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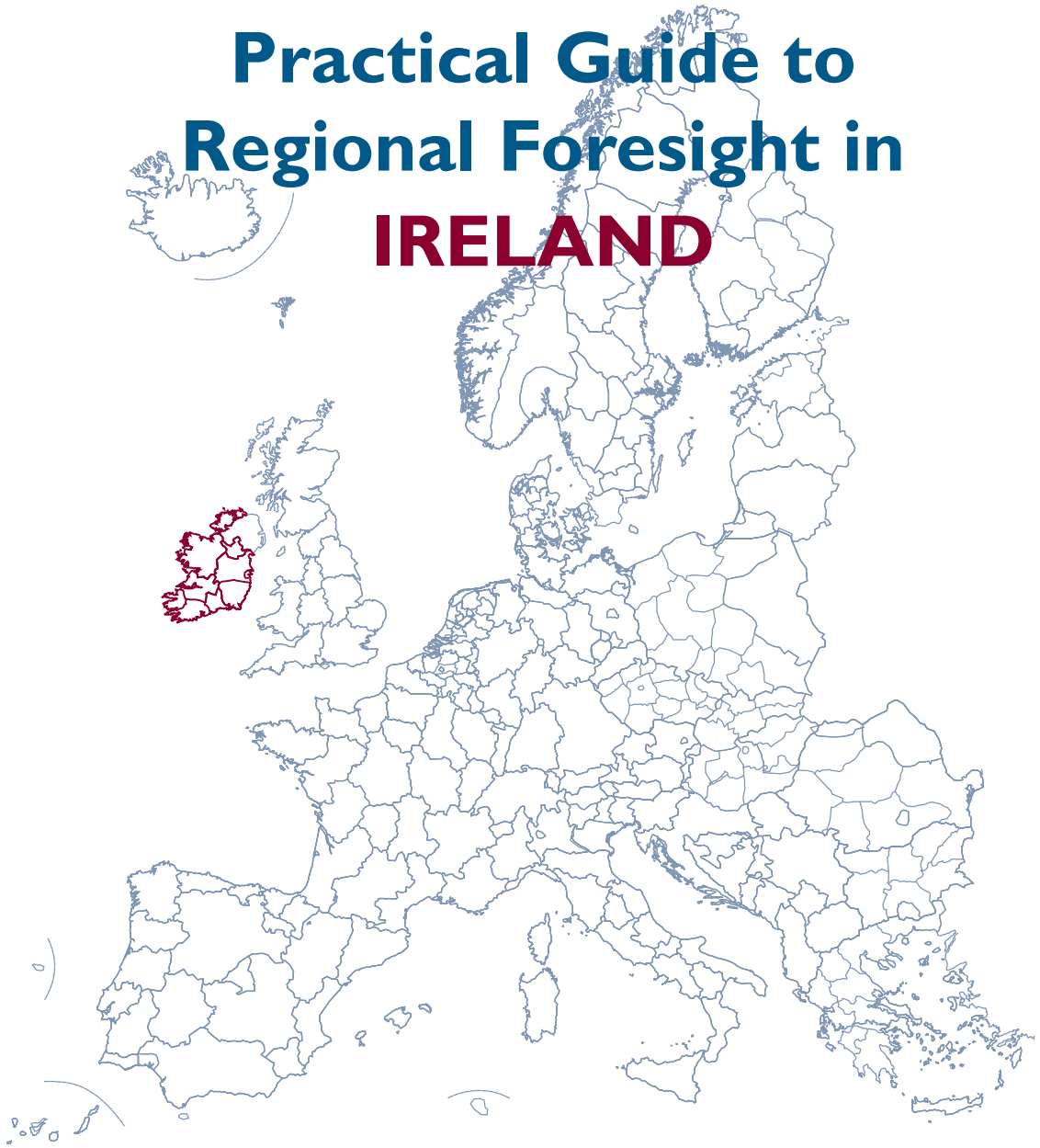
Practical Guide to Regional Foresight in IRELAND



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Practical Guide to Regional Foresight in the IRELAND

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THE CONTEXT IN WHICH THIS GUIDE WAS DEVELOPED

The present *Practical Guide to Regional Foresight in Ireland* is part of an effort sponsored by the European Commission to promote the strategic use of technology foresight in an Enlarged EU.

The *Lisbon Strategy* (March 2000) aims at making the European Union, by 2010, "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion". As this highlights the importance of Science and Technology for all policy fields, the European Commission, together with national and regional actors, is developing a European Research Area (ERA). Identifying excellence, strengthening pan-European collaboration and establishing clearer and more consistent priorities for public research would also give higher visibility of European excellence in science and technology to researchers and policy makers in other parts of the world. To be successful, the European Research Area requires a coherent development of research and innovation policies developed by public authorities in close dialogue with the societal actors affected by these policies. Such strategies are based on both implicit and explicit visions of the future of science, technology and society. The ambitious goal to become the most competitive knowledge-based economy, as well as the creation of the European Research Area call for better European co-operation and co-ordination, as well as for forward looking advice to achieve the far-reaching targets. Foresight can serve this purpose, as it has already been successfully used as a policy tool, mostly at national, but increasingly also at regional level. The contribution of Foresight is twofold: it provides difficult-to-acquire strategic information for decision-making, and it functions as a socio-economic mobilisation tool to raise awareness and to create consensus around promising ways to exploit the opportunities and diminish the risks associated with new S&T developments.

Foresight at a regional level can play a catalytic role in the establishment of initiatives and framework conditions conducive to innovation (in the broadest sense). Regional foresight may be used to monitor performance and suggest improvements and changes in the course of implementation. It contributes to the strengthening of regional identity, not least in the transition to post-industrial, knowledge-based regional economies. Regional foresight also plays an important role in the reform of the European governance[1]. In addition, regional foresight might also significantly contribute to making EU Enlargement a success, helping the regions in both Member States and Candidate Countries to find their new place in the future European economic landscape. The need for more widespread structured forward thinking at regional and local levels, connected with Foresight activities at national and EU levels, is highlighted in the Communication on the *Regional Dimension of the European Research Area*[2]. It emphasises that, together with innovation and education and training, research brings a new message to regional economies, allowing for new forms of advancement keeping pace with local but also international developments. In the recent Commission Communication[3] that aims at providing new momentum to developing the ERA, the role of Regional Foresight is emphasised. Based on joint Foresight activities, inter-regional co-operation between regions facing similar challenges as well as within "macro-regions" (such as, for example, the Baltic, the Mediterranean, etc.) could help to achieve the full potential of the European Research Area.

Despite of the increased importance of Foresight for policy making, Foresight activities themselves have not yet reached the same state of integration and coherence at EU level as many other policy fields. Foresight activities are still non-existent or relatively weak in some Member States

[1] http://europa.eu.int/comm/governance/areas/index_en.htm: Reports of the working groups

[2] COM (2001) 549 (October 2001): The Regional Dimension of the European Research Area. (http://europa.eu.int/comm/research/area.html (11 languages); http://www.inforegio.cec.eu.int/wbnews/new_en.htm: EC Regional Policy website)

[3] COM (2002) 565 (October 2002): The European Research Area: Providing New Momentum. Strengthening - Reorienting - Opening up New Perspectives

and Candidate Countries. The main Foresight work is often done in national settings, players pursue contacts at EU level mostly on an ad-hoc basis (if at all), and European policies and issues are not systematically taken into account in national and regional Foresight studies. There is a risk that many regional and national actors merely repeat and duplicate efforts already made by others without exploiting possible synergies, missing the advantages that co-operation in Europe might bring, e.g. in the form of economies of scale, cost-efficiency and shared knowledge gains. This could impact negatively on the implementation of common EU policies (including the "Lisbon Strategy") and the creation of the European Research Area. Therefore, a consensus is growing that a more coherent development of research and innovation policies in Europe implies an urgent need to co-operate more systematically and efficiently to share the knowledge base on which European, national and sub-national policy decisions are made.

Achieving the aim of using the full potential of Foresight for coherent policy development in Europe requires a variety of activities, such as exploiting the resources available more effectively, and forming a shared knowledge pool on Foresight results, methods and competencies in Europe. First steps are to develop a coherent supportive framework at the European level to ensure systematic use and optimum benefit of Foresight, and to identify and mobilise all relevant actors (at every governance level), to enable EU-wide networking and capacity building. Support for such steps is foreseen in the implementation of the different activities[4] of the 6th EU Framework Programme (FP6, 2002-2006).

The 'Science and Technology Foresight, links with the IPTS' unit, set up in January 2001 in the Directorate "Knowledge-based economy and society", of the European Commission DG Research, promotes systematic co-operation, capacity building, and development of science and technology Foresight, on a European, national and regional level. Actions taken include:

- the establishment of a High Level Expert Group to explore the ground for an EU Strategy and Action Plan in the field of Foresight (June 2001)[5];
- a seminar in co-operation with the Belgian EU Presidency (November 2001) on the use of Foresight results, and the impact of Foresight on government decision-making[6];
- contribution with the JRC/IPTS in the preparation of a Foresight Conference organised by the Spanish Presidency in May 2002[7];
- the establishment of a High Level Expert Group on Regional Foresight;
- the development of the present Country Specific Guides to Regional Foresight for Member States and Candidate Countries;
- the organisation of a conference on Regional Foresight in September 2002 aimed at bringing regional stake-holders together, not least on view of the FP6[8];
- close co-operation with the Greek Presidency on the preparation of the next European Foresight Conference to be held in Ioannina in May 2003.

[4] http://www.cordis.lu/rtd2002/foresight/home.html: Roadmap Foresight in FP6
[5] http://www.cordis.lu/rtd2002/foresight/main.htm
[6] http://www.cordis.lu/rtd2002/foresight/seminar.htm
[7] http://prospectiva2002.jrc.es/
[8] http://www.regional-foresight.de/)

FOREWORD

"Foresight" has attracted a great deal of attention in recent years. The term is used to refer to a wide range of activities, some familiar, some much more novel. But there are new approaches that underpin this upsurge of attention. Compared to more conventional futures studies and long-range planning techniques, Foresight has two novel features. First, it brings awareness of long-term challenges and opportunities into more immediate decision-making. Its analysis of the longer-term is not abstract, and is related to current decision processes - something that futures studies have often failed to achieve. Second, the movement towards Foresight recognises that in complex societies, knowledge relevant to longer-term policymaking is typically widely distributed, rather than centralised in government – or even a few academic or corporate – offices. New approaches are required to fuse decision-making with longer-term perspectives and wider networking.

This Guide is an introduction to Foresight, understood in these ways. It should be useful to readers seeking to brief themselves as to what Foresight is, and is not, and particularly to those concerned with whether a particular Foresight activity is really relevant to their interests. The Guide is especially oriented to those involved in forward planning and strategy development at **regional** and other sub-national territorial levels (though much of the material will be equally relevant to those from smaller countries). It is aimed specifically at potential Foresight **practitioners** and **users**. It sets out to explain **how** regional Foresight (also known as *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.

In order to meet these objectives, the Guide sets out to explain, too, **why** you may wish to use regional Foresight. To date, the use of Foresight has been most visible at the national level. But there have been some less well-known, but significant, regional activities – and there is growing interest at this level. Regional Foresight shares a great deal in common with national-level Foresight, but is not simply a matter of directly importing the methods or results of national-level activities. It is structured so as to inform readers as to the considerations that you will need to take into account in order to decide whether Foresight is appropriate for you, and if so, what approaches are best for your particular context.

However, this Guide is neither a recipe book nor a toolbox. You will not be able to pick and choose a set of techniques and instantly apply them like an expert after reading through it. No one Guide can provide all you need to know about choosing and implementing particular Foresight methods. The Guide does point to where you can obtain further information, and explains what is required to develop expertise in Foresight methodology. It sets out the critical principles and issues involved here, so that the reader should be able to understand:

- How and why regional Foresight can be used,
- What the different approaches to (regional) 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.

This Guide is based on the work of a team drawn from both the Foresight community and the world of regional development planners convinced of the need for wider use of Foresight approaches, and thus the value of having a resource of this sort. Of course, regional Foresight is not a panacea for all regional policy problems, or a substitute for established policymaking processes. This Guide will thus point out pitfalls and potential problems, as well as the benefits that can be achieved in the right circumstances. One of our core messages is that it is vital to undertake adequate preparation before launching Foresight. This involves learning from each

other's experiences, and the Guide will draw on and present many of these. (Hopefully it will help inspire more practical actions and lead to further accumulation of experiences.) Foresight tools are highly relevant to a fast-changing, knowledge-driven world. They can help policymaking be better-informed and more proactive. But it is necessary to achieve effective links between the technical elements of Foresight and its practical application. This Practical Guide is intended to inform the **strategic** use of Foresight.

We welcome feedback on your experiences in using it, and in taking forward the practice of regional Foresight in your own environments.

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EXECUTIVE SUMMARY

Regional Foresight aims to provide inputs that can enhance strategy and policy planning in regions, municipalities and localities. Drawing on the recognition that knowledge about developments that may shape the future is scattered widely in societies, so that no one organisation can possess all of the relevant knowledge, it emphasises networking as a means of accessing such knowledge. Since the future concerns us all, this also means that Foresight is oriented toward involving more of the population – or at least of key stakeholders – in creating visions and in mobilising collective strategic actions.

This "Practical Guide" aims to explain how Foresight can be used, especially in regions and sub-national territories. It sets out different approaches to Foresight, and when and where their use may be appropriate. In particular, it discusses how local conditions have to be taken into account in the design of a Foresight process. The Guide is largely structured in terms of a question-and-answer format. In the outline below, we indicate which question addresses each of the issues summarised.

Many of the answers to the questions are not of the form, "you should do A, B, C", but rather of the form "it all depends…". What we have tried to do, is to explain what it depends on, so that you can decide what steps are necessary on the basis of your assessment for your regional situation. We welcome feedback that might help us give more precision to some of these answers!

Part I: Introducing Regional Foresight

Foresight can be defined as the application of **systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building processes** to **informing present-day decisions and mobilising joint actions** (Q1.1). Foresight 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 smaller territorial scales than the better-known national studies. At such scales, proximity is a dominant factor (Q1.2).

Foresight tools and techniques have been used extensively since the early 1990s at national level. They may also be applied at regional levels. But). Here, a "Region" may refer to a federal state, a metropolitan area or some other subnational aggregation with an historical, economic identity or a distinctive geography. There needs to be a minimal degree of political, economic or cultural leverage in the region, for Regional Foresight to truly inform initiatives and actions. In many regions institutions for informing decisions and developing policy are poorly developed: Foresight cannot substitute for these, but it can help to compensate for their weaknesses, and inspire action to overcome these. (Q1.3)

Foresight examines long-term futures with more of a holistic analysis than is typical in conventional forecasting activities, and with greater links to action and wider participation than do many futures studies. (Q1.4) One core difference between Foresight and other planning activities relates to the participative dimension of Foresight, its emphasis on networking. This is often a feature that is highly appropriate at the regional level (Q1.5). This can be challenging to policymakers. (Q1.5). They, and others, will require that Foresight justifies itself in terms of the scope for action based on the results or improved networking (Q1.6). The overall design of a Regional Foresight process will strongly depend on specific regional characteristics – such as its degree of autonomy, financial competence, infrastructure endowments, business profile, etc. (Q1.7)

Though Technology Foresight is the best-known form of Foresight, the methods can be applied to a huge range of topics (scientific, industrial, demographic, social, political, cultural factors). It can be used to **inform policymaking**, **build networks**, and **enhance local capabilities for tackling long-term issues.** But it is not a magic solution to the social, economic or political problems of regions (Q2.1)

Foresight activities can be undertaken by regional public authorities – and these will be the main organisers of regional Foresight – and other bodies. (Q2.2).

One fundamental point is that there are different types of Foresight, and this needs to be recognised in planning – or reacting to – Foresight processes. A first distinction can be made between activities that are more or less **bottom-up** or **top-down**. Top-down exercises place less stress on interaction and networking. If they do set out to access the knowledge that is widely distributed in a society, they may use highly formal methods such as the Delphi method (this, along with other such methods, is described in an Annexe). Bottom-up exercises are more interactive - they take into account a greater number of views and involve more dialogue. This can increase legitimacy and yield more process (networking) benefits - but are liable to be more time consuming and more difficult to organise (Q2.3).

A second distinction is between Foresight activities that are more or less **product or process-oriented**, though in practice a mixture of both activities is often present. A product orientation is necessary if there is a need to inform specific decisions and decision makers - a report, a list of priorities, an action plan may be the critical output into such a decision system. Foresight is used as a way of gaining intelligence that is lacking in the established policy system, and feeds into it through what the jargon would term a *codified* output, (together with briefings of key officials, etc.). A process orientation places more emphasis on building the social networks, the knowledge among stakeholders as to who is who and who knows what and thinks what. Such an orientation is particularly suitable when there is a lack of networking between key actors (Q2.4).

So Foresight features a long-term orientation, the examination of a wide range of factors, the drawing on widely-distributed knowledge, and the institutionalisation and creation of networks. But it is not just a matter of "talking shops", of unrestrained daydreaming about future visions. (Q2.5) Foresight uses **formal techniques and methods** (Q2.6). Such formal methods provide more operational results, allow users to assess the consistency of different aspects of the vision, and can help to identify where more knowledge is needed and legitimise the exercise. They are valuable ways of structuring and stimulating parts of the more interactive Foresight process (Q2.7).

Further distinctions are drawn between broad classes of formal methods – and again, in practice Foresight activities are liable to involve a mix of these methods. First, **exploratory methods** are "outward bound" - they begin with the present as a starting point and move forward to the future. In contrast, **normative methods are** "inward bound" - they start with a view of possible futures, and ask what trends and events would take us there (Q2.8). Second, **quantitative methods** place emphasis on numerical data and analysis, providing scope for detailed explication of rates and scales of change - but they may involve spurious precision, and are less applicable to many social and political phenomena. **Qualitative methods** are more often used when quantitative data are unavailable or simply inappropriate. Foresight can never be completely dominated by quantitative methods: the mix depends on the access to relevant data and expertise, and the nature of the issues and the task at hand. (Q2.9). Third, some methods – especially some formal (often quantitative) methods such as models – are used to investigate the consequences of different **assumptions** (e.g. to examine what would happen if a particular rate of growth is achieved). Other methods centre on examining and articulating the views of **experts,** usually to relate together relevant features of the regional environment that are hard to get a handle on through data analysis (e.g. changes in social attitudes or breakthroughs in technology) Again, a combination of both types is generally desirable (Q2.10).

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

Regional Foresight may be undertaken with various objectives in mind. But these need to be clearly defined at the outset. (Q3.1). Careful scoping is imperative for any Regional Foresight activity. Such scoping can help to clarify regional challenges that may often not be obvious at the outset. For example, local and regional development depends different types of 'critical resource' (**local institutions**,

business structure, **knowledge infrastructure**, **social capital**). The problems addressed in Foresight, and the methods to be employed, are liable to be related to these resources. It is necessary to assess whether and how far challenges can be addressed by regional players. (Q3.2). While national Foresight activities to date have been technology-focused, Regional Foresight activities may also be oriented to **social**, **science**, **business dynamics**, **territorial vision**, and the like. Often there will be multiple orientations, including technology issues – but it is common for one or other of these dimensions to predominate in an exercise (Q3.3).

Regional Foresight can be arranged as an **autonomous** exercise. It can also be constructed as a set of activities **accompanying** or **embedded** in existing policies, programmes and strategy-making processes (Q3.4).

The **"sectoral" scope** and **time horizons** of regional Foresight are also quite variable, with choices depending upon the objectives and orientation of the exercise. Some exercises have covered around 20 areas – industrial sectors or clusters, and/or topics of interest such as demography or urban infrastructures. - although fewer than 10 areas (and even a very few areas) is more typical (Q3.5). The time horizon of regional Foresight exercises tends to vary from around **5 to 20 years** (Q3.6).

Carrying out a Foresight exercise involves numerous participants – but the number can vary from tens up to thousands. Many activities that are labelled "Foresight" are internal to an organisation, drawing mainly on its own membership - we can term this sort of embedded Foresight activity "intra-organisational Foresight". But what we might term "Fully-Fledged Foresight", in contrast, extends well beyond the boundaries of a single organisation, to include a variety of stakeholders. Such stakeholders may include representatives of regional governments, universities, businesses, chambers of commerce, local media, industry associations, NGOs and, of course, citizens (Q3.7). The **duration** of an exercise is typically between 6 months and 3 years (although Foresight can become a continuous activity), while **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 approach adopted (Q3.8). **Sponsorship** can come from both the public and private sectors: while Foresight is often the initiative of and the financial responsibility of a single party, it can also be very diversified (Q3.9).

The identity of the key players will depend upon the objectives and orientation of Foresight activities. As a general rule, the greater the number of **leading local players** that can be mobilised, the better. Three approaches for recruiting potential participants are commonly used - personal contacts, nominations from stakeholders, and more formal processes (of which the best known is 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). Illustration of Foresight success stories in other regions can be particularly helpful. Various tools can be used to promote regional Foresight more widely. These include traditional communication tools (publications newsletters, etc.), participative events (forums, hearings, seminars, conferences, workshops, meetings…), and use of electronic media (TV and radio programmes, Internet resources). (Q4.3). 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 (Q4.4)

Three main organisational dimensions need to be considered in any Foresight activity. These are: its **formal structure** (roles and responsibilities), **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.

In much of our discussion we talk about Foresight "programmes", specific activities designed around a process of building shared visions. However, it should be noted that Foresight may also be embedded by activities such as training, that equip people with the ability to inaugurate Foresight activities in the

organisations in which they are based. More embedded intraorganisational Foresight activities, and Foresight training, are typically not as challenging to manage as a large-scale, more autonomous and distributed exercise. Such a programme is very demanding, and will require the deployment of project management tools (Q5.3). Whatever the type of exercise, it is important to collect as much as possible available (**passive**) **information** before producing new material through experts and networks (**active information**) (Q5.4). There are useful perspectives for thinking through the mix of Foresight methods you can employ. (Q5.5).

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

Evaluation is an important component of any activity involving investment of substantial time or resources. 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. (Q6.2). Evaluation can be conducted in **real-time** or '**post hoc'**, with both approaches having their pros and cons (Q6.3). In any evaluation strategy, it is important to recognise that benefits from Foresight tend to become apparent at different points in time and in different contexts and organisational levels. Unexpected benefits should be watched for. It is also important to identify 'success stories' as possible 'demonstrators' of positive outcomes (Q6.4). 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 (Q6.5). Foresight should not be thought of as a one-off activity: it will be of more value to a region if it is ongoing, making continuing contributions to policy and business decisions. Continuity may be facilitated by include fostering and embedding a "Foresight culture" in a broad-based manner across many sectors of the regional community. It may be enabled by ongoing 'centralised' activities, as well as by reinforcing local sources of Foresight expertise (Q6.6).

In conclusion, **Foresight** has proved to be a very evocative and popular 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, and there is a danger that the term may come to be devalued by its haphazard application to all sorts of activity - short-term, forecasting, non-participative. But whether or not the label persists is irrelevant to the trends which have driven its emergence. Foresight, as a means to an end, is well adapted to the changing requirements of decision-makers. 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. Thus we need to stress its essential features. This Guide has been drafted with 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 may not be appropriate in many circumstances); it gives case descriptions and illustrations to demonstrate the high variability of regional Foresight in format and utility (rather than as '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.

INTRODUCTION - PRESENTING THE GUIDE

Q 0.1 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.

Q 0.2 Why has an Irish version been produced?

The original Practical Guide to Regional Foresight was an output of the EU's FOREN project and was developed for use by all regions in Europe. Directorate General Research considered that an opportunity existed to connect the guide to existing regional policies and programmes by adding country-specific sections to the original guide. The localisation of the guide is being undertaken for a number of EU Member States and Candidate Countries – with the support of the European Commission Research Directorate's STRATA Programme.

This version of the Practical Guide to Regional Foresight has been localised for Irish users. This has been done by describing examples of Irish situations and regional issues where Foresight has the potential to be used in a way that could bring added-value to (complex) decision-making processes at either national, regional and inter-regional or cross-border level. The examples chosen are not intended to be prescriptive nor exhaustive in their scope but are intended only to be illustrative. However, by reference to the examples and their context, which in many cases should be familiar to Irish readers, they should enable the reader to recognise the potential process and output benefits of Foresight for their own particular needs.

For the non-Irish reader, a short overview of the current economic situation and industrial structure could be useful.

Having largely been bypassed by the industrial revolution, since the 1960s Ireland's model of industrial development has focused heavily on attracting export-oriented foreign direct investment (FDI), primarily in manufacturing industries. As a result, Irish economic growth, particularly during the 1990s, has largely been export led. Between 1900 and 2000, the value of international trade in goods and services between Ireland and the rest of the world as a proportion of GDP rose from 112 per cent to 176 per cent, making Ireland one of the most open economies in the world.

This introduction of foreign (particularly US) capital, technology and world-class management techniques stimulated a dramatic restructuring of Irish industry. Exports in sectors such as pharmaceuticals, electrical and electronic machinery, office and data processing equipment, and instruments rose from 15% of merchandise exports in 1979 to over 50% by 2001. In contrast, the

share of primary goods (food and other commodities) in total merchandise exports has fallen from 28% to 8% over the same period.

Surveys of multinational companies in Ireland attribute Ireland's success in attracting high levels of inward investment to a number of factors. These include the low rate of corporate taxation, a skilled and flexible labour force, macro economic stability, good transport and communications links with markets in continental Europe and the United States, and the external economies stemming from the existing base of multinationals with regard to the availability of key suppliers of goods and services.

Ireland's approach to industrial development has also resulted in a somewhat unusual economic structure. While most OECD economies experienced strong growth in inward investment flows during the 1990s, few are so dependent on the activities of foreign firms. By 1998, 72% of the value of Irish manufacturing output was accounted for by foreign-owned multinationals. This contrasted with the experience of many other small European countries such as Finland, where only 16% of manufacturing output came from foreign-owned firms, as well as Sweden (22%) and Norway (24%), all of which have clearly pursued different industrial development models. Only Hungary, with 70% of manufacturing output made by foreign-owned firms, comes close to Ireland's experience in this regard.

Another unusual feature of Ireland's economic structure is the high proportion of economic activity accounted for by the industrial sector (42% of GNP(2000)) compared with other advanced economies, and the correspondingly low proportion accounted for by the services sector (54% of GNP (2000)). This partly reflects the distortion caused to Ireland's industrial structure by the preferential 10% corporate tax rate historically afforded to manufacturing companies. The move towards a single low rate of corporation tax (12.5%) for all companies may stimulate faster growth in the services sector over the coming years.

Ireland's changed economic circumstances at the beginning of the 21st century have required a re-thinking of Irish enterprise policy priorities. The focus now will shift away from employment-intensive manufacturing projects to attracting "strategic" corporate functions and higher added value products and services with the potential to forge close links with Irish indigenous companies and educational establishments. There will also be greater efforts to attract projects better suited to "regional" locations that have not shared sufficiently in Ireland's recent economic success.

Ireland: some basic facts

Population: (2001)	3.81m
Labour Force: (2001)	1.90m
Unemployment Rate	4.1% (February 2002)
Area	70,000 sq.km. (27,000 sq.miles)
Annual average % change in GDP 1995-2001	9.3% pa
Annual average % change in GNP 1995-2001	8.0% pa
GDP (2001)	89,392 million euros
GNP (2001)	74,331 million euros
GNP/head	23,285 euros

Q 0.3 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).

