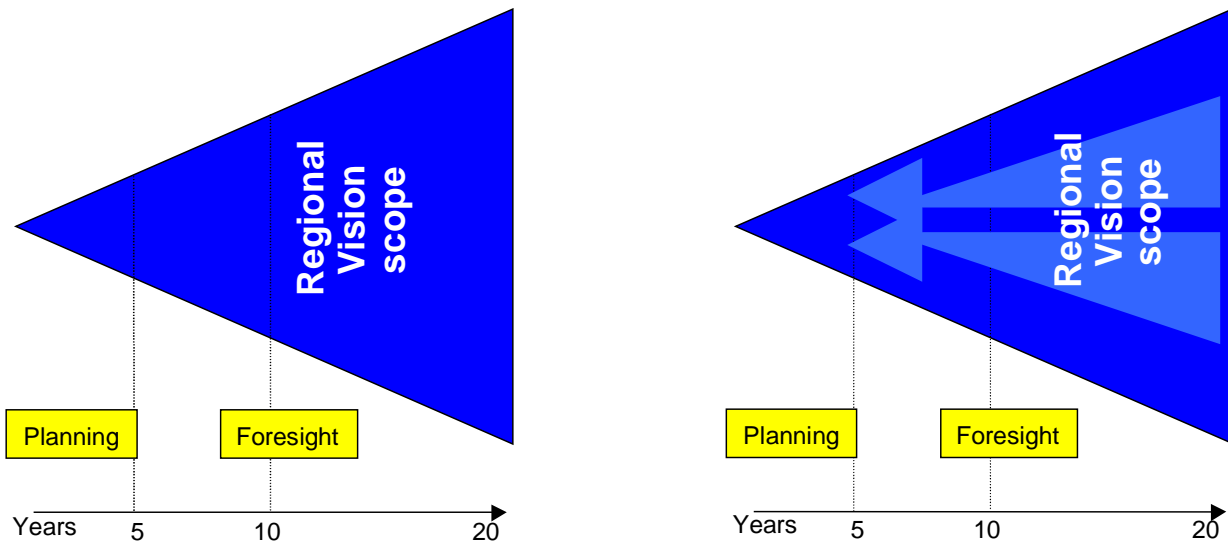
Q3.7 What would be the most suitable time horizon for my regional Foresight to adopt?

Time horizons tend to vary from 5 years up to 20 years, reflecting, for the most part, the variable identities of projected beneficiaries of Foresight products and processes.

The time horizon refers to a future point in time that limits the temporal scope and future orientation of regional Foresight activities. In the French 'territorial prospective' studies, this has tended to be around 20 years, whereas in studies orientated towards sector development, commonly undertaken in the UK, time horizons tend to be significantly shorter, sometimes as little as 5 years. These differences basically reflect different users, with regional planners more likely to find longer time horizons useful than, say, small and medium sized enterprises (SMEs). As a rule of thumb, the time horizon of regional Foresight should at least be beyond the normal planning horizons of the players involved. Some examples are given below:

West Midlands	Baltic STRING	Catalonia 2010	Limousin 2017	Grand Lyon Millenaire3
5 years	10 years	20 years	20 years	20 years

An apparent paradox of regional Foresight is that whilst a long time horizon provides the opportunity to develop a broad vision for the territory, most players' expectations are for short-term activities. In fact, there is no paradox here – regional Foresight is instigated in order to think about possible futures, with a view to changing what we do today for the better. Regional Foresight is about readjustment in the present to create more agile regions for the future.



Q3.8 Who should be involved in my regional Foresight exercise?

Regional actors such as regional governments, universities, businesses, chambers of commerce, local media, industry associations and NGOs are often involved in regional Foresight.

Linked to the coverage of regional Foresight activities is the breadth and depth of participation by regional players. A broad range of regional actors, including regional governments, universities, businesses, chambers of commerce, local media, industry associations, other NGOs, and the wider citizenry, could all potentially be included in regional Foresight. Again, the focus of Foresight activities will have a significant bearing here, with sector development type exercises tending to engage mostly business interests, whilst social and territorial Foresight will most likely see attempts to engage with the wider public.

Regional Foresight exercises can potentially involve thousands of participants from a wide variety of organisations and backgrounds, though it is typical for some groups to be more actively engaged than others. National Foresight exercises have typically shown a preference for engaging 'experts', a reflection of their early preoccupation with science and technology issues, although this is now changing. Notions of 'expertise' are likely to be broader at the regional level, particularly where more socio-cultural issues are concerned.

Nevertheless, your region might be well endowed with universities and leading companies with pools of talent and expertise that can be useful for informing your Foresight activities, although you will need to consider the extent to which such organisations identify with the region. There are well-known examples of world-class universities having few links with their immediate region, and even more instances of international firms showing minimal interest in the long-

term development strategies of the regions in which they are located. On the other hand, Foresight can be an opportunity to engage such organisations in a regional agenda.

A further issue on involvement concerns regional politicians – what should their role be in regional Foresight? There is no clear-cut answer to this question, and much will depend upon the political culture of the region, and indeed, the nation-state. Deep political involvement can mean that things get done more quickly, but there are electoral risks that could result in an exercise being ‘tainted’.

It should be borne in mind that wide engagement is often expensive and difficult to co-ordinate, which means that many exercises show a preference for the establishment of stakeholder and/or expert working groups that are considered as spokespersons for a particular area. You will have to assess the level of commitment expected of such participants, in terms of the amount of time and effort that they will need to devote to the exercise. This will require some careful planning, and participants will need to be told at the start what is expected of them. Nevertheless, you will probably underestimate the effort involved, but the spirit of participants normally compensates, since the Foresight process typically enthralls individuals to work beyond the confines of the normal ‘call of duty’ (although this should not be taken for granted).

However, panel and working group arrangements are often coupled with ‘windows’ of wide consultation, where instruments, such as questionnaires, workshops and public meetings, are used at fixed points in the process. The latter are seen as important, since they lend regional Foresight activities wide visibility. They can also provide a check on domination by any one particular group and they confer wide ownership of the outputs of an exercise. Moreover, the wider the involvement in regional Foresight, the wider Foresight process benefits will be dispersed.

How participants are to be identified and convinced of the worth of the exercise is dealt with in Question 4.1.

Q3.9 How long will it take to conduct a Foresight exercise in my region?

The duration of an exercise is typically between 6 months and 3 years.

The duration of a regional Foresight exercise will depend upon its focus, objectives, coverage and the extent of participation. But if our case studies are indicative, anything from 6 months to 3 years should be anticipated. As we have already mentioned, Foresight can become a ‘continuous’ regional activity, something we discuss in Chapter 6.

Q3.10 How much will it cost?

Costs can vary. They will depend upon location of activities, scope of the exercise, number of people in the project management team, organisation of events, selected approach, etc.

This is quite difficult to estimate at the moment, since very little financial data exists on regional Foresight. Moreover, if the costs of national Foresight exercises are to be considered as an indicator, regional costs are likely to vary, depending on both the location of activities and their scope. Clearly, territorial prospective-type exercises, as seen in France, will be relatively more expensive, by virtue of their duration and scope. However, more modest approaches are possible and these will require fewer financial resources.

Financial costs are most likely to result from the running of a project management team, the organisation of meetings and events, travel and subsistence of at least some of the participants, publicity material, extensive consultation processes (e.g. questionnaire surveys), and other mainstream activities associated with an exercise. You might also have to consider paying some participants to give up their time for your Foresight exercise – this is uncommon, but in some economically deprived regions, it might be necessary.

A good way to begin to estimate financial costs is to develop an outline of what a Foresight exercise might look like in your region. You can do this using this Guide. It is a good idea to keep your outline flexible, so that you can add and remove different activities, thereby increasing or reducing the costs. Experimentation is recommended, and it is probably a good idea to develop a range of options.

The question of who pays, i.e. sponsorship, is dealt with in Chapter 4 of this Guide. However, you should note that the financial burden of regional Foresight activities are typically borne by a wide range of players, not least by the participants themselves, who usually provide their thoughts and time for free.

CHAPTER 4 – BUILDING MOMENTUM

If your Foresight activities are to stand any chance of success, it will be necessary for you to enrol those players whom you consider to be key to your project. This chapter therefore highlights some of the strategies and opportunities for building the necessary momentum behind your Foresight activities.

Questions	Summary answer
Q4.1 : How might the various players be identified?	The identity of players will depend upon the orientation of your Foresight activities. A number of practical approaches can be used to identify individual participants.
Q4.2 : What sort of arguments should be employed to convince players to take part?	Arguments should emphasise the potential benefits of establishing regional Foresight activities.
Q4.3 : How should I promote the Foresight exercise more widely?	Various tools can be used to promote widespread appreciation of, and participation in, regional Foresight activities
Q4.4 : Who should sponsor the regional Foresight exercise and how long should this commitment last?	Sponsorship can come from the public or private sector and often comes from both. Sponsorship should be secured for the envisaged duration of your Foresight activities
Q4.5 : When should the various players be consulted and how should this be done?	Players should be consulted frequently throughout the course of your activities, with Foresight 'naturally' offering many opportunities

Q4.1 How might the various players be identified?

The identity of players will depend upon the orientation of your Foresight activities. A number of practical approaches can be used to identify individual participants.

At regional level, one of the main aims of Foresight activities tends to be the maximum involvement of leading players from the local 'system'. This is because these players will help determine the final outcome: whether Foresight is focused upon formal production activities, or on the activation of learning processes and development of specific skills. Indeed, the correspondence between Foresight's objectives and local needs depends heavily on the number of local players involved and their effective participation, as well as their ability to intensify relationships of exchange within the local system and with regard to external contexts.

The success of the Foresight programme – and thus its ability to attract sponsors, engage local stakeholders, and put the results to effective use in regional development policies – will depend on its ability to mobilise local sources of energy. As the effectiveness of each Foresight activity is strongly influenced by the number of local players involved and their degree of participation, in order to avoid casual or misguided choices, the identification of

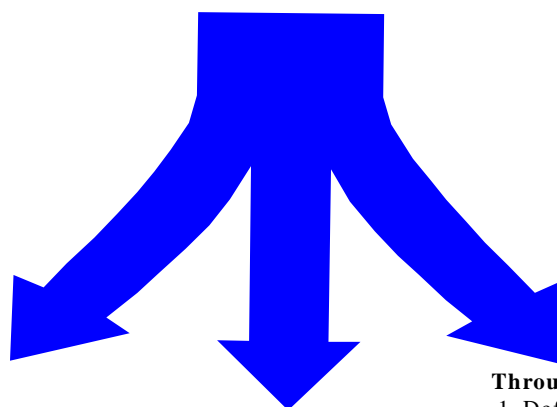
these players must follow an in-depth analysis of the local system and refinement of the general objectives of your Foresight activity.

The various players must be identified according to the **focus** of the Foresight activity, which will, in turn, be dependent upon the **objectives** of the initiative and the **type of region** in which it is to be conducted. Thus, it is necessary to consider the main components of the local system (see Q.3.1), i.e.: local institutions, business structure, knowledge infrastructure, social capital, and the relative players involved. For example, a technological focus will require the involvement of all the members of the knowledge infrastructure and, thus, all the players involved in the demand and supply of technology. In this case, the participation of players from local institutions, the production structure, and the social capital will be limited to their connection with the chosen approach. On the other hand, a focus on the competitiveness of enterprises in a specific sector will require priority involvement of the production sector and, especially, entrepreneurial and trade associations interested in improving the performance of the enterprise system.

General economic development objectives will mainly require the involvement of local institutions and, especially, those responsible for the most important local development planning tools. Objectives focusing on a specific sector, such as improvement of the training system, will involve leading public decision-makers at both local and national level, as well as the public and private training supply systems, and players representing the demand for professional skills.

The most representative players of a "localist" region characterised by widespread presence of SME systems and a low incidence of associations, are those operating in the production system and local institutions, as they are able to encourage greater interaction between public decision-makers and the production system. On the other hand, in a "globalised" region, the players involved will operate outside the local system, i.e. wherever decisions on which the future of regional development depend are made.

Three ways to recruit members & participants



Through personal contacts
using names known to those already involved in the project. You should ensure that key stakeholders are represented

Through stakeholders involvement
you ask the identified stakeholders to give you names

Through a formal process

1. Define the profile of desired membership (stakeholder type, expertise)
2. List together with other already involved people all the names you can imagine
3. Contact every person and ask two questions :
 - Would you be interested ?
 - Do you have two other names ? This allows new unexpected names to come up
4. Match names & profile membership and finalise list
5. Confirm to every person

On a practical level, there are a number of approaches for actually identifying individual participants. In the above diagram, these have been divided into 'personal contacts', 'stakeholder involvement' and 'formal processes' (e.g. co-nomination, which is a form of snowball sampling). All three should be investigated for their suitability, and it is likely that you will draw upon several approaches when identifying participants for your activities.

Q4.2 What sorts of arguments should be employed to convince players to participate in regional Foresight?

Arguments should emphasise the potential benefits of establishing regional Foresight activities

Arguments should primarily focus upon the types of **benefit** to be gained from the setting up of a Foresight activity. Such benefits can be divided into three types:

- "Entry Point" benefits connected to the preparation of specific programmes for submission to national and European financing. In this case, both local institutions and the various members of the production system, the technological infrastructure, the training system and the social system will have specific interests in defining projects and programmes to attract resources into the local system.
- Benefits connected to long-term objectives, aimed at improving the competitiveness of the regional system. These objectives depend on the structural features of the region in question and may address general economic development, improvement of sector competitiveness, greater dissemination of technologies in production and social systems, etc. Obviously, the most suitable arguments for involving players will depend on the objectives identified and the relative benefits. For example, in the case of a Foresight activity aimed at improving the supply of services to citizens by encouraging dissemination of information technology, the arguments to be used with public authorities should revolve around an improvement in the effectiveness and efficiency of the supply of the services. Citizens on the other hand should be made aware that they will benefit from such improvements; arguments might focus upon the benefits of promoting greater awareness by citizens of their rights and the opportunities that information technologies offer (e.g. remote assistance, remote labour, civic networks, etc.).
- Benefits connected to the creation or strengthening of harmony between players at local level. In this case, the arguments, especially those aimed at political decision-makers and entrepreneurial and trade associations, should highlight the potential impacts of Foresight activity. These could include improved interrelations, cohesion and generation of shared vision between local players. This type of benefit also has a direct effect on the advantages to be drawn from the Foresight activity by individual players. For example, individual enterprises can improve their knowledge of the technological and economic scenarios in which they compete, while individual citizens can increase their ability to use new technologies and thus improve their quality of life. Finally, trade associations can consolidate their networks of relations, increase their ability to listen to different points of view and thus improve the quality of the services they offer.

Q4.3 How should I promote the Foresight exercise more widely?

Various tools can be used to promote widespread appreciation of, and participation in, regional Foresight activities

Q4.2 has suggested that players can be convinced to support and participate in regional Foresight by highlighting the potential benefits of activity. These arguments must be articulated and presented if they are to reach their intended audience. Various tools can be used to promote widespread appreciation of, and participation in, Foresight activities, including:

- Publications and traditional communications tools (databases, newsletters, etc.) aimed at widespread promotion of the activities to be carried out and, thus, identification of players interested in participating
- A remote communications Forum designed to disseminate information and promote the activities carried out and completed by Foresight
- Initiatives aimed at encouraging participation at territorial level, such as conferences, workshops, meetings with specific groups of interlocutors and sectors of activity (schools, research centres, associations, world of production, local organisations, etc.), whose aim is to encourage participation and promote a more active and knowledgeable involvement
- Illustration of cases of success at national and European level in regions characterised by similar problems and objectives.

Q4.4 Who should sponsor a regional exercise, and for how long should such a commitment be made?

Sponsorship can come from the public or private sector and often comes from both. Sponsorship should be secured for the envisaged duration of your Foresight activities

Sponsors can be from either the public or private and are sometimes from both:

- The most common public sponsors are national, regional and provincial authorities, some municipalities particularly interested and involved in the project, universities and large national research centres, and centres of innovation. Furthermore, special contributions often come from organisations and institutes whose mission is the promotion of development and innovation activities, i.e. foundations whose aims are to analyse and study the development of socio-economic scenarios. Further important contributions may come from national and European Community public programmes set up to finance studies and analyses. Such contributions are often disbursed through the activities of the EC's RTD Framework Programme or ERDF, as well as through national research programmes, such as those set up in many EU countries to explicitly focus on Foresight activities.
- Private sponsors may include large enterprises particularly interested in the results of the activity and promotion of the territory involved, banks and other financial institutions, entrepreneurial associations (especially in the case of Foresight activities specifically oriented towards enterprise), research centres and centres of innovation (such as science and technology parks), business innovation centres, etc. In some cases, contributions from private sponsors may be offered in the form of co-financing of activities promoted by the European Structural Fund.

Generally speaking, both public and private sponsors should support the activity throughout its entire duration. Hence, the activity programme prepared at the initial stage of the activity will need to give clear details of the total duration of the activity, the ways and means by which it will be updated, and the relative financing requirements. The activity programme should also include the consequent hypothesis of identification of resources. This programme must be as detailed as possible, highlighting the number of players involved, the events planned, the expected results, and the activities designed to encourage participation at territorial level. The programme should also describe how final results will be disseminated and enhanced (emphasizing the points of interest to each category of sponsor). However, sufficient flexibility needs to be built into the activity programme to take account of possible and unforeseen developments during the course of your Foresight activities.

There might be scope or even necessity for sharing of costs across two or more sponsoring bodies, e.g. public-private partnership. However, you should carefully consider the advantages and disadvantages of such an approach. If Foresight is intended to become a continuous activity in your region, it is certainly possible that sponsorship 'duties' could be transferred to other organisations that might directly benefit from the Foresight exercise.

Finally, it should be kept in mind that the time costs of participants in working groups and workshops are usually borne by their employers. This 'informal' sponsorship should never be taken for granted and will need to be acknowledged.

Q4.5 When should the various players be consulted and how will this be done?

Players should be frequently consulted throughout the course of your activities, with Foresight 'naturally' offering many opportunities

Whether the aim is to set up a process-based or a product-based Foresight activity, one of the main features of all Foresight activities must be the active involvement of the various stakeholders from initiation and throughout all the stages of the activity. Widespread and highly-valued participation by various types of local players should not be occasional and episodic, but rather, must be considered a determining factor of the final result. Going beyond mere consultancy, Foresight requires the participation of local players in guiding the participants right from the identification of the general and specific objectives, through the planning of the activities to be completed and the methodologies to be adopted, to the management of operations and the dissemination of results. The total involvement of local players is particularly important in enhancing the results of Foresight. Local players can use the analysis and results produced by Foresight to devise develop more suitable lines of development. The Foresight experience is particularly important for the planning of regional development policies, and also for the adoption of specific activities and actions within the local system.

In terms of 'how' to ensure wide and in depth consultation, promotional activities, such as those suggested in Q.4.3 offer opportunities to elicit views on the conduct of regional Foresight. Moreover, many of the methods used in Foresight (see Chapter 2 and Annexe) require inputs (e.g. data, visions, etc.) from participants. In other words, Foresight activities 'naturally' offer a number of opportunities to consult stakeholders – it is up to you to decide how to take full advantage of these.

CHAPTER 5 – STRUCTURE & ORGANISATION

Foresight activities can often be quite extensive undertakings requiring the appointment of a project management team, usually a steering committee, and often working groups of experts and stakeholders. These 'structures' will need to be organised and monitored, to ensure that the objectives of your activities will be met. This chapter highlights some of the issues you are likely to face in structuring your Foresight activities, and suggests strategies and opportunities in dealing with these.

Questions	Summary answer
Q5.1 : How should my regional Foresight exercise be organised?	You will need to think carefully around a variety of organisational dimensions, taking into account the type of exercise you intend to undertake
Q5.2 : Who are the actors and what are their tasks?	Many players can be involved, and their roles and responsibilities require careful definition
Q5.3 : Does my blueprint include realistic milestones that will allow the exercise to be monitored?	An autonomous Foresight project has to be managed as such. Therefore project management tools have to be developed
Q5.4 : What sorts of inputs will the exercise require?	You should take care in collecting all the existing information (passive) before producing new material (active information).
Q5.5 : Which Foresight methods are best for my exercise?	There is a range of formal Foresight methods available, with their appropriateness dependent upon the context and scope of the exercise you envisage

Q5.1 How should my regional Foresight exercise be organised?

You will need to think carefully around a variety of organisational dimensions, taking into account the type of exercise you intend to undertake

In organising your Foresight activities, there are three main dimensions that you will need to consider in the first instance:

- **Formal structure** of your project
- **Decision processes** to be implemented
- **Resource procurement** (see Q 4.4)

As the table shows, each of these dimensions is associated with a variety of activities, the importance of which will depend upon the type of exercise you intend to undertake.

	Tightly centrally managed autonomous project	Loosely centrally managed autonomous project	Coordination of embedded activities
Formal Structure			
Identify stakeholders	Key	Key	Key
Appoint a steering committee	Key	Necessary	No real need
Set up a management team	Key	Key	Just one person might be enough
Recruit a champion	Useful	Useful	No real need
Recruit expertise	Key	Useful	No
Decision Process			
Define the management style	Key	Useful	No real need
Prepare a blueprint (roadmap)	Key	Just coordination of group plans	No real need
Assign tasks to each group	Key	No	Key
Resource Procurement			
Identify a sponsor (see Q4.4)	Key	Key	Useful
Secure resources (see Q 4.4)	Key	Key	Key
Identify existing inputs	Key	Useful	Useful

Beginning with the **formal structure**, whatever the type of Foresight (see Chapter 2), identifying the stakeholders is a key step. You will need to know which regional players are interested in, concerned by, and have stakes in your project. A simple table of these stakeholders, including their position & expectations vis-à-vis your proposed Foresight activities, is useful.

You will then need to propose a structure for the Foresight, to include the assignment of roles to working groups, panels, committees, sponsoring agencies, etc. Although the tasks devoted to these various 'agents' are tightly linked to the type of Foresight you envisage to implement (see Q5.2), there are some common structural characteristics. For example, all Foresight projects seem to have some sort of steering committee and management team. Establishing these is certainly one of the initial steps a Foresight promoter should take. Many activities also make use of "expert" groups or panels that focus on particular issues. The mechanics of setting up these groups need to be thought through very carefully, since their membership will influence the whole exercise.

Moving on to the **decision process**, if you are engaged in a centrally managed project, you will need to define the management style you want to propose to the groups. For example, if working groups are to be established, they could be given the freedom to make many of the decisions highlighted in this Guide for themselves (this is a definite possibility if the exercise is to be sponsored by more than one organisation). Alternatively, a central project team or steering committee might dictate the terms of conduct to be followed. You should then assign tasks & responsibilities to the different groups you have appointed. Some of the most frequent tasks associated with Foresight are shown in the table below.

Examples of some of the most frequent tasks in Foresight	
Nominate group members	Employ Foresight methods, e.g. scenarios
Manage process	Organise conferences on specific issues
Identify existing literature	Prepare synthesis
Prepare reports on specific issues	Prepare final report
Organise expert hearings	Organise public debate on specific issues

The aim should be a fully developed blueprint, about which reasonable consensus should be obtained, i.e. there should be consultation not only on the scope of the exercise, but also on its organisation and structure. As we have seen in this Guide, there are various options for doing this. It is probably a good idea to investigate these options when discussing the scope of the exercise. As we have already suggested, this blueprint should be flexible and responsive, offering a number of different possible avenues that might be followed. It should cover the following:

- Focus & scope related issues (see Chapter 3)
- Project phases & milestones
- Formal structure related issues
- Decision process related issues

Q5.2 Who are the actors and what are their tasks?

Many players can be involved, and their roles and responsibilities require careful definition

Many players can be involved in a Foresight project, and most of them have already been mentioned in this Guide. These players can fulfil very diverse of roles, including:

- | | |
|---|----------------------------|
| • Promoters | • Champions |
| • Stakeholders or user/target groups | • Political support |
| • Sponsors | • Experts |
| • Steering committee | • Process experts |
| • Project team | • Monitoring group |

The level of involvement of the various actors may vary depending on the type of Foresight and its focus. However, one clear distinction has to be made between autonomous projects and embedded Foresight. If you are engaged in an embedded Foresight (see Chapter 2), the actors involved will be linked closely to the project's management and the participating organisation(s). Apart from the promoter, only stakeholders & possibly experts will be involved. In autonomous projects, on the other hand, wider involvement is more likely and will be linked to the scale of the exercise (see table).

	Autonomous projects	Embedded Foresight activities
Key Actors	Promoters Stakeholders Steering Committee Project Team	Promoters Stakeholders
Usually involved Actors	Champion Experts	Foresight activities coordinator Experts
Actors involved in large scale projects only	Citizens Politicians Monitoring group Process experts	not relevant

Elaborating on a selection of these roles:

- **Promoters** are the people (or the organisation) supporting the idea of developing some sort of Foresight activity in the region. ***If you are reading this Guide you may actually be tempted to become a promoter.*** At a very early stage of the project, promoters usually try to identify who are the interested players in the region (stakeholders) and what could be the first outline of the project (objectives, focus). They would also start looking for sponsors. Usually, promoters become highly involved in the project team.
- **Stakeholders** are those people and organisations that have an interest in the economic & social development of the region. They feel they have something to say about a process such as the one you are about to launch. Stakeholders should participate in the Foresight process. They can become sponsors, provide experts, and/or act as champions. The most important stakeholders should be appointed to a steering committee (if you set one up). Some stakeholders, however, might feel threatened and will oppose the project. For this reason, you (as the promoter) should organise consultations with most stakeholders when drafting your project profile. In this way, it can be used as a tool of enrolment that could engender future ownership of Foresight processes and products.
- A **Steering Committee** will tend to approve the objectives, the focus, the methodology, the work programme, validate the strategy and tools for communication, and help to promote the results. It will define / adjust the assessment criteria and review the deliverables. It will monitor the quality assurance process for the whole project. The Steering Committee could also be a key actor to raise awareness, mobilise experts, and to nominate them to various panels.
- A **Project Team** is nearly always appointed to manage the project on a daily basis. Usually its tasks are as follows:
 - Lead the project on a daily basis
 - Keep regular contacts with the stakeholders & the Steering Committee to ensure that the project direction is maintained;
 - Hold regular meetings with all WP Managers;
 - Maintain accurate records of costs, resources and time scales for the project;
 - Ensure integration of Management Reports and their presentation to the Steering Committee;
 - Ensure that the project maintains its technical objectives
 - Ensure that the project maintains its relevance within the other regional innovation activities.
- Securing high **political support** early on will be helpful to ensure that people perceive the exercise as one that received serious consideration. Indeed, you are likely to want to target key people first, and if these can be won over, a sort of momentum, a “domino effect”, could kick in. It would be helpful if ‘champions’ or ‘ambassadors’ could be enlisted early on to put forward the arguments, even though this entails certain risks as well (e.g. it might lead to rivalry, or a misalignment of expectations of the proposed Foresight exercise).
- **Expert** work is highly significant in terms of:
 - Gathering of relevant information and knowledge;
 - Stimulation of new insights and creative views and strategies for the future, as well as new networks;

- Diffusion of the Foresight process and results to much wider constituencies;
- The overall impact of Foresight in terms of follow-up action.

Apart from subject experts, **Process Experts** can also be mobilised. Their role could be to:

1. Mentor/coach the Steering Committee and the Project Manager

- Provide ideas and external views
- Highlight best practice in Europe
- And, even, ...be an extra pair of hands.

2. Undertake Specific Activities

- Refine the work programme in the course of the Foresight project
- Advise on research methodologies
- Draft consultancy/expert project specifications, advise on appointments
- Comment on key issues papers
- Participate in "consensus building" activities
- Contribute to Steering Committee meetings

The benefits you could expect from bringing in a process consultant are the following:

1. Bring in some economies of scale

- Past experience
- Direct link to the Secretariat and best practice
- Methodologies

2. Contribute to the momentum of the project

- Closely work together with the project manager
- Consultancy experience

3. External view

- Easy questioning
- Access to international experts
- Synthesis and consensus building role

If you want to engage **citizens** from the wider community, it might be necessary to distribute leaflets to homes and work places, advertise in local newspapers, and/or hold 'road-shows' in shopping centres, community centres, etc.

Q5.3 Does my blueprint include realistic milestones that will allow the exercise to be monitored?

An autonomous Foresight project has to be managed as such. Therefore project management tools have to be developed.

Setting up simple tools that will allow you and the project team to monitor your Foresight project is now considered good practice in project management. Monitoring will help you to control and refocus the implementation of the project. It consists of continuously observing and ensuring that the resources foreseen for each project step are used effectively as defined in the blueprint, that work schedules are respected and that outputs actually materialise. The issues involved in on-going monitoring are:

- To observe the activities undertaken during the implementation of each project step in order to compare them, on an on-going basis, to the targets set.
- To continuously adapt the project plan to its environment. The knowledge gained and the active participation of stakeholders may alter the vision or process of your project. As Foresight projects are not expected to be rigid, this is the right mechanism for possible amendments.

The monitoring tool should allow you to follow project implementation. It should be composed of a set of selected indicators designed to provide the relevant actors with on-going and specific data. A simple way (related to classical PERT project management tools) of implementing a monitoring tool is to set up and complete a table such as the following:

PROJECT MAIN MILESTONES	Expected dead line	Probable target date	Corrective actions		Budget share	Budget actual consumption	Corrective actions	
			What	Who & When			What	Who & When
Engage stakeholders								
Set-up the infrastructure								
Choose focus and methods								
Gather existing inputs								
Produce new knowledge								
Develop a shared vision								
Produce final deliverables								
Disseminate results								
Monitor the activities								
Incorporate the outputs in stakeholders decision processes								

This could be complemented by a second tool developed to monitor inputs and outputs. The objective here is to quantify and qualify both the activities involved in and the result of the Foresight project. Typically, they consist of measuring the resources (time, money, human resources...) put into the system, against the results achieved in the production process (new innovation related programmes, new business development, incorporation of Foresight results in stakeholders' strategies,...). However, these indicators are of limited value only. High input indicators don't necessarily result in corresponding output indicators. The complexity of the innovation system requires the shedding of some light on the processes triggered by any Foresight project. The evaluation criteria should then depart from classical input/output indicators such as R&D expenses or patents, and also attempt to create measures of the intensity and quality of networking. Therefore process indicators should also be considered. Evaluation is further considered in Chapter 6.

Q5.4 What sorts of inputs will the exercise require?

You should be careful to collect all existing information (passive) before producing new material (active information)

Once you have decided on the objectives of your Foresight exercise, you might consider collecting information that could prove useful as inputs to your exercise. We can speak here about two different types of information: 'passive' and 'active'.

‘Passive’ sources of information, which include any type of information or data that you can collect on the current state of play in the region and any data that will allow you to construct a retrospective analysis of the main trends (i.e. economic, social and demographic trends) that have characterised your region in the past years. Other types of ‘passive’ information are forecasts, scenarios, results of other Foresight exercises, opinion polls, sectoral and regional data sets, market reports, benchmarking data (both quantitative and qualitative) which refer to, or include, data on your region.

‘Active’ sources of information include mainly **‘resources’** that can be used during the course of the exercise. One of the most obvious inputs under this category is expertise and networks that can be found in your region. For instance, you might consider looking for:

- The presence of easy-to-access expertise in Foresight tools and methodology in the region
- The presence of **associative and representative structures** of different sectors of society – networks, consumer / citizen groups, business associations, credit unions, chambers of commerce, leading figures in the community (public, business), participants that can be involved in your exercise as ‘experts’ on your region, etc.
- The presence of **latent Foresight potential** in the region that could be mobilised with the right stimulus, i.e. the sensitivity of the various players (businesses, regional authorities, research- technology-transfer and innovation-support) to Foresight thinking

If some of these resources are lacking in your region, you could consider tapping into human/network resources situated elsewhere that, nonetheless, have an affinity with (or knowledge of) the region (e.g. a regional diaspora). You might also want to consider the minimum competencies needed to get started. There are a couple of points to bear in mind here. First, it might be necessary to reassess the scope of your exercise if serious limitations have been identified. However, and this is the second point, Foresight itself should be seen as one possible approach to building and strengthening some of the regional assets mentioned above. So the idea to conduct a Foresight exercise should not be abandoned on account of weak networks, etc., since Foresight can help address some of these regional weaknesses.

Q5.5 Which Foresight methods are best for my exercise?

A wide range of formal Foresight methods is available, with their appropriateness dependent upon the context and scope of the exercise you envisage

Any Foresight exercise involves a range of formalised methods, some of them relating to the management of the process, others to the securing of requisite support from key constituencies, and others still to achieving results among intended “users”. Chapter 2 has introduced considerations to bear in mind concerning the methods that are used to process knowledge and opinions about future issues, whilst an Annexe provides a detailed presentation of the most common methods used in Foresight. For this reason, we will not dwell on methods here, other than to say that whilst most formal methods can be used in regional Foresight, it will be down to you to decide which approaches are the most appropriate for the type of exercise you envisage.

CHAPTER 6 – OUTPUTS & OUTCOMES

Foresight activities can produce a wide variety of outputs, including sectoral analyses, critical technology lists, priorities and policy recommendations, scenarios, Delphi results databases, and less tangible 'process' benefits. The challenge is to decide how Foresight outputs might be presented to different user audiences, and who should be responsible for doing this? All too often, insufficient thought has been given to the action to be taken in the light of a Foresight exercise. In many cases this has led to implementation gaps, which have been particularly noticeable at the national level: recommendations have been prepared, but there has been no mechanism to check on their follow-up; networks that were working productively have been allowed to dissolve. In addition to these points, we need to examine another neglected aspect of Foresight - the evaluation of processes, products, and outcomes. Evaluation is an important method of ensuring democratic accountability, and it also provides useful opportunities for learning how better to conduct Foresight activities. Finally, we present some pointers on how to use such learning, to enable regional Foresight to become an ongoing, continuous activity.

Questions	Summary answer
Q6.1 : What outputs and deliverables should I expect from my exercise?	Each Foresight exercise will produce tangible outputs in the form of reports, a website, press articles and intangible outputs like the development of new networks.
Q6.2 : What are the likely challenges in relating outputs to potential users?	Members of various user groups should be involved in the Foresight process and they can help defining the different types of outcomes.
Q6.3 : Why should regional Foresight activities be evaluated?	Evaluation allows you to assess if objectives were met, to learn some lessons on how the exercise was managed, and to define follow-up activities.
Q6.4 : How could I go about evaluating my Foresight activities?	Evaluation can take place in real-time or 'post hoc', with both approaches having their pros and cons
Q6.5 : What sorts of benefits should I be looking for from regional Foresight?	Benefits can be identified at different points in time and at different levels. It will be important to try to take account of unexpected benefits, and you may also want to focus on 'success stories' as possible 'demonstrators'
Q6.6 : How can I manage players' expectations for regional Foresight?	Expectations can be quite variable and sometimes unrealistic, and strategies to deal with this dissonance will have to be developed
Q6.7 : How could Foresight become a continuous activity in my region?	Some continuous Foresight activity is bound to be of value in a region, and there are a number of ways of making this a more likely eventuality

Q6.1 What outputs and deliverables should I expect from my exercise?

Each Foresight exercise will produce tangible outputs in the form of reports, website, press articles and intangible outputs like development of new networks.

Foresight exercises can produce formal & informal outputs:

- Typical formal outputs are reports, dissemination activities such as workshops, newsletters, press articles, web sites, etc.
- Informal outputs are more difficult to grasp although you know by now that they represent a very important aspect of the benefits. Typical informal outputs are the development of new networks within the region, the integration of Foresight results into the strategy and the projects of regional organisations and companies. It could even be the evolution of decision taking processes occurring in these organisations and incorporating Foresight results; for instance companies might start developing scenarios for their investment projects using Foresight results.

The following table proposes a synthesis of the types of outputs you might expect.

	Formal outputs	Informal outputs
Formalisation	Report, book	
Dissemination	workshops, newsletters, press articles, web sites	results & evaluation circulating within networks
Networking	Institutionalisation of networks	Development of new networks or new links within existing ones
Strategic Process	Formal incorporation of results within strategic processes	Informal incorporation of results within strategic processes

In order to be useful the outcomes generated by a Foresight exercise, should be followed up. They have to be disseminated widely, and it would be extremely helpful to check whether outputs were really used in a pragmatic and productive way. The evaluation of the outputs can be done by checking if the targets set at the beginning of the exercise were actually met, and if milestones were achieved as planned. In addition, the evaluation of the outcomes can be done through interviews and/or an evaluation questionnaire with the final users of the Foresight exercise. This step is particularly important if Foresight is embedded in the decision making process. The follow up of outputs allows you to outline pitfalls and to identify new requirements that can be integrated in the subsequent phase of the Foresight process.

Q6.2 What are the likely challenges in relating outputs to potential users?

Members of various user groups should be involved in the Foresight process and they can help defining the different types of outcomes.

In general, the outcomes of regional Foresight activities address different audiences. In starting a Foresight exercise, you should be able to define who the interested groups are that might benefit from the outputs. However, an output can be considered appropriate for one audience but inappropriate for another. The different focus of a Foresight study may help in defining the format of the outputs that a study should achieve in relation to the possible users. A useful (and essential) thing to do is to involve members of various user groups in the Foresight process. The table below illustrates possible Foresight users on the basis of possible Foresight

focus. The members of the user groups can help to define the targeted outcomes that should be foreseen for the various user groups.

Foresight Focus	Social	Technology	Business Dynamics	Territorial vision
Possible Foresight users	Policy makers Consumer Associations Knowledge infrastructure	Policy makers Universities Research organizations Industry	Policy makers Industry Chamber of Commerce SMEs	Policy makers Territorial Associations Unions

For example, the outcomes of a Foresight exercise with a focus on business dynamics can be useful for policy makers to define a sectoral policy strategy but also for SMEs to understand what the main challenges ahead are and to redefine their business if necessary. The type (and level) of information for the two different Foresight users should be formulated accordingly, and if a report for policy makers is the main output, this should be translated for use by SME user groups.

Q6.3 Why should regional Foresight activities be evaluated?

Evaluation allows you to assess whether objectives were met, to learn some lessons on how the exercise was managed, and to define follow-up activities.

At the most fundamental level, evaluation is the process of seeing how far an activity has met the objectives that were initially set out for it. However, evaluation is also employed so that we may see whether there have been additional costs and benefits, and lessons to be learnt, from the activity and the way it was undertaken. For a long time, policies were only evaluated in the sense that those responsible for them would pronounce - usually on the basis of impressions, political doctrine, or very partial data - how far they had been a success. More recently, a whole discipline of “evaluation studies” has arisen, seeking to render the process more transparent and open to debate, and better founded on systematic evidence. While the methods identified in this body of work could be employed by many people, there is wide agreement that evaluations are best carried out by an independent third party: the results are more likely to be seen as unbiased, and those providing information to the evaluators are also likely to be less inhibited. Related to this, there is usually some effort to provide anonymity to informants, so that criticisms can be voiced openly, and favourable comments are not seen as just an effort to get further funds, etc., but it is hard to ensure complete anonymity in some cases.

Evaluations address the questions: Were the objectives of the activity met? Could they have been met more effectively and efficiently (value-for-money, management and organisational fit). They may also go on to ask: Were they the right objectives (were the objectives too broad or narrow, too ambitious or not sufficiently so, well-grounded in an understanding of the topics at hand...). Some of the rationales for the evaluation of regional Foresight activities are shown in the box below.

Evaluation will help you discover whether or how far the exercise has achieved its desired outcomes. This may be important in justifying it in terms of “value for money”.

It is also a good way of systematically collating information on the achievements of the activity, which can be used for other purposes (dissemination, planning follow-ups, etc.) This information is often found very useful by those participating in the activity, as well as by those managing it – and evaluations provide a good opportunity for participants to express their views about what worked and what did not.

Evaluations can lead to the learning of several sorts of lessons. A first set of lessons concerns the appropriateness of the original objectives, and the degree to which these were adequately formulated and communicated to those involved (a frequent problem in Foresight implementation).

A second set of lessons concerns the management of the exercise (whether the activities might have been performed more efficiently and effectively with a different organisational structure, etc.)

A third set of lessons illuminates the barriers to Foresight within the region, and the ways in which these may be tackled.

These lessons can inform follow-up activities, and the design of future exercises. As a result of this, evaluations prove helpful in identifying the direction for future activity and for its organisation, for reflecting upon the objectives of the activity and the broader philosophy behind it (in terms of how far it is a top-down or bottom-up product, for example, or a process or capability-oriented activity).