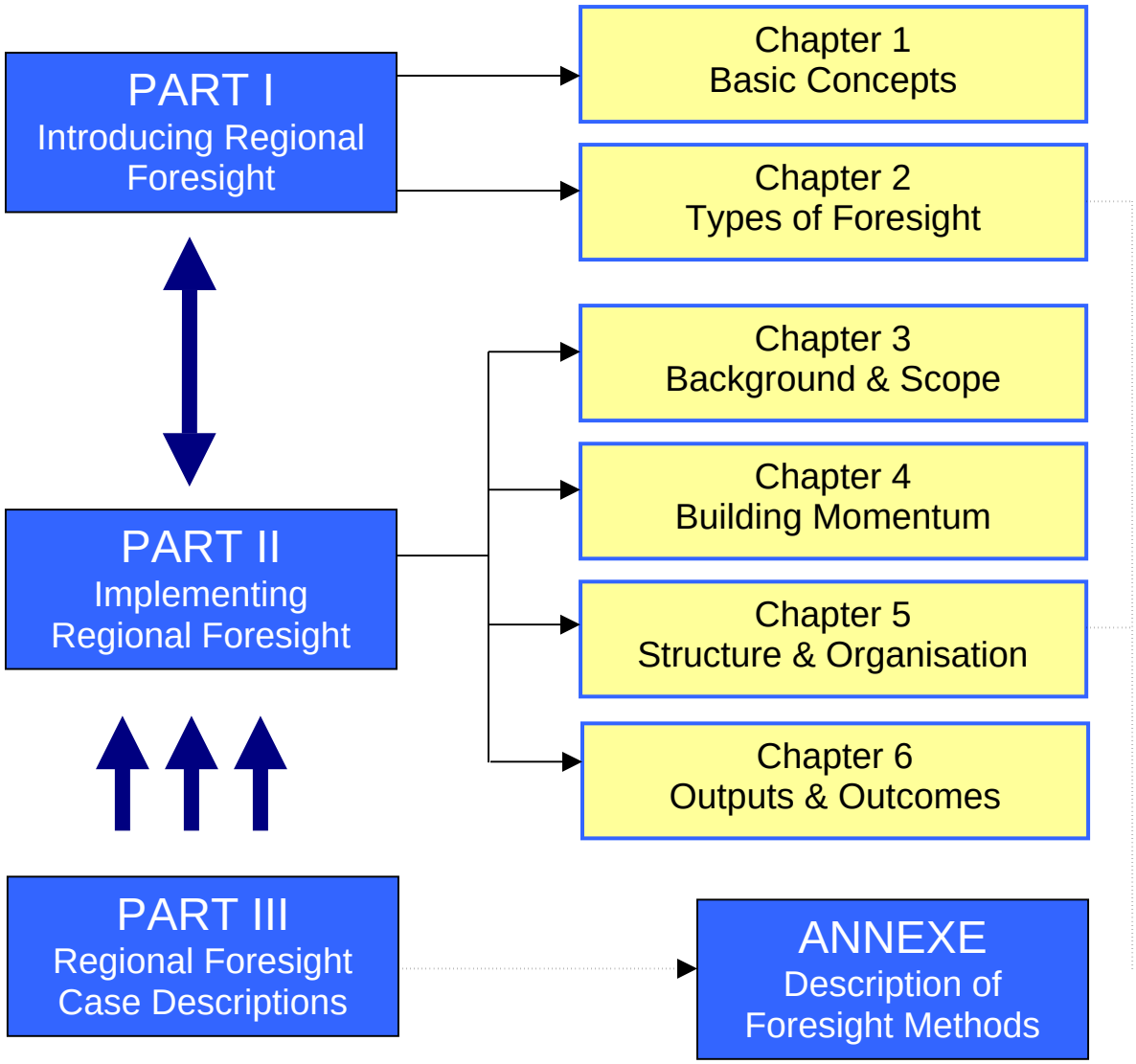
Others among you may already have encountered Foresight, and this might have been a good experience - or a bad one (e.g. frustrated attempts to translate national Foresight down to regional level). For you, Chapter 1 may still be relevant in that it makes the case for regional Foresight in quite explicit 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 6 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.

Q 0.4 What is the structure of the "Practical Guide"?

This Practical Guide has been structured as follows:



Q 0.5 Regional Structure and Governance in Ireland

The positive impact of the economic growth experienced in the period 1994 to1999 in Ireland is evident across the country as a whole. However, the rapid pace of this growth and the pattern of development, as manifested in increasing urbanisation and clustering of economic activity particularly in the Greater Dublin areas, have raised issues in relation to balanced regional development and the distribution of national economic and social progress. The National Development Plan, 2000-2006 (NDP), identifies balanced regional development as a key objective to be achieved over the period of the Plan.

The regionalisation arrangements negotiated by the Irish Government in the context of the European Union Agenda 2000 Agreement, namely the designation of the country into **two NUTS II Regions**, were part of the response to these issues. The new regions are:

a) the Border, Midland and Western (BMW) Region which has retained Objective 1 status for Structural Funds for the full period to 2006
b) the Southern and Eastern (S&E) Region which will qualify for a six-year phasing out regime for Objective 1 Structural Funds up to the end of 2005

Maps, hyperlinked to detailed regional data, is available at
http://www.csfinfo.com/htm/regional_data/content.htm

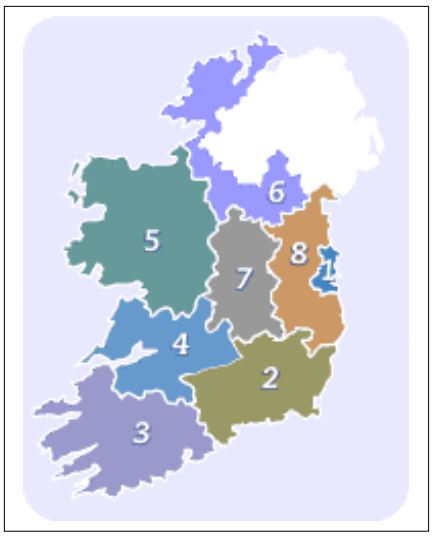
Regional Assemblies

In line with the new NUTS II designation, two Regional Assemblies were established and came into effect under the Local Government Act,1991 (Regional Authorities) (Establishment) Order,1999. The Assemblies comprise nominated elected representatives from the *Regional Authorities* within each region. The main role of the two Assemblies is to

- manage the Regional Operational Programme under the NDP
- monitor the general impact of all EU Programmes under the NDP/Community Support Framework within the region
- promote the co-ordination of the provision of Public Services in the region

The specific designations of the two Regions enables a clear focus on the key issues facing each of the Regions and allows for a differentiation and targeting of policies in a manner which recognises their key attributes and needs. There is a significant difference in the rate and level of development between the more prosperous S&E Region and the BMW Region and it is recognised that the latter needs greater priority in terms of investment and development.

Regional Authorities



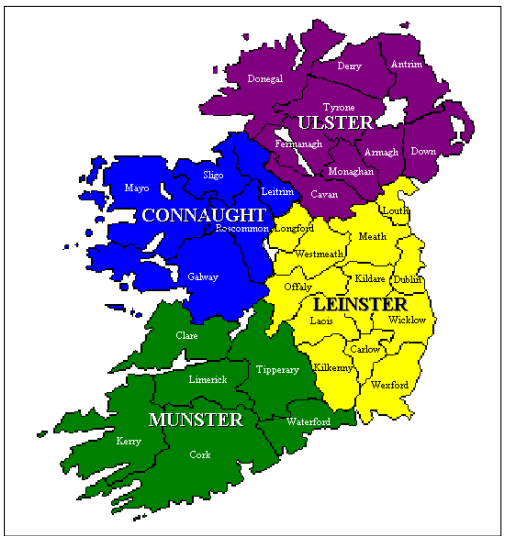
Eight Regional Authorities were established in 1994 under Section 43 of the Local Government Act,1991. Each Regional Authority has established an EU Operational Committee, which is responsible for reviewing progress of the various Operational Programmes at a regional level (NUTS III). Membership of the EU Operational Committee comprises elected members of the Regional Authority, who are nominated by the local authorities, local authority officials, and representatives of Government Departments and state agencies involved in implementing the NDP.

Table 1 below indicates the constituent NUTS III Regional Authority areas and their respective counties for each of the NUTS II regions.

Table 1 Regional Authorities and Counties in the NUTS II Regions

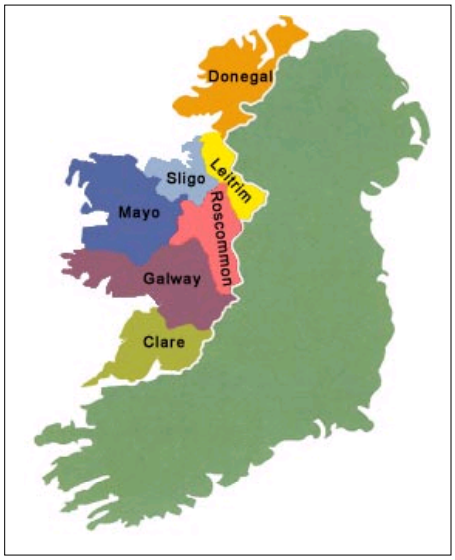
Border, Midland and Western Region	
Regional Authority	*Counties*
Border	Donegal, Leitrim, Sligo, Cavan, Monaghan and Louth
Midlands	Laois, Offaly, Westmeath and Longford
Western	Galway, Roscommon and Mayo
South and East Region	
Regional Authority	*Counties*
South-West	Cork, Kerry
Mid-West	Clare, Limerick, Tipperary NR
Dublin	Dublin
Mid-East	Meath, Kildare, Wicklow
South-East	Wexford, Carlow, Kilkenny, Tipperary SR, Waterford

County or City Development Boards



County or City Development Boards (CDBs) have been established in each Local Authority area as part of the ongoing national reform of Local Government. The CDBs bring together, for the first time, the key players at local level to engage in a process of long-term planning for each county or city for the next ten years. The Boards are representative of local government, local development bodies (Area Partnerships, LEADER groups, and county/city enterprise boards) and the state agencies and social partners (employers and business, farming, trade union and community and voluntary sectors) operating locally.

The initial function of the CDBs is to prepare a 10-year County Strategy for Social, Cultural and Economic Development. These strategies will be templates guiding all locally delivered public services and local development activities.
(Question 1.8bis on page highlights the Strategy for Dublin City)



The **Western Development Commission** (WDC), established in 1997, was put on a statutory basis through the Western Development Commission Bill, 1998. The WDC operates under the aegis of the (new) Department of Communications, Marine and Natural Resources. Its three main functions in the *Western region* are

Ø Economic and social policy analysis that effectively meets the development needs of the western region

Ø Identification and facilitation of regional development initiatives

Ø Management of the Western Investment Fund (WIF); this provides risk capital by way of equity and loans on a commercial basis to projects and businesses

The Western region consists of seven counties Donegal, Sligo, Leitrim, Roscommon, Galway, Mayo and Clare. (This region, except Clare, is also part of the Border, Midlands and West Objection 1 Region)

Arising from an undertaking given in the National Development Plan 2000-2006, the Department of the Environment and Local Government (DELG) is preparing a National Spatial Strategy (NSS) to provide a framework for future balanced Regional Development in Ireland over the next two decades. The research work completed to date for the NSS suggests that spatial trends and patterns of activity and development in Ireland can be seen in terms of twelve **Functional Areas** containing cities or towns and their hinterlands that are loosely defined in terms of boundaries. These areas typically tend to share common characteristics and issues, where people live their working, schooling, shopping and leisure lives and with which many can identify. This sense of identification spans the urban/rural divide and frequently extends across county boundaries.

It is useful to realise that there are differences between the administrative regions above and, for example, the (8) Health Board regions, the (7) Regional Tourism areas and the (33) Vocational Education Committee areas.

Northern Ireland is a separate region, coming under the jurisdiction of the United Kingdom. A number of inter-regional (cross-border) bodies have been established following the Good Friday (Peace) Agreement, e.g. North-South Ministerial Council, Inter-Trade Ireland.

Q 0.6 The Development of Futures Studies, Planning & other Foresight-related activities in Ireland

The day-to-day decisions of government, no less than those of individuals, tend too often to respond to the pressures, the needs, the provocations and the opportunities of the moment. Good management demands the longer view. (Whitaker,1997)

In Ireland, there is no shortage of examples to demonstrate where the longer-term view has been taken on public policy issues. The following list, which is not exhaustive, highlights some of the key reports since the late 1950's.

1958 *Economic Development* (1958) (Stationary Office, Dublin)
1963 *Research and Technology Survey*, OECD & Irish Government (OECD,Paris)
1966 Science & Irish Economic Development Report (follow-up to '63 survey)
1992 Government of Ireland *Report of the Industrial Review Group* - (Stationary Office, Dublin)…'the Culliton Report'
1993 EOLAS, *Assessment of Future Technological Needs* (preparation of the Irish position for the 3rd EU Framework Programme)
1995 Government of Ireland, *Making Knowledge Work for Us – Report of the Science, Technology and Innovation Advisory Council* (STIAC), (Stationary Office, Dublin)……..'the Tierney Report'
1996 Government of Ireland, *White Paper on Science, Technology and Innovation* (Stationary Office, Dublin)
1996 *Shaping our Future; A Strategy for Enterprise in Ireland in the 21st Century* (Forfás, Dublin)
1999 National Economic and Social Council, *Opportunities, Challenges and Capacities for Choice* (Stationary Office,Dublin)
1999 *Technology Foresight Ireland* (Forfás, Dublin)
2000 *Enterprise 2010, a new strategy for the promotion of enterprise in Ireland in the 21st Century* (Forfás, Dublin)
2000 Department of Agriculture, Food and Rural Development (2000), *Agri Food 2010 Main Report*, Dublin (Stationary Office, Dublin)
2002 Promoting Longer-Term Policy Thinking – CPMR Discussion Paper 22 (Institute of Public Administration, Dublin)

Many of these reports were far-reaching in their vision and, where implemented, the strategies they recommended were significant in terms of their relevance for Irish industrial policy.

The hallmark of *Economic Development (1958)* was the move from the protectionist era (1930s – 1950s) of high tariff barriers and the prohibition of foreign ownership of firms operating in Ireland to a situation where the export-oriented expansion of industry and services, even if under foreign ownership, and a more coherent, planned approach to national development has become the norm.

The *Culliton Report (1992)* was extremely influential in shaping subsequent policy developments for the internationally-trading indigenous industrial sector and was a precursor to structural changes within the state support system for foreign-owned and indigenous enterprise.

Shaping our Future (Forfás, 1996) took a long-term policy perspective (fifteen years) and a broad policy perspective on enterprise development – promoting, for example, relevant education and taxation policy developments.

TECHNOLOGY FORESIGHT

Until 1998 there was little experience in Ireland with the development and use of technology foresights or Delphi studies. In March 1998, the Minister for Science, Technology & Commerce requested the Irish Council for Science, Technology and Innovation (ICSTI) to develop and undertake a Technology Foresight exercise in Ireland.

The timing of the exercise was important because

- Ø the preparation of the National Development Plan (2000-2006) was underway
- Ø Ireland had had a long period of economic growth and sustaining this in the future would be a challenge, and
- Ø public finances were in a healthy state – money was available for any necessary investments.

Technology Foresight Ireland was managed by an ICSTI Task Force. This comprised the Chairpersons of the eight sectoral panels that were established – Chemicals & Pharmaceuticals; Information & Communication Technologies; Natural Resources; Energy; Materials & Manufacturing Processes; Transport & Logistics: Health & Life Sciences; Construction & Infrastructure;

Developing the initiative involved learning from practitioners in other countries and this was done through meetings and exchanges with the relevant ministries in the UK, the Netherlands, Austria and New Zealand as well as reviewing all the available literature. Support was also provided by the EU Commission through the Institute of Prospective Technological Studies (JRC) in Seville.

There was a focus on securing strong industrial participation in the exercise – because Ireland is very dependent on (foreign) industry for revenue and employment, they were seen as the main potential users of outputs from the foresight exercise. Whilst a time horizon of 15 years was adopted, the exercise itself was completed in a very short period of time – 12 months. This was considered important if the right level of industry involvement was to be maintained and furthermore, the Task Force considered that technology foresight can be time-critical. Certain outcomes can be useful now, and not so useful after a number of years. The government recognised and accepted that the depth and detail normally associated with a longer foresight exercise could not be replicated in this short exercise.

In response to the final ICSTI report, the Government, in 2000, established a Technology Foresight Fund of approx. €700 million as part of the €2.5 billion investment earmarked for research, technology and innovation activities in the National Development Plan. This Fund is administered by a new organisation Science Foundation Ireland, operating as a sub-board of Forfás. Its main aim is to develop world class research capability in niche areas of biotechnology and information and communication technologies. Other Government departments have also utilised the foresight findings in their work-programmes, e.g., the Department of Public Enterprise included relevant findings in their strategies to promote sustainable energy use and the Department of Agriculture & Food has made use of the Natural Resources Panel report in subsequent policy decisions.

Q 0.7 Useful Irish Resources

- Government of Ireland (1999) *National Development Plan, 2000-2006*. (Stationary Office, Dublin)
- Operational Programme for Regional Development (Stationary Office, Dublin)
- Operational Programme for Local, Urban & Rural Development (Stationary Office, Dublin)
- Department of Environment & Local Government (2000) –
  "What are the Issues?"
  "*National Spatial Strategy - Scope and Delivery*"
  "*Indications for the Way Ahead*"
  www.irishspatialstrategy.ie
- Western Development Commission –
  Blueprint for Success in the West
  Blueprint for Investing in the West
  The State of the West
  www.wdc.ie
- Regional Studies Association (Irish Branch) *Competitiveness, Innovation and Regional Development in Ireland.* Edited by D.McCafferty & J.A.Walsh, 1997
- The Association of Irish Regions
- National Institute for Regional and Spatial Analysis (NIRSA), based in the National University of Ireland, Maynooth
- The Regional Science Association (British and Irish section)
- Enterprise Ireland http://www.enterprise-ireland.com/english.asp
- Shannon Development http://www.shannon-dev.ie/
- Udaras na Gaeltachta http://www.udaras.ie/
- Northern Ireland Economic Research Centre http://www.qub.ac.uk/nierc/
- *Shaping our Future; A Strategy for Enterprise in Ireland in the 21st Century* (Forfás, 1996) www.forfas.ie
- Centre for Governance & Public Management
  www.ul.ie/~business/research/cgpm/
- The Forfás regional infrastructure database which profiles 119 towns with a population over 1,500 (CSO,1996) as well as the four local authority areas of Dublin. www.infrastructure.ie
- Dublin City Development Board www.dublin.ie

PART I – Introducing Regional Foresight

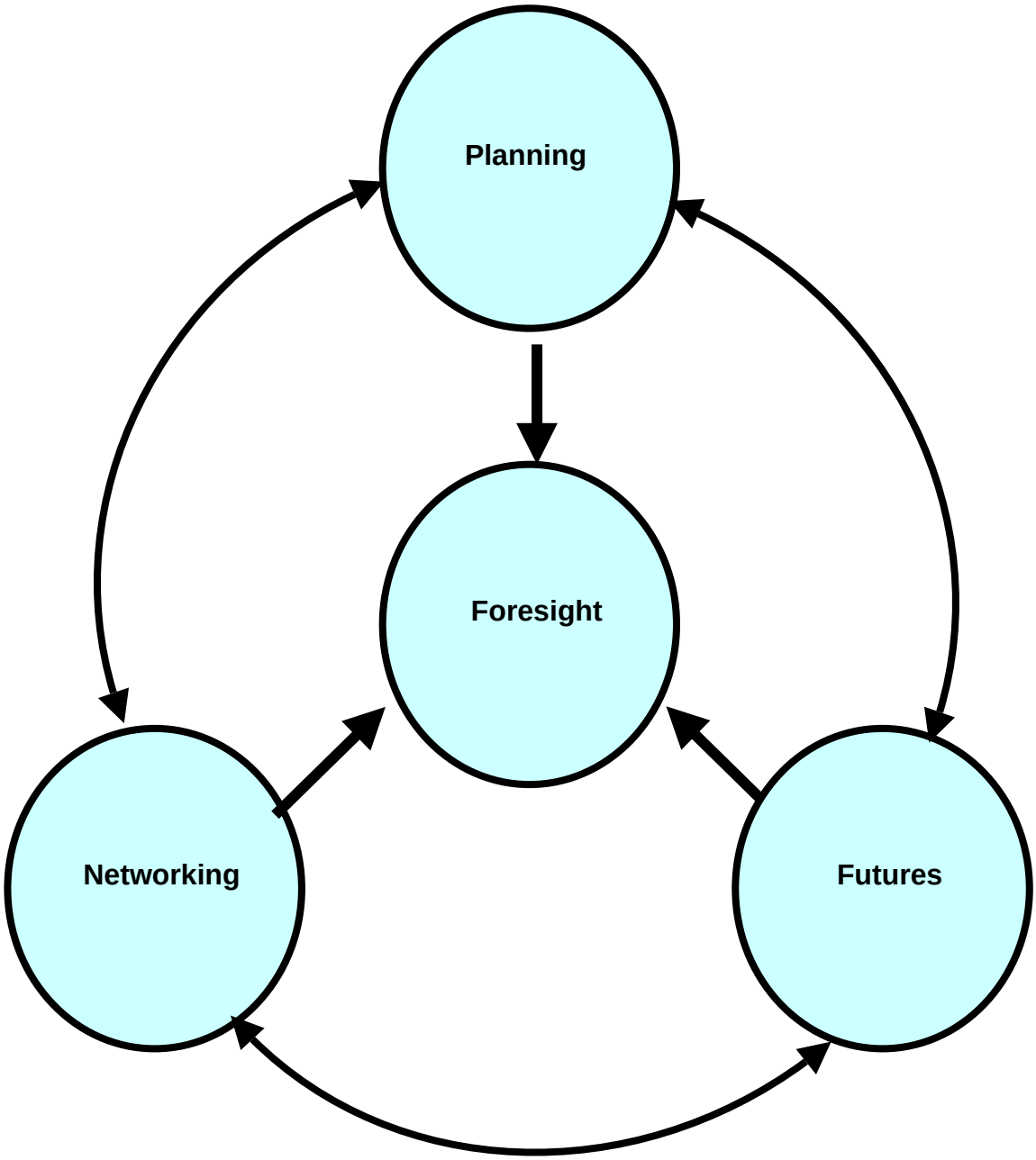
CHAPTER 1 – BASIC CONCEPTS

The following questions will be addressed in this chapter:

Questions	Summary answer
Q1.1: What is Foresight?	Foresight is a systematic, participatory process, involving gathering intelligence and building visions for the medium-to-long-term future, and aimed at informing present-day decisions and mobilising joint actions.
Q1.2: What is Regional Foresight?	Regional Foresight is the implementation of Foresight approaches to anticipation, participation, networking, vision & action at smaller territorial scales – which means that proximity factors become more critical.
Q1.3: Why is Foresight important for my region?	Regions face profound changes in their environments, and regional politics are on the rise - but inclusive and forward-looking policy institutions to cope with the new challenges are still underdeveloped in many regions.
Q1.4: What does Foresight bring to future-oriented thinking?	Foresight brings links to forward planning and policy, and to network building and social participation, to the more narrow varieties of futures studies.
Q1.5: What are the limitations of established planning approaches?	Most planning approaches inadequately deal with longer-term prospects, and similarly fail to draw on the views of multiple stakeholders.
Q1.6: How can Regions use Foresight to do things better?	Foresight can help regions to break down barriers, and to articulate long-term visions and explicate their present-day implications.
Q1.7: What features of a Region influence the approach to Foresight that it might adopt?	Regions vary in terms of modes of governance, social and institutional capital, economic structures and business postures, among other factors.
Q1.8: Why and when should the decision be taken to undertake Regional Foresight?	Foresight can be a proactive effort to shape the future or more of a reactive response to a special combination of circumstances.
Q1.9: When should Regional Foresight NOT be used?	Foresight is only worthwhile when it can be tied to action.
Q1.10: How can Foresight be used at Regional level?	Foresight can be used to inform policymaking and to build networks, so as to enhance local capabilities for tackling long-term issues.

Q1.1 What is Foresight?

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



The term 'Foresight' has become widely used in recent years, 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. These networks should be better able to respond to policy and other challenges, because of the improved anticipatory intelligence they have developed, and also the enhanced 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.

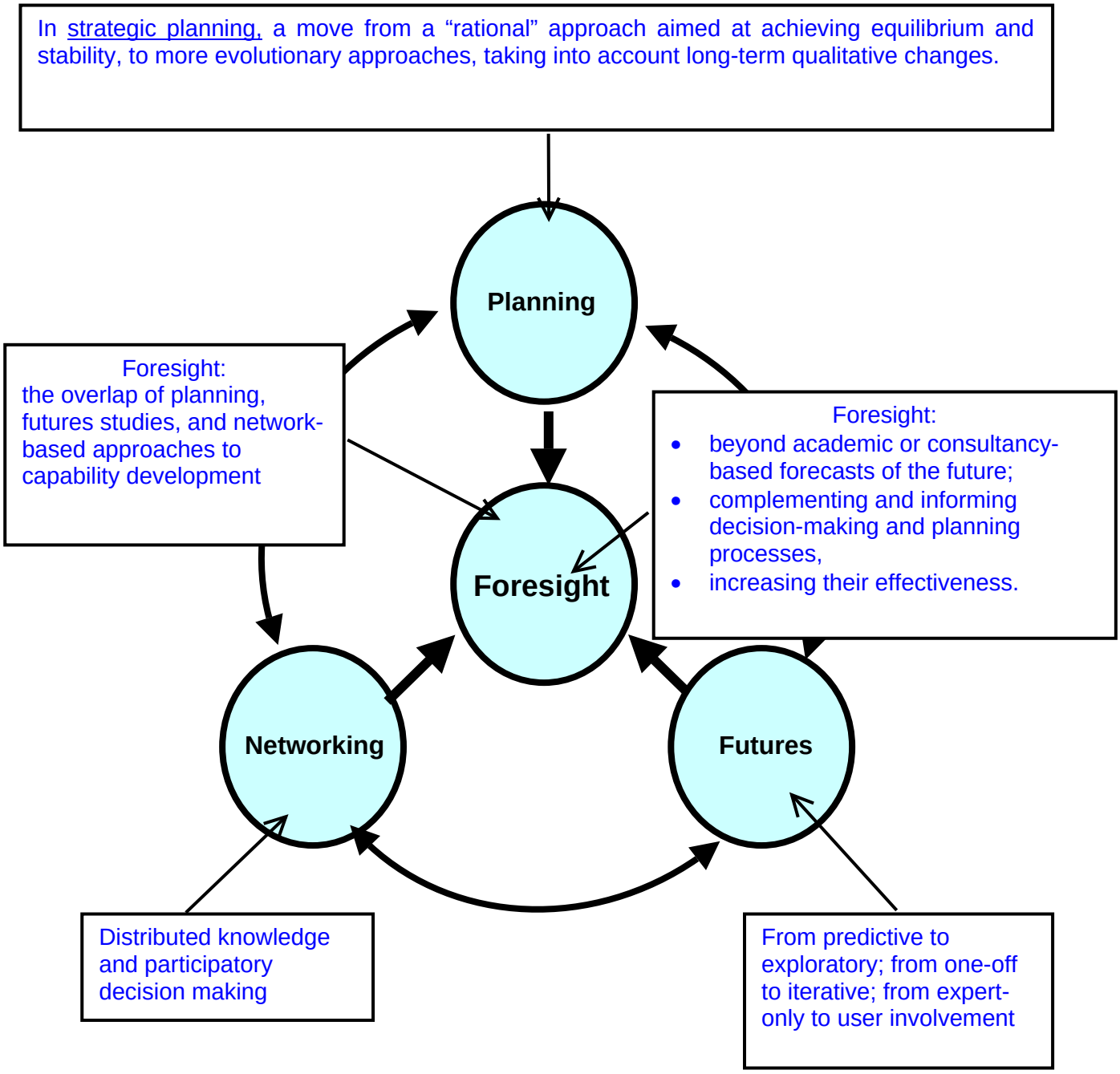
The contexts in which Foresight can be employed are equally wide-ranging. Much work to date has focused on national competitiveness and especially on setting priorities and strategic goals for areas of research in science and technology. But Foresight can and often does also deal with such social, political and cultural issues as demographic change, transport issues, and environmental problems. 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 – social forces shape the development, use and social implications of science and technology. Similarly, it is impossible to consider the long-term development of social issues without considering the relevance of evolving scientific and technological knowledge..

Foresight involves five essential elements:

- Structured **anticipation** and **projections** of long-term social, economic and technological developments and needs.
- **Interactive** and **participative methods** of debate, analysis and study of such developments and needs, involving a wide variety of stakeholders (often going well beyond the narrow sets of experts employed in many traditional futures studies).
- These interactive approaches involve forging new social **networks**. Some Foresight programmes use networks merely to help develop their formal products (such as reports and lists of action points), but others take network establishment to be an equally, or even more, important achievement in its own right.
- 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 guiding **strategic visions**, around which there can be a shared sense of commitment (achieved, in part, through the networking processes).
- This shared vision is not a utopia: feasibility and desirability have to be combined. 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 Foresight approaches to anticipation, participation, networking, vision & action at smaller territorial scales – which means that proximity factors become more critical.



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.

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 fypes 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.