Q6.4 How could I go about evaluating my Foresight activities?

Evaluation can take place in real-time or ‘post hoc’, with both approaches having their pros and cons.

The evaluation of Foresight has to be designed carefully – not too obtrusive as to disrupt operations and annoy stakeholders; not too cursory as to fail to be useful to the majority of these stakeholders; and sufficiently independent to provide a credible and legitimate overview of the activity. Evaluation can take place in “real-time”, while the activity is underway, or “post hoc”, when it is completed.

Real-time evaluation can provide feedback to those responsible for an activity, so that they are able to identify shortcomings more rapidly and address problems. However, it should be differentiated from the routine monitoring of an activity. The latter is simply a management task of making sure that tasks are being performed on time, reports received when expected and by the relevant people, money is being spent as it was allocated, etc. Evaluation, on the other hand, is oriented towards examining whether the objectives that such tasks are meant to accomplish are being fulfilled. But it should be borne in mind that the ultimate objectives Foresight is aimed at are mostly long-term ones, and real-time evaluation will be best suited to identifying unfolding processes (a lot of the processes of interaction between people are hard to pick up after the event), and perhaps early impacts. These impacts are most likely to revolve around process issues, e.g. networking, increased future-orientation of players, etc.

Most evaluations are **post hoc**, working with hindsight. These are often conducted to provide a “closure” to the activity, a drawing up of a final balance sheet. Even this is problematic when the ultimate objectives involve effecting very long-term change. Conducting an evaluation of this sort, say 2-3 years after the exercise has been initiated, can examine follow-up activities,

e.g. the enactment of new policies and programmes, the establishment of business joint ventures, and even the emergence of social and technological innovations. There may be some scope for evaluating such process-type impacts and capability development issues, as an indicator of the extent to which Foresight has become 'embedded' in the region. The problem with attempting such evaluations is one of 'weak signals', since developments and outcomes after some time will have been dependent upon a great number of factors, with Foresight being just one of them. Moreover, it may be that the part played by a Foresight exercise will remain unacknowledged, even if it has actually been catalytic. While this is problematic for accountability, Foresight is at its most effective when meshed with other activities, so a combination of influences is only to be expected.

Evaluations focus on relating achievements to objectives, and a wide range of data may be relevant. Some of this may be "by-product" data – records of meeting attendance, press reports, publication lists, etc. But often it will be necessary to generate new data – often by surveying people participating in or potentially being influenced by the activity.

Q6.5 What sorts of benefits should I be looking for from regional Foresight?

Benefits can be identified at different points in time and at different levels. It will be important to try to take account of unexpected benefits, and you may also want to focus on 'success stories' as possible 'demonstrators'.

Many of the benefits associated with Foresight will be identified in the course of evaluation as described above. But there are several issues that go beyond the basic remit of evaluation:

- There may be benefits of the activity that were not originally anticipated, but which nevertheless deserve to be identified and built upon. Thus, building broad Foresight capabilities was rarely an explicit part of the goals of many early Foresight exercises, and yet it has proved to be a welcome by-product of some of them at least.
- It is often helpful to be able to identify "success stories", which can serve as demonstrators to inspire other parties to undertake or act upon Foresight activities, and which can be useful benchmarking aids in the identification and generalisation of good practice.

The most straightforward way of identifying benefits, of course, is to ask the people involved in the activity to report on these systematically. This systematic approach has to be open enough to allow for unexpected benefits to be captured, and will need to be employed at several periods (if not continually), so as to capture immediate and longer-term benefits, and changing appraisals of how important these have proved to be. Furthermore, benefits may be experienced at different levels – in terms of the effectiveness and careers of individuals, in terms of the organisational capabilities of participating agencies and firms, in terms of improvements in communication networks and social interaction more generally. Thus survey questions need to be framed so as to capture different types of benefits.

If the interest is directed especially at success stories, it may be worth putting more effort into following up certain cases which are believed to have been particularly successful, rather than trying to gain an equivalent depth of information all across the board. Examples of the sorts of data on benefits that might be generated include:

- Are there improved linkages in the sense of participants (and especially the stakeholders who might be more peripheral to existing networks, such as SMEs) knowing about and being known by relevant organisations and experts, being involved

in meetings and discussion groups, having access to sources of knowledge and assistance when faced with problems and opportunities? Such benefits can be assessed by asking participants about their experiences and how they have changed, or by examining data on meetings, websites, help lines, etc.

- Have new activities or initiatives been undertaken, have priorities been shifted, as a result of Foresight? We can see what the sponsors of these activities claim, and what the other people involved in collaboration or implementation believe to be the case, how far reference is made to Foresight in supporting documents, etc.
- Is there evidence of the creation of a “Foresight culture”, with longer-term perspectives being taken seriously by a wider spectrum of actors? Have other bodies undertaken Foresight activities of their own, and is there evidence of the results of Foresight being discussed within user organisations?

Q6.6 How can I manage players’ expectations of regional Foresight?

Expectations can be quite variable and sometimes unrealistic, and strategies to deal with this dissonance will have to be developed.

A Foresight exercise in a region may face problems in having to deal with different or unrealistic expectations. The outcomes desired from Foresight may vary across actors – some may hope for a focus on urban problems, others on particular sectors of the economy or on certain social groups, and so on. Some expectations as to outcomes can be unrealistic, in that they will be informed by too optimistic a view as to how great an emphasis will be placed on certain issues, how far decision-makers are liable to heed the inputs from Foresight in dealing with such issues, and how rapidly to expect change.

For these reasons, it is helpful to have a clear notion of the sorts of benefit that can reasonably be expected. This needs to be conveyed as part of the Foresight activity, and needs to be communicated by capturing relevant information, and putting it into a form suitable for stakeholders to examine. As the Foresight activity proceeds, and better understanding is gained as to what it can and cannot hope to accomplish, there may need to be some modification of these expectations, too.

Q6.7 How could Foresight become a continuous activity in my region?

Some continuous Foresight activity is bound to be of value in a region, and there are a number of ways of making this a more likely eventuality.

A single Foresight exercise may inform decisions for a period of time – not just the particular policy need that led to the initiation of an exercise, but a succession of subsequent activities, often in marginally related areas. But after a while, there is every chance that the reports will be seen as old and of decreasing relevance; the personal links forged in networks will have decayed as people move around within and across organisations; even the skills acquired for doing Foresight may grow rusty through disuse. And, in any case, it is likely that other topics will arise which require longer-term perspectives being brought to bear, and some new Foresight will be necessary.

The upshot of this is that some continuous Foresight activity is bound to be of value in a region. This does not necessarily mean that a full-blown Foresight programme should be run on a permanent basis – though this is not inconceivable, as long as there is plenty of room built

into it for renewal and reorganisation to deal with changing circumstances. It may be something far more modest, such as setting up a Foresight Unit with the task of conducting small-scale Foresight exercises or training activities with particular agencies or sets of users on a continual basis. Such a Unit could also play a valuable role in organising regular meetings to maintain and reinvigorate the networks set up in the course of an original Foresight activity, and in providing information and analysis that can help update the reports and considerations that such networks may have generated.

In many ways, the critical task is one of fostering a “Foresight culture”, so that all sorts of social and economic organisations recognise the relevance of longer-term perspectives, and can engage in Foresight as and when it is needed. This amounts to embedding Foresight and the development of relevant capabilities deeply within the region. To achieve this “decentralisation” of Foresight, it may still be valuable to have ongoing centralised activities of one sort or another. For example, while a major regional Foresight exercise can rarely, if ever, be sustained for long periods of time, such an exercise could be envisaged as taking place say every 3-5 years or even less frequently if there is a rolling programme of Foresight, targeting different sectors and/or problems at different times. The political problem here is assigning responsibility for these centralised but wide-ranging activities, and sustaining this arrangement through the inevitable changes in administration, governing parties, political fashions, etc. The chances of maintaining activities in the face of such changes are much greater if there are autonomous sources of Foresight expertise. Repositories of experience, for example, in Universities, trade associations, consultancies, and associations of voluntary groups may also be developed with a view to maintaining Foresight capabilities in the region

PART III – Regional Foresight case descriptions

CHAPTER 7 – CATALONIA 2010 (Spain)

Foresight for developing long-term regional vision and deepening the regional identity.

This landmark study was completed a decade ago at the time when Foresight methods were just beginning to take hold at national level, is (along with the first Limousin study in 1987) one of the first "global" regional prospective exercise to be carried out in Europe. In many respects it constitutes a highly relevant benchmark and reference for the present rising interest and activity in regional Foresight.

BACKGROUND

Catalonia is an autonomous Community within Spain with a population of six million people (Barcelona 1.6 million). It covers an area of 31,930 square kilometres. The primary impulse for this major regional Foresight exercise was the need and desire felt by the Catalan Regional Government or **Generalitat**, in the late 1980s to anticipate future developments and to generate a wide-ranging debate on the long-term positioning of Catalonia as a key Mediterranean region. It regarded both: the internal view of what constitutes Catalonia for Catalonians, and the outwardly projected image and interconnections with the rest of Spain, Europe, and especially with the Maghreb on the South-western shore of the Mediterranean. This led to the establishment of the Institut Català d'Estudis Mediterranis (ICEM) now called the **Institut Català de la Mediterrània** (ICM - Catalan Institute of the Mediterranean) by the Generalitat in 1989. During the three years to 1992 *Catalonia 2010* became the defining project for the ICM.

SCOPE

The study was very broad covering all aspects of Catalanian society - culture, politics, economics, demographics, spatial planning, etc. One of the intermediate outputs showing the wide scope was the decomposition of the Catalan 'system' into the six major sub-systems shown in the table, each driven by a number of key factors (listed in the second column).

The scope of the study was also particularly marked by a strong outward orientation via explicit consideration of external interdependencies with other European regions and the Maghreb. Furthermore, it stressed the recognition of the rise of a trans-national space for co-operation in which regional authorities increasingly collaborate.

Morphology of the Catalan System	
Sub-systems	Key factors
1. Demographic evolution	Fertility Longevity Migratory balance
2. Territorial planning: land-use, infrastructure & communications	Natural resources Spatial distribution of population & activities Internal transport External transport Telecommunications
3. The productive system	Dynamics of world growth Catalan economic competitiveness
4. The labour market & social protection	The evolution of the dependency ratio The financial balance of the social protection system
5. The dynamics of Catalan society	Catalan identity Ways of life in Catalonia Catalan trends & desires
6. The geopolitical & institutional framework	European perspectives Mediterranean perspectives The Spanish model of 'autonomy' in the international dynamics

BUILDING MOMENTUM

Direct sponsorship by the Presidency of the Generalitat, gave the project a high degree of visibility and buy-in by the many stakeholder groups with a vested interest in the project - both within the political and policy making institutions and the wider economy and society. At the outset, meetings were held with each department of the regional government to present the study and to identify relevant future-oriented work and strategic plans in all areas covered. At this stage also, a selection of experts covering the different areas was made in order to draw-up the first list of key variables for the study. Stakeholder interest, input and involvement in the project during the three-year implementation phase took different forms. Firstly, there were 13 lead-experts involved in the working group and secondly, a broader group of 42 experts directly involved in the preparing of the report and detailed background documentation (e.g. commissioned studies, etc.). Finally, there was the group of over 200 experts involved in sub-system panel discussions Delphi and other types of surveys, and workshop seminars aimed at the detailed elaboration of themes and issues underpinning the study.

STRUCTURE AND ORGANISATION

The study was co-ordinated by ICM (Maria Àngeles Roque) and Futuribles International (Hugues de Jouvenel) and had a lead working group of 13 people. The study was conducted in four main phases. The first phase consisted of a systems analysis of Catalonia looking ahead 20 years to 2010 to identify the main variables impacting on the development of the region. The second stage consisted of studying and analysing the morphology of the Catalan system projected ahead 20 years. This resulted in the identification of the six sub-systems listed in the table above, which then defined the main architectural elements for the subsequent parts of the study. The third phase consisted of a detailed analysis plus the elaboration of a series of hypotheses and associated micro-scenarios for each of the sub-

systems. The fourth phase was devoted to the elaboration of global scenarios. The main working group took charge of this final global scenario definition phase.

METHODOLOGY

The study used a variety of methodologies:

- In the initial systems-analysis phase, a cross-impact matrix was developed involving 45 different variables requiring the working group to provide a response to 1980 questions (i.e. the cause/ effect relationship between the 45 variables scored with a coefficient of 1 (weak), 2 (medium) or 3 (strong). The so-called MICMAC³ method was used to identify the variables of highest impact and highest dependence.
- In working out the morphology of the system leading to the identification of the six sub-systems, trend analyses were carried out on the variables with due attention paid to possible break-points or inflection-points either brought on by events or conscious actions. This was associated with an analysis of the strategies of the different actors involved - including possible alliances, conflicts and their means available for action.
- In the longest and most difficult part of the study - analysing and projecting the sub-system dynamics - different methods were used. As in the previous phase many desk-research type studies were undertaken, and a large number of surveys with different sectors, specialists and actors representing different components of Catalan society. The forward-looking survey used a single-round Delphi, while more opinion-poll type surveys were used also for the collection of information on aspects such as Catalan values in the 1990s.
- Of all the background publications and reports produced specifically for the study, a sample of 41 is included in the bibliography to the final report, indicated with an *.
- The final scenario building part, worked from the sub-system partial scenarios to the global ones with the aim of revealing an overall synthesis of the dominant trends and the main risks of discontinuity, plus the challenges these entail and the policies which would be possible to put in place over the long term. Five global scenarios were drawn up covering three different perspectives - trend scenarios, contrasted scenarios (best case/ worst case) and normative scenarios - i.e. the desirable future:
 1. Transition trend scenario to 2000 - *catching the train on the run*
 2. Favourable trend scenario to 2010 - *Catalonia, the motor of Europe*
 3. Pessimistic breakdown scenario to 2010 - *a marginalised Catalonia*
 4. Alternative discontinuous break scenario to 2010 - *a new development strategy*
 5. Involved discontinuous break scenario to 2010 - *an introspective Catalonia*

OUTPUTS AND OUTCOMES

The principal tangible output was the publication of the final report of the main findings and synthesising the work carried out over the three years of the study. The report was edited in Catalan, Spanish and French. In intangible terms, the impact was very high indeed. The report and the findings of the study became virtually obligatory reading for all political and institutional actors in Catalonia - not just within the regional government, but also at the level of city councils and municipal authorities all over Catalonia, and in the private sector. It became a

³ MICMAC means "cross-impact matrix - multiplication applied to classification" - see Godet (1993) From anticipation to action - A handbook of strategic prospective, UNESCO Publishing

highly used reference in all aspects of political and policy discussions, and in a very explicit way, introduced a whole new vocabulary and set of concepts into the political debate. A series of 24 debate and diffusion seminars took place all over Catalonia tailoring each time the content and delivery to the geographical location, the situation in which the seminar took place and to the profile of the participants involved, for example:

- In the EADA (Economy Circle) on "the economic future and business competitiveness scenarios"
- In the College of Solicitors on "professional collectivities"
- In the Faculty of Political Science and Sociology on "prospective methodologies"
- With the leaders of political parties on "political institution building"
- With the Faculty of Education Science on "migration and multiculturalism"
- With the Culture Departments of both the Regional Government and Barcelona City Council on "identity and culture".

A summer school was also organised at the Menéndez Pelayo International University entitled "Mediterranean Foresight. Catalonia 2010". The study received a lot of press coverage in the form of synthetic articles, opinion articles and, in some newspapers, special reports analysing the contents of the global scenarios. The study has been a highly cited reference in subsequent studies and works on Catalonia, such as for example, the symposia "Catalunya demà" organised by the regional government from 1997 to 1998 to debate the future of Catalonia.

No specific evaluation was carried out. In terms of follow-up and renewal, a more recent publication "L'espai mediterrani llatí" (the Latin Mediterranean space, 1999) includes a chapter that proposes a revision of the parameters proposed in the original global scenarios. The chapter points out that some of the scenario elements have been realised, some trends have been broken giving rise to new situations and parameters and some challenges remain unresolved. A new normative trend scenario is proposed.

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CHAPTER 8 – UUSIMAA (Finland)

Developing and networking embedded regional foresight capability.

BACKGROUND

The Uusimaa Employment and Economic Development Centre (EEDC) is a regional organisation of the State in the Helsinki metropolitan area. The EEDCs, of which there are fifteen altogether in Finland, were established in 1997 to support the development of business activity and employment at regional level. Two years earlier an extensive Foresight operation within the framework of the Objective 4 Programme of the European Social Fund (ESF) was set in motion in Finland. The operation was co-ordinated by the Ministries of Labour and Education. The Ministry of Labour placed particular priority on the development of foresight within the EEDCs and set up a support project for this. Project funding enabled the centres to employ one full-time person for half a year to initiate Foresight activity. The activity was able to continue after this period within the framework of the ESF programme, although a Foresight project clearly concerning a specific branch or subject had to be formulated and funding applied for on this basis.

Foresight activity within the framework described above has been initiated to a greater or lesser extent in several EEDCs. The Uusimaa EEDC is very strongly committed to Foresight. When the activity of the nation-wide support project finishes at the end of 2001, the Uusimaa EEDC will continue activity by allocating a proportion of the ESF funds within its own discretion to Foresight. This decision concerns the entire new EU programme period i.e. it will apply until the end of 2006.

Four factors have had a major impact on the shaping of Foresight activity in the Uusimaa EEDC:

- General practice regarding Foresight in Finland
- Regional organisations' previous experiences of planning and forecasting
- Nature of the Foresight information needed, based on the tasks of the EEDCs
- Special position of the Uusimaa region as a national centre

Unlike other European countries, specific, extensive Foresight exercises have not been implemented in Finland. Instead, Foresight and Foresight-type activity can be found distributed across many organisations, both in the public and private sectors, e.g. in Ministries, research institutes, educational institutes, branch-specific organisations, etc. In forecasting work, there are also often some Foresight activities included, for instance, in the form of scenario writing. Similarly, in the anticipation of qualification requirements, which is traditionally based either on large-scale quantitative forecasts or barometric corporate questionnaires, longer-term Foresight studies have recently been gaining ground.

More widely, Finnish regional organisations have a long tradition of Foresight-type work undertaken in connection with forecasting and planning. Already by the 1970s, for example, scenario projects and Delphi studies had been carried out in the Helsinki region through the co-operation of the State regional organisations and the municipalities. In recent years, Foresight has achieved a new significance with the turbulent and uncertain economic

development. The need for flexible positioning that focuses on understanding and “making” the future has grown, and Foresight is seen as responding to this need better than forecasts and the detailed plans that emerge from these.

The field of tasks for the EEDCs is very broad in scope. It includes the development of technology and regional innovation activity, the development of business activity, particularly for small and medium-sized enterprises (SMEs), activity that increases and maintains employment, and the development of employees' qualifications. Practically, this amounts to funding for enterprises, organisation of assistance from consultants, and the organisation of further training for the unemployed as well as for those in work. The EEDCs carry out at regional level the tasks that come within the areas of responsibility of the Ministry of Trade and Industry, the Ministry of Labour and the Ministry of Agriculture and Forestry.

Almost one third of Finnish business is concentrated within the Helsinki region and the business carried out in the area is very often of national importance. For this reason, the Uusimaa EEDC cannot restrict itself to a purely regional standpoint in its Foresight activities. A constant interaction with organisations undertaking national Foresight as well as networking with regional organisations in different parts of the country has been an important objective for EEDC Foresight.

SCOPE

The following starting points have been adopted for Foresight in the Uusimaa EEDC:

- Linking of various traditions and approaches regarding Foresight
- A broad scope, in which the projects carried out by the EEDC itself, as well as the Foresight information obtainable through networking, are specified
- Continuity of activity

The Uusimaa EEDC combines three different approaches related to acquiring futures information: (1) technology Foresight; (2) anticipation of qualification requirements; and (3) forecasting. Of these three, technology Foresight constitutes the basic framework. The aim in EEDC Foresight is both to collect industry-based information and to examine more general social questions such as the development of the Information Society, the ageing of the population and marginalisation problems linked with long-term unemployment. This broad scope, coupled with the limited resources available, makes it important to consider carefully which Foresight projects the EEDC will itself implement and for which matters it can resort to information available from others. The solution adopted is currently as follows:

- For quantitative forecasts, the EEDC will rely almost entirely on data produced by Ministries and research institutes
- The EEDC defines the most important branches and social questions for its region and its own Foresight exercises are focused upon these
- Concerning other branches and subjects, Foresight information produced by networking partners is compiled and worked up to a form suitable for the EEDC's own needs

The nation-wide support project for EEDC Foresight has compiled the most important regional forecasts describing economic, employment and population growth as the “TOP 15” indicators,

available through the Internet. At this stage, the forecasts mainly extend to 2010. Concerning the results of Foresight projects, there is no summary information, by branch for example. The support project has, however, set up an Internet portal where information on ongoing and completed projects is available, and where links to original material can be found.

The Uusimaa EEDC has strived for a more systematic division of labour in Foresight between regions. This means that each region would specialise in its own characteristic branches and questions and, by networking with other regions, would produce information that would also be applicable on the national scale. In this way (and despite scarce resources), it is intended that regional Foresight work will be of benefit to many organisations, in addition to the interests of the region concerned. Based on this principle, the Uusimaa EEDC has chosen two subjects in which it has specialised at this stage and for which it has done Foresight work during the last two years:

- Future prospects for knowledge-intensive business services (KIBS)
- Future employment possibilities in the voluntary sector

The themes chosen are based on the special nature of Uusimaa, which is on the one hand characterised by the fastest growth in the country, and on the other hand by long-term unemployment and the related marginalisation risks. KIBS are the fastest growing of the various branches, both in Finland and internationally, and in Finland, over half of the turnover of these services is produced in the Helsinki region. The voluntary sector, which in Finland is smaller than in many other European countries, has been shown by international studies to be important for maintaining employment and for reducing long-term unemployment.

In summary, the Foresight work of the Uusimaa EEDC includes special projects, and parallel to this, the continuous acquisition and provision of Foresight information for supporting practical work, both within its own organisation and for its partners. The following sections describe in more detail how the continuous interaction between Foresight and practice has been attempted.

Finally, regarding the time horizon of the Foresight, 10-15 years has been commonly used. This means that when collecting information from networking partners, Foresight exercises with this time horizon are focused upon. Sometimes the time horizon is longer, e.g. in the "Manpower 2020" project of the Labour Ministry. However, in the EEDC's own projects, it can also be shorter. For instance, in the KIBS study, interviewees were asked to think about the situation after five years and after ten years. The shorter time period was needed because the basic information on this sector was very deficient. In the voluntary sector project, the time horizon used has also been 5-10 years (for much the same reasons). Deciding on the time-horizon has seen the need to balance two opposing factors: (1) the desire for Foresight to be really future-oriented, and not too short-term; (2) the danger that a very long time horizon (30 years or so) would make the application of the results difficult in practice, especially at the regional level.

BUILDING MOMENTUM

In Uusimaa important measures for involving various stakeholders in the Foresight activities have been (1) needs analysis for Foresight, (2) a start-up plan for Foresight, (3) creating network connections, and (4) Foresight training.

Needs analysis for Foresight. When the Foresight activities in the Uusimaa EEDC were just starting-up, a central objective set was that Foresight would serve practical work in terms of both strategy and planning, as well as at the practical decision making level. In order for this objective to succeed, the personnel themselves must feel that Foresight information is necessary and they must know how to use it. The needs analysis was carried out to clarify the types of context in which employees in different positions would need information on the future, whilst at the same time, brief training sessions were held on Foresight thinking, Foresight methods and the results of Foresight projects. The needs analysis and training were carried out in 19 small-group sessions for the approximately 160 employees of the Uusimaa EEDC.

The **Foresight start-up plan** contained the following sections:

- Summary and conclusions of the needs analysis
- Plans for EEDC's own Foresight projects and for acquisition of other Foresight information
- Organisation of Foresight
- Linking Foresight to leadership, strategic planning and decision making
- Regional cooperation and networking for Foresight
- Foresight training plan

Creating network connections: After the work for the start-up plan, Foresight had already become a familiar concept within the EEDC's own organisation. The EEDC's first project of its own was started for the KIBS sector. In order for the objective of a nation-wide division of labour to be successful, networking with two other EEDCs was established in the project. During the duration of the project, numerous other network connections were established, with, among others, professional associations specific to the branch. Similarly, a Foresight project that was later started for the voluntary sector enabled the establishment of network connections with public sector actors, as well as with many associations. When the Foresight activities of the Uusimaa EEDC became known in other organisations conducting Foresight, cooperation also started with these. This reinforced the position of Foresight within the EEDC, as information concerning the future development of many branches and social phenomena could be acquired quickly.

Foresight training has had an important position in making Foresight well known and in committing different stakeholders to cooperation. Subsequent to the training in connection with the needs analysis, almost 40 other training sessions have been held and around 1300 participants in all have attended these. A great part of the sessions has been directed to the personnel working in the local employment offices operating under the EEDC (employment advisors, career guidance officers), and to cooperation partners of the EEDC (teachers and student advisors in schools and in other educational institutes, municipal business advisors, etc.) The basic content of the training has been as follows:

- "From forecasting to Foresight" - the "philosophy" of Foresight
- Foresight methods
- The mega trends and weak signals of economic and social development
- Results of branch-specific Foresight projects
- Where to find additional information on Foresight

STRUCTURE AND ORGANISATION

Foresight activity in the Uusimaa EEDC began in spring 1998 when a project group was set up for this purpose. At the end of the same year, a full-time project manager was employed and at the end of 1999 a full-time project researcher was taken on. The current decision to continue the Foresight project until 2006 starts from the premise that the two people mentioned and the Foresight group are responsible for the Foresight activity. The network connections also play a decisive role in the Foresight work of the Uusimaa EEDC. One can say that the organisation of Uusimaa Foresight consists of three parts:

- A project-type two-person Foresight unit
- A Foresight group as a regional form of networking
- Cooperation projects as a means of other networking

16 people belong to the **Foresight group**. The EEDC's own departments and most important units are primarily represented there. Two regional councils, the City of Helsinki and the National Technology Agency (Tekes) are also represented. Of the **network connections** that have been implemented through projects, the following can be mentioned:

- The Ministry of Labour's Manpower 2020 project, in which the Uusimaa EEDC is involved in working groups dealing with regional occupation structures and the impact of the development of the Information Society
- A project of the provinces for developing an anticipation system for qualification requirements
- A scenario project for the Confederation of Finnish Industry and Employers
- The EEDC is also involved in the secretariat of the Ministry of Trade and Industry's nation-wide project for developing technology Foresight.

METHODOLOGY

Face to face thematic interviews in leading companies were used in the KIBS Foresight project. The method of mega trend and weak signals analysis was adopted in summarising the results and drawing conclusions. The results were evaluated in a seminar for representatives from enterprises in the KIBS sector, actors in the public sector, and researchers. A panel discussion of company representatives from different KIBS sub-branches occupied an important position in the seminar. The results were also dealt with at several smaller occasions with, among others, the professional associations in the branch.

In the project concerning the voluntary sector, the Foresight work was done in four expert groups. Two of these dealt with the development outlooks for the largest areas within the voluntary sector: (1) social and health-care and (2) training, culture and youth work. The two other expert groups were theme-specific, dealing with (3) the future development of the voluntary sector in relation to the private and public sectors, and (4) the voluntary sector from the perspective of citizens' scope for influence.

The Foresight project employees, as well as the Foresight group in Uusimaa, have strived continuously for increasing their methodological know-how in Foresight and futures studies. Contacts have been made with researchers and research institutes on EEDC's own initiative, as well as through the nation-wide project. An important Foresight support in Finland in terms of methodology is the Finland Futures Research Centre operating within the University of

Turku, around which has been built a network academy for futures research covering all universities in Finland.

The co-operation with other actors conducting Foresight is important, not only for acquisition of information, but also in terms of learning and practising Foresight methods. In Uusimaa EEDC, for example, quantitative forecasting methods have become familiar through network projects, and more experience in practical application of scenario work has been acquired in this way. The current Manpower 2020 project of the Ministry of Labour involves both forecasting and scenario writing and the Foresight project of the Confederation of Finnish Industry and Employers now being started is mainly based on scenario work.

OUTPUTS AND OUTCOMES

The results from the KIBS project are being used within the EEDC in the planning of further training for employees and in the planning of supporting activities for SMEs. Two special projects for the support and development of enterprises are ongoing in the EEDC, one for start-up businesses and the other for fast-growing businesses. In the KIBS project, there has been very close co-operation with the latter project, since the branch particularly emphasised at this stage has been the information technology sector.

In the case of KIBS, the EEDC's idea for nation-wide division of labour and specialising has been realised even on a continuous basis. From the beginning of 2001 onwards, the EEDC's Foresight project manager, in addition to the Foresight work, has assumed responsibility for the nation-wide follow-up and development of the KIBS sector, in Sectoral Expert Services - an activity of the Ministry of Trade and Industry. Along with this task, the results of the KIBS project have been presented in different parts of the country, particularly in the various EEDCs, but also at other occasions held by organisations from both the public and private sectors.

At the time of writing, the voluntary sector Foresight project that started later is just at the finalisation stage, but it is anticipated that the results of this project will be used, above all, when planning actions designed to alleviate and prevent long-term unemployment. Foresight information from sources other than the EEDC's own projects has been used, for example, in the Foresight training described above. Another important use of this information is in supporting strategic planning, one practical form of which is the yearly analysis of changing trends in the EEDC's operating environment.

The Uusimaa EEDC's strengths in Foresight so far are firstly the extent to which people within the organisation are aware of Foresight and the continuous growth of skills in the use of Foresight information. The results of the EEDC's own projects have proved beneficial in practice and there is currently a continuous demand for Foresight training. Networking with organisations from the public sector is extensive at both regional and national level.

Because the Foresight activity in the Uusimaa EEDC is of an ongoing nature, one cannot actually talk about "process renewal", but rather of the special Foresight topics in the near future as well as of challenges in the development of Foresight, the latter reflecting also deficiencies of Foresight work done so far. The topics and challenges that are now considered most important in Uusimaa are the following:

- To extend the topic of KIBS to service innovations and Foresight in services more generally

- To develop a closer link between technology Foresight and anticipation of qualification requirements
- To further increase the interaction between Foresight studies and practice
- To build networks with the private sector, particularly with SMEs
- To create a 'real' Foresight culture in the Uusimaa region

Extending the KIBS project to cover service innovations and the service branch more generally is a central topic in the Foresight of Uusimaa EEDC in the next few years. In this regard, the centre will be working in close co-operation with the National Technology Agency (Tekes), which has set the development of the service sector by means of technology as one of the focal points of its activity. Cooperation with Tekes has also been initiated in the search for such methods whereby technology Foresight and the anticipation of qualification requirements can be better linked. Representatives of the Ministry of Education and municipalities are also involved in this co-operation.

Although the Uusimaa EEDC has, in certain respects, been successful in connecting Foresight with practical work, it is believed that there is room for improvement. The "reputation" of Foresight within an organisation depends to a large extent on how the actors at different levels experience the service they receive from the Foresight unit in terms of their practical information needs. On the other hand, there is a danger, especially at regional level, that Foresight becomes totally subordinated to everyday information needs and actually has the same function as former planning units. This danger has been recognised in the Uusimaa EEDC and in order to avoid it, the independence and research focus of the Foresight unit continue to be emphasised.

In terms of networking, connections with the public sector are good and co-operation in different directions is continuing. One shortfall in the Foresight of the EEDC so far has been an inadequate amount of practical co-operation with the private sector, although the picture is brighter for KIBS. In further work, there will be special emphasis on building network relationships with the SME sector in other branches that are important for the Uusimaa region. Using network connections, in addition to continuing Foresight training, the aim is to raise the status of Foresight to a level where the Uusimaa EEDC can talk of a real Foresight culture.

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CHAPTER 9 – WEST MIDLANDS (UK)

Foresight to support long-term regional industrial SME competitiveness.

BACKGROUND

The newly formed Regional Development Agency (RDA) in the West-Midlands, known as Advantage West Midlands (AWM), has recently been awarded ERDF Objective 2 funding to conduct its own Foresight exercise. Known as 'Forensic', the RDA's expectation is that their Foresight project will play a key role in helping to formulate future strategy. As there was existing work in Foresight going on nationally, the idea was to tap into that and imitate it to some degree. So the national programme was a strong driver for the establishment of a regional exercise.

SCOPE

AWM has been looking for a 'fast track' to achieving a regional Foresight exercise by means of the ERDF money. The challenge has therefore been to get Foresight into the region in as short a time period as possible. The backdrop to the project is the make-up of industry in the region, with 25-30,000 manufacturing businesses in existence. Many of these are small traditional businesses that are considered not to be very good at strategic planning. Forensic is therefore being tailored to the needs of SMEs, to ensure that they are aware of the benefits of Foresight.

Forensic's aims are to support regional industrial competitiveness through the use of Foresight, the exchange of best practice, and the utilisation of a sound strategy for research, technology development and innovation. The approach adopted has taken the Regional Economic Strategy (RES) as its starting point. The RES identified eight sectors for AWM to concentrate upon. Initially, the Foresight exercise focused on only four of the sectors identified in the RES, establishing panels in Creative Industries, Medical Technologies, Tourism & Leisure, and Engineering Design. However, after about six months, the exercise was extended to cover all eight RES sectors. This was made possible by the merging of the Foresight panels with a set of working groups, known as Business Growth Task Groups (BGTGs), which had been set up to implement the RES. The merger was not too traumatic, since both sets of groups were already focused on the same sectors and joint membership was not uncommon. Moreover, the Foresight panels had met only twice before the merger.

The 10-20 year time horizon of the national programme was thought to be 'off-track' – if the regional project can push SMEs to think 3-5 years out, then they consider themselves to be doing well. For this reason, the exercise has a relatively short time horizon.

Panel members were identified through personal contacts, names known to those in AWM and on the Steering Group. Project co-ordinators have attempted to ensure that innovation and design councillors from Business Links are represented on every sectoral panel, especially given the SME focus. Most members are from the business community, although there is some academic and regional government representation. There are no plans to consult beyond the membership of the panels in drawing up visions and Action Plans. This is because members were appointed to the panels as spokespersons for the wider interests in the region. Of course, spokespersons were free to consult their constituencies if they thought it

appropriate. But there are no plans for a project-wide questionnaire survey, although the Engineering Design panel has sent out a questionnaire of its own.

The budget for the project is £472,000 over two years (2000-02), with 50% funding coming through ERDF, which is considerably more than other UK regions have had at their disposal to undertake Foresight exercises.

BUILDING MOMENTUM

In trying to raise awareness of Foresight, project co-ordinators have tried to work with the trade associations (TAs) in a given sector. They start with the complete list of panels and task forces at the national level and then try to map these to the interests of the TAs in the region – this is a good way to raise interest in Foresight. In addition, they organise events and workshops with the TAs. The project's approach is not to dictate what should be done, but rather to discuss the needs of TA members and to work with the TA to meet these needs. Speakers from the national programme panels and task forces are invited to give presentations to TAs, and they also arrange presentations on the use of methods.

In addition, AWM has tried to identify a lead partner in each panel, e.g. in Medical Technologies, Medilink is the lead partner. These are encouraged to provide some of their own (often human) resources, although ultimately AWM has the resources to support the panels.

STRUCTURE AND ORGANISATION

As we have already seen, Forensic is organised within eight business sectoral panels (BGTGs) that have been set up to implement the RES. Each BGTG is different, depending on the sector, but all are looking to bring together the main players in their sectors, and are responsible to AWM for sectoral strategic priorities and plans. The first thing the BGTGs have been doing is developing shared visions for their sectors from which they can identify the main trends and drivers, and then work back for their planning.

In addition, a Steering Group has been appointed, along with two full-time project co-ordinators, based at Coventry University, including an AWM secondee. However, certain tasks have been contracted out to expert units, e.g. at the University of Birmingham, the Centre for Urban and Regional Studies has recently established an 'observatory' looking at regional trends and they are working for the project.

METHODOLOGY

Forensic has been very dependent on the national programme for the articulation of key trends and drivers and has attempted to reinterpret these from a regional perspective. This is set to change when the regional panels have drawn up their own Action Plans (by spring 2001) - they will then be able to draw upon these in their work with SMEs.

As for AWM's relation with the national programme, the five-year life cycle has been perceived as a big problem, since this sees consultation activities and report production occur during a relatively narrow window of time in the national Foresight 'cycle'. This means there is little material for the regions to use to keep SMEs engaged. Also, to engage with a national Foresight Panel was like having to deal with a separate Foresight Directorate, with each Panel

having its own arrangements. From the regional perspective, there seemed to be no consistent approach across the national programme, which has made contacts difficult. Also, some national Panels have been keen to do regional events whilst others have not. All of this has had to be considered when planning to do anything at the regional level.

As for the deployment of Foresight methods in drawing up visions and Action Plans, the project co-ordinators have tried to get the panels to develop scenarios, but with great difficulty: it has been hard to get people to think beyond their established mind sets (and interests). Consequently, one of the project co-ordinators has written scenarios using the trends and drivers identified during meetings, and he then puts these to the panels. By doing this, it gets the panels over the initial hurdle. He uses a SWOT-STEEP approach in constructing scenarios, and has looked at what is going on in the rest of the world in order to validate them. Validation is done mostly through web searches, but he also uses books and papers written on the sectors, as well as DTI work. Obtaining regional level audit/benchmarking data has proven particularly difficult, although the Centre for Local Economic Development (Coventry University) has now been sub-contracted to collect and collate regional level statistics.

OUTPUTS AND OUTCOMES

Project co-ordinators make presentations at other organisations' events and have a stand at regional exhibitions. The objective is to direct SMEs onto other business support agencies. Foresight is a high level strategic project from which SMEs need to be directed towards the right schemes. At all Foresight events, they have a mini exhibition of the various schemes and initiatives that are available, covering not just Business Links, but also schemes run by banks, for example. Foresight does not want to duplicate but rather reinforce existing work and schemes that are out there already. They are working with these schemes rather than in competition. It has been about positioning Foresight as a 'neutral' project – the AWM has no axe to grind. All agencies are therefore invited to Foresight events.

In fact, Foresight as a product is not considered to be very strong, and the Steering Group has had many discussions on whether to use the Foresight label, given the debate that this puts off firms. But one benefit for keeping the name is that it receives DTI recognition and attention when labelled as Foresight. But from a company point of view, there is a need to show positive business impact. For this reason, the project is linked to business marketing planning. The plan is to identify a Foresight SME 'Top 10' and project co-ordinators are looking to identify case studies to show that Foresight works and has tangible benefits. This approach involves working with each SME case on a one-to-one basis to produce business-marketing plans. This will be done once the regional panels have produced their visions and Action Plans in spring 2001 and will result in the publication and distribution of a case study report in late 2001. A client-partner database will also be set up to ensure that SMEs in the region are engaged and to monitor the reach of the Foresight message to all of its intended audience. This will be done with the help of TAs. A media-relations strategy has been drawn up to ensure that information reaches all those involved.

The benefit of merging with the RES infrastructure for Foresight is that the resources earmarked by AWM for supporting the BGTGs (i.e. administrative support in the form of Sector Co-ordinators) is now also employed to benefit the Foresight project. This gives Foresight more leverage and influence within AWM.

It should be noted that ERDF Objective 2 funding covers just 65% of the region and, of course, larger firms are not covered by the project. Project co-ordinators have therefore applied for extra resources from DTI and the new Rover Task Force. If successful, the latter will allow the project to be extended to 2003 and would allow a further 25 SMEs to be targeted for case studies.

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CHAPTER 10 - LIMOUSIN 2017 (France)

Foresight to raise self-determination, local responsibility and commitment to long-term choices

BACKGROUND

Limousin is a region of 710 000 inhabitants located in the centre of France. The GDP has been stable since 1986 and represents 1% of the national total. The region has a strong urban polarisation but agriculture is still very present in the regional economy accounting for 9% of total employment. 80% of the firms in Limousin are SMEs with less than 5 employees. The main industrial sectors are food processing, electricity and electronic, wood, paper, and minerals. The region has a real diversity of its industrial base. Even if the migratory balance is positive, one of the specificities of the region is a strong ageing population with an imbalance between the east and the west of the territory.

Limousin was the first French region to conduct a Foresight exercise in 1987. At the time, the situation was favourable: the newly formed regional council wanted to situate itself in the institutional scene and the development of European construction with the Single Market and the new regional policy was a stake for a new regional policy.

In 1997, a second exercise was launched in the context of the preparation of ERDF negotiations, and negotiations with the State for the pluri-annual contract 2000-2006 (CPER).