Some important changes highlights the increased importance of foresight:

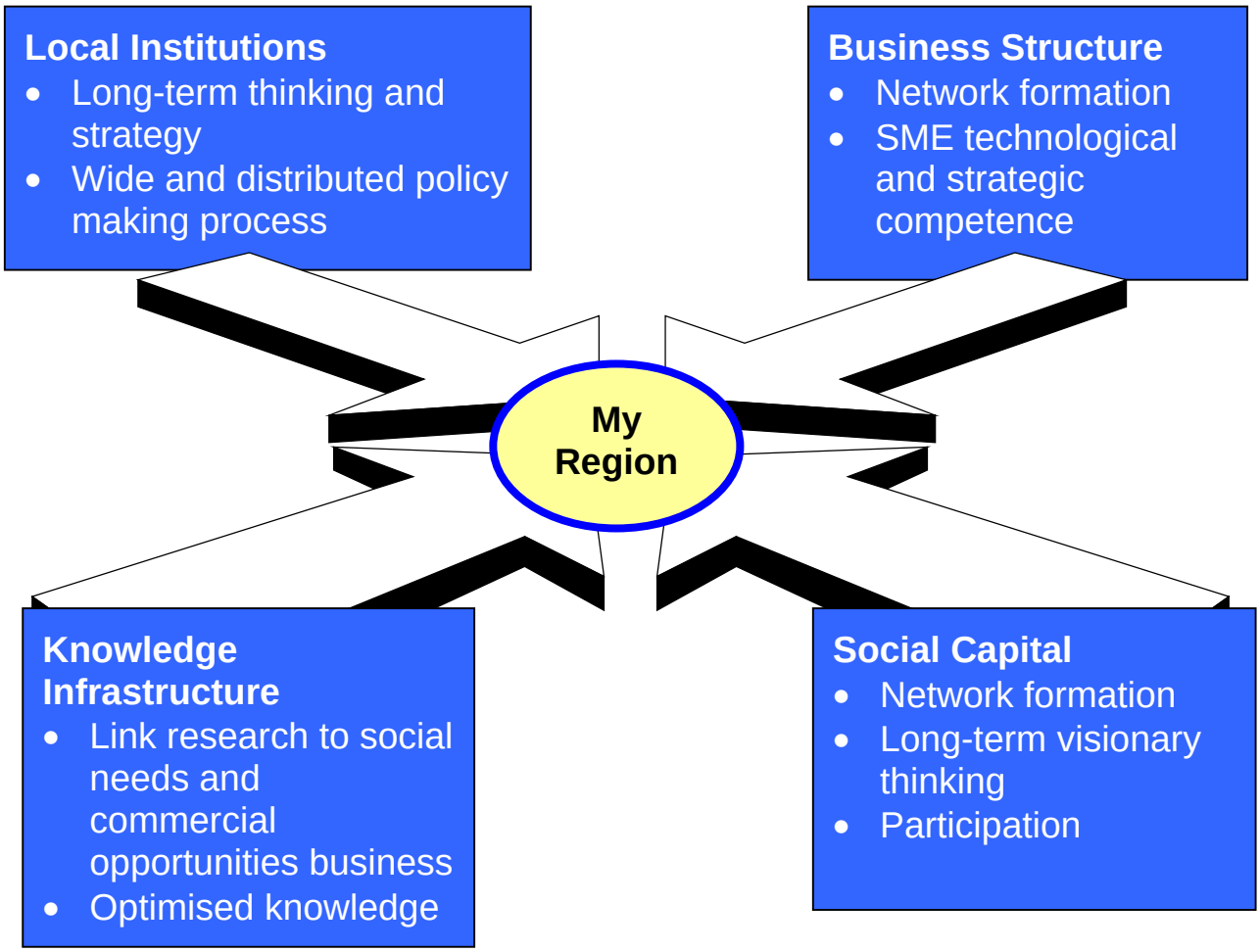
In strategic planning, there has been a move from a “rational” approach aimed at achieving equilibrium and stability, to more evolutionary approaches. In much modelling and rational planning it was assumed that we can grasp the dynamics of social and economic life on the basis of quantitative changes within stable structures: Qualitative changes frequently undermine such assumptions, and traditional “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 to do so.

Policy development has seen a shift from an elite-driven / top-down to a broader, more participatory approach. This reflects pressures for greater democratisation and legitimacy in political processes. Decision-makers also have to live with the fact that knowledge is distributed widely. Thus intelligence-gathering and networking methods have to evolve, too.

In futures studies, 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 to be absorbed into policymaking in systematic and ongoing ways.

Q1.3 Why is Foresight important for my region?

Regions face profound changes in their environments, and regional politics are on the rise - but inclusive and forward-looking policy institutions to cope with the new challenges are still underdeveloped in many regions.



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 ("too small for the big problems, too big for the small problems"). Our era of rapid change and globalisation is 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. Some regions have very sophisticated structures but many others do not, and face considerable difficulties in meeting these new challenges. Foresight is by no means the complete answer to such problems, but it can contribute to their eventual resolution.

So, what challenges is it that regional Foresight activities might address? Externally driven examples could be of a political nature (e.g. EU enlargement implications for regional development funding, central government decision to change devolution of power) or an economic one (e.g. global competition threats to local firms, sectors and employment). 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 – but when it is not, then identifying and agreeing on the problem can become the first step of the Foresight process itself. This Guide highlights some of the common challenges currently facing regions, but it will be your responsibility to determine the most important ones that you face (or the ways to identify them). Brainstorming approaches are often one way to leverage ideas 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.

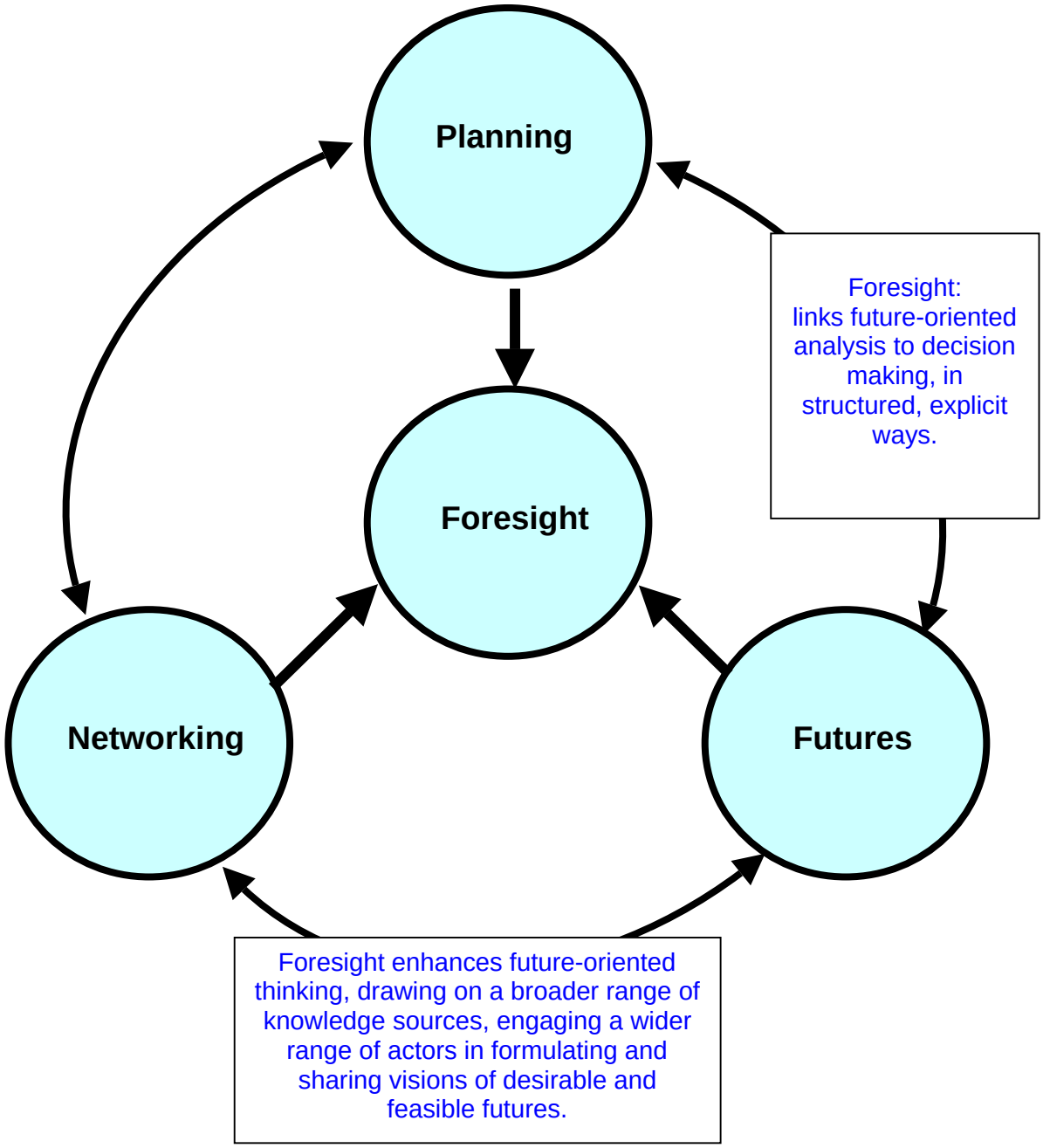
One approach is to consider issues and problems in terms of four critical resources on which local and regional development depends:

- **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 on the facing page provides a sample of some issues relating to each of these critical resources.

Q1.4 What does Foresight bring to future-oriented thinking?

Foresight brings links to forward planning and policy, and to network building and social participation, to the more narrow varieties of futures studies.



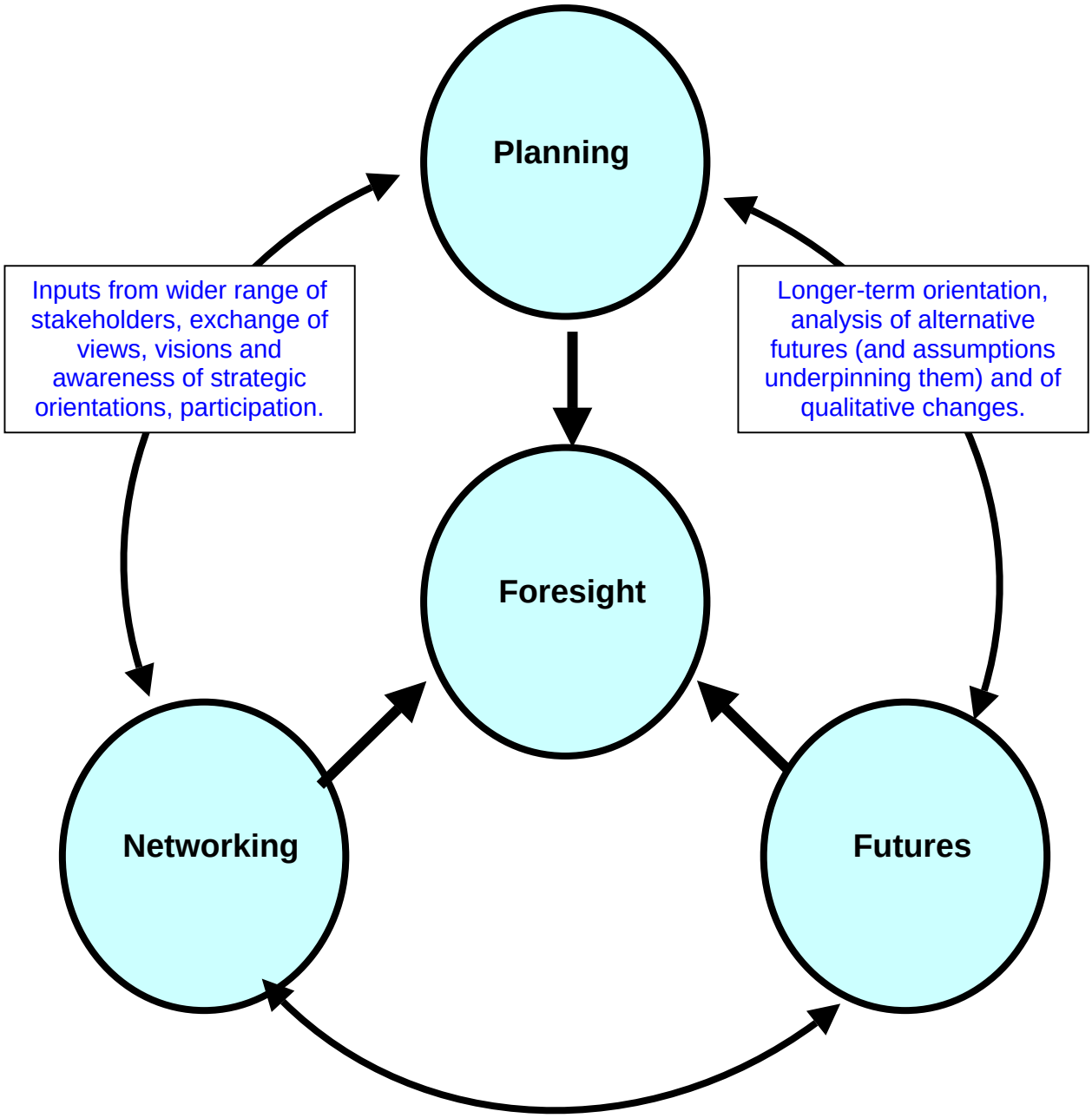
Foresight places more stress on both networking and links to decision-making than has been the case for many more traditional and less participative forms of futures study. Many futures studies are relatively top-down, and oriented towards producing formal products. Two varieties that are frequently encountered are:

- **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 such models are inadequately developed for dealing with many topics, especially those involving qualitative phenomena and structural changes. 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.

Many of the futures studies that have achieved most public visibility are not tied to particular decisions. Sometimes they are the result of academic exercises, sometimes they are "wake up" calls from pressure groups. These approaches may not be full-fledged Foresight, but when done well 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!).

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

Most planning approaches inadequately deal with longer-term prospects, and similarly fail to draw on the views of multiple stakeholders.



Foresight is different from most planning activities, 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 enhancing awareness of who can supply knowledge!), 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 possible futures 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.

Drawing on earlier accounts, the following useful definitions may be offered:

- **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 EC Strata project FOREN Report "Reconciling Foresight with Policy Making at Regional Level" December 2000 http://foren.jrc.es

Q1.5 IRL What are the limitations of established planning processes?

Here it could be useful to consider how the policy advisory and planning systems generally operate in Ireland.

Many government departments rely on the advice and policy recommendations of various semi-state agencies – either for the broad economic competitiveness agenda or for specific sectoral issues. This system generally works well in practice as the welfare of Ireland Inc. will be the driving motivation for those involved. However, there is always the risk that a politically supine approach could, in certain circumstances, be adopted. The budget and board membership of state agencies who have a planning function are controlled by their parent departments and the degree of independence which they enjoy will depend on the relationship between the agency and their department.

The current (justifiable) trend for more transparent and participative policy making leads organizations to be as comprehensive as possible when undertaking public consultation exercises, e.g., National Consultation debate on GMOs and the Environment organized in 1999 by the Department of the Environment and Local Government, or as representative as possible when setting up government task forces, e.g., the Task Force on Physical Sciences established in 2001 by the Minister for Education and Science comprised 56 representative organisations from teachers unions to parents groups to professional scientific organisations. These processes require quite expert management, often necessitating the involvement of a well-known and respected chairperson to ensure that the outcomes or final recommendations are not driven by the lowest common denominator and which therefore may be insufficiently innovative or forward looking.

In Ireland, social partnership agreements, from the mid-eighties to the present, have contributed in part to the economic growth and stability of the nineties. However, reviews of the social partnership model as it operates here would suggest that they have some limitations that would render them unsustainable in their current format. Timescales are relatively short – 3 to 5 years. The employer, union and Government stakeholders seem to lead the process whilst the other social pillars are seen to be marginal and by implication their views less pervasive in the final agreements.

A recent Discussion Paper (No.22/2002), produced by the Institute of Public Administration's Committee for Public Management Research (CPMR), identifies many of the constraints to longer-term policy thinking in the Irish public service. These include:

> *The political imperative* – the incentives acting on politicians and the political system work in favour of a 'short-term' focus. This in turn influences the priorities of civil servants who may tend to provide Ministers with options, perceived to be favourable in the short-term, rather than presenting all the options, including the longer-term issues.
>
> *Structure and routine of department's business* – routine matters dominate the activities in many government departments and a significant amount of staff time is taken up by activities associated with servicing the democratic process. Historically, units have been set within departments to deal with specific issues. Consequently, responsibility for addressing cross-cutting policy issues can be difficult.

Data – in some cases the absence of relevant data to inform longer-term policy thinking is an issue and in other cases, where data does exist, incomplete analysis can be a problem.

Capability – linked to the data problem is concern regarding the appropriateness of the skills base within the civil service to develop longer-term policy options.

Relevance – linkages need to be made to current priority issues for the longer-term policy view to be deemed relevant.

These issues need to be considered within the context of the Strategic Management Initiative www.irlgov.ie/finance/publications/main3.htm which seeks to improve the quality of service and customer focus of the Irish civil service, and by implication the quality of policy advisory and planning processes.

Q1.6 How can Regions use Foresight to do things better?

Foresight can help regions to break down barriers, and to articulate long-term visions and explicate their present-day implications.

What do we mean by 'region'?

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. Many of the issues discussed will also be highly relevant to smaller countries.

Different types of European 'regions' include:

- Large regions with high autonomy - 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 areas 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 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 judge how relevant the Foresight experiences of other regions may be to you. The aim is **not** to pin down a precise definition of regions, let alone to create a general-purpose typology of regions.

Regions are arguably well-suited to the participative and vision-building features of Foresight. 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 demands new orientations to policymaking. These may be unfamiliar to regional actors, and may prove difficult to accommodate in current 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. The breaking down of such barriers may be resisted, even by new incumbents of policy positions.

One important set of factors shaping Regional Foresight activities is the **Institutions and Social Capital** in the region. The barriers that Foresight can confront can extend beyond the chief policymaking agencies, into the wider t and social context in which such capital is based. There are various ways in which such social capital may be organised (e.g., co-operative versus competitive cultures; interactive versus individualistic modes of learning; associative consensus versus polarised interest groups). This sort of organisation, and the cultural traditions associated with it, will influence how rigid the barriers mentioned above may be, and how they may best be overcome.

In thinking about the nature of the resources available to your region, it may be helpful to distinguish between

- *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* - a key element of which is 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. [9]

[9] 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).

Q1.7 What features of a Region influence the approach to Foresight that it might adopt?

Regions vary in terms of modes of governance, social and institutional capital, economic structures and business postures, among other factors.

A tentative grouping of some exemplary European regions in terms of business posture and governance

Regions vary in terms of:

- centres of competence for public and private intervention;
- support for regional economic, technological and social development.

Business posture	Governance of firm innovation support		
	Grassroots	**Network**	**Dirigiste**
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

Firms have distinctive orientations both towards each other and the outside world. Regions vary in terms of role of lead firms, global versus local reach of innovation activities, balance between in-house versus public and co-operative research, and disposition to networking and clustering.

Beyond the local institutional and social capital, some other important characteristics of regions relevant to their Foresight activities are:

Governance. Successful regional Foresight requires political leverage that can enable its initiatives and proposals to be acted on. Cooke et al. (1998)[10] distinguish three types of governance: **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).

Business postures. Cooke et al[1], focusing particularly on innovation dynamics, identify three regional types. The **Localist** type has few if any: large indigenous firms, or branches of externally controlled firms; local research organisations capable of combining with regional industrial clusters; public R&D/ innovation resources (there may be some small private ones). 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; there is widespread access to regional R&D resources and to outside sources when required; and 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 privately financed, though there is some SME-oriented public innovation infrastructure; local "associationalism" is heavily influenced by the needs of larger firms.

The diagram on the facing page illustrates these two dimensions. Additionally, Regional Foresight will be influenced by the region's:

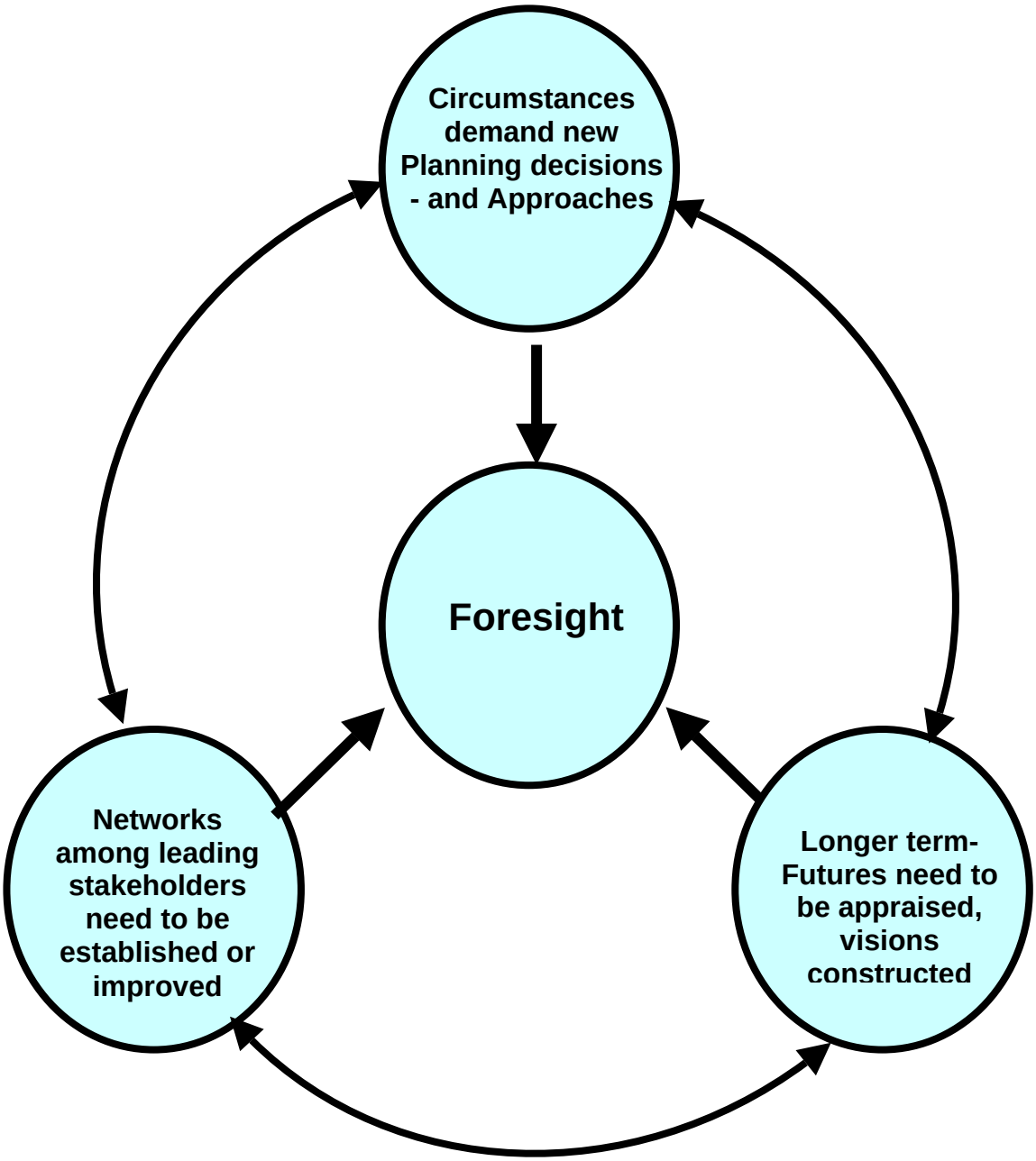
- **Financial and Budgetary competence**. *Regional Financial Competence* relates to the degree of local control - private and public – over major financial issues. For example, are there local capital markets, local credit-based systems involving regional administration in loan-guarantees, regional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

- **Infrastructure**. Regions vary immensely in the influence they can exert "**hard**" **infrastructure** (transport, telecommunications) and "**soft**" or **knowledge infrastructures** (universities, research institutes, science parks and technology transfer centres).

[10] P Cooke et al (eds) 1998, *Regional Innovation Systems - The role of governance in a globalised world*, UCL Press Ltd.

Q1.8 Why and when should the decision be taken to undertake Regional Foresight?

Foresight can be a proactive effort to shape the future or more of a reactive response to a special combination of circumstances.



Regions can have very different reasons for undertaking 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.

Q1.8 IRL Why and When to undertake a regional Foresight?

"Dublin – A City of Possibilities"[11]

The European Union, by comparison with other parts of the world, is heavily urbanised and many of its large cities continue to experience rapid growth. European cities are important for many aspects of EU competitiveness and Dublin[12] is one of the large number, of one million plus cities throughout the European Union - although Dublin would be seen as relatively small and isolated in comparison to most of the others. Nevertheless, Dublin is viewed as a large city in an Irish context. It has prospered and grown rapidly during the past decade and has both benefited from and also made a significant contribution to the improvement of Ireland's international competitiveness.

The population of the Greater Dublin Area (GDA) increased by 551,000 persons (or 60.1 per cent) between 1961 and 1998 and is forecast[13] to grow to at least 1,700,000 by the year 2011. Employment, between 1981 and 1998, increased from 453,000 jobs to 618,000 (+36.4 per cent) and GDA's share of total State employment increased from 39.8 per cent in 1981 to 41.7 per cent in 1998. The major employment growth occurred in Dublin's service sector – by 1998 some 49.7 per cent of all service workers in the State were resident in the Greater Dublin Area.

Much of the recent growth of the Dublin region can be said to derive from two inter-related factors. The first is the key and dominant role played by Dublin in the domestic economy and throughout most facets of Irish life. The second factor relates to the vigorous promotion of Ireland as a location for foreign investment in the 1990's and the crucial importance of Dublin and near-to-Dublin locations within this FDI promotion strategy to date.

Dublin needs to take the necessary action to further improve competitiveness; many of these actions relate to local investment in physical and social capital. Like other capital cities, Dublin needs to focus particularly on its international role both on behalf of Ireland and on its own behalf. Dublin possesses agglomeration and urban advantages unique in Ireland and without which Ireland's development effort could be disadvantaged. At the same time, many of the current bottlenecks in Dublin may arise from the over centralisation of functions and activities that contribute relatively little to Dublin's key role.

Many other cities have adopted a regional strategic approach identifying for itself a particular role relative to its trans-national or European regional context. Thus, cities can develop in a complementary way. Dublin needs to focus on 'development' and qualitative change rather than on 'growth' per se. A study[14] in 2000 showed that Dublin has a performance and potential comparable to Helsinki however, the study also pointed out that in the decade up to 2010, Dublin will need a vision and a strategy if it is to more closely match the potential and operational levels of Copenhagen.

[11] www.dublin.ie
[12] Throughout this section, Dublin refers specifically to the Greater Dublin Area (GDA) rather than to Dublin City.
[13] Brady Shipman Martin, et al, Strategic Planning Guidelines for the Great Dublin Area, Dublin Corporation, 1999.
[14] *The Role of Dublin in Europe* (November 2000) – a report prepared by Goodbody Economic Consultants, Department of Regional and Urban Planning, UCD and The Faculty of the Built Environment, UWE for the Spatial Planning Unit, Department of the Environment and Local Government

Ø ***The need to build a future vision for Dublin***

Is driven by the need ……
1. to manage the by-products of Dublin's success, e.g., congestion, scarce and expensive housing, skills shortages and social exclusion.
2. to identify strategies for the 'development' of Dublin rather than simply continue with the existing (economic and demographic) growth pattern
3. to identify and enhance competitive advantages so that Dublin (and the country) does not become marginal to projected future EU growth axes

In July 2002, the Minister for the Environment and Local Government launched an integrated economic, social and cultural strategy that will guide sustainable development in Dublin City until 2012. Responsibility for the Strategy rests with the Dublin City Development Board (DCDB), which is facilitated by Dublin City Council.
"Dublin – A City of Possibilities" creates a vision for the city for the next ten years and the integrated strategy addresses the current situation in Dublin City and reflects the issues, concerns and priorities raised during an extensive period of consultation. It is born out of a unique partnership of agencies and organisations involved in the development of the city. In addition, the Local Government Act 2001 provides a statutory basis for the Strategy. This Act requires that agencies and bodies in receipt of public funds proof their plans and actions against the Strategy.

"Dublin – A City of Possibilities" Strategy is integrated in nature. A City of Neighbourhoods is central to the strategy and is referred to as the heart theme. There are four enabling themes – A Diverse and Inclusive City; A Connected and Informed City; An Integrated City; A Democratic and Participative City. Finally, there are ten outcome themes which impact on the way people live, how people live and where people live in the City.

The **process** to develop the Strategy was intended to:
Ø Raise awareness of the development of the Strategy and work of the DCDB
Ø Discover, through a process of participation, the key concerns of City stakeholders
Ø Generate creative solutions together and agree ways forward
Ø Mobilise commitment for a shared vision; and
Ø Create shared ownership and act together to make it happen

Whilst the development of this strategy for the sustainable development of Dublin City was never labelled a 'Foresight' exercise – it had all the hallmarks of one.
A long term perspective, a high level of consultation, the need to develop consensus amongst a diverse group of stakeholders regarding priority investment decisions and future strategies and the need to gain commitment amongst the same diverse group of stakeholders for the strategies to be implemented. Moreover, the rationale and timing of this futures-oriented exercise serves to illustrate why and when a regional foresight could be undertaken.

Q1.9 When should Regional Foresight NOT be used?

Foresight is only worthwhile when it can be tied to action.

Foresight should not be used if there is no possibility to act on the results that it will generate. "Wishful thinking" is not enough to sustain a Foresight exercise: those involve are likely to feel that their expectations have been raised unduly, their time wasted. A minimal degree of political, economic or cultural leverage is required – even if it is recognised that the Foresight activity is likely to have to battle with entrenched opposition to achieve any significant impacts.

Nor is "me too" a good basis for regional Foresight. 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).