SCOPE

The objective of the Foresight exercise was to help decision-makers make their choices, but also to clarify the regional situation for the inhabitants and more widely for the public at large. For that reason, the focus of the exercise was very large and was not intended to exactly align with the policies of the regional council. The idea was also that every inhabitant, in their day-to-day life and activities, should take into account the results of the exercise. That is the reason why the subtitle of the exercise is: "The ball's in our court!"

Similar to the first Foresight in 1987, which was called "Limousin 2007", the second exercise in 1997 ("Limousin 2017") had a time horizon of 20 years. The duration of the exercise was two years, and 250 people, covering all sectors of regional life, were mobilised in working groups. The Regional Council financed the whole process.

BUILDING MOMENTUM

In order to raise awareness and enrol participants, the Regional Council has, during the whole process, initiated many actions, including:

- Regular articles in the regional press
- Publication of documents and first outputs
- On-line publication of workshop reports
- On-line forum in order to allow debates and comments at a wide level

STRUCTURE AND ORGANISATION

A team of 5 persons working in the Regional Council managed the exercise, with an external consultant, specialised in Foresight activities, assisting them. A steering committee was appointed and led jointly by the President of the Regional Council and the Préfet (representative of the State at regional level).

The work was structured around 19 working groups. The organisation of these groups was as follows:

First phase: Diagnostic

Orientation & Synthesis Group: Activity

Sub-group 1: Monitoring of the Foresight study of activity sectors

Sub-group 2: S&T resources

Sub-group 3: Services

Sub-group 4: Agriculture

Sub-group 5: Wood

Sub-group 6: Retail, craft & tourism

Orientation & Synthesis Group: Society

Sub-group 1: Demography & lifestyle

Sub-group 2: Education & training system

Sub-group 3: Identity, images & creativity

Orientation & Synthesis Group: Territory

Sub-group 1: Future of territorial context

Sub-group 2: Territory organisation & management

Sub-group 3: Territorial economical logic

Transversal Issue Group: Sustainable Development

Second phase: Strategy

Group Activity

Group Society

Group Territory

METHODOLOGY

Limousin 2017 was an “**action-prospective exercise**” and it was quite different from Limousin 2007, since it took into account:

- What occurred in Limousin since 1987, and what was useful in this preceding exercise
- What are the new trends: some were evident, like the Euro and the Internet, others were less evident or really recent
- New prospective tools: in 1987, they were oriented towards knowledge whereas today *prospective* has become very operational and oriented towards action

As a consequence of this approach, Limousin 2017 was divided into 3 phases:

- **Phase 1: retrospective**

This phase aimed to look at the recent evolutions, the trends, and to identify those that exist since 1987, those that have changed since this date and those that appeared since 1987. It also aimed at describing the regional situation. It also made an assessment of the first “Limousin 2007” Foresight, asking whether the exercise had influenced decision-makers?

- Phase 2: prospective diagnosis

Two questions summarise this phase: what does the future depend upon? And what does Limousin's future depend upon? The diagnosis analysed, on the one hand, the context, and on the other, the specificity of Limousin. The objective here was to identify the direct or indirect impacts of some of the main trends on Limousin, to investigate the possible futures for the region, and to think about possibilities for action.

- **Phase 3: Action**

Taking into account the results of the diagnosis phase, this phase aimed to identify the main trends that will be important determinants for the region's future.

Three levels of inputs were mobilised for this work:

- An inventory of all the publications related to the main trends
- Specific studies about the positioning of Limousin in relation with some of the main trends
- Invited experts (21) to debate with the different working groups

OUTPUTS AND OUTCOMES

The main output of the "Limousin 2017" exercise is a global report, available for free and which can also be consulted on line via the web server of the Regional Council. This report takes into account:

- Reports written by the working groups
- Documents selected to identify the trends
- Specific studies realised during the exercise
- Experts' inputs
- Different works or studies undertaken outside of the process but which have been integrated as inputs during the exercise

The report also integrated some "stories" of people who, because of their activities, are committed in the region's life.

It can be argued that Foresight in Limousin has become a regional habit, with the second exercise drawing quite heavily upon the first.

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CHAPTER 11 - PROVINCE OF LIEGE (Belgium)

Foresight to guide the emergence and development of the 'regional' information society.

BACKGROUND

The FASIL (Forcer l'Avenir par la Société de l'Information en région de Liège) Project intends to ensure that the Liege region takes full advantage of the opportunities offered by the Information Society through a strategic approach and a programme of actions. It is managed by the SPI+ and SOCRAN, and has been granted financial support by the European Commission (under Article 10 of the ERDF regulations), the Walloon Region and the Province of Liege. A Steering Committee of about thirty members monitors the project closely.

The first phase of the project was carried out between March 1997 and November 1998 and allowed a strategy and a plan of actions in the field of the Information Society to be laid down. A specific Foresight programme, using the Delphi methodology, has been launched within this project.

SCOPE

The main objective of the Foresight programme was to build a consensual view amongst experts about the stakes of Information Society development in the Province of Liège and the projects that could be developed to enhance this development. A mid-term time horizon was chosen for the exercise. 100 people have been approached as experts. 50% of the cost of the Foresight programme was funded through ERDF as a part of the global FASIL project.

BUILDING MOMENTUM

Although 100 experts were approached at the beginning of the project, only 42 accepted to help during the first round (DELPHI 1). Most of these experts were from the region. During the second round (DELPHI 2), the 42 experts were approached again. 23 accepted to participate to this second round. These percentages may seem low, but are quite normal with Delphi surveys.

STRUCTURE AND ORGANISATION

Delivering the DELPHI survey was entrusted to the SEGEFA university department, which worked in close collaboration with the operational staff. The following stages give details of the steps taken:

- Definition of the different themes to be targeted
- Development of questionnaires
- Verification of their pertinence amongst resource people linked to the University and also experts from MERIT and LENTIC
- Selection of a panel of experts (based on a defined profile) to be contacted according to the theme in question
- Following up of experts

- Thorough analysis of replies according to the different points of view and presentation of the results
- Development of a synthesis
- Development of the DELPHI II questionnaire

METHODOLOGY

The DELPHI I questionnaire covered the following 8 themes:

- Transport & Logistics
- Public transport
- Economic development
- Health
- Education development and adult education
- Media - Culture
- Administration
- Citizen services

Each questionnaire for the first seven themes was addressed to the relevant experts. The questionnaire on the 8th theme (Citizens services) was addressed to all the experts in the role of citizens. Thus, each expert replied to two themes.

Each thematic questionnaire (the first 7 on the list above) asked the expert to express themselves on the following four major points.

- 1) An assessment of strengths and weaknesses and the correlative exposition of evolution prospects, the extent of application being the Province of Liege;
- 2) The issues that imply the use of NTIC's; each issue (11 were identified) was the object of a general question and several affirmations. Each 'issue' question had an affirmation on which the expert gave an opinion amongst the 8 nuances proposed. In addition, they gave their opinion, for these affirmations on the subject of opportunities / threats concerning the situation of the region.
- 3) The leads for the region, positioning with regard to firm proposals of action possibly to be carried out in the future. The expert was asked to choose and justify two of these proposals which would be priority for the development of the region as well as two which would be easy to put into action;
- 4) Propositions, in accordance with the vision of the expert, still in the optic of a concrete application within our region.

For the 'Citizens services' theme, each expert replied, as a citizen, to proposals issued from affirmations and proposals from the 6 thematic questionnaires (transport was grouped under one theme), always positioning themselves with regards to the region. Each expert also chose

2 proposals in each theme that he subscribed to, expressing his justification and his vision of possible obstacles.

The DELPHI II file was sent to 42 experts of DELPHI 1, it included three main parts.

- 1) The communication of the results of the DELPHI 1 questionnaire enabled the experts to situate their replies (from his own theme and the citizens services theme) in relation with those of the other experts. The expert was asked if he wished to modify one or several of his replies to DELPHI 1 and to give a justification;
- 2) New thematic proposals. These are supported in particular by the conclusions from the working parties. A number of firm proposals for projects to be developed in the Liege region have been the object of a request for expert opinion. The firm proposals reserved for the questionnaire concerned major projects that were able to illustrate actions that support the main theme of the project;
- 3) A general demand for the validation of the SWOT grids presented for each theme and, in a global form for all the themes. These grids were designed by integrating all the observations made since the first version from October 1997 and by expressing the main needs of users as shown by the answers to the DELPHI 1 questionnaire and the conclusions reached by the working parties.

OUTPUTS AND OUTCOMES

The DELPHI study has not produced a specific output. The exercise was used as a tool to develop the regional Information Society strategy, and this strategy has been the real output, taking into account the results of the DELPHI survey. However, a specific annexe of the strategy provides details about the survey (questionnaires, hypothesis of work etc.). The only outputs directly coming from the survey were graphs showing the areas of convergence between the experts' opinion and the areas of conflict.

Expectations have been satisfied even if the limited number of experts mobilised during the second phase weakens the final results. The DELPHI has not produced regional mobilisation nor developed a global Foresight process in the region, but as the Annexe to this Guide will suggest, this is not the role of such a method.

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CHAPTER 12 - NORD-PAS DE CALAIS (France)

Foresight to guide the development of a strategic plan for regional development.

BACKGROUND

The Regional Council of Nord - Pas de Calais has organised "prospective seminars" since the beginning of the 1990's. The goal of these seminars has been mainly to elicit the views of thematic experts (at regional or national level), in order for them to explain the main trends in their domain (economy, demography, technology, etc.). However, it was not until the beginning of 1999 that a specific "Foresight" team was set up and that the Regional Council decided to launch a systematic Foresight exercise. The trigger for such action was the need for the Region to raise awareness of its different departments who will have to participate in the 'redaction' of a regional plan (Schéma régional d'aménagement et de développement du territoire - regional scheme for planning and development).

SCOPE

The Foresight programme aimed to initiate a strategic approach to elaborate the regional plan, and to clarify available options through a better knowledge of regional society, an understanding of the regional environment's evolution, and better information about regional interests.

Because of its objective, participation in the programme was limited to people working in the departments of the Regional Council. The goal of the exercise was not to mobilise regional actors or to create networking. Nevertheless, the focus of the exercise was very large and aimed to take in all the aspects of regional life in a broad sense. In the same way, the time horizon was set for 20 years ("the time necessary for action").

The time schedule of the project was quite short: from February to September 1999 for the working group, and from September 1999 to February 2000 to exploit the results. The cost of the programme (entirely covered by the Regional Council) were mainly concerned with the provision of human resources (3 full-time staff). As it was an internal exercise, other typical costs associated with more disseminating exercises (organisation of meetings, etc.) were reduced.

BUILDING MOMENTUM

Attendance at the working groups was organised on a voluntary base. Three preliminary meetings were organised to explain the process, and the internal newsletter and the Intranet were used to create publicity. A specific area in the Intranet was set up to share information, such as minutes of the working groups, reports, articles or bibliography related to the themes of the working group. Altogether, 50 people attended the different working groups.

STRUCTURE AND ORGANISATION

The work was structured into working groups. These working groups were organised into 4 thematic areas. In each of these thematic areas, a work-plan was organised as follows:

- Social and individual behaviour

- Demographics behaviour
- Health
- Citizenship and identity
- Solidarity and association
- Education and training
- Way of life and social time
- Collective actions and democracy
- Utopia
- Regional resources
 - Environmental resources
 - Waste material
 - Energetic resources
 - Human resources - training
 - Human resources - research
 - Human resources - culture
 - Public financial resources
 - Private financial resources
- Economy
 - Pertinence of the regional space
 - The world markets
 - Consumption changes
 - Immaterial markets
 - New services
 - New economy
 - Management changes
 - Employment and work
- Regional area and territory
 - Human mobility
 - Urban structure
 - Rural and agricultural areas
 - Land areas
 - Animation of the sub-areas
 - Intra-regional goods flows
 - International goods flows
 - Europe and "Euroregion" (cross-border area)

METHODOLOGY

Before each meeting, a "position paper" with key articles, main trends, etc. was prepared by the Foresight team and distributed to participants. Sometimes, participants also provided some inputs by way of a specific paper. A member of the Foresight team animated each working group but the discussion was quite free and the objective was that people question themselves (awareness process). The goal was not to create scenarios but to ask questions (even without answers).

OUTPUTS AND OUTCOMES

The main output of the programme has been a "Short guide of prospective - Nord - Pas de Calais 2020". The guide has been largely disseminated within the Regional Council and a

presentation of this guide has been organised for the employees. It is published in a specific collection related to north of France issues.

The Foresight team is still in place in Nord - Pas de Calais, but its main role is now to support and supervise the work for the 'redaction' of the regional plan. A new Foresight programme is planned for this task. This will be much more open to regional actors, since one of the objectives will be to create regional consensus on the content of the regional plan. The new Foresight will be structured by thematic (culture, economy, environment, urban) areas.

This prospective exercise allowed the creation of a "collective intelligence" about the stakes and future trends for a very large focus of 60 themes. It helped to identify the possible futures of Nord-Pas de Calais and to plan some concrete actions in terms of social innovations, innovations by training and R&D, exchanges of experience, etc.

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CHAPTER 13 – BALTIC STRING⁴ (Denmark, Sweden, Germany)

Foresight to reach a common vision and strategic action plan for cross-border co-operation and regional development.

BACKGROUND

Since the end of the 1980s, the European Community has reserved substantial funds to promote cross-border co-operation between neighbouring border regions and to help these regions develop regional policies. Much of this support over the last decade has come through the INTERREG initiative, although cross-border co-operation has also been supported within the framework of Phare and Tacis programmes in Central and East European countries and in the newly independent states.

Subsequently, a large number of cross-border arrangements have emerged, aimed at furthering general European integration, improving economic development, bringing people closer together and solving joint environmental problems. But as cross-border co-operation has progressed and acquired more and more concrete contents, the need has arisen for adequate organizational forms and actors capable of taking the initiative, deciding on actions and implementing them. In many border regions, activities have often tended to be framed by national interests and not by a broader cross-border outlook. In long-term cross-border co-operation activities, misunderstandings and conflicts may arise due to information gaps as knowledge about systems, rules and norms is embedded in national identities. In such circumstances, it is hoped that Foresight methods (in the sense of participative exploration of joint interests) can offer a more promising way of addressing the sensitivity of the national border and for giving meaning to the construction of co-operation across borders and boundaries.

In the South-western part of the Baltic Sea, a diverse group of regional authorities have recently concluded a two-and-a-half-year strategy process on how to jointly create a sustainable basis for growth and development in an increasingly globalised world. This project is called the STRING project (South-western Baltic Sea Trans Regional Area Inventing New Geography), and the strategy process it involves has been guided by a regional Foresight approach to ensure that the articulation, execution and exploitation of joint efforts were coordinated across three national borders. Thus, whilst the STRING project is nested within the guiding principles of the structural funds, the spatial planning perspective and the use of Foresight methods have offered an open strategy process, which is qualitatively different from the normal programme procedures and the anticipated distribution of funds.

The regional authorities involved in the STRING project are: The Öresund Committee (S/DK), a cross-border co-operation committee with Danish and Swedish local and regional authorities; the County of West Zealand (DK); the County of Storstroem (DK); the City of Hamburg (D); and the State of Schleswig-Holstein (D). The STRING area has a population of 7.9 million inhabitants and covers an area of 36,800km². The density of population is 215 (hab./km²) and the annual Gross Domestic Product per capita is one of the highest in Europe at 27,500 Euro.

⁴ This text has been taken from B Holst Joergensen (2001), "Foresight in Cross-Border Cooperation", *IPTS Report*, vol.59, November 2001

SCOPE

The main aim of the STRING project has been to develop a common strategic platform and jointly address common conditions, options and challenges. Networking among specialists, planners and decision-makers has been another explicit aim of the project. An implicit aim is to influence the political agenda on a possible future link across Feme Belt between Denmark and Germany. Thus, target groups for the project include regional and local authorities, universities and research institutions, centres of education and vocational training, trade unions, chambers of commerce, business development organisations, cultural institutions, Agenda 21 actors and other NGOs.

The project had a total budget of 1.3 million Euro, of which 0.7 million Euro was co-financed by INTERREG IIC. It had a duration of 30 months (January 1999 – July 2001), which may seem a long time, but experience from various bilateral cross-border co-operation programmes in the region taught the STRING partners that it takes time to develop a common language and give meaning to the common vision and strategic action plan. The time horizon for the exercise is ten years, to 2010.

Above all else, then, the STRING project has been about building bridges – in the sense of both the physical constructions across the sea and the social constructions across institutional and spatial boundaries. The overall aim has been to create a STRING of interrelated and dynamic urban and rural locations including towns, cities and villages. The idea of the STRING project is thus to reach a critical mass by building bridges in order to cope with future changes in society on a regional, European and even global level. As for the physical bridges, the project has kept alive the political debate on the "missing" link across the Feme Belt to conclude the so-called Scandinavian link from Sweden over Denmark to Germany. As for the social construction, the project has brought people and systems together across three national borders within a long-term strategic cooperation framework.

BUILDING MOMENTUM

Commitment was steadily built up throughout the process (e.g. in this case from the initial project application for INTERREG IIC funds) through the various workshop meetings, to the political forums and public conferences that occurred later in the project. It was always believed that this broad support would be sufficient to make it possible to embark on concrete projects within strategic action fields giving shape to the vision of a high quality area based on innovation, entrepreneurship and sustainability.

Related to this, one thing that turned out to be an important feature of the STRING strategy process was the cautious building of democratic legitimacy, linking each step of the Foresight process to the democratic institutions of the region. The idea was NOT to build yet another political-administrative structure – rather, the idea was to create a dynamic political forum where political representatives of the STRING partners could meet, discuss and give direction to the project. The political representatives actively participated and committed themselves to the formulation and implementation of the strategy and the action plan. They met in five political forums during the course of the process, often in relation to the thematic workshops and the conferences (see below). These forums constituted the milestones of the project and opened up the project to a broader perspective and focus. How each political representative gave an account of agreed policies and ideas to his/her constituencies was a matter for each representative and the government system he/she represented – members included, for example, a county mayor, a town mayor, a city mayor, and a state prime minister.

The broader public was informed through political resolutions, together with newsletters, reports and a project web-page (www.balticstring.net). Although these decisions were made politically accountable to the citizens living in the region, the political representatives were fully aware that the future of the STRING region was closely related to bringing the activities much closer to the people. In 1997 unexpected civic resistance to closer cooperation across the Danish-German land border, in combination with widespread scepticism about the European project, had taught the promoters of the new region to be much more sensitive to the complexities of European integration. However, the STRING partners also agreed that public ownership would be closely related to implementing decisions and producing concrete results affecting daily life. The STRING project should make a difference to citizens living in the region, and should enhance it as a place to live and work. In other words, it had to offer flexible solutions to everyday problems in a cross-border region, such as transportation, recognition of diplomas and credit transfer systems, tax systems, cultural life, integrated coastal management, etc.

STRUCTURE & ORGANISATION

Language, in the literal sense of the word, was one of the first things to agree on as the co-operation crosses three countries, each with its own language. From the very beginning it was agreed that the common language should be English so that all participants could communicate on equal terms. It was also a particular challenge to develop a common administrative language bringing together divergent administrative and political decision-making cultures and practices.

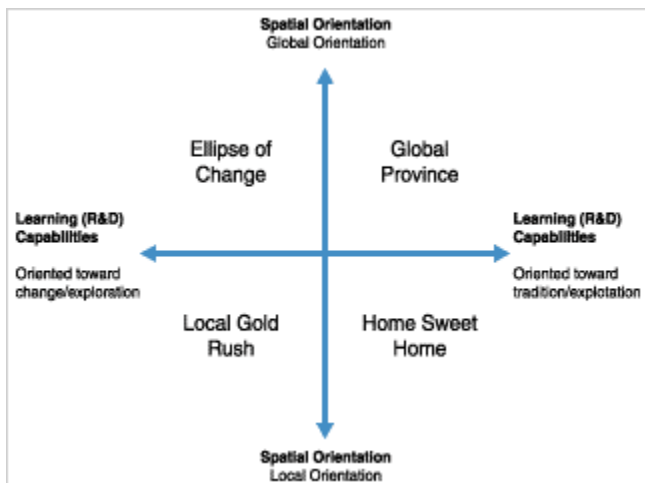
The overall process was managed by a **steering group** consisting of regional administrative leaders and a small **project secretariat** whose officials were appointed by each STRING partner from their own staff. They met regularly and communicated in between meetings by e-mail. This project secretariat, which was not tied to a particular physical location, was the driving force throughout the whole process.

The formulation of joint interests and actions was made in an open process involving more than **100 experts** from universities, research institutes, chambers of commerce, local and regional authorities, associations and organisations (STRING, 2000). The experts came together in **thematic working groups**, each of which was chaired by a key official from one of the STRING partners. The experts were appointed by each STRING partner on the basis of their personal merits, and not, as it is often the case, on the basis of the organisations they represented. This meant that new networks were created, and old ones were given new meaning.

METHODOLOGY

Within thematic workshops, experts identified **driving factors** for the future development (10-year time horizon) of business and industry (local versus global spatial orientation; learning capabilities oriented towards tradition; history and stability versus rapid change and innovation) and later elaborated four equally plausible **scenarios** (The "ellipse of change"; "global province"; the "local gold rush"; "home sweet home").

Communication between the participants was supported by reports and discussion papers produced by consultants. One theme was barriers to, and potential for, business development;



a second theme focused upon the urban-rural dimension and the strengths of polycentric urban structures; and a final theme addressed sustainable mobility. As the contracts for these reports were signed prior to setting up the thematic working groups. They did not fully reflect the information required by these groups. However, some adjustments were made and additional papers were produced. Thus, one lesson learned from this process was that working groups should be actively involved in formulating the terms of reference of external reports so as to ensure they closely match their requirements.

The project secretariat and the chairmen of the thematic work groups assured co-ordination between scenarios for the future development of the STRING region, a **common vision** and a **strategic action plan** (see below). They also managed the overall process and decided to use the scenario framework of one working group to guide the final work of the other two groups. The scenarios were used as a starting point for developing a preferred vision of a STRING region, characterised by a high quality of life based on innovation, entrepreneurial spirit and sustainability. The vision was agreed by all thematic working groups and later presented to the political forum of the STRING partners.

OUTPUTS AND OUTCOMES

The STRING partners reached a commitment to implement the strategic action plan, both during the whole process and also in the concluding **conference** in June 2001. The strategic action plan comprised seven areas of strategic priorities for future activities

- Business Development –based on innovation and creativity
- Learning Society –social capital as a pre-requisite for technological innovation
- Exchange of Knowledge – to foster potential synergies between private corporations, public research institutions and academia as well as between different academic disciplines
- Mobility of People – meaning physical mobility as well as professional, educational, mental and cultural mobility
- Infrastructure and Transport – aimed improving technical facilities
- Environment, Nature and Landscape – as a general challenge for regional development
- Culture – as a result of the uprooting of traditional national values in favour of "glocal" (i.e. simultaneously global and local) values.

Some projects were already agreed and initiated during the strategy process, e.g. the Baltic Sea Virtual Campus project involving Swedish and German educational partners, whilst others were ready for take off. These projects were called “lighthouse” projects, since they were intended to illustrate and breathe life into the ambitions of the overall political project.

The outcome of the strategic process has been the development of a common vision and strategic action plan comprising a number of strategic action fields, such as business development, education, infrastructure, and culture. In addition, a number of concrete projects – the so-called “lighthouse” projects – have been planned (and some have even been implemented) and are useful for testing and illustrating the ambitions of the project. Thus, the STRING partners are continuing to co-operate and build on the established process and structure to undertake key projects within the strategic action plan. As the project has built upon existing collaborations and networks, these have been given new meaning. By the involvement of a wide range of experts throughout the process, new networks have been established and new opportunities created.

Reflecting on the process, it has been concluded that the management structure needs to be lean, transparent and effective, consisting of the monitoring of activities, a steering level to secure continuous coherence between goals and activities, and a virtual project secretariat made up of officials from the STRING partners.

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CHAPTER 14- LOMBARDY (Italy)

Private-sector led foresight as a tool for informing the policy of regional governments aimed at raising technological competitiveness.

BACKGROUND

Lombardy is very important in the Italian context owing to its geographical position and its history. It is situated in Northern Italy, at the foot of the Alps and in the centre of the North Italian Plain, at the intersection of the main routes which link the Mediterranean area and central Europe. Lombardy, which comes fourth in size among the Italian regions, has an area of 23,860 square kilometres or represents 7.9% of the land area of Italy. However, with about 9 million inhabitants and a density of 378 inhabitants per square kilometre, it comes first regarding population figures,

The Region of Lombardy was one of the first Italian regions to industrialise. The most technologically advanced sectors are present: engineering products, metals, chemicals, rubber, printing and plastics. Some of the most prestigious companies operate in Lombardy, even if there has been a considerable decline of large industrial plants. There are very many small and medium companies.

The present tendency is the growth of services in the urban areas, the decentralisation of productive processes, the spread of small-scale entrepreneurs. Artisan activity has a very important role: engineering, wood and furniture, textiles and footwear and building are the most developed sectors.

In the Lombardy region, there has been a partial use of the main results of the Technology Foresight exercise carried out at national level by Fondazione Rosselli. The critical emerging technologies located and evaluated by the national exercise were confronted with the technological structure of some industrial sectors within Lombardy in order to assess their relevance for the medium range dynamics of competitiveness for the firms in these sectors. This was initiated in 1997 by a number of organisations, including a local technical university, an industry association, the Milan Chamber of Commerce, and a leading banking group. Results were made available in a final Report in 1998.

SCOPE

The objectives of the study were set by the initiators, aiming at the identification of the actual level of technological competitiveness of the most important sectors of Lombardy's industry. Its prospective took into consideration the role and the weight of technology in determining economic competitiveness, as well as the most relevant future developments of technology affecting the structure (products, processes) of the region's industrial sectors.

STRUCTURE AND ORGANISATION

The Study was carried out by a team of researchers at the Politecnico di Milano who relied on strong co-operation with the entrepreneurial Associations, either of the sectors or of the areas where the firms were concentrated. The methodology used was based on brainstorming

meetings, data analysis and extrapolation, and interviews of top managers from a sample of the most innovative and competitive firms in the region.

METHODOLOGY

The following steps were taken:

1. Selection of the first 6 sectors to be analysed, according to their international competitiveness (export sales/total sales), size (total employment) and their technology level.
2. Evaluation of the most important (strategic) factors affecting the actual level of competitiveness of the firms in these sectors and the role of technology among them.
3. Identification of the dynamics of the importance of these factors in the medium term.
4. Identification of those technologies that were foreseen to be critical in determining the industrial structure (in terms of products and design and manufacturing processes) of the selected sectors.
5. Screening of the strategy adopted by the firms to cope with these technological innovations

OUTPUTS AND OUTCOMES

Results were presented to the Regional Government of Lombardy enabling them to define economic policies suited to the development needs of the firms in the selected sectors. Moreover, results were also used by the banking group (involved from the outset) as guidelines for giving financial support to the Lombardy industry. They also served to guide the applied research activities within the Politecnico di Milano. Even if the main outcomes of the initiatives cited above yet still have to be realised, some important developments have already shown, such as:

- the Regional Government of Lombardy has set up a programme supporting the establishment of “Centres of Excellence “ in some areas of the region (including one of the industrial districts analysed within the study).
- the banking group involved has set up a specialised fund supporting initiatives (projects and structures) for technology transfer to SME’s in Lombardy.

The interaction among researchers, technologists and top managers initiated through the study has proved to be useful in inducing the latter to think in an organic and strategic way about the future of their firms. This applies especially regarding the new and often unexpected technologies that were foreseen to be critical for their future economic performance. As a consequence, the sponsoring institutions decided to support the extension of the study, in order to include further relevant sectors. This activity is ongoing.

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CHAPTER 15 - NORTH-EAST ENGLAND (UK)

Developing and embedding a broad-based regional Foresight consciousness and capability.

BACKGROUND

Situated on the East coast of England facing Northern Europe and Scandinavia, the North East is a largely rural area. Most of its population of 2.6 million live along the three great commercial rivers of the Tyne, Wear and Tees where economic development is concentrated. The Region consists of four Sub-Regions: Northumberland, Tyne and Wear, County Durham and Tees Valley.

The Region's economy until relatively recently was based on coal. The decline of the traditional industry of coal mining, steel, shipbuilding and heavy engineering has necessitated significant economic restructuring. Today, the Region's strengths lie in automotives, electronics, advanced engineering, including offshore oil and gas, pharmaceuticals, chemicals and metal manufacturing. Levels of unemployment are higher than the UK average.

The need for Foresight was felt to be particularly acute here because of the inward migration of large foreign owned firms to replace traditional activities such as coal mining, steel and heavy industry. The resulting shortage of R&D facilities, indigenous entrepreneurs and creative new product design caused concern amongst policy makers who felt that the region was heading towards a less competitive future despite the short term rise in manufacturing employment.

During its first phase (1996 - 1997), the foresight was managed by Newcastle University (Regional Centre for Innovation and Design - RCID). In its second phase (1998 - present) the responsibility for running the programme has passed to the Regional Technology Centre in Sunderland (RTC North).

SCOPE

The primary aim has been to increase the competitive standing of regional industry and society through improved appreciation, anticipation and exploitation of future developments in science and technology.

The programme is structured around four objectives, which determinate the different focuses:

- The 'flagship' programme is cross-sectoral and includes quality of life issues (age, physical environment, crime, transport etc) - they are driven by the FORUM membership and its quarterly meetings.
- The 'sector panels' are more focused and include groups for IT, sensors, engineering training, manufacturing, energy, marine, chemicals, leisure & learning and a cross-sectoral group. The intention is that these should all become fixed time scale and mission based. These sectors were identified by a scoping study carried out by CURDS (Newcastle University), which attempted to match Foresight issues with regional requirements.
- 'Technology Scan' is about keeping abreast of all new technologies but particularly those that have great potential to affect the regional economy.

- ‘Industrial outreach’ is perhaps the most difficult area because it deals with how Foresight can be made relevant to SMEs including audits and opportunity reviews as part of a structured methodology for future competitiveness.

Several hundred organisations have been involved both in consultation and operational activity.

BUILDING MOMENTUM

The first phase of the project was specifically dedicated to build momentum. Over the period March 1996 to December 1997, a wide ranging dissemination exercise was carried out to publicise the results of the national programme and options for regional implementation. This resulted in a much wider appreciation of the objectives of Foresight and the specific benefits to be derived from participation by different interest groups within the business and academic communities. The fact that the RTC North took responsibility for the programme in 1998 has achieved better access for participants but also induced a high degree of interaction which takes place with SMEs from that location.

Vigorous leadership via focus groups in all the focused areas resulted in the establishment of active Foresight networks. Through a combination of surveys and events, they have addressed specific topics, some of which were subsequently worked up into collaborative bids between industry and HEIs to access funding for innovation and product development.

STRUCTURE AND ORGANISATION

There are four levels of governance. The Steering Committee acts like a board of directors and has overall authority. It meets every two months and has equal representation from senior figures in industry, academia and development organisations. The Executive Board is a subset of the Steering Committee that meets more frequently (monthly) to implement policy but not to create it. The Technical Evaluation Panel is responsible for assessing funding applications for SME Foresight projects. Finally, the Foresight Forum is the advisory body that guides the ‘flagship’ programme via its quarterly meetings. Membership of the latter is open to all who wish to join. The others are all by appointment.

Sector panels are organised separately and are normally chaired by an industrialist who is supported by the Coordinator. Reports are presented at Steering Committee meetings.

METHODOLOGY

There is no Delphi activity in the North East but a lot of other methods are used. Scenario workshops have proved very popular, both in relation to the offshore sector and vocational education. Opportunity mapping has occurred in Energy and Environment sectors. High-tech seminars have been organized in IT, communications, chemical sensors, nano-technology and other specialist areas. Some events are multi-faceted incorporating a speaking program with an exhibition, workshops and demonstrations. The choice of method is generally a matter for the committee or panel concerned. In the flagship program the Co-ordinator decides. Foresight North East offers project based support to SMEs in identifying future R&D and new business opportunities.

OUTPUTS AND OUTCOMES

Soft outputs include the knowledge transfer and improved working relationships that result from network activity. These are very valuable but difficult to quantify. Outputs of the Forum meetings have been most influential on regional policy. GONE representatives have made funding available for pilot projects as a direct consequence of such meetings. ONE North East uses these meetings to forge a link between Foresight and its own Strategic Futures programme.

In general, expectations have been satisfied. As regards the events, individuals do seem to get a lot out of the scenario workshops because they permit original thinking with like-minded persons outside the organisation. Formal seminars do not generate the same level of interest unless the technology has 'curiosity value'. A good example was a micro-engineering lecture and demonstration provided by a Swiss engineering organisation. Concerning the SME programme, detailed project work with companies tends to follow a similar pattern. In the early stages the client is interested in technology per se, and in information about its own core business. In the later stages the client becomes more interested in market issues, regulation and the core business of suppliers and customers.

A specific web site "Foresight North East" (www.foresight.org.uk) has been launched to disseminate the Foresight activity and to support the continuous development of the programme.

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Annexe – Foresight Methods

Most methods used in Foresight studies stem from the disciplines of forecasting and Futures studies. Some of the methods described in this Annex were developed in the 1950s and '60s as tools to deal with military strategies and technologies, and to elicit opinions on issues that were difficult to analyse using scientific methods (i.e. the Delphi method).

Chapter 2 provided many points of introduction into the use of techniques and methods in Foresight. These can help to structure information concerning the future and may help – or hinder – Foresight being used as an interactive approach.

Before discussing broad groups of Foresight method, and some of the specific methods in more detail, we briefly introduce an approach that we often find employed in organisations with a forward-looking outlook – environmental scanning, which provides helpful background intelligence for many types of Foresight activity.

ENVIRONMENTAL SCANNING

Environmental scanning systems provide early warning about important changes and detect 'weak signals' that indicate plans should be amended. Scanning involves a commitment to a continuing process of monitoring change, with an orientation toward longer-term issues.

It is important at the outset to be clear why the scanning system is to be set up, the level of involvement required and how the results are to be used. This method allows finding early indications of possible important future developments to gain as much lead-time as possible.

There are various scanning techniques. Often it is a matter of an individual or a small set of individuals entrusted with the task, and reporting regularly back to the organisation (sometimes with talks by outside experts, videos, etc.) Material and information can be identified systematically by searching the Web and on-line databases and through the scanning of media and preparation of literature reviews. Such a role may also be contracted out to consultants. Another approach to scanning the environment for changes is the use of an *expert panel*. Participants in such a panel could be asked in a systematic manner to provide observations and judgements about important developments that are underway or expected. The composition of the panel could change over time with rotation, which is encouraged to bring in fresh views into the process. Communications media can take many forms.

Scanning can be used to inform the management process, enabling it to consider issues at an early stage rather than reacting to them when they become critical. It is not a Foresight method as such, more a necessary background to the topic of Foresight.

Broad classes of Foresight methods

Many tools and many variants of the same tool are used in Foresight exercises. Chapter 2 distinguished between explorative and normative methods and between qualitative and quantitative methods. In this Annex, we illustrate Foresight methods by classifying them based on three criteria:

Criteria	Methods
1. Methods that are based on eliciting expert knowledge to develop long-term strategies.	<ul style="list-style-type: none">- Delphi method- Expert panels- Brainstorming- Mindmapping- Scenario analysis workshops- SWOT analysis
2. Quantitative methods that make use of statistics and other data	<ul style="list-style-type: none">- Trend extrapolation- Simulation modelling- Cross impact analysis- System dynamics
3. Methods to identify key points of action to determine planning strategies	<ul style="list-style-type: none">- Critical / key technologies- Relevance trees- Morphological analysis

Foresight methods based on the use of expertise

While many people know about the specific topics addressed in Foresight activities, relatively few people have a well-informed view of the longer-term developments that are likely or possible in these topics. Experts should be able to address more fundamental questions, and to know of what problems, innovations, and opportunities are arising in their areas. Sometimes these will be practitioners, sometimes researchers. Some experts know a great deal about their subject area but are relatively narrow, with little knowledge of developments even in adjacent fields; some find it difficult to communicate with non-experts, and some are convinced that their sort of expertise alone is sufficient to address all of the problems posed by Foresight (so that there is no need to encourage wider participation – the only issue is seen as being a matter of disseminating their own views).

Often it will be necessary to sample a broad range of expert opinion, to inform the Foresight activity. There may be various reasons for this:

- Critical knowledge is widely dispersed in (and beyond) your region
- It is quite possible that someone will have knowledge of relevant material that is not yet common knowledge, even among experts
- Broad consultation is useful for identifying recruits for networking activities
- Broad consultation can help establish the legitimacy of the Foresight exercise.

Consultation - through questionnaires, workshops, Internet, etc. – may be carried out at a number of points in the Foresight process. On other occasions it will be necessary to work more intensively with smaller groups of experts, to stimulate dialogue, to deepen the analysis and produce reflective conclusions.

In either case, a critical task will be that of *identifying relevant expertise*. It can be very helpful, for example, to use **reputational** approaches – rather than rely on the initial set of candidates that might be thought of, to use questionnaires asking these people to nominate others who they believe to be particularly knowledgeable in specified areas of expertise. A **snowball** survey involves contacting the people nominated by your first contacts, then contacting their nominations, and so on. **Co-nomination** approaches may be employed, in which the repeated naming of particular people as expert in particular fields is used for guidance in the selection of experts. However, it is possible to find experts in existing databases and through the internet.

Experts may be:

- Accessed via mail, email or other “remote” approaches.
- Recruited into face-to-face encounters, workshops, conferences, Panels, etc.

And they may be:

- Used as a “passive” source of data, so that their views are elicited and collected, but they have little say in these processes
- Involved much more interactively, so that they play a more creative role in determining what knowledge is relevant and how it could be used.

Putting these two dimensions together, we can locate some of the main techniques as follows:

Experts are:	Remotely sampled	Physically present
Mainly passive	Conventional postal surveys (e.g. most Delphi studies). Interviews.	Attendance mainly as observers at workshops, conferences. Delphi and similar surveys as group events at conferences, etc.
Highly interactive	Participation in computer conferences, remote groupworking.	Expert Panels; Scenario workshops; Brainstorming

We examine some of the most often utilised methods below.

DELPHI METHOD

Delphi involves a survey of people believed to be experts in the areas being studied. In the most common form of Delphi, the opinions sought concern the particular developments that are likely to happen. Such Delphis have been widely used in Technology Foresight studies and other exercises. But there are many other types of Delphi possible. They may focus on different topics – on social developments, for example. Instead of trying to forecast dates of development, Delphis can be constructed to help identify and prioritise policy goals, for example.

One feature that makes Delphi different from an ordinary opinion survey is that essentially the same questionnaire should be filled out several times, with the respondents receiving feedback on the set of earlier responses. The idea is that the respondents can learn from the views of others, without being unduly influenced by the people who talk loudest at meetings, who have most prestige, etc. Ideally, significant dissenters from a developing consensus would be required to explain their reasons for their views, and this would serve as useful intelligence for others. (Unfortunately, to carry this out is time consuming, and is quite often missed out from Delphi studies.) Often the goal (and the result) of a Delphi study is to achieve convergence of opinions. There are even implementations of Delphi that are explicitly designed to identify different clusters of opinion, rather than zones of consensus. In practice, some so-called Delphis do not make much, if any, use of iterations of the questionnaire; these are really opinion surveys misappropriating the name “Delphi”.

Delphi surveys are fairly time-consuming and labour intensive, and need expert preparation. A poorly designed Delphi will attract antagonism and illicit poor information, and may fuel criticisms of the overall Foresight activity with which it is associated.

Why is this method useful?

To predict and assess emerging developments where there is no empirical database, where external factors are likely to have a determining effect and where social arguments may dominate economic or technical considerations. Delphi is very useful to collect and synthesise opinions. Delphi inquiries are a valuable tool of communication for exchanging opinions on a topic, and in a sense the Delphi method is a controlled debate.

Does Delphi have a special use?

Delphi can be used for making tacit knowledge of experts about the future more explicit and for longer-term assessments, for which extrapolations make no sense. It can help to gather the opinions of a larger group of experts and in fields where there is not a lot of evidence about the developments and experts often do not dare to explain their real opinion. Delphi inquiries are a valuable tool of communication for exchanging opinions on a topic. It is conducted anonymously in order not to let anyone lose face in case of opinion change. The domination of single persons is avoided.

Who participates and how?