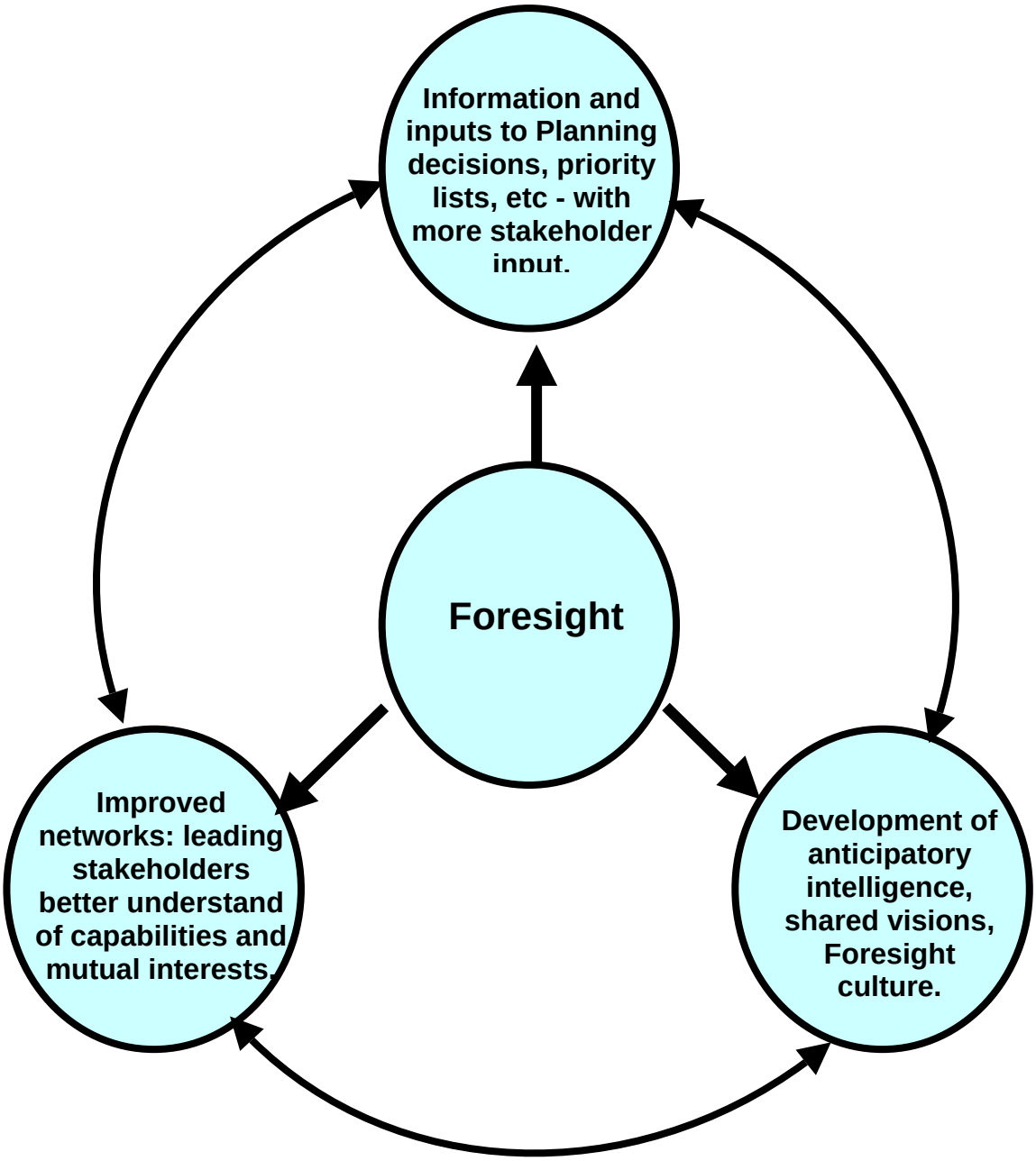
If there is no possibility for careful preparation and tailoring of regional Foresight to specific regional characteristics, then it probably should not be implemented. We should be explicit in acknowledging that Foresight cannot solve all of the social, economic or political problems that beset a region. 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 in situations where there are profound disagreements. Political discretion also needs to be exercised in cases where conflict is inevitable between certain sectors on highly contentious issues. Skills at mediating conflictual discussions are liable to be required! In some situations, unfortunately, there is a strong probability that the conflict-resolution powers of Foresight methods will be insufficient, and that conflict may even be exacerbated by embarking upon Foresight at this moment. In such cases, Foresight should not be undertaken, or at least taken up in a very cautious way. Foresight **may** help find areas of agreement shared between opposing factions, - but it can become mired in disputes between entrenched antagonists, especially when 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.

Q1.10 How can Foresight be used at Regional level?

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



Part III describes a number of regional Foresight activities. They very different in terms of the resources committed to them and their scale of activity, in the topics focused on and the methods used. The questions of what topic to address and what types of method to use are addressed in the next 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 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.
- 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.
- **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. This probably the rationale one that has been slowest to be recognised as a practical goal - but it is often very relevant at regional level.

In practice a mixture of these three reasons is often in play. 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.

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, such as the European Commission, can play a role in collating information about Foresight and fostering its use in particular settings. Such activities may be sources of information and practical help for new Foresight activities.

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. This should help you to decide just what types of Foresight you may wish to undertake or participate in.

Questions	Summary answer
Q2.1: What issues can Foresight be applied to?	Foresight can be applied to a wide range of topics, and Foresight activities may concern embedding capabilities as well as working through a single large programme.
Q2.2: What sorts of people undertake Foresight?	A wide range of actors, such as governments, firms, and educational and voluntary institutions can undertake foresight.
Q2.3: What are the main types of Foresight programme?	There are many varieties and nuances of Foresight: a first fundamental 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 important 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 uses formal techniques to examine long-term issues of current relevance, in an institutionalised way, taking a wide range of factors into account, and drawing on widely-distributed knowledge.
Q2.6: How can formal "futures" methods be used in Foresight?	The **results** of formal methods can be fed into Foresight as "forecasts", but 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 forecasting methods in Foresight?	Formal forecasting methods provide results which can communicate key Foresight conclusions and elements of their associated visions, check the consistency of different aspects of the vision, help identify where more knowledge is needed, and legitimise the exercise as more than an expression of opinions.
Q2.8: What is the difference between exploratory and normative methods?	Exploratory methods essentially begin from the present, and see where events and trends might take us; normative methods, in contrast, ask what trends and events would take us to a particular future or futures.

Q2.9: What weight should be put on quantitative as opposed to more qualitative methods?	Each class of methods provides distinctive inputs, and while quantitative data often have high impacts, Foresight usually draws on both approaches – and we should be aware of the limits as well as the advantages of quantification.
Q2.10: Are there other important variations in approach underlying the formal methods used in Foresight?	Foresight may be centred more on the expert-based, or more on the assumption-based techniques.
Q2.11:What Foresight approach is most appropriate for my situation?	The problems at stake, the resources to hand, and the political context all have to be taken into account in defining the mix of methods to be used in a Foresight activity.

Q2.1 What issues can Foresight be applied to?

Foresight can be applied to a huge range of topics, and Foresight activities may concern embedding capabilities as well as working through a single large programme.

Orientations of Foresight and related "futures " activities and future-oriented thinking			
	Field	**Use of Foresight and "futures" studies**	**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.

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.

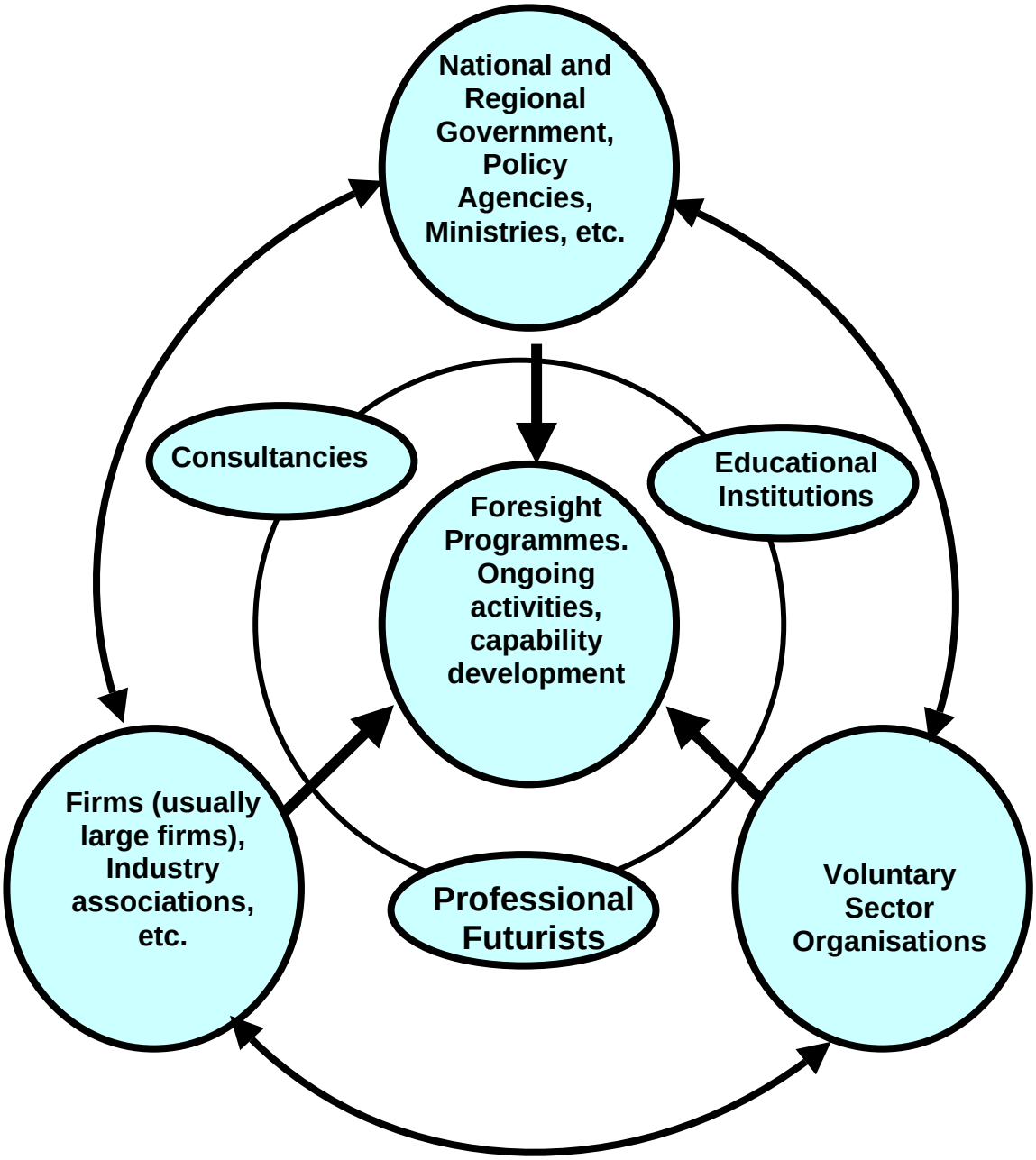
But the basic principles, and indeed many of the specific methods and tools, of Foresight can also be applied to other topics and used in other ways and (as is considered in the following question) by other actors. Foresight can be applied to any topic where significant changes are anticipated – or desired – in the long-term. We mentioned earlier that even the more narrowly science and technology-focused Foresight activities have found it necessary to take broader economic, social and cultural factors into account. Given that these activities were (usually) designed without building in expertise in such issues, a problem arises. Either the experts that have already been recruited try to apply their intelligence to fields far removed from their own specialisation, or else there has been a hasty effort to locate appropriate expertise at a late stage and tack it onto an existing set of activities and processes. Each of these unsatisfactory options has been encountered in practice. We can learn from these experiences 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.

Chapter 1 stressed 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.

It will usually be of considerable benefit to situate Regional 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 What sorts of people undertake Foresight?

A wide range of actors, such as governments, firms, and educational and voluntary institutions can undertake foresight.



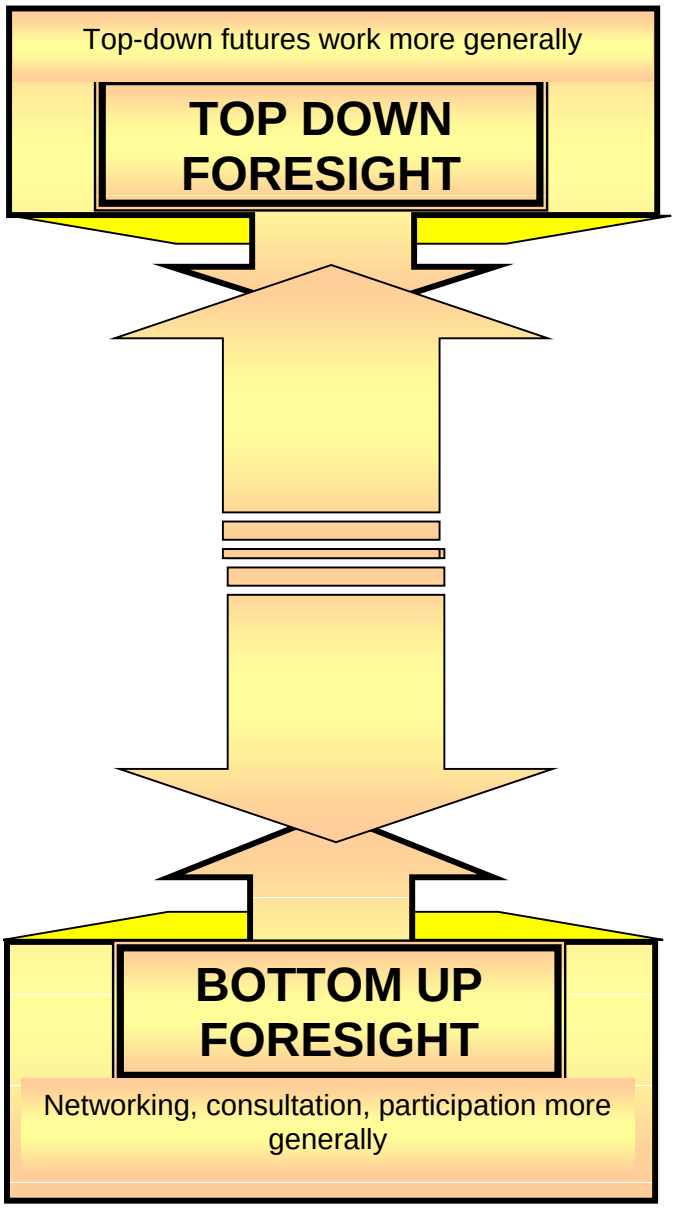
So far, we have focused on governments, and mainly national governments, as initiators of Foresight. But many large commercial organisations, and a number of regional authorities - and also voluntary associations and charities - have undertaken or commissioned Foresight programmes and exercises. Sometimes these have been described through other terms such as “futures studies”, "strategic visions" or “prospective”.

Not surprisingly, the areas of focus that concern these different organisations 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 exercises oriented to smaller territorial scales.

Q2.3 What are the main types of Foresight programme?

There are many varieties and nuances of Foresight: a first fundamental distinction is between Foresight activities that are more or less bottom-up or top-down.



Foresight activities vary in the extent to which they are "*top down*" or "*bottom up*". **Top-down exercises** 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.

In contrast, **bottom-up exercises** 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.

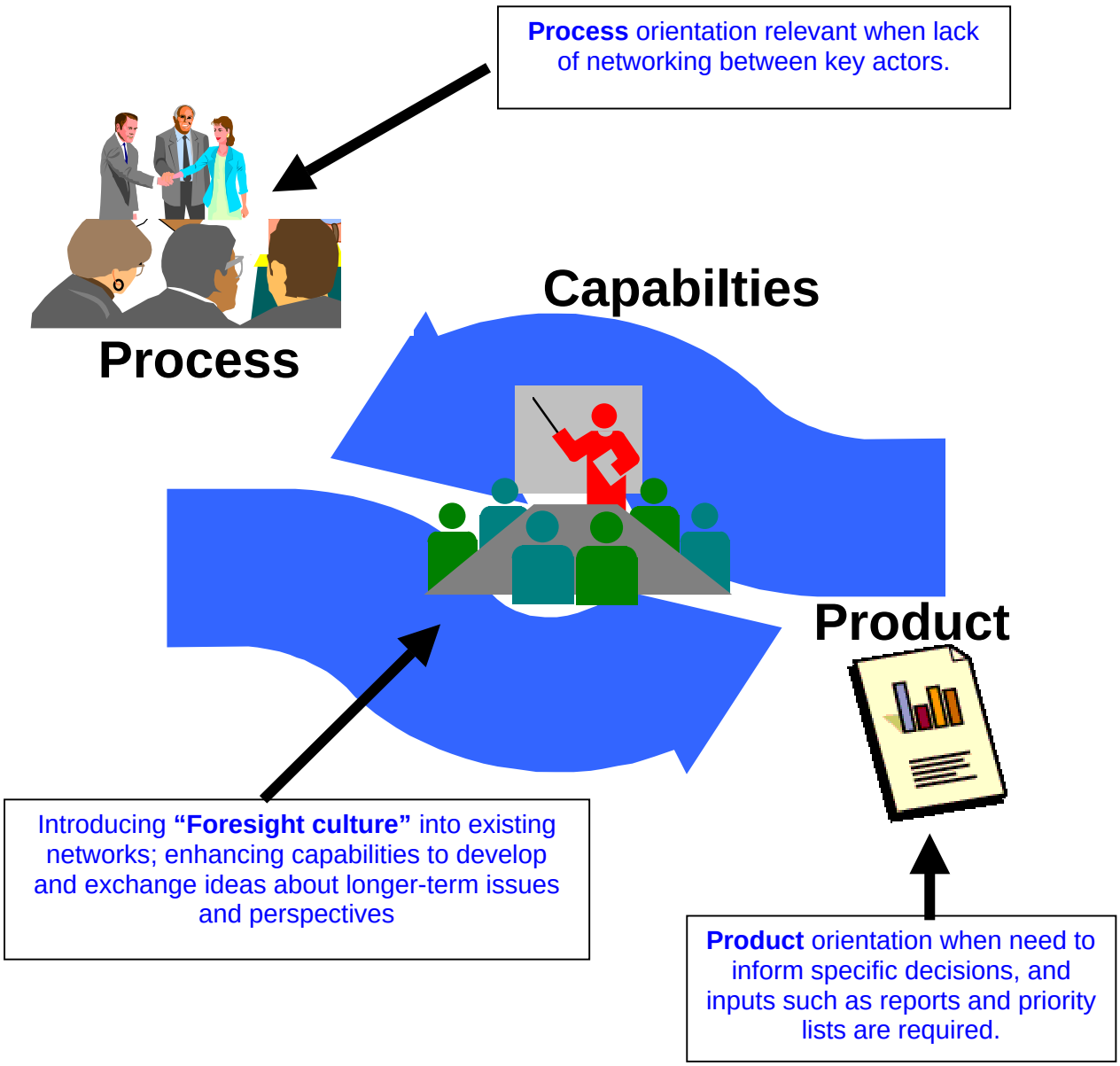
These extremes are manifest in several exercises. But also we find many Foresight exercises that fall between them, with a mix of top-down and bottom-up elements.

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



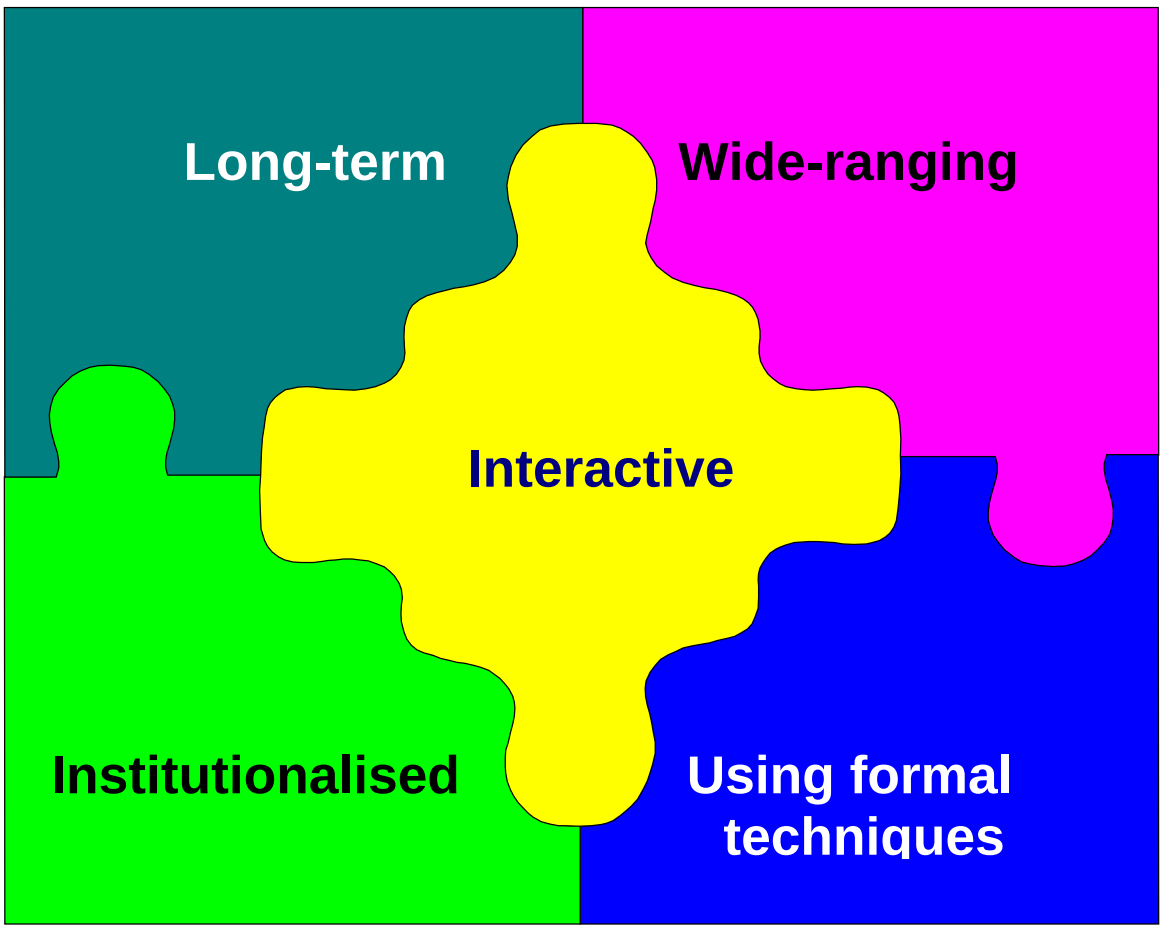
The focus on products or processes is related to the top-down/bottom-up distinction. In practice Foresight activities vary in the extent to which they emphasise:

- **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. 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. 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.
- 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.

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. So capability-building may be assessed in terms of credentials such as diplomas awarded, numbers of people being trained, etc.; and "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 uses formal techniques to examine long-term issues of current relevance, in an institutionalised way, taking a wide range of factors into account, and drawing on widely-distributed knowledge.



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:

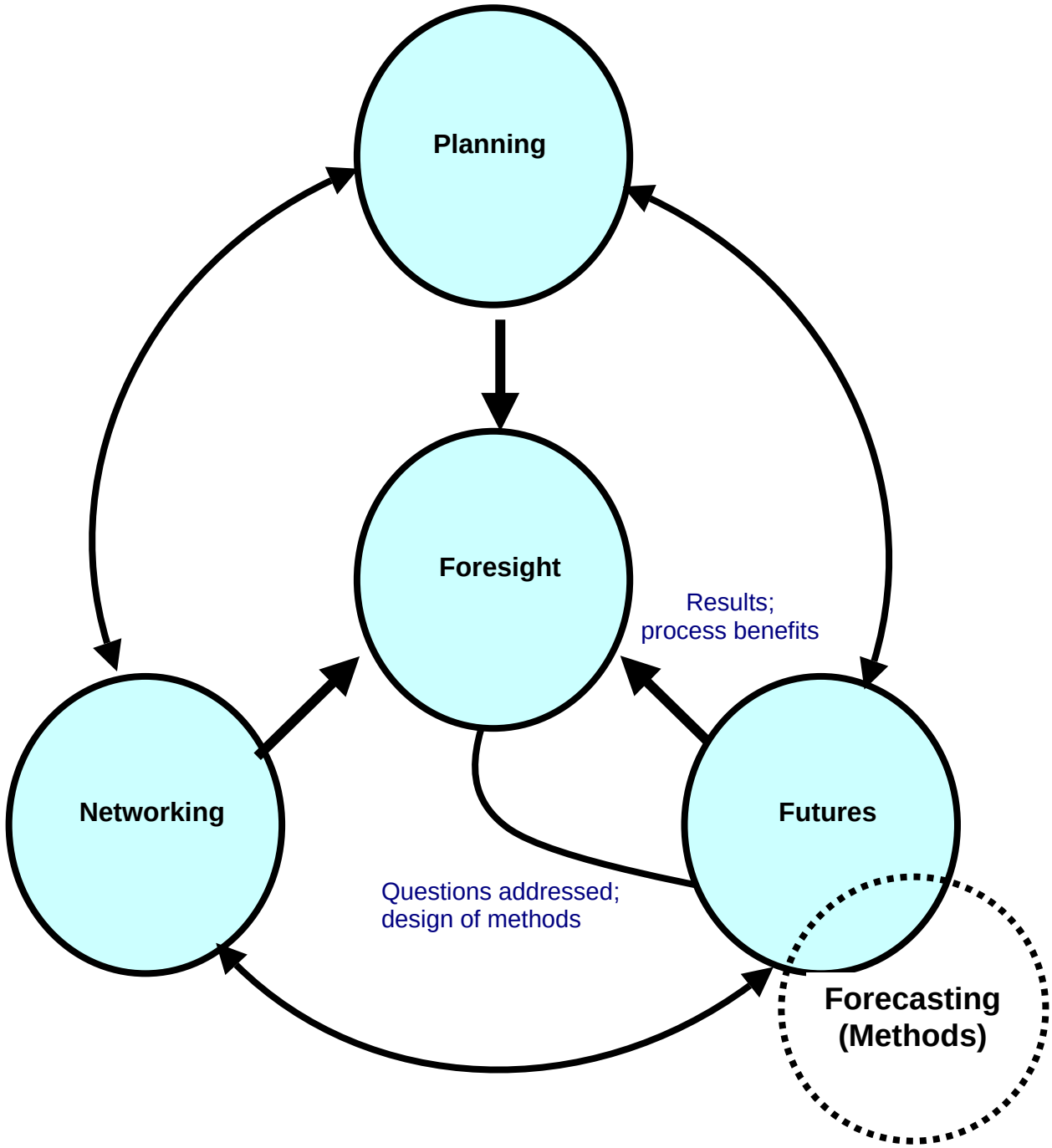
- Have a long-term orientation, not a short-term focus, even though the objective is to inform current decisions. Long-term generally refers to periods over ten years ahead, though there may well be insight generated as to much more immediate developments, and Foresight approaches are sometimes applied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

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.

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

The results of formal methods can be fed into Foresight as "forecasts", but 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. The next main section of this 'Practical Guide' addresses the tools that may be applied to the management of the process, the securing of requisite support from its constituencies, and achieving results among its intended "users". But people often identify "Foresight methods" with the formal techniques used for the generation of informed visions of long-term futures. More detail on such 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. 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. I.e., 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 forecasting methods in Foresight?

Formal forecasting methods provide results which can communicate key Foresight conclusions and elements of their associated visions, check the consistency of different aspects of the vision, help identify where more knowledge is needed, and legitimise the exercise as more than an expression of opinions.

Points to bear in mind in deciding how and when to use formal methods include:

- Some formal methods are more suitable for particular topics; economic and demographic modelling is well-established, but sociological and political issues are harder to address in models; experts on S&T developments are easier to locate than experts on 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 to facilitate workshops and meetings and to capture their results are still in their infancy, but being developed rapidly. It is worth considering and experimenting with them, since experience suggests that at least some of them can be very helpful. But remember that individual Foresight experts are often tied to particular tools, having limited experience of other approaches.

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, than trends and issues that 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.

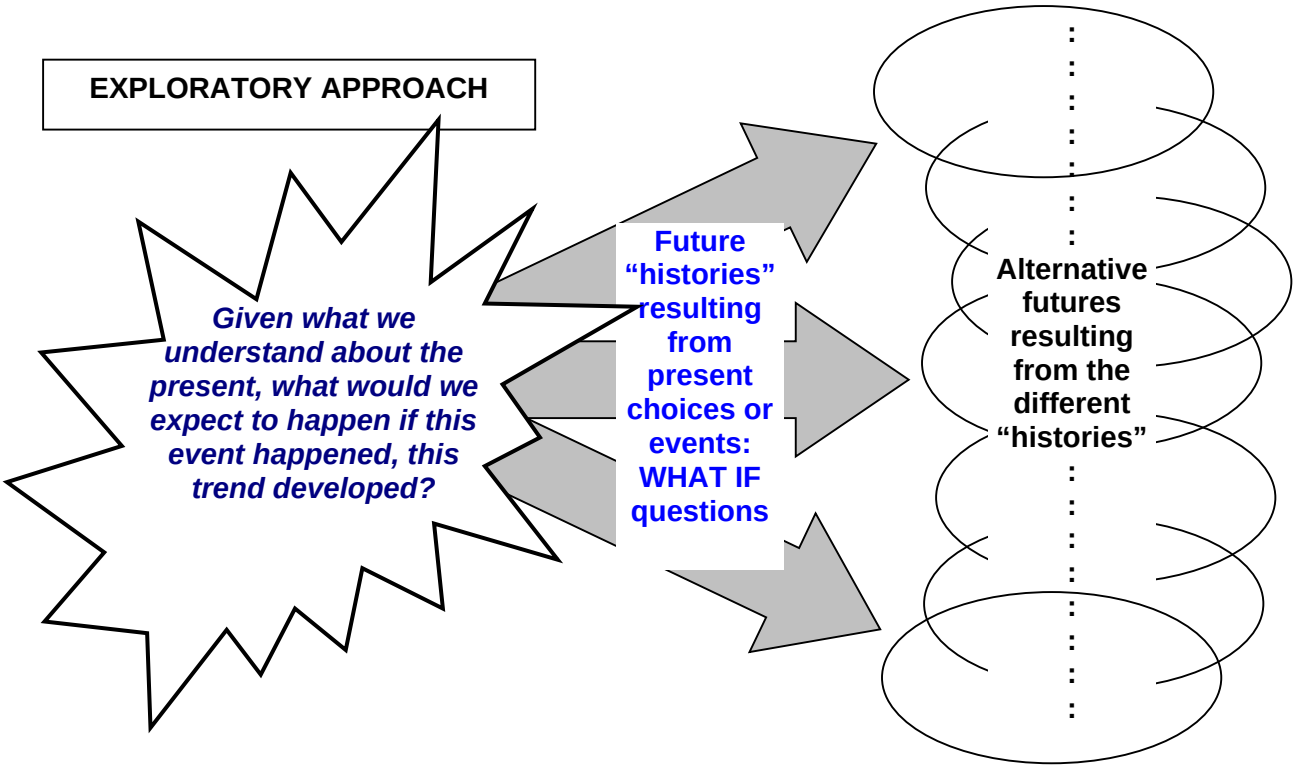
Formal tools are also often valuable in identifying points at which further knowledge is required – there is nothing like trying to model a relationship to tell us how well (or badly) the underlying processes are understood. Priority areas for better statistics and new analyses of social dynamics may 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.

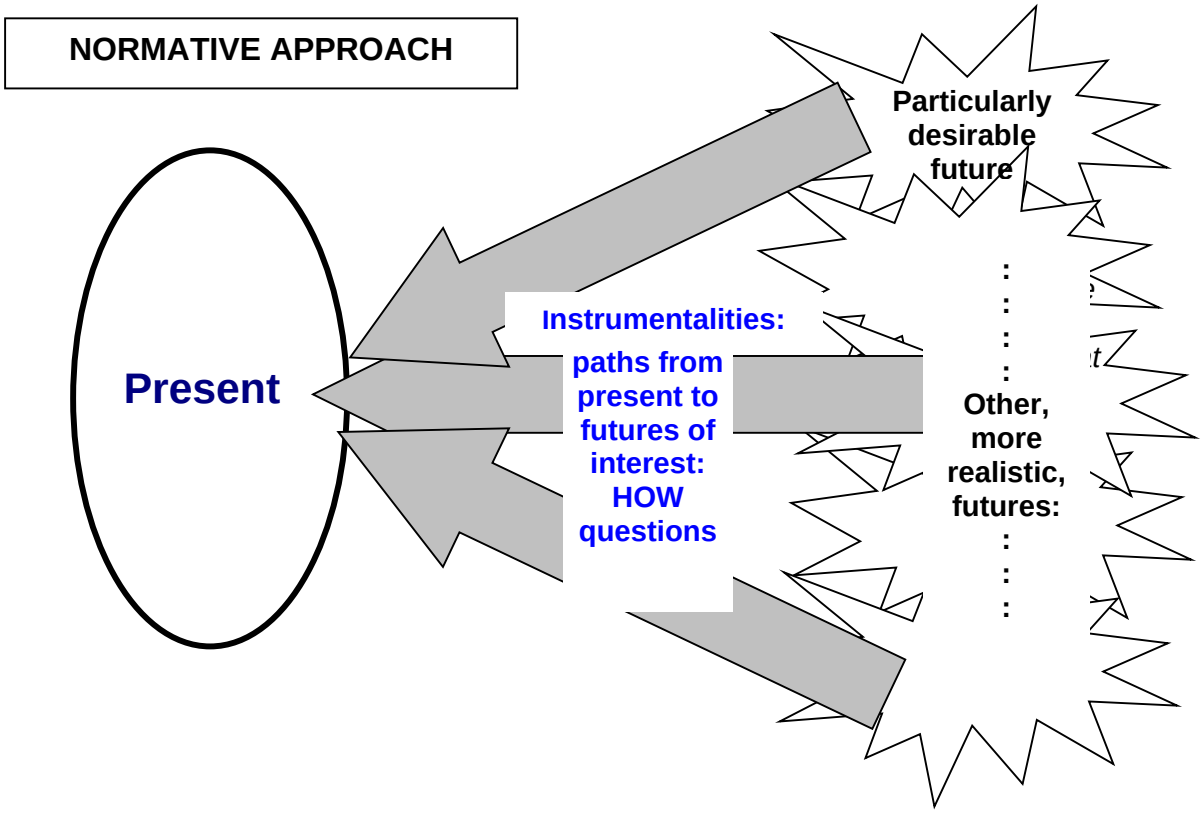
Finally, formal methods can help lend an exercise more legitimacy than is forthcoming for material that is presented simply as a synthesis of expert views. As we have already noted, the outputs of formal methods always depend on non-technical assumptions and approaches. This means that there are dangers 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 (see facing page). Many of the approaches - even those that are best known and apparently "stabilised" - come in many variants. Our bibliography provides references to some major directories and guides to these tools, and an Annexe also provides more detail. The answers to the following questions provide a brief guide to some of the main characteristics of different tools.

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

Exploratory methods essentially begin from the present, and see where events and trends might take us; normative methods, in contrast, ask what trends and events would take us to a particular future or futures.





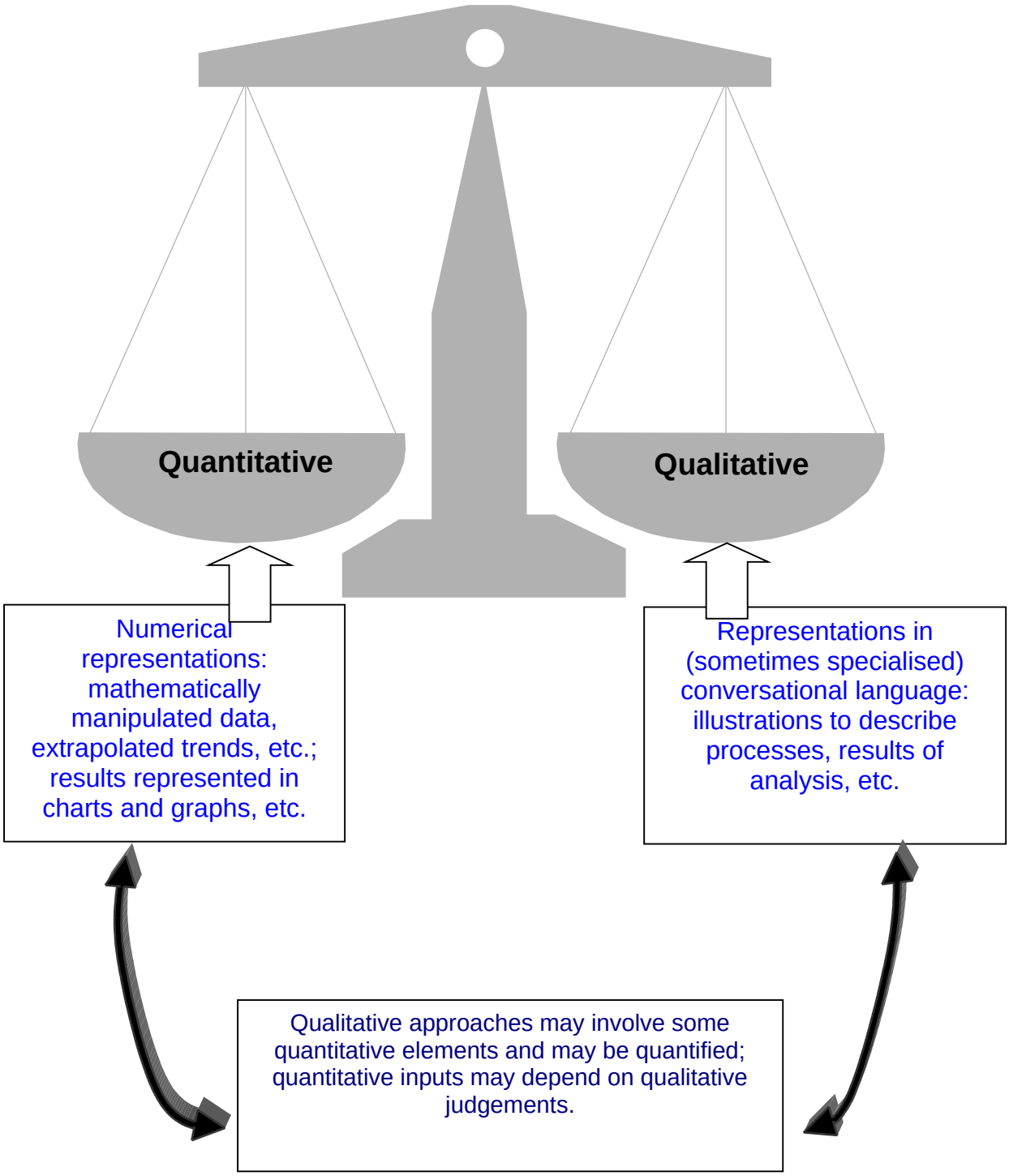
A fundamental distinction in futures and forecasting studies is commonly drawn between exploratory and normative methods. This terminology is well-established, but rather misleading (since both approaches involve exploration, of course, and both call into play questions about norms and values). Still,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

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. 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?

Each class of methods provides distinctive inputs, and while quantitative data often have high impacts, Foresight usually draws on both approaches – and we should be aware of the limits as well as the advantages of quantification.



Another important distinction is between quantitative and qualitative methods:

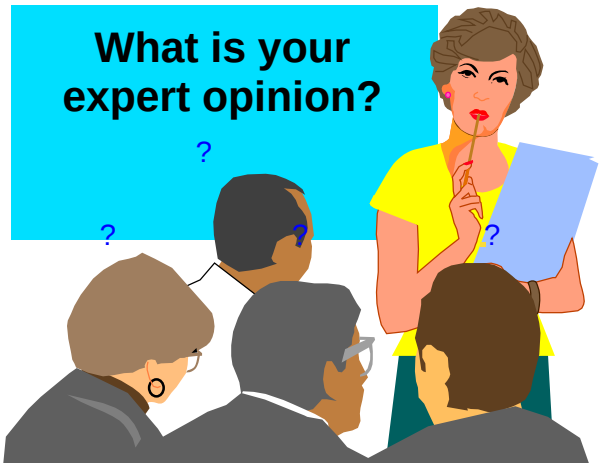
- ***Quantitative*** methods rely on numerical representation of developments. These have considerable advantages (ability to examine rates and scales of change, to engage in basic accountancy-type testing of the consistency of different elements of the whole). They also have disadvantages (limited grasp 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. (Even simple time series extrapolations of trends imply a model with time as the "independent variable" – standing as proxy for unmeasured processes that take place in time.) Complex models relate more variables together to track their mutual influences. So-called **dynamic** models do this tracking over many periods of time, Many of the equilibrium models employed by economists assume, in contrast, a move from a present state towards a (allegedly more balanced) future state. Quantitative data may come from statistical sources, or be the products of expert judgement. For example, in cross-impact studies experts make estimates about the probability of developments; in Delphis, the data we work with derive from the numbers of people agreeing with particular statements or forecasts.
- ***Qualitative*** methods are 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 Foresight) lagged behind that of quantitative approaches. Often, an expert figure has been required to pull the strands of qualitative analyses together and synthesise them, by more or less intuitive means. In the last decade or so this situation has improved considerably. 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.) Qualitative methods still remain less well-documented than quantitative ones: 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, so that most Foresight designers will want to use these in an experimental way, for the immediate future.

The exact mix of methods is highly dependent on access to relevant expertise and hard data, 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.

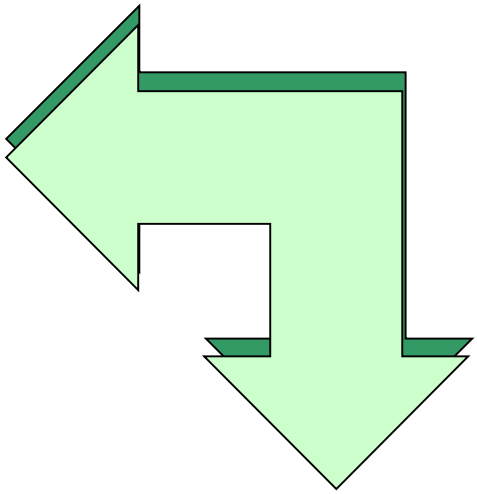
There is a strongly-rooted tendency to place more weight on statistical or other numerical information. This is misguided: such data can be invaluable in giving a broad overview, in demonstrating the incidence of phenomena, the representativeness of case studies or opinions, and the like. But they can 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 cannot be completely dominated by quantitative methods and their results. The task is to establish an appropriate role for such methods.

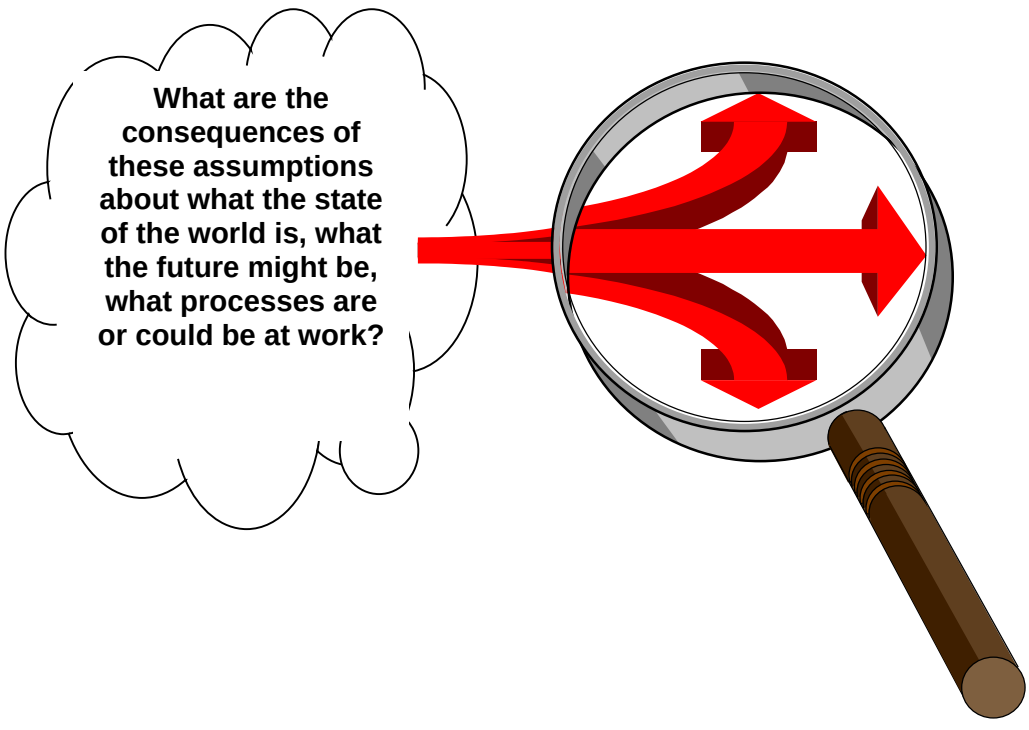
Q2.10 Are there other important variations in approach underlying the formal methods used in Foresight?

Foresight may be centred more on expert-based, or more on assumption-based, techniques.



- 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?





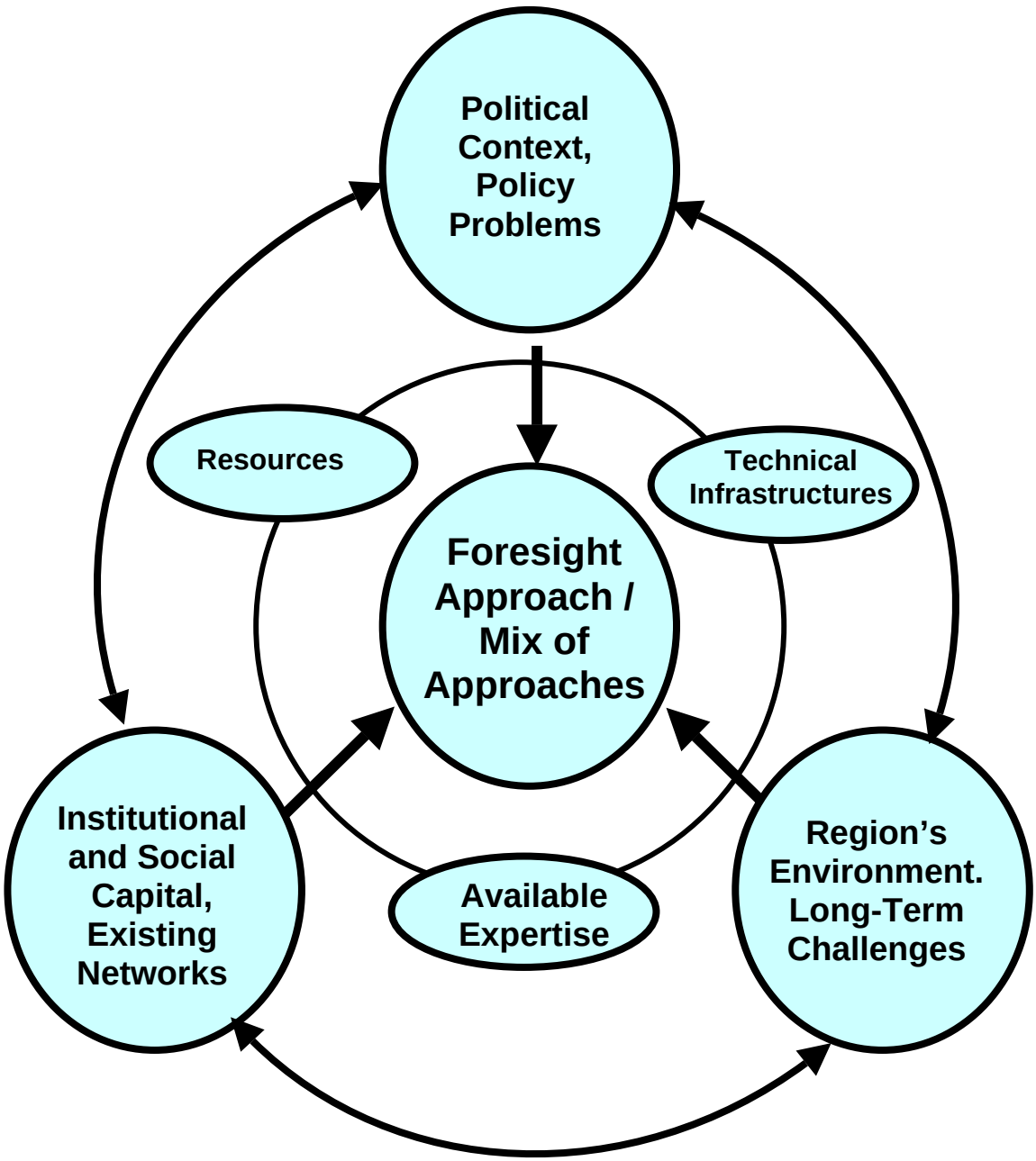
A third critical distinction is between methods that centre on examining and articulating the views of experts, and those based more on investigating the consequences of assumptions:

- ***Expert-based*** techniques seek to draw out informed opinion and the evidence that underlies such 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. (In such cases, 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, 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. This is inaccurate. Delphis are expert-based and yield quantitative results. Some sorts of scenario work are mainly qualitative but highly assumption-based. Essentially, the point is that in some circumstances we are able to rely upon data and knowledge of processes and relationships that has already been codified and subject to some scrutiny. In other circumstances, we need to elicit opinions and "guesstimates" from experts when we are considering rapid change, qualitative breaks, social and technological innovations.

Q2.11 What Foresight approach is most appropriate for my situation?

The problems at stake, the resources to hand, and the political context all have to be taken into account in defining the mix of methods to be used in a Foresight activity.



This discussion has not laid down rules about “how to” utilise particular methods in any detail. 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 appropriate balance of approaches to Foresight will depend, of course, on the specific circumstances confronted. This may seem to be obvious. 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. 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. Some of the challenges to implementing Foresight is discussed 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 explicate the steps involved in organising a regional Foresight exercise. Its structure should provide you with a framework in terms of which a Foresight blueprint can be developed for your region. Throughout, we offer you options to consider within the context of your own region.

Before considering the structural and planning aspects of Foresight, Part II begins with Chapter 3, addressing a number of **background** issues whose exact nature will be highly dependent on your region. These are baseline factors that will substantially determine the overall thematic orientation of your regional Foresight effort, and its ambitions in terms of desired impacts. 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 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: this should detail the inputs that will be required, and set out the processes and methods to be used. 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. This also considers how you might **evaluate the outcomes** of your Foresight activities and establish Foresight as a **continuous** regional activity.

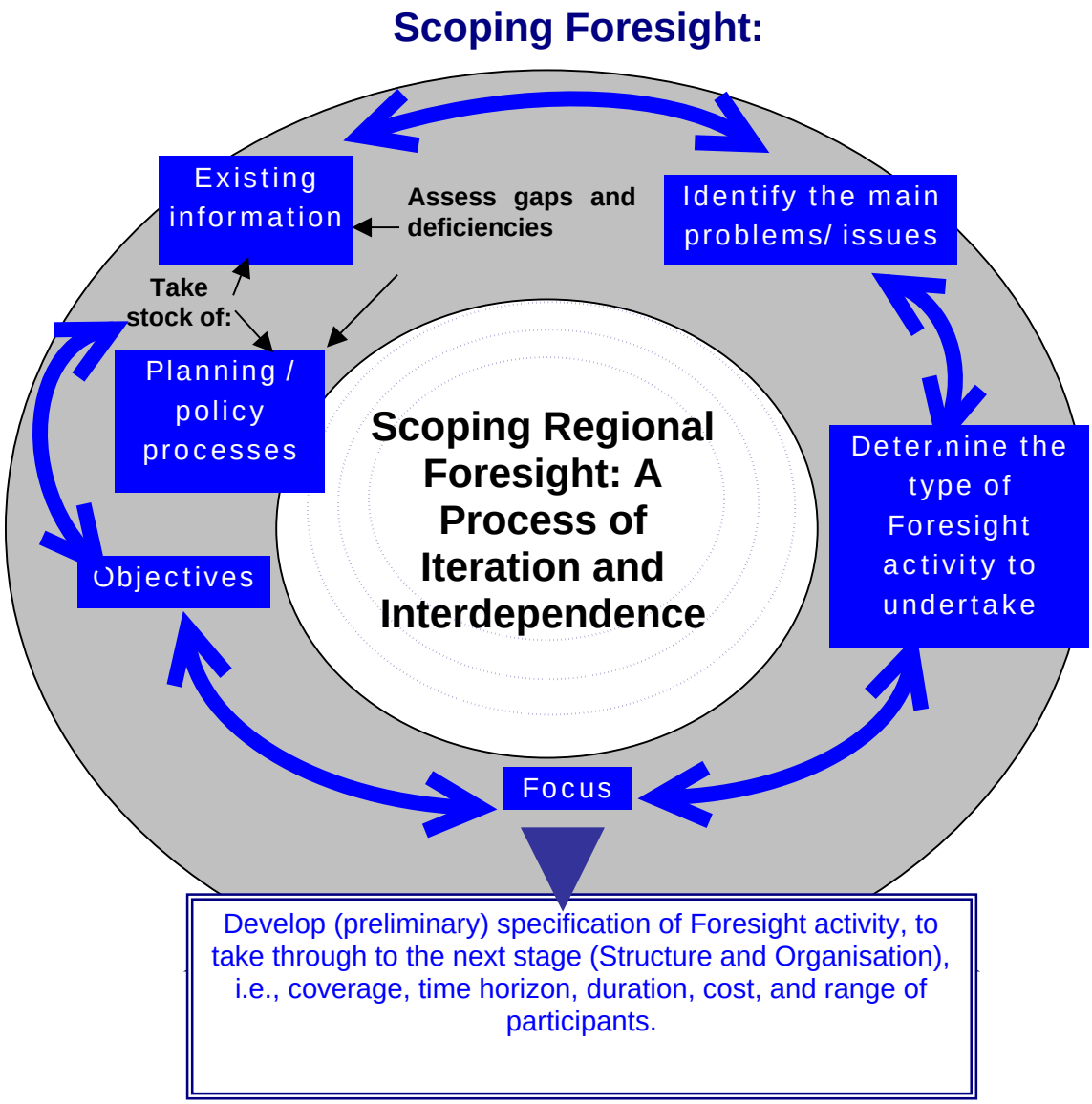
CHAPTER 3 – BACKGROUND AND SCOPE

This chapter moves on from explaining the core features and various approaches of Foresight, to examine some of the practical issues that arise in planning for a Foresight exercise – **scoping Foresight**.

Questions	Summary answer
Q3.1: What should the objectives of Foresight be in my region?	Regional Foresight is about addressing regional challenges: many more specific objectives can be set for regional Foresight, and these need to be carefully scoped and clearly stated from the outset.
Q3.2: What is the role of the different players located in the region, in the face of these challenges?	The role depends on the extent to which the different challenges can be addressed by the players in the region.
Q3.3: How can 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
Q3.4: How could Foresight be 'positioned' vis-à-vis existing policies and programmes?	Foresight activities can be relatively 'stand-alone' exercises organised by regional public authorities, or they can be embedded in existing policies, programmes and strategy-making processes; they can be more or less closely related to national and international activities
Q3.5: 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
Q3.6: 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 the varying identities of projected beneficiaries; as a rule of thumb, the time horizon of regional Foresight should at least be beyond the normal planning horizons of the players involved.
Q3.7: 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
Q3.8: How long would a Foresight exercise in my region take, how much will it cost?	The duration of an exercise is typically between 6 months and 3 years; costs will depend upon location of activities, scope of the exercise, number of people in the project management team, organisation of events, the approach selected, etc.
Q3.9: Who should sponsor the regional Foresight exercise and how long should this commitment last?	Sponsorship can come from the public or private sector - often from both - and should be secured for the envisaged duration of your Foresight activities.

Q3.1 What should the objectives of Foresight be in my region?

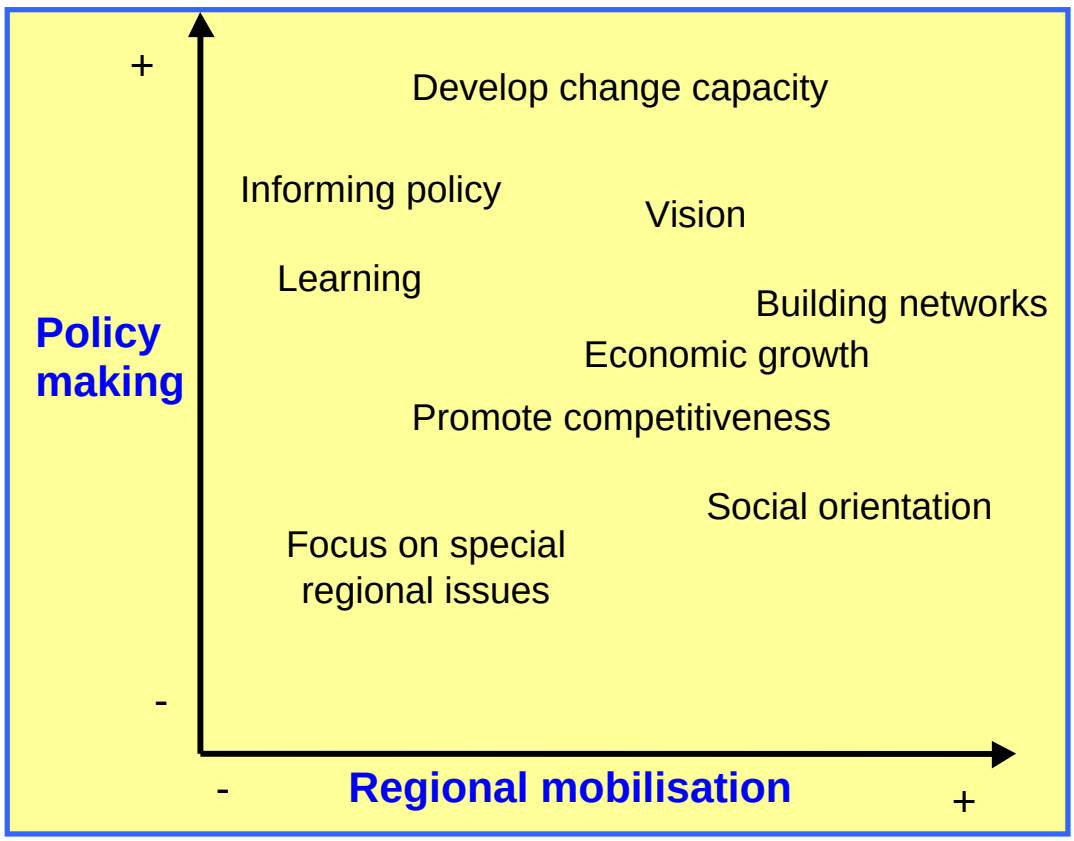
Regional Foresight is about addressing regional challenges: many more specific objectives can be set for regional Foresight, and these need to be carefully scoped and clearly stated from the outset.



As discussed in chapter 2, Foresight is centrally about helping to confront challenges more effectively. The focus and approach of your regional Foresight activity will depend upon the specific challenges confronted. There are, of course, various ways in which this can be done, and a range of objectives is integral to most Foresight activities. These objectives should be clearly stated, and internally consistent. In the first instance, often it is important to avoid being **too** specific: in order to gain widespread support for your activities early on, consultation with key regional players is required. This can help ensure early buy-in to the exercise. The involvement and mobilisation of regional actors is one of the key success factors and can be seen as an objective in itself (see chapter 6).

Part I of this Guide set out some of the reasons why regions undertake Foresight. You might refer back to this when thinking about the objectives of your own Foresight activities. One can plot some typical objectives set for regional Foresight, shown in the graph below in terms of the emphasis on:

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



Q 3.1 IRL Objectives of Foresight in my region.