In general Delphi inquiries are addressed to experts (i.e. they constitute the panel of respondents) that participate by answering to the questionnaire. The definition of 'expert' can be very broad.

How does Delphi work?

Requirements

- Selection of the subject to forecast – It should be one where there is lack of data on future trends.
- Selection of the panel of experts (problem of bias, which is present in every panel group) – care is needed in recruiting the panel and the criteria for selection should be set out. Before an expert agrees to take part in a Delphi inquiry, he/she should understand the purpose of the inquiry and should be aware that his/ her expertise should be made available in different rounds of the inquiry. The Delphi method has an iterative nature. If the exercise is to maintain its credibility the tendency for panel members to drop out after the first round should be minimised.
- Clarity of the questions – questions should be sharp and answerable. In general questions are related to the date of occurrence of an event or development, what are the possible constraints (economical, technological, social, political) to the occurrence of event or development. Before sending the questionnaire out more widely, it should be piloted among a small sample of experts to refine it.
- Administration of the questionnaire – the questionnaire should be administered from a person that is responsible for the management of the questionnaire and to communicate results to the panel members.
- Analysis of responses – results are presented in a statistical manner. A common approach is as follows. For each question the median (i.e. the central tendency) and interquartile ranges (i.e. the middle half of the range outside which lie the upper and lower 25%, or quarters, of the range) are calculated. This information is the basis of the

second round of the inquiry and it is sent to the panel members, who are asked to review their estimates in the light of the group opinion. Members who maintain an estimate outside the interquartile ranges are asked to provide a brief justification for their opinion. A new median and interquartile ranges can be calculated and either used as the final forecast or circulated again for further refinement. The questionnaire can circulate until convergence of opinions is reached, but a Delphi inquiry should not have more than four rounds.

How can we use the output?

What goes in: Expert based opinion in an anonymous questionnaire among a defined sample of experts.

Data treatment: Statistical analysis but also qualitative assessment of results. The data treatment is quantitative; the input consists of ratings and thus quantifying qualitative issues.

What comes out: Most commonly, Delphi produces a prediction of a date of occurrence of a sequence of events and assessments of the topic with different criteria. However, other types of judgement may be elicited – the importance of goals, the drivers of change, and practically anything else that might be of interest to study.

Normally, the number of respondents is small, Delphis are not intended to produce statistically significant results. In fact, the outcomes provided by a panel do not predict the response of a larger population or even a different Delphi panel. The outcomes represent the view of a particular group of experts.

How it is used with other techniques?

In the preparatory phase, creativity techniques (e.g. brainstorming, 6-3-5 or others) or scenarios are used. Data from literature research, patent analysis or bibliometrics can be added. In the analytical phase, different statistical methods (calculation, rankings, correlations) or the re-building of scenarios as well as pseudo-roadmaps can be used. For comments or additional explanations, qualitative analyses are necessary. SWOT analysis can be based upon the results.

What are the drawbacks?

Delphi studies are difficult to perform well. A great deal of attention must be given to the choice of participants, the questionnaire must be meticulously prepared and tested to avoid ambiguity. It is a time consuming method (i.e. a single Delphi round can easily require three weeks; a three round Delphi questionnaire requires at least three to four months including preparation and time to analyse outcomes. Some participants drop out during the process (especially after the first round). In addition, further qualitative assessment of Delphi inquiry may produce useful information, however this step is often not carried out due to lack of time.

Other drawbacks include:

- As in all panels or expert groups, the opinions will reflect the set of participants involved: a narrow set of criteria for these may lead to unrepresentative views or miss out important sources of knowledge.
- To gain persons to answer a questionnaire twice or more often is difficult and needs incentives (e.g. that the experts receive the results). The dropout-rate increases after the second/ third round so that current studies are often limited to preparation and two rounds.

- Single opinions that might be of special value are also pooled and normally ignored. Only the accumulated results are published to save anonymity. It is difficult to find out reasons for extreme answers later on, as this anonymity has to be respected.

EXPERT PANELS

Panels of sectoral and/or technological experts are commonly used in national Foresight studies. The constitution of such Panels, in itself, is not a 'methodology', but specific methods may be employed to motivate the panel, assign tasks, and elicit sharing and further development of knowledge. Panel work is highly significant in terms of:

- The gathering of relevant information and knowledge;
- The stimulation of new insights and creative views and strategies for the future, as well as new networks;
- The diffusion of the Foresight process and results to much wider constituencies;
- The overall impact of Foresight in terms of follow-up action.

Problems with Panels may relate to:

- The selection of panellists – the selection of candidate panellists can be done through systematic literature searches, co-nomination (e.g. nomination from professional organisations). The qualification of experts can stem from important qualification in their discipline, experience, work and interests. It is also important to search for creative thinkers with diverse viewpoints from around the world.
- Lack of motivation;
- Over-dominance of strong personalities;
- Dangers associated with too narrow representation (little challenging thinking, perceptions that vested interests are in charge, the "capture" of independent members by well-resourced interest groups).

An expert panel cannot produce a statistically significant outcome. The results provided by a panel will not predict the response of a larger population or even the findings of a different panel. They will represent the synthesised opinions of the particular group, no more, no less.

We set out below some methods frequently used with Panels and expert groups – Brainstorming and SWOT analysis, which are techniques that can be used in brainstorming and scenario building, and Scenario Analysis Workshops themselves.

BRAINSTORMING

Brainstorming is a widely used group method. It involves a period of freethinking, which is used to articulate ideas. These should be collated and written down without critical comment, though ideas may be spun off from earlier ideas. Individual ideas will not normally be subject to critique or further analysis until a sufficient number have been generated. This should reduce participants' inhibitions about throwing out "wild" ideas. Typically these ideas will then be grouped, prioritised, etc., and taken as the basis for more analytic discussion. This is a useful technique for expert committees and consultation management groups. Several computer systems are now available as alternatives to the traditional use of whiteboards and flipcharts to record and display the ideas.

What is brainstorming?

The main objective of brainstorming is to elicit ideas from a group of people. Used in a structured manner, this tool can be highly effective to move participants out of conflict and toward consensus. Brainstorming is founded on the principle that the quantity of ideas increases their quality. This technique has the following basic components:

- Generating as many creative solutions as possible to tackle a problem;
- Listing every idea presented without comment or evaluation - deferring the judgement of ideas improves the volume of participant input and consequently the value and encourage creativity;
- Subsequently, grouping ideas to reduce redundancy, allow for related ideas to be brought together;
- Evaluating or assign priorities to the ideas

Why is this method useful?

Brainstorming brings new ideas on how to tackle a particular problem – the freethinking atmosphere encourages creativity, even imperfectly developed thoughts may push the thinking of other participants.

Problems are defined better as questions arise – alternatives appear in a new or different perspective and novel approaches to an issue can arise during the process.

Brainstorming helps to reduce conflicts – it helps participants to see other points of view and possibly change their perspective on problems. All participants have equal status and an equal opportunity to participate.

Does brainstorming have a special use?

It can be used every time when large quantity of information is generated before problem solving, decision making, or planning - and in scenario analysis. Brainstorming helps participants to move into a working group mode, by “breaking the ice” and allowing unusual ideas to be expressed.

Who participates and how?

Anyone can participate in a brainstorming session. It is useful to encourage participants from diverse backgrounds in the issue to be discussed. Effective brainstorming sessions are small (from 7 to 12 participants). Larger groups should be divided into smaller groups.

How does it work?

- *Requirements:* a facilitator; a way to record all the ideas/information (e.g. a facilitator, and/or a whiteboard, flipchart, etc. – there are now also computer-based group decision aid software tools that support brainstorming and other activities described here)
- *Procedure:* Introduce the topic and the purpose of the specific brainstorming session (briefing information might be sent in advance to participants). Begin the discussion by asking a specific open-ended question to focus the discussion (there is no rule for the length of a session, sometimes the group should define in advance a target number of ideas). When the group feels comfortable that there are no more ideas to add, revisit

the list of ideas, group the ideas together, ask clarification or more information on what was meant by each item.

How can we use the output?

Feed the suggestions developed into later stages of group work, or into other steps in the policy process.

How it is used with other techniques?

The gathering of ideas can be managed by using different types of techniques to boost productivity of brainstorming. For example among the most common used techniques there is: role-playing, mind-mapping, story boarding, card clusters. In addition, brainstorming can be part of expert panels

What are the drawbacks?

Sometimes the ideas produced are unworkable. The outcomes depend on the ability of the facilitator of maintaining the discussion alive. Opponents may refuse to consider each other's ideas. It is important to explain to participants how the results will be used to underline that they are not wasting their time.

A note on MINDMAPPING:

Mindmapping is a technique applied to brainstorming and other group discussion methods (for example where people are talking about the relationships between a large number of factors). It allows for quickly charting group's ideas in logical groupings, even when ideas are given in a non-sequential manner. This technique allows to efficiently brainstorm for ideas, and at the same time create a skeletal framework for later categorisation of the information generated. Mindmapping can be used in planning, identifying customer groups. Mindmapping works well when issues have many components and subcomponents. This technique is a non-linear way of outlining information. It is possible to implement it with 'pen and paper', but there are available dedicated software tools⁵ which allow us to visualise in real time the developments of the brainstorming.

SWOT (STRENGTHS WEAKNESSES OPPORTUNITIES AND THREATS) ANALYSIS

What is SWOT?

SWOT analysis is an analytical tool, which should be used to categorise significant environmental factors both internal and external of an organisation. SWOT should not be viewed as a static analytical tool with emphasis solely on its output. It should be used as a dynamic part of the management and business development process.

Why is this method useful?

SWOT analysis involves the collection and portrayal of information about internal and external factors that have, or may have, an impact on the evolution of an organisation/ business. It generally provides a list of an organisation's strengths and weaknesses as indicated by an analysis of its resources and capabilities, plus a list of the threats and opportunities that an

⁵ For example <http://www.mindjet.com/index.htm>

analysis of its environment identifies. Strategic logic requires that the future pattern of actions to be taken should match strengths with opportunities ward off threats and seek to overcome weaknesses.

Who participates and how?

People directed involved in various hierarchical levels of decision making in an organisation/ business, or a wider sample of actors if the SWOT concerns a whole region or nation. Representatives from a variety of stakeholders groups should be involved, as they would bring in the analysis their own particular perspectives.

How does it work?

The SWOT is often portrayed as a 2x2 matrix and it identifies through means of a chart a reasonable overview of major issues that can be taken into account in subsequently drawing up strategic plans of an organisation.

The development of Opportunity and Threats matrices encourage an assessment of the likely probability and impact any factor may have on an organisation/ business. It is possible to apply a scoring system to assess the importance of factors. A factor that score highly on both 'probability of occurrence' and on 'likely impact on the organisation/ business', would have to be one worthy of close attention and play a significant part in the development of a strategic plan. Similarly, Strengths and Weaknesses can be assessed against a scoring system that allows the factors to be identified according to their significance (i.e. major, minor, neutral) and level of importance (high, medium, low).

It is possible to represent this analysis in a Performance- Importance matrix that highlights those factors which are both important and in which performance of the organisation/ business is low. It is towards these factors that strategy should be addressed.

How can we use the output?

SWOT analysis can be used as one step in the process of scenario building. It can be used prior to a Delphi survey to help focus the Delphi questionnaire.

How it is used with other techniques?

SWOT analysis is often used in brainstorming, with scenario analysis and with Delphi technique.

What are the drawbacks?

Inadequate definition of factors; Lack of prioritisation of factors; Over-subjectivity in the generation of factors: compiler bias.

SCENARIO ANALYSIS WORKSHOPS

Scenario methods can be extrapolative or normative (see Part 2 for a discussion of these terms). The critical point is that the scenarios themselves must be internally consistent pictures of future possibilities, and prove useful for envisaging the implications of uncertainties. Scenarios are tools for synthesis, structuring thinking, and presentational purposes.

There are many scenario development methods, and scenario workshops are just one way in which they are produced. (Often scenarios are produced by smaller expert groups, and in some cases this can be a valuable approach – for example where there is an explicit effort

being made to develop and contrast scenarios based on different theoretical perspectives. Scenarios may be used as part of modelling exercises, where special efforts will be required to frame them in terms of the parameters of the model.) There are dangers with scenario approaches, in that the end-states developed may be perceived as the only possible futures – or, often, that one scenario is implicitly the “most likely” scenario, with a couple of minor variations deviating from it.

This can facilitate systematic comparison of different scenarios, and force the developers of the scenarios to achieve consistency in terms of the elements of each scenario that are addressed.

What are scenarios?

Scenarios consist of visions of future states and courses of development, organised in a systematic way as texts, charts, etc. There are many ways of preparing scenarios, but a common method involves groupwork. Scenario planning is organisational learning. This method consists of organising information and future possibilities into alternative visions for the future. It is especially useful to comprehend events that seem to contain a mixture of unrelated information. Scenario methods can be extrapolative or normative, depending on the starting point. The scenarios are pictures of future possibilities and are composed of a mixture of quantifiable and non-quantifiable components arranged as logical sequences of events. A scenario is a means to represent a future reality in order to shed light on current action in view of possible and desirable futures.

Why is this method useful?

It helps to shape the virtually infinite number of possible futures that could be described down to a manageable size of three to four ‘futures possibilities’ on a specific organisation’s future. Scenario planning aims for the intervention of strategy and the testing of related organisational characteristics against multiple representations of the future of business environment.

Do scenarios have a special use?

Scenarios can be used any time when the number of factors to be considered and the degree of uncertainty about the futures are high to build alternative images of the future that might be a useful hint to select the way forward.

Scenario planning is an approach dealing with the following steps:

- Acknowledgement of aims;
- Assessment of the organisation’s characteristics including its capability to change;
- Assessment of the environment, current and future;
- Assessment of the fit between the two;
- Development of policies and decisions and actions to improve the fit.

Who participates and how?

Participants should include the final users of the scenarios, and people knowledgeable of the socio-economic contexts of the region. Diversity of experience is an asset to the success of the scenario exercise. The scenario building helps participants to gain a new understanding of how change could be managed as a result of the scenario building experience. Also external people can be included especially original thinkers.

How does it work?

Scenarios would work only if they meet five conditions that instil rigor: relevance, coherence, plausibility, importance and transparency. Numerous methods have been developed to create scenarios. Most approaches recognise the need to understand the system under study and identify the trends, issues, and events that are critical to this system.

In general, independently of the process chosen, there are some basic requirements:

- a) A scenario planner
- b) A group of participants (ideally 7 to 12)
- c) Time (at least two or three days to be divided in different sessions)

Often, creating scenarios has been compared to the process of writing a movie script where a main idea is formulated and characters are developed around it. There are a number of questions that are considered in scenarios building: What are the driving forces? What is uncertain? What is inevitable? Around these questions the following steps can be defined: identify the focal issue or decision; identify the key forces and trends in the environment; rank the driving forces and trends by importance and uncertainty; select the scenario logics; fleshing out the scenarios; assess the implications; and select the leading indicators and signposts for monitoring purposes.

Scenario workshops are one possible way to build scenarios. Firstly, a small group will be constituted – or sometimes, parallel small groups will explore different scenarios. A process will be used to obtain views as to critical choices and drivers that could differentiate or lead to distinctive futures. The most important of these will then be selected and used as the basis of an elaboration of the sorts of events that can unfold, the sorts of end-states that might be reached. The group will then typically be requested to consider what the strategic options might be for the specific scenario to be achieved, or for the key actors to be able to cope with the situation represented. A commonly used method for eliciting relevant drivers is the use of STEEPV – people are asked to identify Social, Technological, Economic, Environmental, Political, and Value-Based factors and issues. Some scenario workshops work from scratch, some begin with an existing set of scenarios and use these as a starting point, a set of images of the future to elaborate, or simply something to criticise!

How can we use the output?

This method can provide planners with one point estimate of innumerable possibilities of what the future unfolds. This method allows participants to develop plans that are viable over the wide range of possible futures also with a process that helps manage uncertainty. This method helps participants to radically alter the way they think about the future. Optimisation against a specific future target is replaced by a balanced evaluation of the range of strategies that may be required. Participants understand better the alternative needs of futures and are able to develop better-informed strategies and policy options.

How it is used with other techniques?

Scenarios are often used in combination with SWOT analysis (strengths, weaknesses, opportunities and threats). SWOT it is very useful to provide the scenario planner with a useful insight into the strategic agenda of the final user of the scenarios.

What are the drawbacks?

Users may find difficult to deal with multiple images of plausible futures. Some scenarios stay at the level of broad generalities lacking supporting analysis and quantification, and are thus not very operational. However, the method can be employed in a more rigorous manner, e.g. with extensive use of tables and other techniques for systematisation of the analysis.

Quantitative Foresight Methods

Numerical data, of many types, are useful in thinking about longer-term developments, and to a certain extent they can be useful ways of presenting Foresight results, too. There are several limitations for such data, for example:

- Some things are hard to represent numerically. But this does not mean that they are necessarily less tangible, less significant, or less amenable to serious analysis or appraisal within Foresight.
- The quantifiable elements of a phenomenon should not be taken as encompassing all of the phenomenon (or even all of the most important features of the phenomenon) – but often they are, and often, for example, attention will be focused on the graphical elements of a report.
- Not everyone is comfortable with working with or even reading statistical information, and some people are extremely suspicious of “lies, damned lies and statistics”, knowing that often so-called hard facts are actually misleading – based, for example, on inappropriate samples, using inadequate indicators, or being misinterpreted in various ways. Certainly it is important to use reliable sources (e.g. official statistics) and to seek the advice of independent experts as to the use and presentation of such data.
- Good quality data are often not available, or not sufficiently up-to-date to inform a Foresight exercise – and the production of new data may be costly or excessively time-consuming.
- Some advanced statistical methods and modelling techniques are highly complex, and relatively few people are able to scrutinise or challenge the assumptions that are being made in using them. Experts are also wedded to one or another type of method, and discount other experts’ reservations as to their uses and limitations.

There are major advantages to using quantitative data, which account for the great interest in it. Being able to put information in numerical form means that:

- It is possible to manipulate the information in consistent and reproducible ways, combining figures, comparing data, and so on. This allows for much greater precision than simply talking about increases/decreases, etc. As an accounting tool, numerical data can help us check for consistency in our forecasts and plans, so that, for example, we do not imagine that we can spend the same money twice over, work for more than 24 hours in the day, and so on.

- It is possible, too, to manipulate appropriate data in systematic ways to produce trend extrapolations and other forecasts.
- It can allow for comparison of the scale of developments in various circumstances (e.g. estimates of the numbers of people in different areas who might be suffering a disease, be in need of housing, etc. Such comparisons can inform decision-making in significant ways – for instance, helping to validate or undermine claims from particular interest groups about how more serious their problems are than those of other people. (But remember that statistics can only inform, not substitute for political decisions.)
- It is possible to represent results in the form of tables, graphs and charts, which can often communicate a great deal about the topic of interest.

Data may be generated in various ways. *Secondary data* is data that was generated for other purposes, but which we can re-use in our own work – often we can use secondary data from official statistics or academic sources. Sometimes we need to generate our own primary data. The most common sources of data are sample surveys (in which a proportion of a population is systematically sampled: a fairly small proportion can give results that are good estimates for the whole population), or censuses of the population. Many statistics are generated by means of questionnaires and other surveys, where the people concerned are requested to provide information for data collection purposes. Otherwise, data may be “captured” from various sources – as a *by-product* of people’s contact with tax, health or other authorities, and the records that these produce; or from other sources which in some way “capture” their behaviour. (For example, a new source of data is websites, and it is, for example, possible to track the growth of activity in a particular field in various regions by counting up and examining the websites addressed to the topic.)

Once we have data in a numerical form, there are a great many quantitative techniques that can be employed in the course of Foresight. Many statistical tools are employed to determine the relationships that can be found between variables, and most good basic textbooks of statistics and data analysis will discuss these techniques and more fundamental procedures such as how to represent averages, trends, etc.

Here we will briefly outline some of the main approaches to using numerical data in forecasting, since these methods are frequently employed in the course of Foresight studies, and it is important to be aware of their key features. Again, there are a large number of introductory and more advanced books that detail such approaches.