The Department of the Environment and Local Government is undertaking the preparation of a National Spatial Strategy (NSS), which should provide a framework for future, balanced Regional Development in Ireland over the next two decades. The NSS will guide future infra-structural, industrial, residential and rural development while providing protection for Ireland's cultural, natural and environmental heritage, promoting social inclusion and enhancing quality of life.

The Strategy will also take account of the European Spatial Development Perspective, which was agreed in 1999 by the 15 EU Ministers responsible for spatial planning.

Here in Ireland, the Department have rightly adopted a highly consultative approach to the preparation of the NSS and have since February 2000, with a view to stimulating an informed public debate, issued a number of consultation papers.[15]

As Dublin's 'over-development' calls for effective planning and an infra-structural response (see Question 1.8bis), so clearly does the 'under-development' of the *Western Region*[16]*.*

The three main functions of the Western Development Commission (WDC) in the *Western region* are

1) Economic and social policy analysis that effectively meets the development needs of the western region
2) Identification and facilitation of regional development initiatives
3) Management of the Western Investment Fund (WIF); this provides risk capital by way of equity and loans on a commercial basis to projects and businesses

The WDC has adopted a ***networking*** approach in order to assist it in achieving its objectives. This operates at national, regional and county levels. The networking structures include:

I. The Forum of Western Ministers, which comprises all Government Ministers and Ministers of State representing the seven WDC counties

II. The National Liaison Network, which comprises senior officials, appointed by all of the government departments to liase with the WDC – this enables the WDC to contribute directly to policy-making for the region and facilitates co-ordination of the activities of public bodies within the region.

III. Steering Groups, whose role is to advance regional development initiatives in the following sectors:
   - Ø manufacturing and services
   - Ø natural resources
   - Ø organic farming
   - Ø marine and fisheries
   - Ø tourism

IV. The Steering Groups draw on sector experience from both within and outside the region.

[15] "What are the issues? " (Feb. 2000); "The National Spatial Strategy – Scope & Delivery" (May 2000); "Indications for the Way Ahead" (Sept. 2001)
[16] Counties Donegal, Sligo, Leitrim, Roscommon, Mayo, Galway, Clare

V. The Western Investment Fund Advisory Panel, which comprises financial expertise that assists the WDC with its investment of the WIF in commercially viable projects.

The objectives for using Foresight in this context could be any one of the following, the need –

a) To secure ongoing endorsement of a shared vision for the region
b) To strengthen the commitment to achieve that shared vision
c) To develop better linkages between the networks: the networks, which operate at different levels, could be better linked in both a vertical and horizontal way, i.e., the national (both political and administrative) with the regional (sectoral).

Given the diversity of the five sectors currently under consideration, and listed at pt.III above, it is conceivable that objectives and strategies being developed by the different Steering Groups could, potentially, be in conflict. Improving the linkages between the networks would lead to enhanced communication between the different levels and thus to a better understanding of why and what synergistic strategies it is necessary to implement in order to realise, in a cohesive way, their shared vision for the region.

d) To optimise the synergies between the regional strategies of the Western Development Commission and the overall objectives and implementation of the National Spatial Strategy.

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

The role depends on the extent to which the different challenges can be addressed by the players in the region.

What Challenges face my region?
What should be the main objectives of Regional Foresight?

Examples from the case studies:

Region	Main 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

Who are the main stakeholders and sources of knowledge and other resources? To which extent can they shape future developments?

Are the key players located in the region, or does the exercise need to go outside?

A sense of social or political crisis, or the anticipation that break points are undermining established trends, often gives rise to demands for Foresight (and/or similar strategic futures activities). It is helpful to interpret the situation in terms of **challenges**, and to identify the critical challenges - as discussed in Q: 1.4 - that should set the main thematic orientation of the Foresight exercise. There must be a good measure of shared agreement as to the nature of these challenges established at an early stage in the Foresight activity.

In scoping Foresight, it is important to measure these challenges against regional actors' and institutions' remits, decision-making powers, and capabilities. This 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. In terms of the inputs that Foresight requires, it will help identify where outside expertise and agencies might be required. And a crucial issue for participation and network building that it will help you consider is whether the expectations of participants are realistic.

Once you have identified the challenges in broad terms, then, it is important 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, for example as a forum helping private businesses 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, and other regional bodies will have to be brought on board very early on if the chances of connecting to critical users are to be maximised.

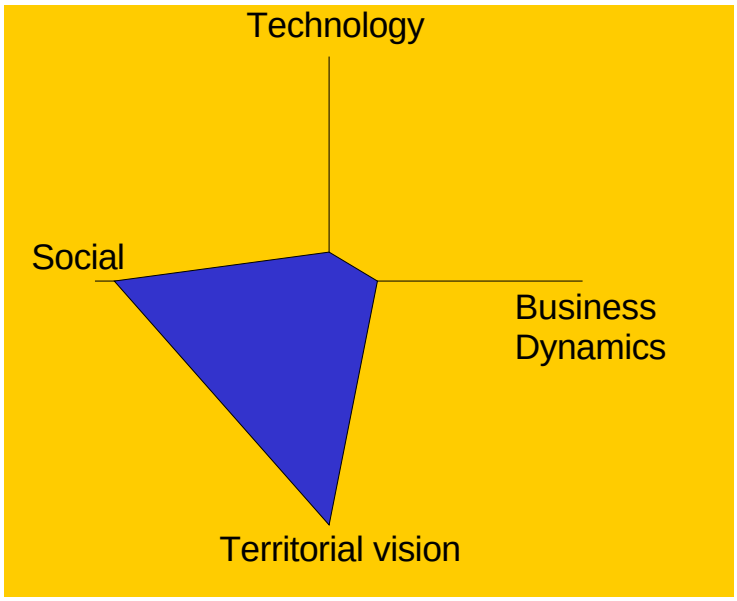
These are just a few of the considerations to bear in mind. However, the underlying questions of competence, prerogative and authority, are absolutely vital. Since Foresight is a participatory process involving time and commitment from stakeholder representatives, your activities must carry a stamp of 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. Similarly, care must be taken not to promise too much to too many regional players.

Q3.3 How can I choose the focus of Foresight in my region?

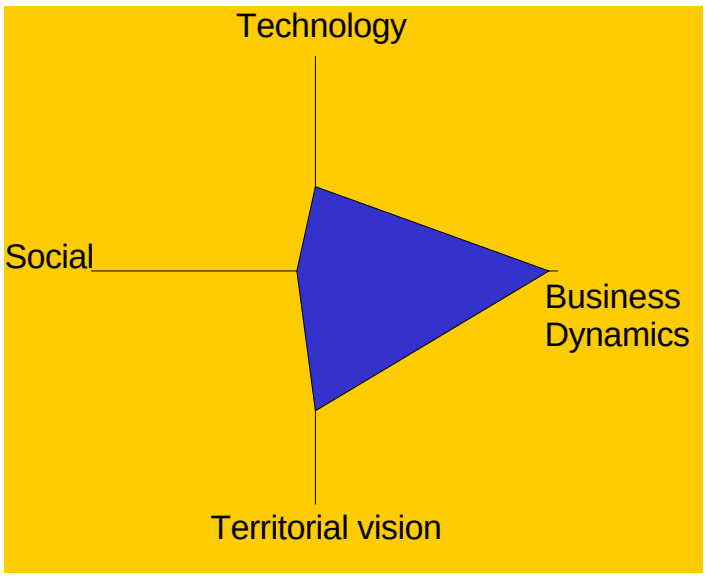
Regional Foresight exercises tend to have more than a single focus, although it is not uncommon for there to be a predominant orientation towards a particular set of issues.

Two examples of focus in Regional Foresight (see facing page):

The Limousin 'focus matrix'



West Midlands 'focus matrix'



The focus of Foresight will flow from the challenges that have been identified, of course. A broad classification of areas that can be the foci of regional Foresight activity distinguishes between the following areas:

- **Social:** 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**: 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:** the stress is on economic development, with activities often focused upon enterprise clusters, SMEs, industry associations, etc.
- **Territorial vision:** the region is considered as a whole in a larger system, as a nexus within which major global issues and trends - geography (resources, environment, etc.), geopolitics, economy and human development, for instance - interplay.

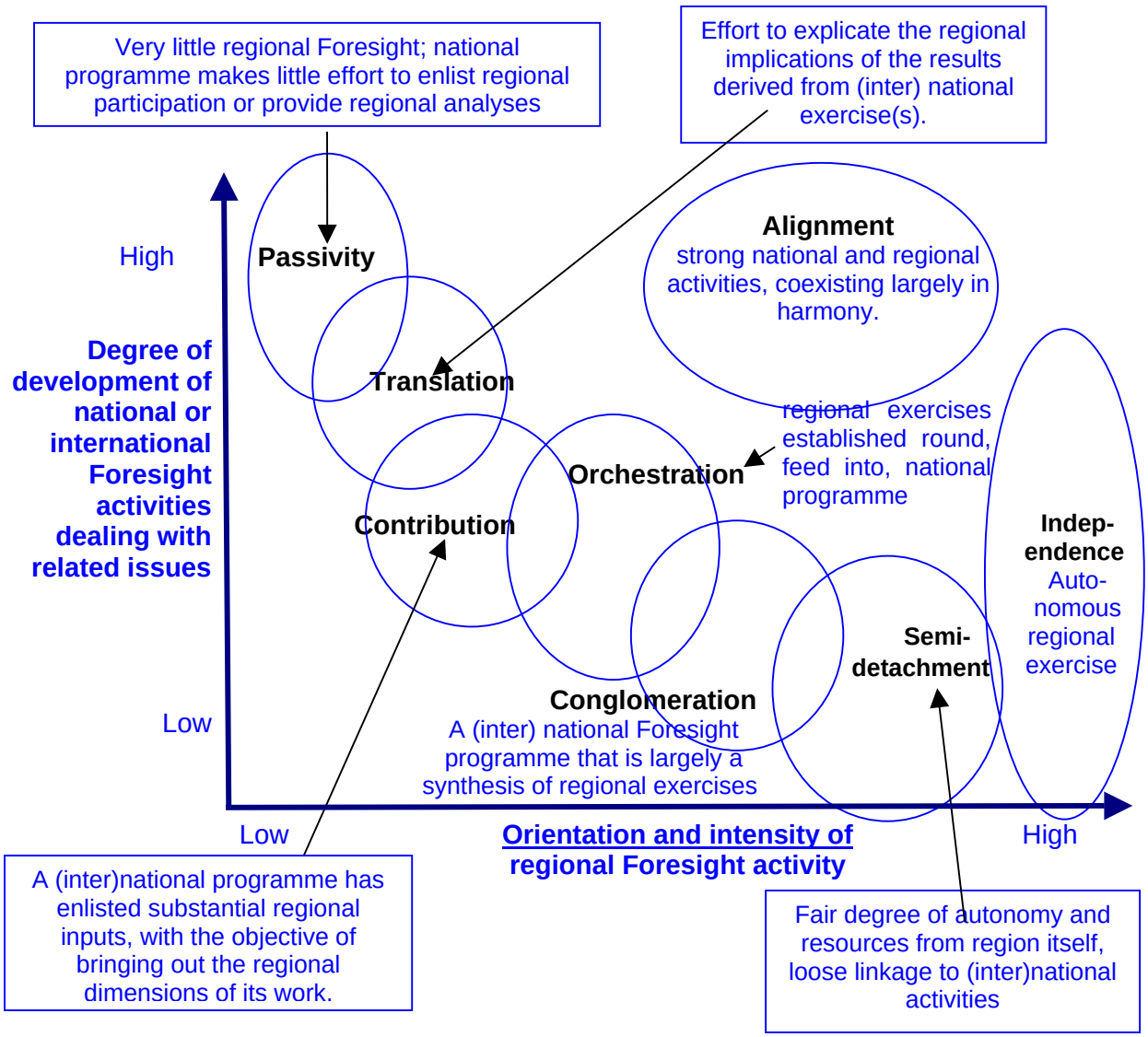
In fact, most regional Foresight exercises do not have a single focus, but a combination, as shown on the facing page. The striking contrast in Foresight focus between the two regions can be largely explained by the extent of regional devolution in both countries. In France, 'territorial prospective' 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 (until 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 the experiences encountered in any existing activities. As well as providing possible results and benchmarks for your work, they could provide important lessons as to the political, social and cultural issues that have to be taken into account if the exercise is to be a success..

Q3.4 How could Foresight be 'positioned' vis-à-vis existing policies and programmes?

Foresight activities can be 'stand-alone' exercises organised by regional public authorities, or can be embedded in existing policies, programmes and strategy-making processes; they can be more or les closely related to national and international activities

A "spectrum" of different relations between regional Foresight and related national or international activities has been set out by Miles and Keenan:[17]



[17] The illustration is a modified version of that presented in I Miles and M Keenan 2002, "Bringing It All Back Home: Linking National and Regional Foresight", **IPTS Report** no 61 February 2002 pp29-35, *online at http://www.jrc.es/*

In some regions, Foresight activities have been organised by regional public authorities as relatively ‘stand-alone’ exercises. This is perhaps most evident in France, where a number of regions have organised major territorial prospective exercises with the objective of generating overall territorial visions. Such exercises are often located in strategic positions, e.g. central planning departments or other central agencies, 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. But this can make their results difficult to implement, especially if regional government and/or business are organised along ‘traditional’ lines.

For this reason, some people argue that regional Foresight should not be detached, but rather embedded into existing policies, programmes and strategy-making processes. This requires a quite different mode of organisation from a more centralised exercise. It 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 recent 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’.

On the facing page a "spectrum" of relations between regional Foresight and activities at higher territorial levels is set out. **Alignment** is something of an ideal. It will need reconciliation of Co-ordination and autonomy are reconciled in various ways – for example, there may be a separation of themes to address (e.g. national technology focus, regional cultural focus), or high levels of shared membership of working groups. At the other extreme, **Independence** characterises some of the Spanish regional activities, for example. There may be no national programme; or it may be viewed (rightly or wrongly) as inappropriate to regional concerns. Regional political sentiment or ambition may mean that a regional programme is prioritised as an element in fostering local identity and political autonomy. While there is likely to be informal and formal contact between individuals and/or agencies at different levels and in different regions, in these circumstances there can be divergence in methods and philosophy of Foresight. Across the spectrum of linkages we see activities ranging from the "translation" of materials to suit local contexts, efforts to establish participation from and workshops in regions, co-ordination of training and milestones, and the like.

Q 3.4 IRL Positioning Foresight vis-à-vis existing policies and programmes.

Agri Food 2010

In some circumstances, positioning foresight vis-à-vis other policies could be a very relevant activity and could link policies elaborated at a number of levels. Enlargement of the European Union requires preparation, across a range of policy areas, both on the side of the candidate countries and within the existing Member States.

In Ireland, the Minister for Agriculture, Food and Rural Development established the Agri Food 2010 Committee in June 1999. The terms of reference were:
To propose a strategy for the development of Irish agriculture and food over the next decade, following the agreement on the European Union's Agenda 2000, and in the light of the changes and challenges which are likely to evolve nationally and internationally over that period.

The Agri Food 2010 Committee was set up because of awareness in the Department that the agri-food sector was facing major challenges in the coming decade. Issues such as the new round of world trade negotiations, the enlargement of the EU and change in EU policy, and a food market driven by new consumer lifestyles and concerns, were thought likely to produce a much more challenging and competitive environment. Similarly, changes in farm structures and the growth in the number of part-time farmers were seen as having significant implications for the future of the agri-food sector.

Reflecting on such issues and exploring possible trends in the agri-food sector until 2010, and particularly in the context of Agenda 2000, the Committee developed a vision for the future of agriculture and the food industry. To achieve the vision, the Agri Food Committee elaborated a number of strategies under five headings: meeting consumer requirements; developing a competitive food industry; developing competitive full and part-time farming; maximising the sector's contribution to sustainable rural development; and facing the challenge of new technology.

In response to the Agri Food 2010 report and subsequent consultation, the Department developed a Plan of Action as the government's formal response. This plans sets out specific measures to achieve the strategies contained in the Agri Food 2010 report.

Q3.5 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.

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

How many areas to cover? Some French exercises (e.g. Limousin, Grand Lyon) have set up around 20 working groups, with each looking at a particular theme or sector. In other places, only 5-10 such groups have been established. There are often attempts to tackle cross-sectoral and/or cross-thematic areas, where synergies are thought to lie. The examples above show that a broad range of themes and sectors, both emerging and long-standing, have been addressed by regional Foresight activities.

It must be recognised from the outset that it is impractical to set out to cover all possible regional themes and/or sectors:. The choice of themes to prioritise mostly depends upon the objectives and foci of your Foresight activities

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 among sectors 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 made within regions has often not been made explicit. Methods ranging from "recycling" existing strategic priorities to undertaking SWOT analyses have played an important part. Even fads and fashions probably play a role here, as in many other organisational decisions. Lobbying by interest groups is another influence; and this certainly is an area where consultation of key regional players is likely to pay dividends, both in identifying themes of concern and through increasing the likelihood of commitment to later stages in the exercise. Nonetheless, difficult decisions will perhaps have to be taken when there is demand for more themes and/or sectors to be addressed than resources or time will allow.

In relatively centralised regional Foresight activities, logistical and co-ordination concerns naturally limit the scope of activities. More distributed Foresight activities, initiated and co-ordinated by a wide variety of regional players, in theory allow for a whole multitude of themes and sectors to be simultaneously addressed.

There are two major problems that such more distributed approaches confront. **First**, 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 national Foresight Programme's regional experience in the early years of the twenty first century. The Programme put emphasis on stimulating regional players to initiate and organise their own Foresight activities: but it proved impossible to select and target more than a handful of business sectors (or 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. (See Chapter 6's discussion of ‘continuous’ regional Foresight.) **Second** problem 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. Despite such problems of co-ordination and synthesis, they may be highly effective.

Q3.5 IRL Themes which a regional exercise could cover.

Ø **Cross Border Co-operation in the context of the Peace Operational Programme for Northern Ireland and the Border Region of Ireland 2000-2004**

The new Peace Operational Programme (Peace II) is a distinctive European Union Structural Funds Programme which will assist Northern Ireland and the border region to address the opportunities and challenges arising from the peace process. Peace II will be implemented by 5 priorities addressing

- Economic Renewal
- Social Integration, Inclusion & Reconciliation
- Locally Based Regeneration & Development
- **Outward & Forward-Looking Region and**
- Cross-Border Co-operation

Ireland has a small open economy, and while the Northern Ireland economy forms part of a much greater unit there have been many advocates of the merits of greater and improved North-South co-operation in the socio-economic spheres. The Ireland/Northern Ireland INTERREG Programme will provide support for jointly planned, managed and funded cross-border actions in the economic area.

Peace II will support activities such as the joint planning of service and infrastructure and the development of joint strategies, policies and actions for sectoral service development in areas such as health and social services, equality, education, transport, waste management, inland waterways and fisheries etc.

Organisations on both sides of the Border, working jointly on any of these planning exercises should foresee that, in particular, the process benefits of a foresight approach to deciding priorities and strategies in any of these areas, could be extremely beneficial as well as contributing to the knowledge-sharing on both sides.

Ø **“New Connections” - underpinning the Information Society in Ireland**

In January 1999, the Government published its first Action Plan on the Information Society and in June 2001, agreed a range of measures to strengthen engagement with the Information Society agenda. These included a new Cabinet Committee on the Information Society and a complementary eStrategy Group comprising the Secretaries General from each Government Department. A new Information Society Commission was also appointed. The Commission draws on high level representation from business, the social partners, and Government itself and reports directly to the Taoiseach (Prime Minister). The main role of the Commission is to provide independent expert advice to Government and monitor Ireland’s progress as an Information Society.

In March 2002, the Irish Government published its Action Plan “New Connections” which is designed to provide a strategic framework for its renewed commitment to the Information Society agenda across all areas of Government. This commitment was subsequently endorsed with the appointment in June 2002, of a Minister of State with responsibility for the Information Society. The Minister is responsible for the co-ordinated implementation of the new Action Plan.

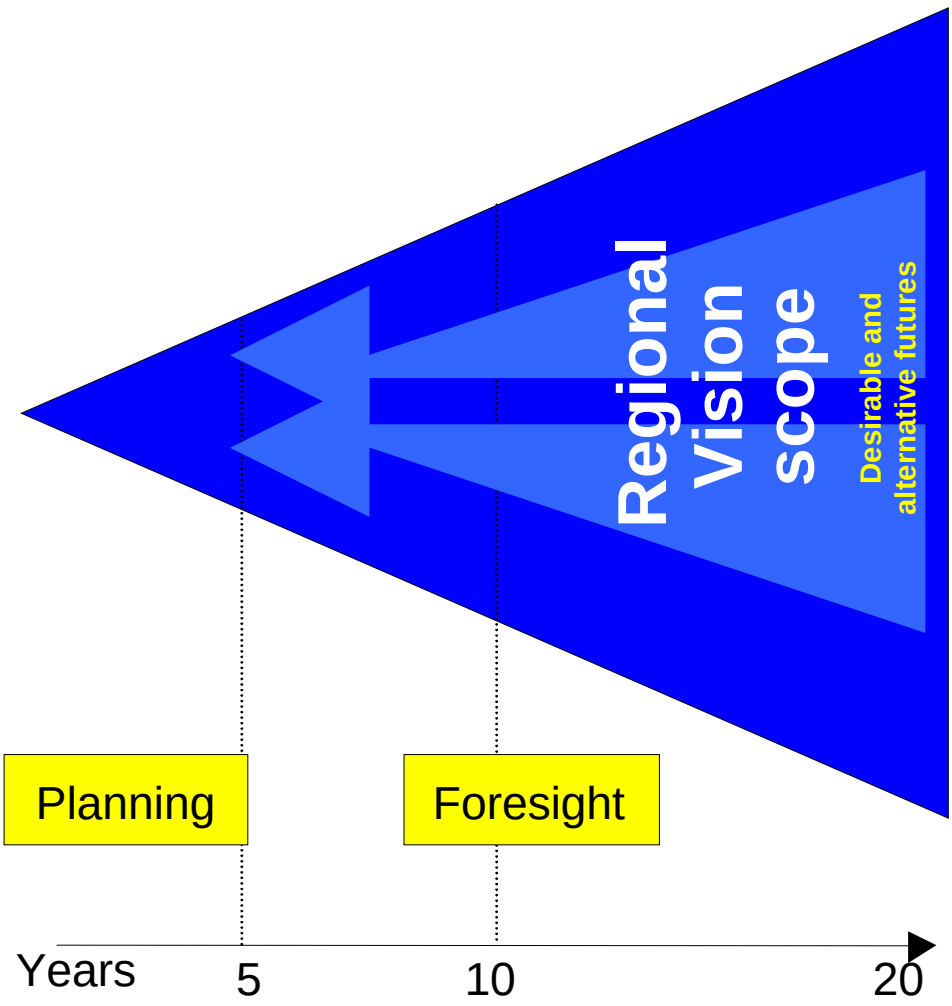
The new Action Plan comprises a number of diverse elements:

- Ø Key Infrastructures
  - Telecommunications infrastructure
  - Legal and regulatory environment
  - eGovernment
- Ø Supporting Frameworks
  - eBusiness
  - R&D
  - Lifelong Learning
  - eInclusion

The Information Society Commission has just recently set up a Futures Group, to consider "futures" beyond the current time-scale brief of the ISC. Using this Country Guide as a basis, the ISC Futures Group will explore how they might usefully apply a foresight methodology to their work.

Q3.6 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 the varying identities of projected beneficiaries; as a rule of thumb, the time horizon of regional Foresight should at least be beyond the normal planning horizons of the players involved.



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

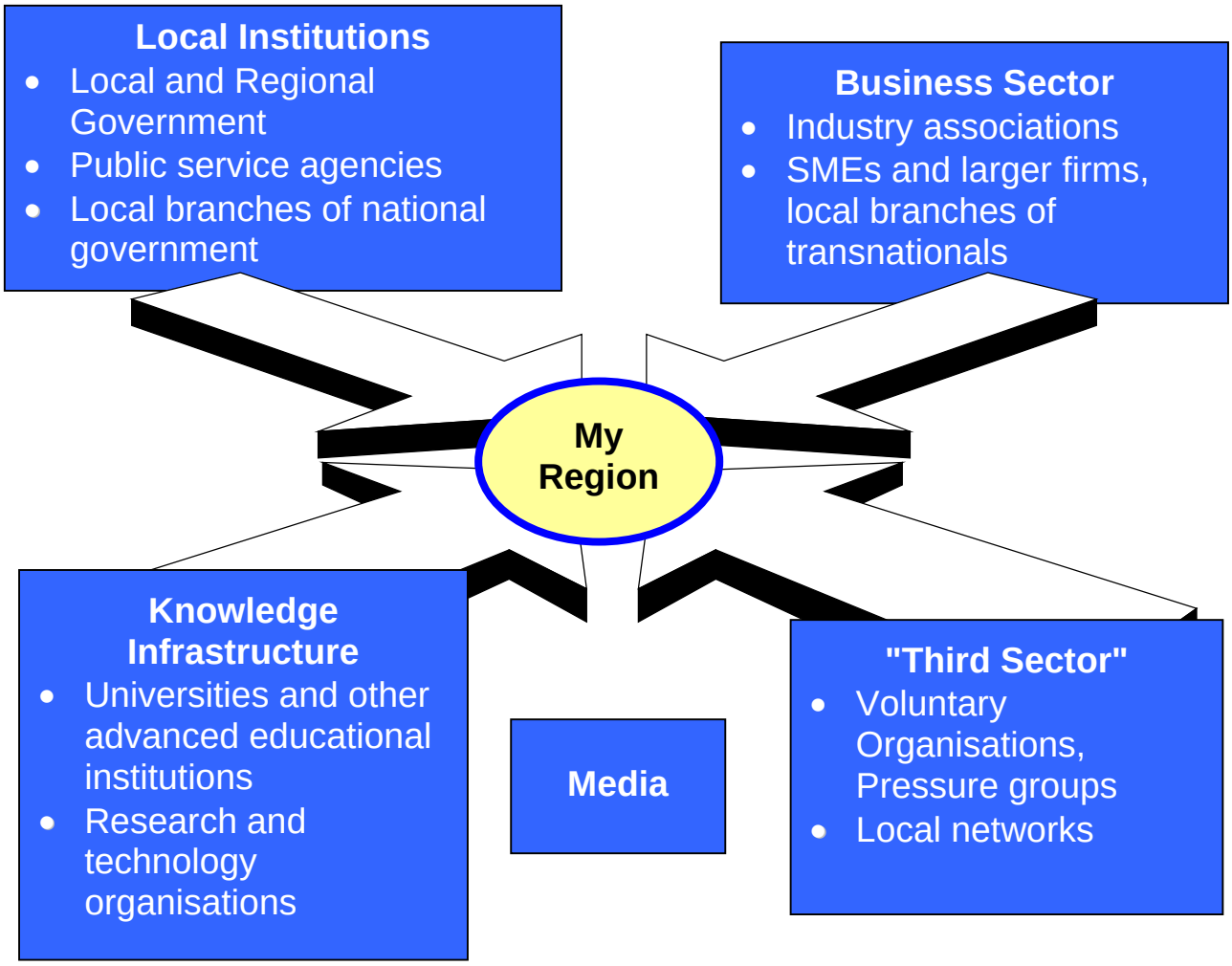
Foresight is centrally concerned with increasing the time horizon of planning activities. This is not just a matter of "stretching" existing horizons, extending familiar planning and intelligence-gathering into a longer-term future. A major point about the longer-term is that it brings into relief trends, countertrends, and possible events that are of limited concern in the short term. Such developments may well not be crucially important to one's immediate prospects - but if they are not taken into account until the problems start to be highly manifest, then it may be too late to adapt effectively, or the costs of coping with change may be higher than they would be otherwise. Consider, for example, the question of developing a base of skills to cope with economic or technological change: this is often a matter that will require years to put into place. Similar issues are confronted in infrastructural developments, or in the cases of energy or water systems, or restoring natural environments, for example.

The time horizon of regional Foresight activities varies considerably in practice. What is thought of as the "long-term" varies considerably across different cultures. In the French ‘territorial prospective’ studies, the time horizon has tended to be around 20 years. In contrast, studies orientated towards sector development, such as have been undertaken in the UK, often have significantly shorter time horizons - sometimes as little as 5 years. These differences reflect different users as well as different issues and cultures. Thus, regional planners are more likely to find longer time horizons useful than, say, small and medium sized enterprises (SMEs).

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.

Q3.7 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.



A broad range of regional actors, including regional governments, universities, businesses, chambers of commerce, local media, industry associations, other NGOs, and the wider citizenry, can 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, and this has been the case in a few exercises. Even here, of course, 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.

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. 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 risks of becoming enmeshed in electoral processes 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 enthuses 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.

Q3.8 How long would a Foresight exercise in my region take, how much will it cost?

The duration of an exercise is typically between 6 months and 3 years; costs will depend upon location of activities, scope of the exercise, number of people in the project management team, organisation of events, the approach selected, etc.

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.

As for costs, there is little systematic 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.

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. Core, and usually centralised financial costs are most likely to result from such elements as:

- the running of a project management team,
- the organisation of meetings and events, travel and subsistence of at least some of the participants (you might also have to consider paying some participants to give up their time for your Foresight exercise – this is uncommon, but in some regions, it might be necessary),
- publicity material,
- extensive consultation processes (e.g. questionnaire surveys),
- and other activities, both routine and one-off, associated with an exercise.

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.

Q3.9 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 - often from both - and should be secured for the envisaged duration of your Foresight activities.

But remember the English saying: "he who pays the piper, calls the tune".

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 (usually making the largest contribitons), 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 who are particularly interested in the results of the activity (in some cases large regional firms may be interested in actively promoting their home territory - for customer or staff recruitment, or to win community support), 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 or similar mechanisms.

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 (emphasising 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 may be scope or even necessity for sharing of costs across two or more sponsoring bodies, e.g. a public-private partnership of some form. 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 Carefully consider the advantages and disadvantages of such an approach. For example, could it lead to a special interest group "capturing" Foresight?

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. It is often the most important input that organisations can make, and were it to be costed, it would often far outweigh the formal expenses of the exercise.

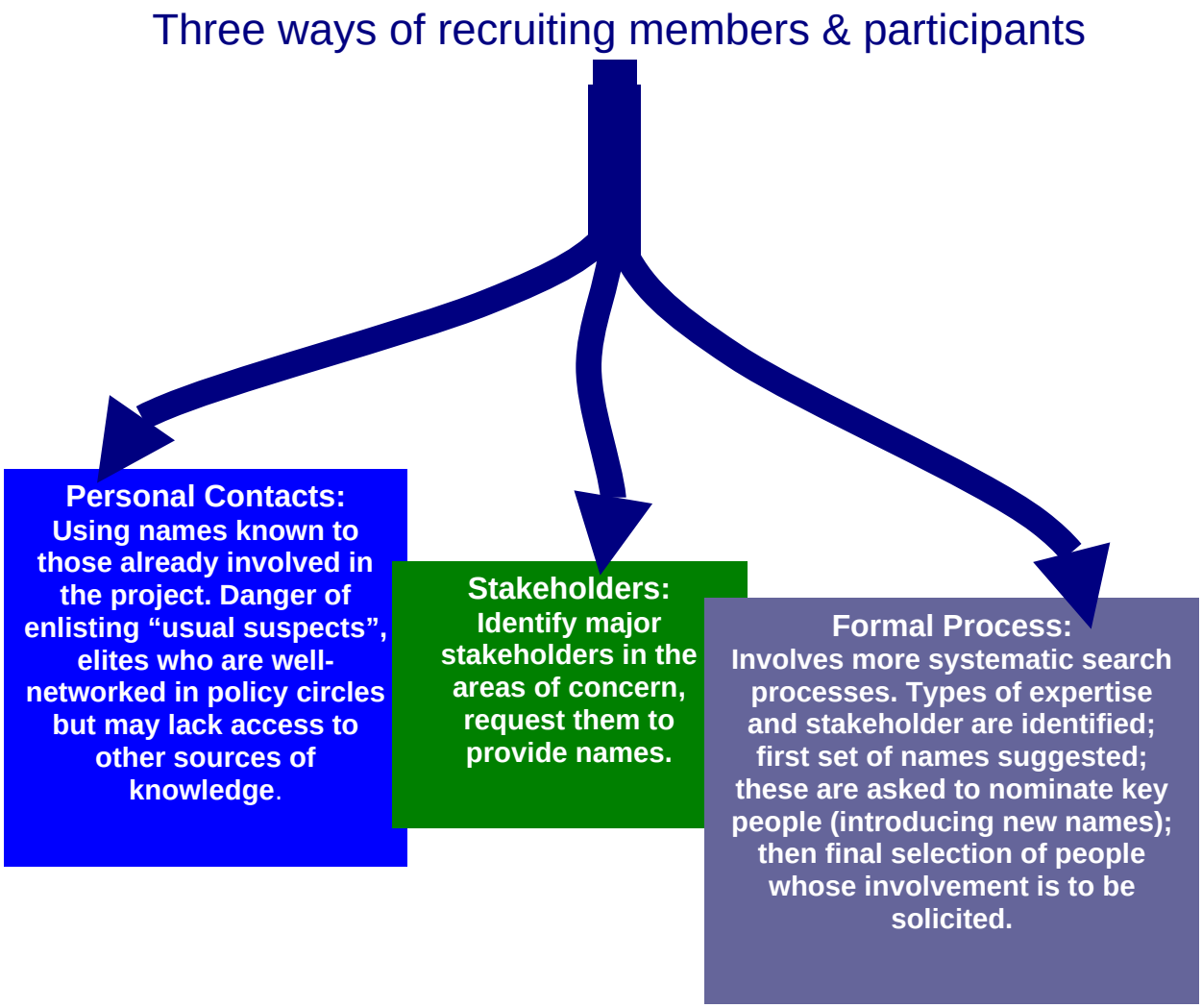
CHAPTER 4 – BUILDING MOMENTUM

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 can we identify the players to involve in Foresight?	A combination of approaches based on personal contacts, stakeholder analysis, and formal methods 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: When and how should the various players be consulted?	Players should be consulted frequently throughout the course of your activities, with opportunities arising through the Foresight process

Q4.1 How can we identify the players to involve in Foresight?

A combination of approaches based on personal contacts, stakeholder analysis, and formal methods 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. This applies whether Foresight is focused upon mainly economic or technological activities, or is more concerned with regional learning processes and the development of specific skills. 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 energies. The correspondence between Foresight’s objectives and local needs depends not only on the number of local players involved, but also on the intensity of their participation, and on the utilisation of existing networks and the formation of new ones, both within the local system and (often) with regard to external contexts. The identification of key players to involve requires in-depth analysis of the local system and will be part of the 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 Chapter 3), 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 members of the scientific and technological knowledge infrastructure, including those involved in the supply of technology (and at least the "vanguard users" on the demand side). On the other hand, a focus on the competitiveness of enterprises in a specific sector or cluster would require priority involvement of parties from the economic sector, especially, entrepreneurial and trade associations interested in improving the performance of enterprises. General economic development objectives will require the involvement of local institutions responsible for the most important local development planning tools. Objectives focusing on a specific "service" problem, 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 (defined in Q1.7 as one with few large firms, etc.), are those operating in the business system and local institutions, who can encourage greater interaction between public decision-makers and the production system. On the other hand, in a more "globalised" region, a good number of key players involved will operate outside the local system - decisions that will shape the future of regional development depend are not all in one's own hands, and there are challenges in incorporating such external interests into the process.

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. It is likely that you will draw upon several approaches when identifying participants for your activities.

Q4.1 IRL Identifying the players to be involved in a Foresight exercise.

The Gaeltacht

The Gaeltacht region in Ireland covers extensive parts of counties Donegal, Mayo, Galway and Kerry, all of which are on the western seaboard, together with parts of counties Cork, Meath and Waterford. The term “Gaeltacht” describes those areas where the Irish language is the community language. All of the population of some 86,000 is also fluent in English. The Gaeltacht areas are the unbroken link with the past that saw Irish as the main language in Ireland. They are a vital lynch-pin for the transmission of Irish as a community language to the next generation and a cornerstone in the development of a bilingual society in Ireland.

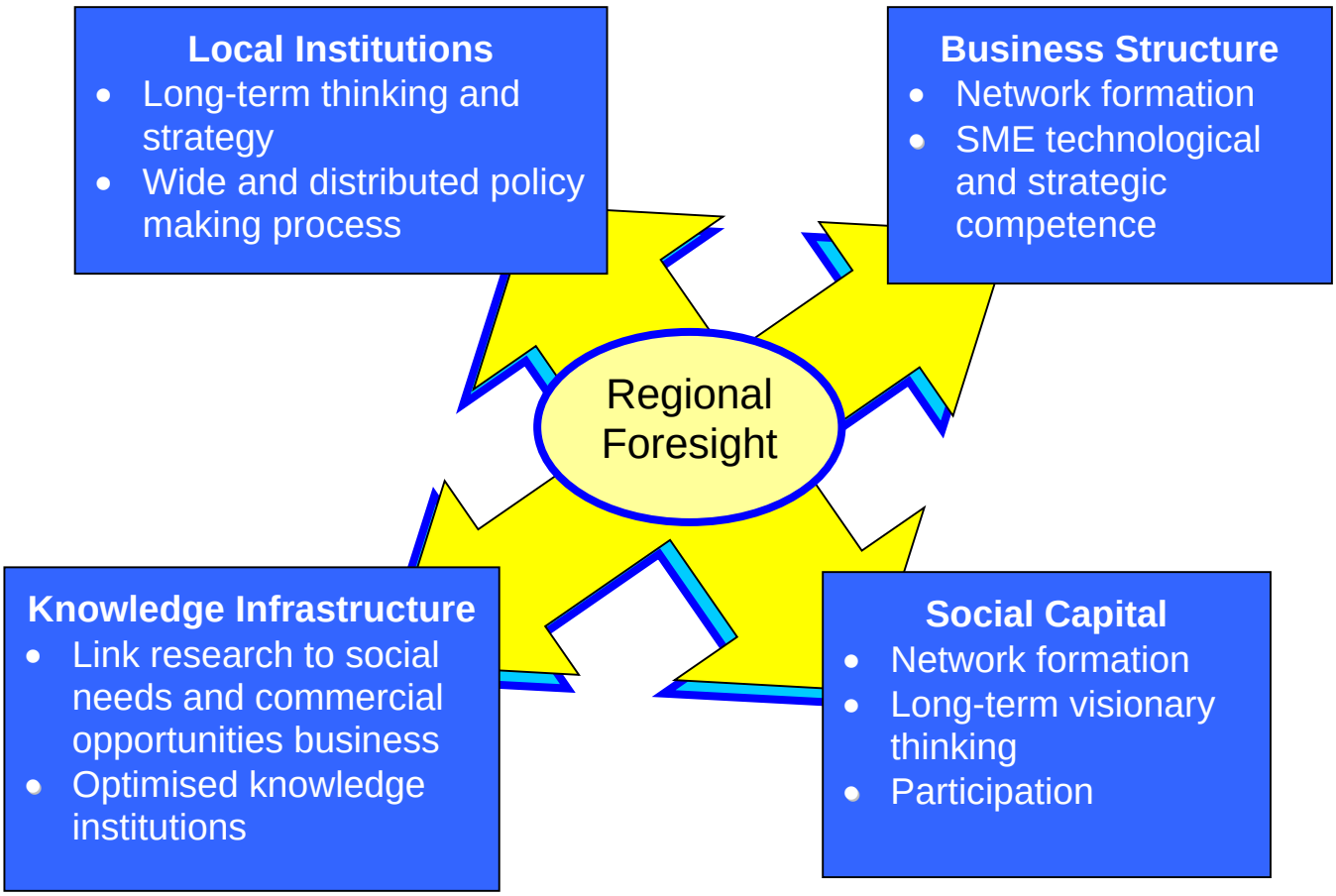
Udarás na Gaeltachta is the Gaeltacht Regional Development Authority and combines an economic development role with community, cultural and language development activities, working in partnership with local communities and organisations. The Authority seeks, through its work, to maintain and develop the Gaeltacht as a vibrant community where there is a sufficient level of economic activity to sustain the community and where the language is established at the heart of that economic activity.

It is conceivable that the Authority might undertake a foresight exercise to determine new strategies in order to address the question of how to secure a viable future for the Irish language and the communities who wish to live/work in this cultural context. The success of such a foresight exercise would, in part, on its ability to identify and mobilise local energies and stakeholders. This would involve identification of a number of relevant activities/roles carried out in the region and the associated actors or stakeholders

'Region'	'Role in the Region'	Stakeholder
Gaeltacht areas in County Galway	Promotion and sustainable development of the Irish language	Udarás na Gaeltachta; Conradh na Gaeilge; Gael Linn; Department of Education & Science;
	Economic activity, e.g., media, crafts, marine, tourism, enterprise	TG4 (Irish TV/radio station) and associated small media companies; Crafts Council of Ireland; Marine Institute; Irish Salmon Growers Assoc.; Bord Failte (tourism board); CERT (training agency for the tourism industry); Irish Hotels Federation; Chambers of Commerce; regional branches of the Irish Business Employers Confederation and Irish Congress of Trade Unions
	Environmental Protection (sustainable development)	Environmental Protection Agency and Marine Institute re. coastal erosion issues An Taisce and An Bord Pleanala re. housing and industrial developments in high amenity areas
	Government Departments	Department of Education & Science; Department Community, Rural and Gaeltacht Affairs
	A "wild card"	Individuals/organisations who will 'challenge' the status quo e.g. representing those who have relocated from urban centres such as Dublin
	Service Providers	For health care; child-care; transport; telecommunications
	Community and Voluntary Groups	e.g. Resident Associations, Irish Country Women's Assoc. Macra na Feirme (young farmers association)
	Third Level Education	National University of Ireland – Galway; Galw Institute of Technology
	Enterprise Development	Udarás na Gaeltachta; Enterprise Ireland; County Enterprise Boards
	Public Representatives	Elected members of the County Developmen Board; the Regional Authority; BMW Regional Assembly; The Dáil (National Parliament)
	Young People	Dáil na nOg (local representatives) Junior Chamber of Commerce; Comhairle na nOg/National Youth Council Students Union representatives from the third level sector in the region

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.** A Foresight activity may be triggered by intentions to prepare specific programmes for submission to national and European financing. Some long-term funding is more likely to be available if a systematic appraisal of long-term issues, bearing on the case for the funds, has been made. (For some EU accession countries and developing countries, funds may even be made available for Foresight itself.) The sorts of projects and programmes that could attract resources into the local system will be defined by combinations and alliances of various members of local public institutions and businesses, the training and research systems, etc. - and the types of Foresight benefit and objective will be framed by this..
- Benefits connected to **long-term capabilities**, aimed at improving the competitiveness of the regional system. The objectives depend on the structural features of the region in question: they may address general economic development, improvement of sector competitiveness, greater dissemination of technologies in production and social systems, etc. The most suitable arguments for involving players will depend on these objectives: for example, consider the case of a Foresight activity concerning the regional development of Information society. Here a theme might be improving the supply of services to citizens by encouraging dissemination of information technology, and the arguments to be used with public authorities could revolve around an improvement in the effectiveness and efficiency of the supply of the services. Citizens on the other hand should consider how such improvements might affect them; arguments might focus upon the benefits of promoting greater awareness of citizens' of their rights, the opportunities that information technologies offer for, for example, remote access to emergency and welfare services, employment opportunities in remote areas, civic networks, etc.
- **Network benefits** connected to the creation or strengthening of understanding and fruitful interchange between players at local levels. Arguments, especially those aimed at political decision-makers and entrepreneurial and trade associations, should highlight the potential improvement of mutual awareness of capabilities, and the generation of shared vision, between local players. For individual players, related benefits include individual enterprises being able to improve their knowledge of the technological and economic scenarios in which they compete, individual citizens increasing their ability to use new technologies and thus improve their quality of life. Finally, trade associations can consolidate their networks of relations, and 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?

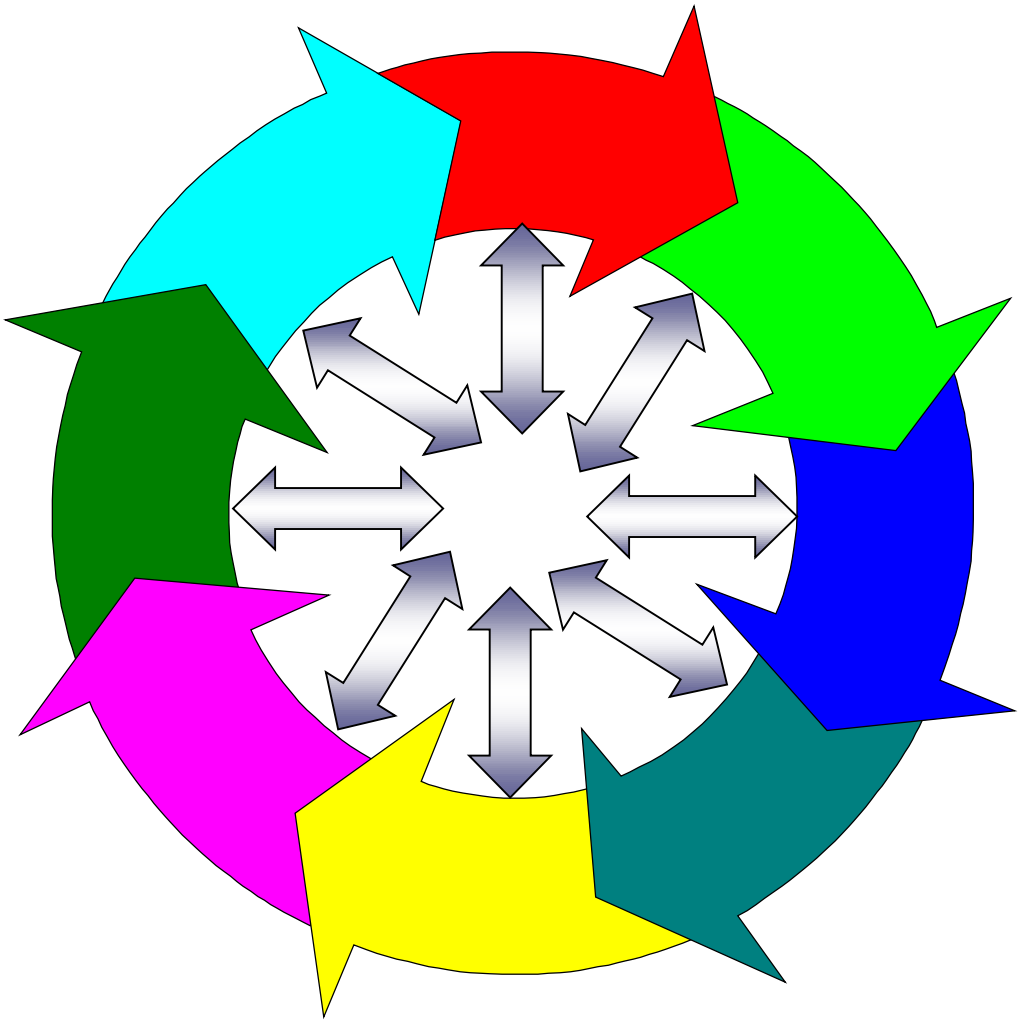
Various tools can be used to promote widespread appreciation of, and participation in, regional Foresight activities.

Q4.2 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. Websites are being used to increasingly good effect in Foresight activities, and can provide an important way of reaching emigrés and other people who are concerned for your region, but not physically present there at the moment
- Initiatives aimed at encouraging participation at territorial level, such as conferences, workshops, and other meetings. These may be mainly oriented toward dissemination of decisions already taken and preliminary results, or they may be more active consultation as to the aims and activities of Foresight. They may be tied to the actual work of Foresight in terms of generating visions and gathering knowledge. It is often helpful to work together with specific intermediaries and sectors of activity (schools, research centres, industry associations, community organisations, etc.), whose aim is to encourage participation and promote a more active and knowledgeable involvement among their members or clients.
- Illustration of cases of success at national and European level in regions characterised by similar problems and objectives. Such "success stories" may be identified in the course of evaluation activities (though the search for such stories is quite a different process from that of evaluation proper).

Q4.4 When and how should the various players be consulted?

Players should be consulted frequently throughout the course of your activities, with opportunities arising through the Foresight process.



Whether the aim is to set up a process-based or a product-based Foresight activity (see Chapter 2), one of the main features of Foresight activities must be the active involvement of the various stakeholders from initiation and throughout all the stages of the activity. This is a core factor differentiating fully-fledge Foresight from more narrow futures and planning approaches.

Widespread participation by various types of local players is not tokenistic (though it does play a role in establishing the legitimacy of the activity): it should be highly-valued as a source of vital knowledge and perspectives. It should not be occasional and episodic (though there will certainly be occasions where specific knowledge inputs are required and thus particular sorts of consultation arranged).: 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. Participation must be considered a determining factor of the final result.

The total involvement of local players is particularly important in enhancing the results of regional 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.

Q.4.4 IRL Consulting the various players in a Foresight exercise.

Shaping the Strategy for Dublin – A City of Possibilities.

It is worth recalling here the point made in Q1.8bis regarding the process adopted by Dublin City Development Board (DCDB) when shaping a development strategy for Dublin.

The **process** to develop the Strategy was intended to:

- Ø Raise awareness of the development of the strategy and the work of the DCDB
- Ø Discover, through a process of participation, the key concerns of City stakeholders
- Ø Generate creative solutions together and agree ways forward
- Ø Mobilise commitment for a shared vision, and
- Ø Create shared ownership and act together to make it happen

DCDB sought to ensure that as many people as possible participated in the consultation process believing that participation in the early days of the strategy development is desirable. It is often the outcome of decisions made at this stage that have the greatest effect on people's needs and chances to benefit. It provides the greatest opportunity to develop a sense of ownership and opportunity to make a difference.

The first step in the consultation process involved the establishment of a ***City Community Forum***, comprising of community and voluntary organizations in the City. The Forum provides for a co-ordinated and recognised structure for two-way consultation with this sector and the mechanism for participation on a level platform with state agencies and other bodies. The Forum is directly represented on the DCDB and currently has almost 750 member organizations.

The consultation/participation process covered three phases.
Phase 1 – developing the Strategy Working Papers
Phase 2 – developing the draft Strategy
Phase 3 – refining the draft Strategy

Phase 1 – developing the Strategy Working Papers
Five Strategy Development Groups were established to address five areas of strategic interest. Ninety individuals and organizations participated in the Groups including Board members, Community Forum members, key stakeholders and experts. These Groups, using the expertise of members, knowledge of existing plans and organizations in the City and research, drafted a number of Strategic Working Papers, which were published under the title **"Capital Wish"** – this provided the basis for discussion and debate, highlighting options and helping to develop consensus. The final Strategy emerged eventually from "Capital Wish".

Phase 2 – Developing the draft Strategy
Seven major initiatives were developed between March 2001 and January 2002 to facilitate consultation/participation in shaping the draft Strategy. The initiatives were:

1) Information and Awareness Campaign
   Involved advertisements in local and national newspapers; a Freephone Information Number; articles in newspapers, journals, newsletters and on websites; radio interviews and a video of the wider consultation process
2) WWW.DUBLIN.IE
   A central point for information; encouraging views via the online feedback form
3) Consultation Brochure (including survey)
   Brochure was sent to over 70,000 households, businesses, schools, libraries, organizations and agencies around the City. 1000 people/organizations replied to the survey

4) Let's Talk Circles

These were focus group meetings targeted at agency staff and specific interest groups with a view to discussing policy priorities for the City

5) Five Civic Fora

The Civic Forum was designed to involve Councillors and local interests within each of the five areas of City Council within the consultation process

6) Three Consultation Seminars

The Seminars were organised to facilitate debate under three specific themes (Integration; Participation and Social Inclusion) that are central to achieving the objectives of the Strategy

7) Schools and Youth

A video encouraging consultation and highlighting the key issues was distributed along with copies of brochures to secondary schools in Dublin

Phase 3 – Refining the draft Strategy

The process at this stage was designed to obtain feedback from City stakeholders on the draft Strategy and to maintain the interest and momentum that had been created during Phase 1 and 2. Four initiatives were developed.

1) Information and Awareness Campaign

Aiming to reach as wide a spectrum of people as possible – especially those not reached in Phase 2

2) Stakeholder meetings

Held with senior management in relevant agencies and government Departments. This process involved 23 meetings with almost 60 organisations.

3) Listening to Youth through Comhairle na nóg – the national Youth Council

160 students (aged 7 to 17) from 45 schools in Dublin City participated and formulated their views on the issues young people feel need to be addressed.

4) Sustainability Proofing

DCDB commissioned Schumacher Ireland to develop and apply a Sustainability Proofing Toolkit to evaluate the Strategy.

Numbers participating in the 3 phases of consultation:

Phase 1	Phase 2	Phase 3
Mar 2000 – Feb 2001	Feb 2001 – Dec 2001	Dec 2001 – June 2002
90	**75,543**	**162,100**

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?	Organisational structures will need to reflect 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?	Depending on what existing information (passive) can be accessed, decisions will need to be made about producing new material (active information).
Q5.5: How can I make use of available expertise in Foresight?	The way of using foresight expertise depends very much upon the foresight methods, context and scope planned for in your exercise.

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

Organisational structures will need to reflect the type of exercise you intend to undertake.

	Autonomous Foresight Programme, with central management that is:		Coordination of "Embedded Activities"
Formal Structure	**Tight**	**Loose**	
Identify stakeholders	~	~	~
Identify stakeholders	~	4	4
Appoint steering committee	~	~ (though may be less intensive than in preceding column)	s
Establish management team	4	4	Small management team only needed
Recruit a champion	~	4	s
Recruit expertise	~	4	~
Decision Process			
Define management style	~	4	4
Prepare action plan, milestones, etc.	~	4 (Task is essentially co-ordination of group plans)	4
Assign tasks to each group	~	4 (Though these tasks are subordinated to groups' own plans)	~
Resource Procurement			
Identify sponsor(s) (see Q4.4)	~	~	4
Secure resources (see Q 4.4)	~	~	~
Identify existing inputs	~	4	4

Key: ~ = A critical component; 4 = A highly useful component; s = Likely to be little need

Three main dimensions to be considered in organising Foresight activities are the **Formal structure** of your project; the **Decision processes** that need to be implemented; and the matter of **Resource procurement**. As the table on the facing page shows, each dimension is associated with a variety of activities (whose importance will depend upon the type of exercise you intend to undertake).

Formal structure Whatever type of Foresight is planned (see Chapter 2), identifying the stakeholders is a key step: which regional players are liable to be interested in or concerned by your project? A mapping of these stakeholders, and their position & expectations vis-à-vis proposed Foresight activities, is useful. You will need to propose a structure for the Foresight activities, including the assignment of roles to working groups, panels, committees, sponsoring agencies, trainers, etc. The tasks assigned to such parties are linked to the type of Foresight planned (see Q5.2). Common characteristics include, for example, the vital initial step of establishing a steering committee and management team. 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.

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, will working groups be given the freedom to make many of the decisions outlined 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 define the terms of conduct to be followed. Tasks & responsibilities will have to be assigned to the different groups you have appointed. Some tasks frequently associated with Foresight are shown in the table below.

Examples of frequent tasks required 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

Reasonable consensus has to be constructed around the action plan - i.e. there should be consultation not only on the scope of the exercise, but also on its organisation and structure. As shown in this Guide, there are various ways of 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 plan should be flexible and responsive, offering a number of different possible avenues that might be followed. It should cover issues of focus & scope (see Chapter 3); Project phases & milestones; Formal structures; and Decision processes.

For **Resource procurement** see Q 4.4.

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

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

	Autonomous projects	Embedded Foresight activities
Key Actors	• Promoters/sponsors • Stakeholders • Steering Committee • Project Team	• Promoters/ sponsors • Stakeholders
Other Actors Usually involved	• Champion • Experts	• Foresight activities co-ordinator • Experts
Actors involved in large projects	• Citizens • Politicians • Monitoring group • Process experts	• not usually relevant

TYPES OF ACTOR INCLUDE:

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

Promoters are people (or organisations) supporting the idea of developing Foresight 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 try to identify who are the stakeholders in the region and what could be the first objectives and focus of the project. They would also start looking for sponsors. Promoters usually become highly involved in the project team.

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

Stakeholders are people and organisations that have an interest in the regional economic & social development. They have something to say about, and 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. Some stakeholders, however, may feel threatened and oppose the project. For this reason, you (as the promoter) should organise consultations with stakeholders when designing your project profile, so as to increase the chance of "buy in" to, and "ownership" of, Foresight processes and products.

Many players can be involved in a Foresight project (see facing page), and these players can fulfil very diverse roles. The level of involvement of the various actors can vary depending on the type of Foresight and its focus. In the illustration on the facing page we make the clear distinction between autonomous projects and embedded Foresight. If you are engaged in 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 on facing page). Here we will focus on key "operational" roles (Q 5.5 will provide more detail on the use of **Process Experts**):

- 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 can also be a key actor to raise awareness, mobilise experts, and to nominate them to various panels.
- A **Project Team** to manage the project on a daily basis, with tasks such as:
  - Leading the project on a daily basis
  - Maintaining regular contacts with the stakeholders & the Steering Committee to ensure that the project direction is maintained;
  - Holding regular meetings with all WP Managers;
  - Keeping accurate records of costs, resources and time scales for the project;
  - Ensuring integration of Management Reports and their presentation to the Steering Committee;
  - Checking that the project maintains its technical objectives
  - Ensuring that the project maintains its relevance to the other regional innovation activities.
- Securing high **political support** early on demonstrates to the world that the exercise is taken seriously. If you target key people first, and win them over, a momentum can be established. It would be helpful if '**champions**' or 'ambassadors' could be enlisted early on to put forward the arguments. Such figures are vital to seeing projects through difficult times; but there are sometimes risks of rivalry (e.g. between agencies), or of divergent expectations.
- **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.

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.

PERT-type framework for managing Foresight

PROJECT MILESTONES	Expected deadline	Probable target date	Corrective Actions		Budget apport-ioned	Budget actually used	Corrective Actions	
			What Action	Who respon-sible, when			What Action	Who respon-sible, when
Engage stakeholders								
Establish infrastructure								
Choose focus and methods								
Gather existing information inputs								
Generate new knowledge /fusions of knowledge								
Create shared visions								
Produce formal deliverables, “final” products								
Disseminate results, promote implementation								
Monitor implementation activities								
Facilitate use of methods and results by stakeholders								
Work for embedded and follow-up activities								

Setting up simple tools that will allow you and the project team to monitor your Foresight project follows what is now considered good practice in project management. Monitoring 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. It will help you to control and focus the implementation of the project. On-going monitoring involves:

- Observing the activities undertaken during the implementation of each step in the project in order to compare them, in real time, against the targets set.
- Continuously adapting the project plan to its environment. As new knowledge is gained and stakeholders are activated, the vision or process of your project may need to be altered: Foresight projects are not expected to be rigid.