TREND EXTRAPOLATION

The basis of extrapolation is to locate a trend that is apparent over time, and project forward data concerning the rates of change and the extent of change achieved. In shorter-term forecasts this is often a matter of extending a linear or exponential curve – e.g. economic growth, power or diffusion of a technology. In the longer-term, limits to growth will often be encountered – there may be a limit to the size of the population to whom a technology or cultural practice can diffuse for example, and various other types of trend curve may be fitted to the data (for example, the well-known s-shaped logistic curve). Some of the issues to be confronted when using trend extrapolations are:

- Are we really working with trend data? Often historical data is limited, and trends are guessed at, or inferred on the basis of assuming that population group or country A will do tomorrow what group or country B is doing today.
- Can we really be confident that the underlying driving forces will persist? Do we have some idea, that is, of why there is a trend, and of whether the factors that give rise to it are stable or even self-reinforcing ones? Or is there reason to expect that these factors could change dramatically, rendering the trend exhausted or even reversed? Will counter-trends come into play, for example as resistance grows to a particular cultural development, or competitors learn how to challenge the power behind a trend?
- At what point will ceilings or turning points be reached? One of the main challenges in forecasting the diffusion of technologies or practices is trying to estimate what the “ceiling” might be, for example, what the level will be at which the population is saturated with this new product. We can easily be caught out here – for example, it may be assumed that the ceiling will lie at one TV set or car per household – but of course many households feature more than one of these products (and some will never have one).
- Is the quantitative trend masking qualitative change? Often we talk about the development of a trend as if the thing that is developing or diffusing is remaining the same. But this is not necessarily the case – new technologies do not only diffuse, for example, they also change – the computers that are continuing to diffuse into the population today are very different from the first microcomputers of the 1970s, for example, let alone the mainframe computers of the 1950s! Similar changes may be involved in cultural practices, even in diseases: and one consequence is that the implications of later adoption of the new product or practice are liable to be very different from those of the early adoption. The skills required, the cultural meaning the utility of the new thing - these are all liable to have changed.

SIMULATION MODELLING

First, “simulation” can refer to two quite different things. Here we are concerned with computer simulation models. However, “simulation” can also refer to role-playing games, where groups of people act out the strategies of different agents in some social situation, to see how this situation might evolve (and to get better insight into the objectives and incentives confronting these different agents). There have been a few efforts to bring these two types of simulation together, for example by using a model to calculate the consequence of players’ actions for economic growth, energy use, etc., but this remains a fairly rare approach at the time of writing.

Computer simulations can be extremely complicated affairs, with so many variables and relationships involved that a large team has been required to assemble together all of these elements and to locate relevant data, and a large computer is necessary to run the model (perhaps also requiring programming in a specialised language). At the other extreme, very simple models can be constructed using spreadsheets and similar tools, on quite basic PCs. What the latter may lack in detail and comprehensive, they may gain in simplicity and transparency. There has been a long debate among modellers. Some favour creating large, “all-purpose” models (which may be so complex that not even their authors properly understand how they function!). Others seek to “keep it simple”, building satellite models to examine particular issues in detail, around a basic general model. There are also major

theoretical debates as to the sorts of assumptions about equilibrium versus dynamic processes that should be built into models.

Modelling has been most developed around relatively easily quantifiable issues, such as economic growth, employment, energy use, and demographics. In recent years important modelling efforts have been undertaken in examining climate change and environmental impacts. Modelling social, political and cultural change is much more contentious.

Models are to a large extent subject to similar questions as we raised for extrapolation (which is really very simple modelling). Some of the other key questions to keep in mind when modelling, or its results, are to be used in Foresight are:

- Who validates the data and relationships assumed? Are there independent experts able to assess the quality of the modelling effort? How far can key assumptions be debated, even by non-experts?
- Is the model over complex, do even the designers understand how it works? Can it be simplified? Can it be made less costly to run, in terms of computer and labour resources?
- Is the model able to cope with structural or qualitative changes on the horizon? If it is supposed to be dealing with some future development, how well can such developments be described within its framework? How far are the results already dictated by the assumptions that are made here?
- Does the model assume that an equilibrium state is to be reached? If so, is this remotely realistic – and is the passage of time taken to reach this equilibrium based on serious analysis, or is it just a matter of faith?

CROSS IMPACT ANALYSIS

This is both an expert-based and a quantitative method. One of the major applications of cross impact analysis is in the preparation of scenarios. The approach is to ask the experts to rate the likelihood of various events occurring, and furthermore to rate the likelihood of each occurring if each of the others does or does not occur. The matrix of possibilities that arises from this can be subject to mathematical analysis to generate a list of scenarios, each with an aggregate probability of occurrence assigned to it. The method has strong protagonists, but there has been limited independent analysis of its utility.

The cross-impact method forces attention to chains of causality: 'x' affects 'y'; 'y' affects 'z'; The definition of events to be included in the study can be tiring and tedious but is a crucial step in a cross-impact analysis. Any influences not included in the event set, will be completely excluded from the study. However, the inclusion of events that are not pertinent can complicate the analysis unnecessarily.

Cross impact analysis is often described in manuals of forecasting and futures methods, but in practice relatively few people use it regularly (those that do are often strong proponents of the method). The low use reflects two main limitations:

- It is very demanding of the experts who are a major source of the data used;
- It is only suitable for dealing with a small number of key variables.

SYSTEM DYNAMICS

What is system dynamics?

Systems dynamics is one of the most commonly used forms of computer simulation for dealing with many faceted problems. The objective of this method is to find the conditions under which a system under study will evolve into what direction. The tools used are models that represent symbolically the reality of the system. It aims at considering the interrelationships among the components of an organisation or environment rather than looking at each component in isolation.

System dynamics is a tool to investigate complex dynamic problems in terms of their stocks and flows and feedback loops. It is usefully developed within a specific computer language (though it is in principle possible to use spreadsheets and related methods to perform the relevant tasks.) A system dynamics application starts with the identification of a problem. The modellers should then draw in all major patterns of influence that together create the 'system' that produces the problem. A successful model is able to simulate these patterns and produce system behaviour. Different values for variables and different policy structures may then be introduced to simulate how the system would respond to different circumstances or initiatives. This method searches for the causes of system behaviour that lie within the system, with events 'outside' serving as triggers rather than causes.

Why is this method useful? And does system dynamics have a special use?

System dynamics models are used to understand and anticipate changes over time in puzzlingly complex systems. It can be used with what are thought to be 'data poor' problems. The information base for conceptualisation and formulation of System Dynamics models is much broader than the numerical database employed in operations research and statistical modelling. This method can be useful to gain insight and understanding in a messy situation by sketching increasingly sophisticated causal loop diagrams.

How does it work?

This method requires an expert in modelling to run. It looks for dynamic patterns, and describes these patterns in terms of structural relationships between its multiple positive and negative feedback loops and the levels and rates of its primary variables. The design of a system dynamics model begins with a time frame. The factors that contribute to the problem are listed and their structural relationships sketched with particular attention to characterising them as levels and rates that feed or drain them. Levels and rates must alternate in the model; no level can control another without an intervening level. The next step is to quantify these factors and the assumptions behind them. Computer simulations can then be run to test the validity of the model. The model will begin from the initial quantified values for the variables and step through them at discrete time intervals. The basic computer model employs a set first order, non-linear differential equations to reflect changes over time, with the chosen time interval small enough so that system behaviour appear continuous.

How can we use the output?

The qualitative usage helps policy-makers ask better questions and may help anticipate patterns and sources of dysfunctions, even if simulation were not employed. However, the dynamics generated by information feedback and circular causality are difficult to distinguish without computer support.

How it is used with other techniques?

System dynamics can be used with most of other models to increase understanding of system behaviour or to simulate the future.

What are the drawbacks?

A System Dynamics model is only capable of running one version of a situation at a time, although it may capture a great deal of variety in the changing values of its variables. Different stakeholders or groups with different cultural or political agenda might bring different assumptions and thus see a quite different picture. A system dynamics diagram can become very complex when actual situations with lots of variables are modelled.

Foresight methods for defining key actions and priorities

Planning methods have been extensively developed in the last few decades. These are now extremely sophisticated, and able to deal effectively with many circumstances. But they tend to focus on shorter-term, more predictable topics than Foresight does. They also tend to take the objectives and aims of the eventual activities as givens, as ends for which we are seeking to define the most effective means. In contrast, Foresight may lead us to question the longer-term objectives that are being pursued, and is likely to deal with uncertainties that are sufficiently high to reduce the credibility of many restricted planning tools.

Some tools that have been employed in Foresight exercises for defining key actions and priorities will be briefly described here. They include the analysis of critical/key technologies (the general principles behind this approach can be applied to things other than technologies) relevance trees and morphological analysis. SWOT analysis might also be seen as such a method.

CRITICAL/KEY TECHNOLOGIES

What are critical technologies?

This method – which could in principle be applied to things other than technologies - consists of applying sets of criteria against which the importance or criticality of particular technologies can be measured. The method usually involves interviews with industrial experts on the forecasted technology. Sometimes, a benchmarking analysis provides comparisons with other countries or regions. (Benchmarking refers to the identification of the state-of-the-art for a given technology relative to the level of the country/industry/region in question. The idea is that identification of such gaps will help people develop strategies for closing them – and allow them to learn from best practice elsewhere. Similarly, areas of strength that need to be consolidated may be found.) The resultant lists can be *technology-push/supply oriented*, or *demand industrial needs driven*. This will depend on whether the focus is on future technological capabilities, or rather on the emerging/future needs of industry. This approach tends to over-emphasise technological issues at the expense of broader socio-economic

concerns. (In principle similar methods could be used to identify critical social innovations, but we know of no examples.).

Why is this method useful? And do critical technologies have a special use?

Critical technology studies permits informed assessments on technological developments, but they cannot be used as to justify decisions or actions relating to technological policy or the economy. Critical technology studies can be used as a springboard for recommendations that need to be discussed at the political level and evaluated with reference to practical factors.

Who participates and how?

The method is based on interviews of industrial experts. The first step is to generate an initial list of technologies that can be produced starting from an existing list (e.g. also from previous Foresight studies), or the list can be produced by a combination of brainstorming and bibliography searches. In other cases panels of experts are used in combination with patent analyses, bibliometrics and other studies.

How does it work?

A satisfactory definition of critical technology would need to be explicit about assumptions, meaning and relevance. A useful definition of critical technology should meet the following requirements:

1. *Is it policy-relevant?* It should indicate where the points of potential policy intervention in the linked processes of R&D, commercialisation, diffusion and utilisation of a given technology are to be found;
2. *Is it discriminating?* It should be able to discriminate unequivocally between critical and non-critical technologies. It should be as consistent as possible in level of aggregation and in clarity of classification;
3. *Is it likely to yield reproducible results?* It should be sufficiently functional to enable the panels or agencies employing it to develop tests and methods that will prove to be functional, robust, and accessible to those not directly participating in the exercise.

How can we use the output?

In general, critical technologies reports are not produced to review or analyse policy. Rather it should be considered as an exploratory step that draws from a wide range of informed expertise and normative opinions. The outcomes of a critical technology process can be used as inputs to define and debate policy.

How it is used with other techniques?

This method can be used in combination with brainstorming techniques to identify the initial list of technologies.

What are the drawbacks?

It is difficult to achieve a true representation or unbiased sampling despite the attempt to place the process in a well-defined structure.

RELEVANCE TREES

This is one of several normative forecasting methods, which start with future needs or objectives, and then seek to identify the circumstances, actions, technologies, etc. required to meet these. Relevance trees are used to analyse situations with distinct levels of complexity, in which each successive lower level involves finer distinctions or subdivisions. Relevance trees can be used to identify problems and solutions and deduce the performance requirements of specific policies, technologies, etc. They may be used to determine the relative importance of efforts to implement policies or increase technological performance.

What are relevance trees?

A relevance tree is an analytic technique that subdivides a broad topic into increasingly smaller subtopics.

Why is this method useful? And do relevance trees have a special use?

Relevance trees analysis has demonstrated to be a powerful intellectual stimulus to ensure that a given problem or issue is illustrated in comprehensive detail and that the important relationships among the items considered are shown in both current and potential situations.

Who participates and how?

Participants are stakeholders directly concerned with the issue under study. The process can be guided by an external facilitator.

How does it work?

A relevance tree looks much like an organisational chart and presents information in a hierarchical structure. The hierarchy begins at a high level of abstraction and descends with greater degrees of detail in succeeding level of the tree. The entries at a particular level are intended to describe in a complete manner, the item to which they are connected in the level above. Ideally, each entry at a particular level is orthogonal, that is, it should not overlap with any other entry, thus being mutually exclusive of other entries. Finally, the items at the same level should be addressed from the same point of view. If done properly, the structure can lead to a clearer understanding of the topic under analysis.

How can we use the output?

The output is a graphical representation with a hierarchical structure that shows how a given topic can be subdivided into increasingly finer levels of detail.

What are the drawbacks?

The development of relevance trees requires critical judgement thus the possibility of human error is present. Finally, if the underlying thought processes are not insightful, the outcomes of this method will be weak.

MORPHOLOGICAL ANALYSIS

This method is often used as complementary technique in conjunction with relevance trees. It involves mapping options to obtain an overall perspective of possible solutions. Morphological analysis has often been used for new product development but also in constructing scenarios. The technique allows for two key elements:

- a systematic analysis of the current and future structure of an industry area (or domain) as well as key gaps in that structure.
- a strong stimulus for the invention of new alternatives that fill these gaps and meet any imposed requirements.

Morphological analysis involves mapping a discipline to obtain a wide perspective of existing solutions and future possibilities. The approach can be based on five basic steps:

- Formulation and definition of a problem;
- Identification and characterization of all parameters toward a solution;
- Construction of a multidimensional matrix (morphological box) whose combinations will contain all possible solutions;
- Evaluation of the outcome based on feasibility and achievement of desired goals; and
- In-depth analysis of best possibilities considering available resources.

Steps 2 and 3 form the heart of morphological analysis since Steps 1, 4, and 5 are often involved in other forms of analysis. Step 2, identification of parameters, involves studying the problem and present solutions to develop a framework. This step can involve developing a relevance tree to help define a given topic. Once parameters are identified, a morphological box can be constructed that lists parameters along one dimension. The second dimension is determined by the nature of the problem.

The purpose of morphology is to organise information in a relevant and useful way in order to help solve a problem or stimulate new ways of thinking. No "right" or "wrong" way exists for constructing a morphology. Good knowledge about a problem or issue, however, is essential to developing the most effective morphological framework.

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RELEVANT WEBSITES

The following is a short and by no means comprehensive guide to sites of interest. Some of the most valuable material can be gleaned from Foresight programmes themselves; in particular the UK national programme has extensive documentation on other programmes and helpful search facilities:

<http://www.foresight.gov.uk>

Finding who is doing what, and where, in forecasting, futures research, strategic management

<http://www.ssfutures.com/web-lnk1.htm#Consult>

Futures related sites, reference data and methods:

<http://ag.arizona.edu/futures/fut/futmain.html>

Futures organisations and research centres, Futures consultants, Scenarios pages, Publications and forums:

<http://www.coatesandjarratt.com/resources.htm>

The IPTS website has a large volume of futures work.

<http://www.jrc.es>

One view as to how to build scenarios:

<http://www.wired.com/wired/scenarios/build.html>

And a view on using scenario planning:

<http://www.gbn.org/>

Making use of Futures thinking; the UN University "Millennium Project":

<http://www.geocities.com/~acunu/>

George Washington University "Emerging Technologies" study:

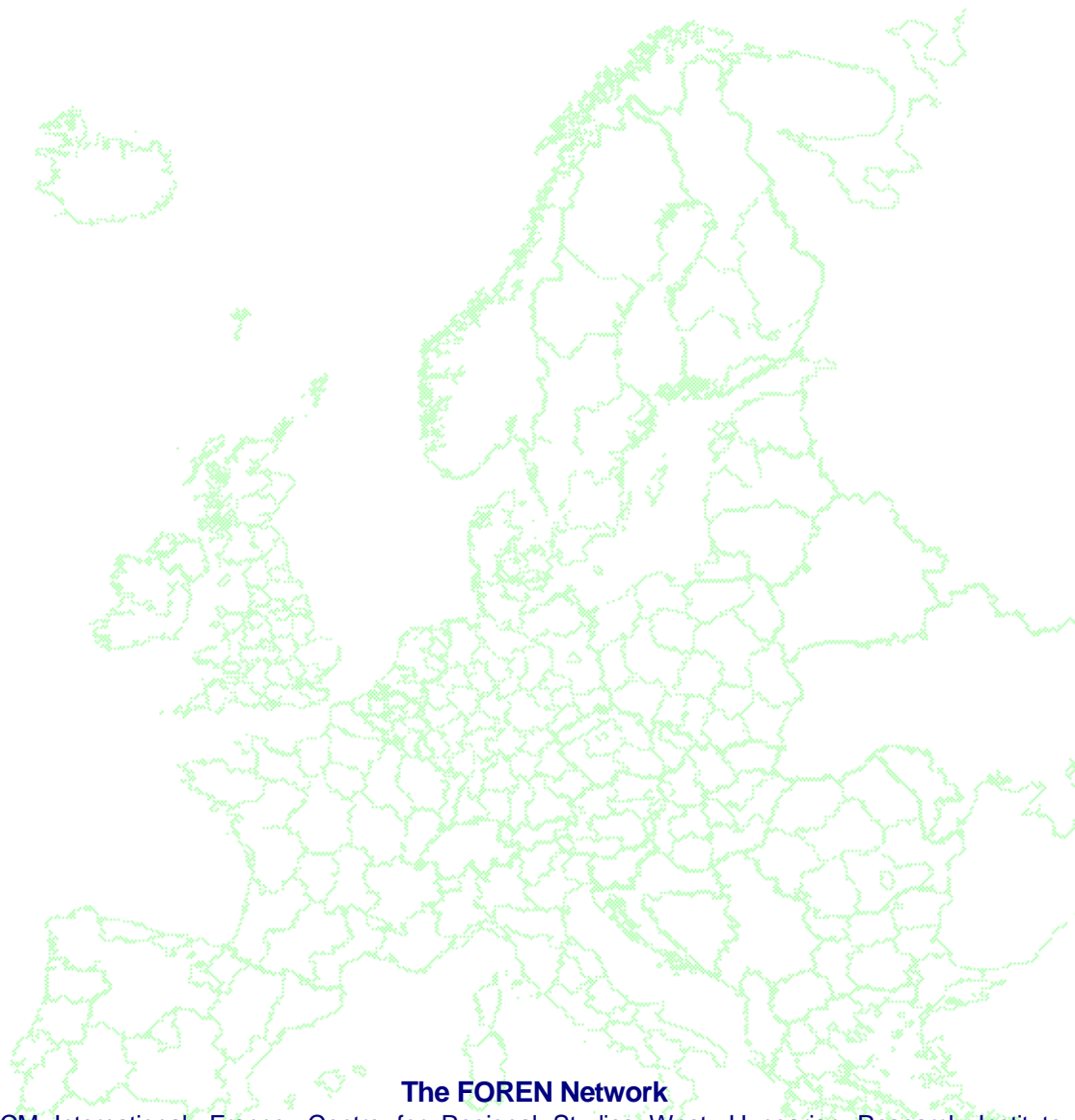
<http://gwforecast.gwu.edu/index.asp>

Summary of useful knowledge about forecasting that can be used by researchers, practitioners, and educators:

<http://morris.wharton.upenn.edu/forecast/>

The FOREN website:

<http://foren.jrc.es>



The FOREN Network

CM International, France; Centre for Regional Studies West, Hungarian Research Institute, Hungary; Employment and Economic Development Centre, Uusimaa, Finland; Enterprise Ireland, Ireland; FinLombarda, Italy; Fondazione Rosselli, Italy; Forfas, Ireland; Fraunhofer Institut für Systemtechnik und Innovationsforschung, Germany; Helsinki University of Technology, Finland; Instituto de Desarrollo Regional, Spain; Instituto de la Mediana y Pequeña Industria, Spain; JRC-Institute for Prospective and Technological Studies, Spain; National Committee for Technological Development, Hungary; Observatory of Innovation Business Development Cardiff, United Kingdom; Observatorio de Prospectiva Tecnológica Industrial, Spain; Parque Tecnológico de Andalucía, Spain; Province of Flevoland, The Netherlands; Policy Research in Engineering, Science and Technology, University of Manchester, United Kingdom; Regional Development Agency ONE North East, United Kingdom; RIS Yorkshire – Humberside, United Kingdom; Sviluppo Italia, Italy; University of York, SATSU, United Kingdom; Welsh Development Agency, United Kingdom; Wirtschaftsförderung Region Stuttgart, Germany