The monitoring methodology should involve a set of selected indicators that are designed to provide relevant actors with specific and topical data that allow them to follow the course of the project. A simple way (related to classical PERT project management tools) of implementing such monitoring is to set up and complete a table such as that on the facing page.

Indicators of inputs and outputs are important, but of strictly limited utility. The objective here is to measure the resources put into the system (time, money, human resources...), against the results achieved. It is (relatively) easier to quantify these where they concern economic dynamics (e.g. new innovation related programmes, new firm and business development, incorporation of Foresight results in stakeholders' strategies.). However, high values of input indicators do not necessarily result in corresponding output indicators. In complex innovation systems, the processes triggered by a Foresight project interact with many other factors. Evaluation criteria should then depart from classical input/output indicators such as R&D expenses or patents, and 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?

Depending on what existing information (passive) can be accessed, decisions will need to be made about producing new material (active information).

Once you have determined the objectives of your Foresight exercise – and even before the final decisions have been made - you should consider collecting information that could prove useful as inputs to your exercise.

- **'Passive'** sources of information mean that you can draw on knowledge that has already been codified. These include data on the current state of play in the region, 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, etc. Other types of 'passive' information are forecasts; scenarios; results of other Foresight exercises; opinion polls; cluster, sectoral and regional analyses; market reports; and quantitative or qualitative benchmarking data That can be related to conditions in your region.

- **'Active'** sources of information include mainly 'knowledge resources' that can be drawn upon during the course of the exercise. One of the most obvious inputs under this category is the expertise (in individuals and networks) that can be found in your region. For instance, you might consider looking in your region for:
    - Ø Readily accessible **expertise** in Foresight tools and methodology in the region.
    - Ø **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.
    - Ø **Latent Foresight potential** in the region that could be mobilised - i.e. the openness of the various players (for example businesses, regional authorities, research bodies, technology transfer and innovation support institutions) to Foresight thinking.

If some of these resources are lacking in your region, you could consider tapping into human resources and network links situated elsewhere that, nonetheless, have an affinity with (or knowledge of) the region. (For example, many regions have suffered a diaspora of talented individuals, who nonetheless may have continuing emotional ties with the region.) You should also consider the minimum competencies needed to get started. Bear in mind that it might be necessary to reassess the scope of your exercise if serious limitations have been identified. But a Foresight exercise should not be abandoned just because we find problems with local resources and networks. Foresight itself should be seen as one possible contribution to building and strengthening the regional assets mentioned above

Q5.5 How can I make use of available expertise in Foresight?

The way of using foresight expertise depends very much upon the foresight methods, context and scope planned for in your exercise.

"Process Experts" can be used to:

- **Mentor/coach the Steering Committee and the Project Manager**
  - Provide ideas and external views
  - Highlight best practice in Europe
  - Monitor and assist day-to-day operations.

- **Undertake Specific Activities**
  - Refine the work programme in the course of the Foresight project
  - Advise on research methodologies
  - Draft specifications for consultancies and/or expert projects, advise on appointments
  - Comment on key issues and papers produced about these
  - Participate in "consensus building" activities
  - Contribute to Steering Committee meetings
  - Provide training for key players

Any Foresight exercise involves a range of formalised methods, and it will be down to you to decide which approaches are the most appropriate for the type of exercise you envisage.[18] Some of these will relate 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".

You may be able to draw upon regional expertise in Foresight and related methods, or - as is very common in regions' first ventures into Foresight - to mobilise expertise from other regions, from international consultancies or research groups, etc.[19] Some of the roles of such "process experts" are set out on the facing page. The benefits that bringing in a process consultant *should* provide include:

- Economies of scale
  - Being able to reduce learning costs by drawing on past experience
  - Being provided with direct links to international good practice and key players and sponsors overseas
  - Access to leading-edge methodologies

- Contribute to the momentum of the project
  - Close work together with the project manager (providing formal and informal training)
  - Consultancy experience in communications, client relationship management, etc.

- External view
  - Easier questioning of received regional assumptions
  - Access to other international experts
  - Potential role in synthesis and consensus building (the expert is – hopefully - not seen as belonging to one or other regional faction).

[18] Chapter 2 introduced considerations concerning the methods that are used to process knowledge and opinions about future issues. An Annexe provides a more detailed presentation of the most common methods used in Foresight.

[19] It is important to be sure, however, that this expertise is really committed to the objectives and style of Foresight you desire!

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 - and less tangible 'process' benefits. It is important to assign responsibility for presenting outputs to different "user" audiences, and for forwarding the **action** to be taken in the light of a Foresight exercise. Another important and sometimes neglected aspect of Foresight is 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 consider 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; how can they be related to intended users?	A Foresight exercise will produce tangible and intangible outputs; there are diverse users, who can be involved in defining the desired outputs.
Q6.2:	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.
Q6.3:	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
Q6.4:	What sorts of benefits should I look for from regional Foresight?	Benefits can be identified at different points in time and at different levels; it is important to take account of unexpected benefits, and you may also want to focus on 'success stories' as possible 'demonstrators'.
Q6.5:	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
Q6.6:	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; how can these be related to their intended users?

A Foresight exercise will produce both tangible and intangible outputs; there are diverse users, who can be involved in defining the desired outputs.

Some types of output from Foresight:

	Formal outputs	Informal outputs
Material for long-term reference and dissemination activities beyond region	Reports, books, electronic records (videos, web resources)	Networking with Foresight activities and actors in other regions, etc.
Dissemination within region	Workshops, newsletters, press articles, web sites	Visions developed in workshops, results & evaluation circulating within networks
Networking	Institutionalisation of networks e.g. through formation of permanent organisations and meeting places	Development of new networks or new links established within existing ones
Strategic Process	Formal incorporation of results within strategic processes, e.g. through use of lists of key priorities as a framework for assessing projects and plans.	Informal incorporation of results and knowledge of networks and key sources of knowledge, within strategic processes

Foresight Focus and Users:

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

Foresight exercises can produce formal & informal outputs:

- Typical **formal outputs** are reports, dissemination activities such as workshops, newsletters, press articles, web sites, etc. These are often what some people refer to as “codified” knowledge, in that the knowledge generated through the process has been turned into information that can be circulated widely, without necessarily requiring face-to-face interaction.
- **Informal outputs** are more difficult to grasp, because these typically take the form of knowledge embodied in people’s practices and approaches to issues. Though these may be harder to identify and quantify than documentation, they represent a very important aspect of the benefits. Typical informal outputs are the development of new networks within the region, and the integration of Foresight results – and methods - into the strategy and the projects of regional organisations and companies (for instance companies might start developing scenarios for their investment projects)

The upper table on the facing page outlines some of the types of outputs you might expect. Useful outcomes are those generating results. They are more likely to do so if they are disseminated widely, and it would be extremely helpful to check whether outputs were really used in a pragmatic and productive way. The assessment of outputs allows you to outline pitfalls and to identify new requirements that can be integrated in the subsequent phase of the Foresight process. We discuss evaluation in later questions, but at this point we can note that evaluation of the outputs involves checking to see if the targets set at the beginning of the exercise were actually met, and if milestones were achieved as planned. (Evaluation of the outcomes can involve interviews and/or a questionnaire survey of the final users of the Foresight exercise: a particularly important step if Foresight is embedded in the decision making process.)

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 lower table on the facing page 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.

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 users and intermediaries.

Q6.2 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.

Why evaluate Regional Foresight?

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".
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. 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: • 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);
• the management of the exercise (whether the activities might have been performed more efficiently and effectively with a different organisational structure, etc.);
• 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. 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).

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.

The methods identified in this body of work could be used “in-house” by the sponsor or members of the Foresight team. But there is wide agreement that evaluations are best carried out by a competent and independent third party. The results are then 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 praise is not seen as just an effort to get further funds; 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 (in terms of providing value-for-money, and in terms of management and organisational processes)? Were the objectives adequately communicated to those involved in the Foresight exercise, so that their efforts could be enlisted most appropriately, and their expectations not divergent from actuality? They may also go on to ask: Were the objectives the right ones (were they too broad or narrow, too ambitious or not sufficiently so, were they well-grounded in an understanding of the topics at hand…). the right objectives? Some of the rationales for the evaluation of regional Foresight activities are shown in the box on the facing page. Perhaps the most central one is the opportunity for learning that evaluation provides: this can allow for your own future activities to be better informed by understanding of what worked well and what did not; the lessons may even be of use to other people involved in regional Foresight elsewhere, or to people within your region seeking to embed Foresight in their own organisations.

Q6.3 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.

Evaluation relates the achievements against the intended objectives è the "Logic Diagram" approach

STEP IN LOGIC DIAGRAM	Relevance to Evaluation
Overall Policy Objectives	Identifying overall mission of organisations sponsoring regional Foresight, leading to a specific Foresight exercise and a range of other activities. Evaluation focuses on the relationship between these different activities.
Objectives of Foresight Exercise	The main goals selected for the Foresight activities, implicit goals remaining implicit, as well as goals added to the exercise during its operation. Evaluation examines how well all goals have been accomplished.
Main Activities pursued in Foresight Exercise	The exercise will have a number of major activities that are being pursued (see chapter 5). **Evaluation** examines how well the activities have contributed to achieving the Foresight objectives. **Monitoring**, in contrast, examines the detailed operation of the activities, how far milestones are being met, etc.
Immediate Effects	Evaluation examines the extent to which formal outputs have been achieved (e.g. reports produced and circulated, meetings held and attended).
Intermediate Impacts	Evaluation, using methods such as interviews and surveys, with participants in the projects, with the "users" of their results, etc. asks questions such as: Have new networks been formed, have people changed their behaviour, have other organisations incorporated Foresight methods or results?
Ultimate Impacts	Evaluation *will try to identify* effects of the exercise on regional performance as whole, although effects of diverse Foresight and other interventions may be difficult to disentangle.

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. Evaluations focus on relating achievements to objectives, and a "logic diagram" (see facing page) can structure the analysis of this. 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. Evaluation can take place in "real-time", while the activity is underway, or "post hoc", when it is completed.

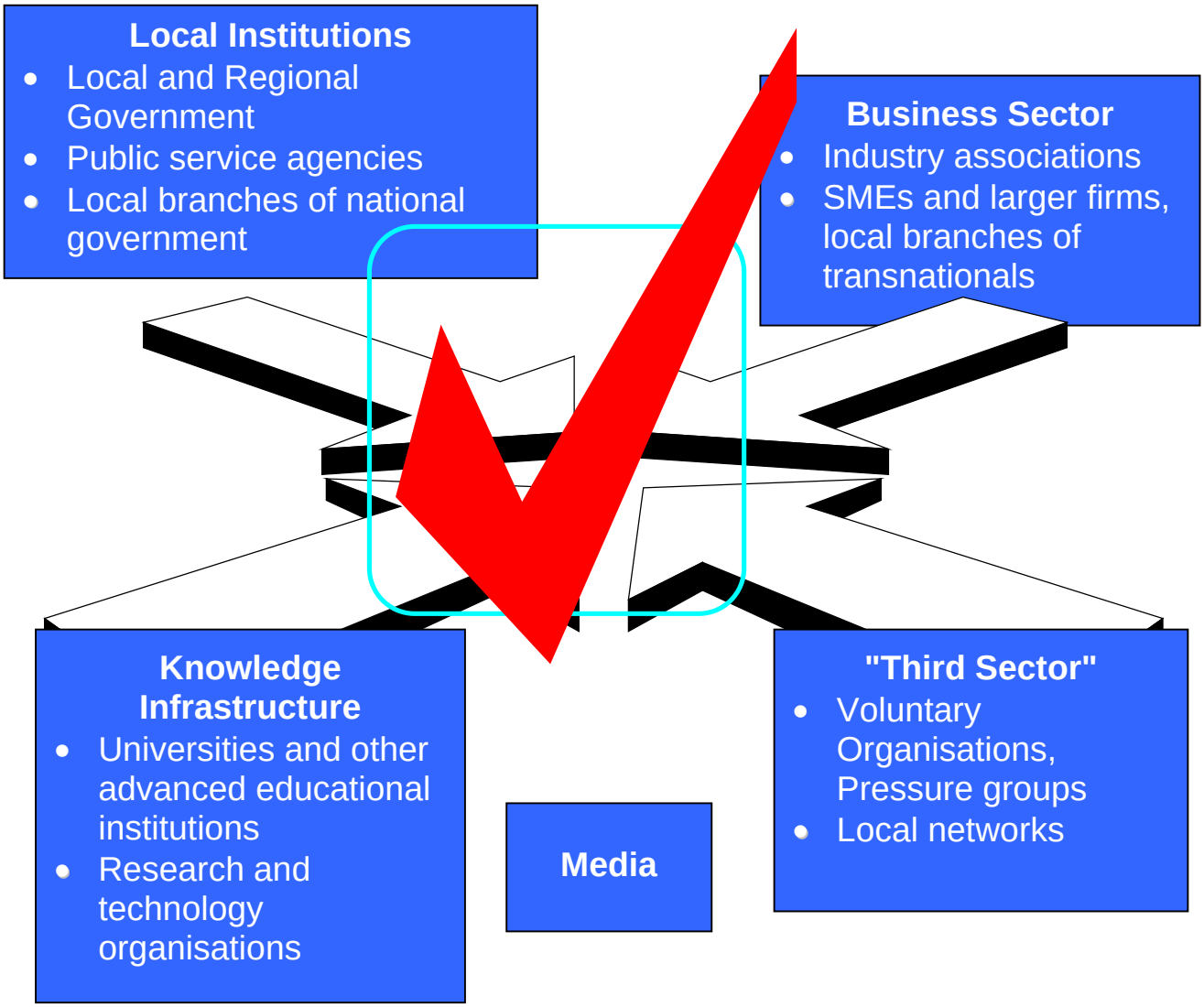
Real-time evaluation can provide feedback to those responsible for an activity, so that they are able to identify shortcomings more rapidly and address problems. However, it should be differentiated from the routine **monitoring** of an activity. The latter is a management task: making sure that tasks 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 such tasks are accomplishing their objectives. But it should be borne in mind that the ultimate objectives that Foresight is aimed at are mostly long-term ones. Real-time evaluation will be best suited to *identifying unfolding processes* (many of the processes of interaction between people are hard to identify and assess after the event), and perhaps *early impacts* (these are most likely to revolve around process issues, e.g. networking, increased orientation of players to long-term futures, 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, within a few 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': 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.

Evaluation is usefully thought of as one of the components of a ROAME (Rationale, Objectives, Appraisal, Monitoring and Evaluation) process – see facing page – and it is valuable to draw up a ROAME statement, specifying how these components will be put into practice – at the beginning of the activity.

Q6.4 What sorts of benefits should I look for from regional Foresight?

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



When you have designed your Foresight activity, you will have specified the desired objectives and outcomes; and many of the benefits actually achieved through 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. (The building of broad Foresight capabilities was rarely an explicit goal in many early Foresight exercises - yet it proved a welcome by-product in several cases.)
- 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.

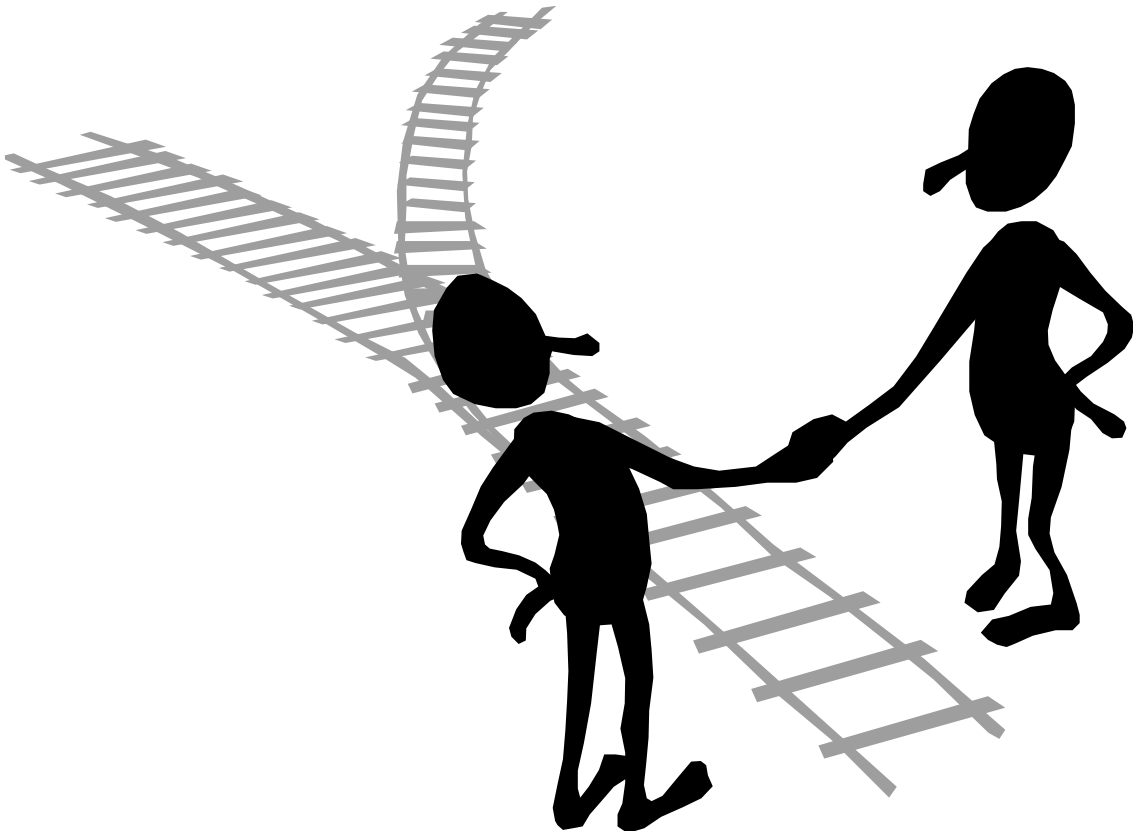
The most straightforward way of identifying benefits is to ask the people involved in the activity to report on these systematically. Survey questions need to be framed so as to capture different types of benefits, and so as to allow for unexpected benefits to be captured. They may need to be employed at several periods (if not continually), to capture immediate and longer-term benefits, and 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.

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? Are participants (especially the stakeholders who might be more peripheral to existing networks, such as SMEs) more aware of, and better known by, relevant organisations and experts; are they involved in meetings and discussion groups, do they have access to sources of knowledge and assistance when faced with problems and opportunities? Such benefits can be assessed by asking participants directly about their experiences, 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? Examine 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?

Q6.5 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.

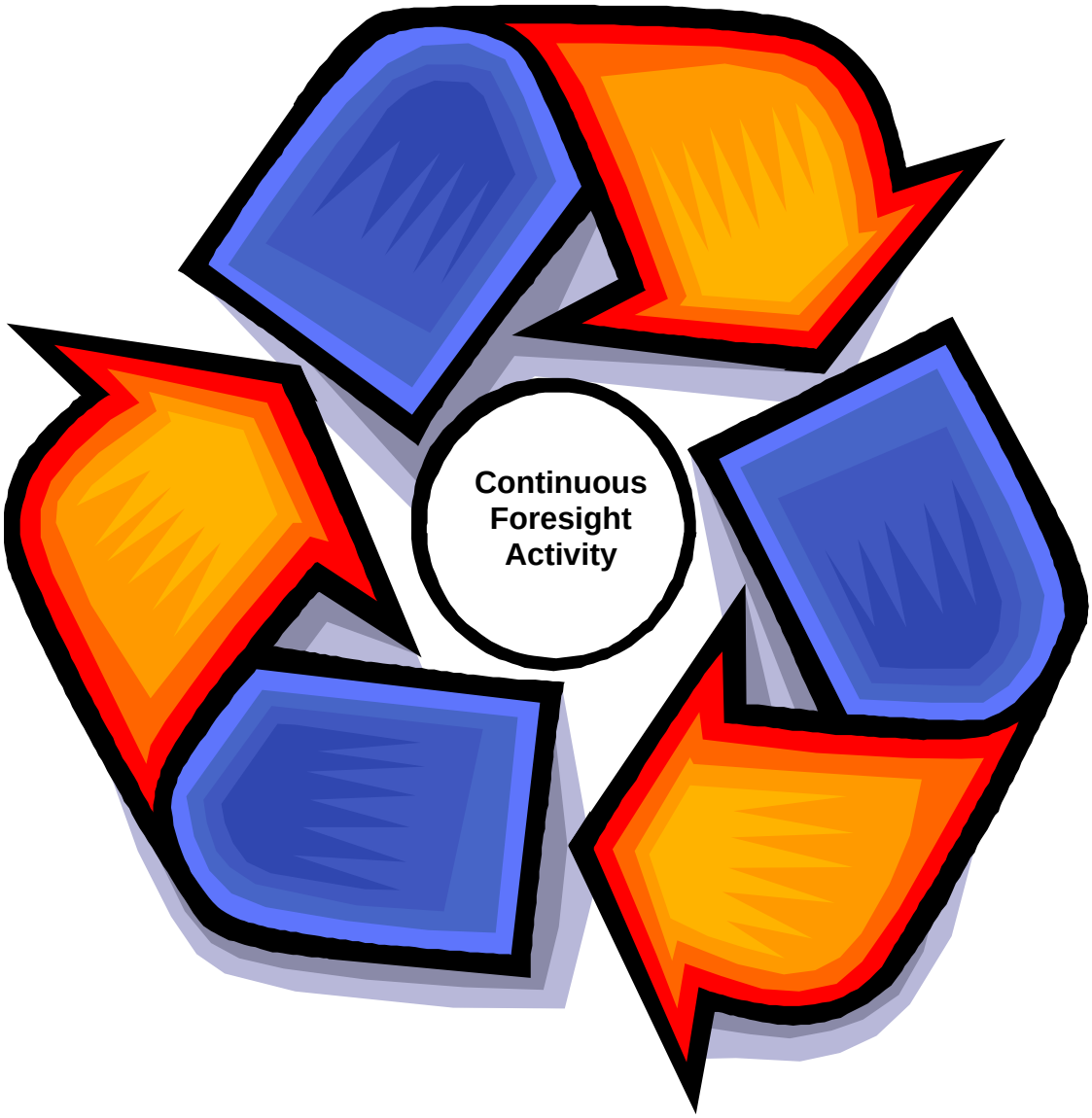
For these reasons, it is helpful to have a clear notion of the sorts of benefit that can reasonably be expected. This needs to be conveyed as part of the Foresight activity,. It needs to be communicated by capturing relevant information, and putting it into a form suitable for stakeholders to examine. 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.

Gaps in implementation can be very discouraging. These may occur where recommendations have been prepared, but there has been no mechanism to check on their follow-up; and where networks that were working productively have been allowed to dissolve.

This is why we have stressed the need to link Foresight to action: fully-fledged regional Foresight is not a matter of free-floating visions. It is a participatory process of constructing better understanding of what desirable and feasible futures could be, and how different partners in the region need to work together to create them. This is a demanding task, and it cannot be achieved without serious inputs of time and effort from many parties. Perhaps the most crucial message in managing expectations is the following: **Foresight is not a quick fix**.

Q6.6 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. As well as informing the particular policy need that led to the initiation of an exercise, it can contribute to 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. A region is always going to be confronting new challenges.

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. (This is not inconceivable, as long as there is plenty of room built into it for renewal and reorganisation to deal with changing circumstances.) Far more modest things may be achieved, 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**", in which 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, a major regional Foresight exercise can rarely be sustained for long periods of time. But 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 help maintain Foresight capabilities in the region: attention should be given to the possibilities of facilitating the development of such centres.

PART III – Regional Foresight case descriptions

In this section of the Guide, we provide accounts of real regional foresight experiences from across Europe. You will have noticed throughout Part II that we refer to actual regional foresight cases in order to illustrate key points, trends and issues in the deployment of foresight. In this section, we provide expanded in-depth accounts of six regional foresight exercises, using a framework of analysis that closely aligns with the chapter headings used in Part II. In this way, you should gain a better appreciation of the real activities associated with the implementation of regional Foresight.

In writing Part III, we have had to strike a balance between quantity, i.e. covering many cases briefly, and quality, i.e. providing quite detailed accounts of only a few cases. We have opted for the latter in choosing to cover only six examples, which means that some of the cases referred to in Part II are not expanded upon here. The six cases that appear here were chosen for their distinctiveness and, to a lesser extent, their geographical dispersion.

In Chapter 7, we start with an exercise conducted in Catalonia in the early 1990s. This landmark study was completed at the time when Foresight methods were just beginning to take hold at national level, and is 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.

In Chapter 8, we examine Foresight in the Uusimaa region of Finland. Here, the focus has been on developing and networking embedded regional foresight capability. A similar focus has been adopted in North East England, the subject of Chapter 9, where the emphasis is also on embedding Foresight in business and more widely throughout society.

In Chapter 10, we cover one of the many French *territorial prospective* exercises that have been popular over the last decade. This chapter focuses upon the Grand Lyon conurbation, and tells how a regional government has used Foresight to elicit greater democratic participation by its citizens in urban planning policy debates.

Chapter 11 sees a return to the UK, with a description of Foresight activities in the West Midlands. This is a relatively new exercise that has received seed funding support from the EU Structural Funds. Its focus is on instilling longer-term thinking within Small and Medium-sized Enterprises (SMEs) with a view to improving their competitiveness.

Finally, Chapter 12 covers a transnational exercise between bordering regions in Germany, Denmark and Sweden. Known as Baltic STRING, this exercise sought to reach a common vision and strategic action plan for cross-border co-operation and regional development. This too received seed funding from the EU.

CHAPTER 7 – CATALONIA ON THE 2010 HORIZON (Spain)

BACKGROUND

Catalonia is an Autonomous Community within Spain with a population of six million (Barcelona 1.6 million) occupying an area of 31,930 square kilometres. The primary impulse for this major regional Foresight exercise was the need and desire felt by the Catalonian Regional Government or Generalitat, in the late 1980s to anticipate future developments and generate a wide-ranging debate on the long-term positioning of Catalonia as a key Mediterranean region - in terms of 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 by the Generalitat in 1989 of the Institut Català d'Estudis Mediterranis (ICEM) now called the Institut Català de la Mediterrània (ICM - Catalan Institute of the Mediterranean). Over the three years to 1992 Catalonia 2010 became the defining project for the ICM.

SCOPE

The study was **very broad** covering all aspects of Catalonian 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 on the following page, 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, and the recognition of the rise of a trans-national space for co-operation in which regional authorities increasingly collaborate.

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 plan 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 - from those 13 lead-experts involved in the working group, a broader group of 42 experts directly involved in the preparing of the report and detailed background documentation (e.g. commissioned studies, etc.) to 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.

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

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 **MICMAC**[20] 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 *.

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

- 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. Involuted 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 **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 llati" (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)

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 coordinated 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 cooperation 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 characterised on the one hand by the fastest growth in the country, and on the other 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 must themselves 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 cooperation 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 cooperation 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 cooperation 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 cooperation.

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 recognized 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 cooperation in different directions is continuing. One shortfall in the Foresight of the EEDC so far has been an inadequate amount of practical cooperation 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 - North-East ENGLAND (UK)[21]

BACKGROUND

Situated on the East coast of England facing Northern Europe and Scandinavia, the North East is a largely rural area. However, most of its population of 2.6 million are concentrated 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 the Tees Valley.

The Region's economy until relatively recently was based mostly on smokestack industries, such as coal and steel, shipbuilding, and chemicals. The decline of this traditional industry has necessitated significant economic restructuring, although chemicals remain important. 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 in North East England 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.

Foresight has had a formal presence in the region since 1996, first as part of regional efforts to rollout the results of the national exercise. During this first phase (1996 - 1997), the Foresight initiative 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), which is working closely in partnership with the Regional Development Agency, ONE North East. This second phase has seen the region assume ownership of the Foresight process, and is the phase that we will mostly focus upon here.

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 approach has been perhaps more 'bottom-up' than in other regions, with those responsible for promoting Foresight actively seeking to embed the practice in a distributed manner. Specific **objectives** within this aim have been to:

- Establish an accessible focal point, enquiry service, and project management centre to support and promote the 'flagship' Foresight programme.
- Provide coordination services to support 'external' Foresight panels and projects including meetings, network events and literature distribution.
- Create proactive mechanisms for collating and disseminating information about developments in new technology affecting key sectors of the NE economy.
- Deliver an industrial outreach programme focusing on the promotion of Foresight through best practice techniques and the subsequent introduction of company-specific measures to a selected number of SMEs.

[21] This account is based upon G Ollivere (2000), "FOREN Workshop 1 Position Paper"; and G Ollivere (2001) "FOREN Workshop 4 Position Paper – The Marine & Offshore Sector in North East England". Both are available online at http://foren.jrc.es

Several hundred organisations have been involved, both in consultation and operational activity. A **10-year time horizon** is typically used. For much of its six-year duration, the regional Foresight effort has been run on a **shoestring** budget, with funding available for one full-time position in RTC North plus some event organisation. In total, this has formally amounted to about €80,000 per annum. However, the organisers of the regional activity have been especially resourceful in **leveraging** resources from other actors, including industry, the national government and the EU in supporting, for example, regional events and sectoral activities. Associated projects, such as Young Foresight, are funded separately, with the RTC North appointee essentially managing a central work programme and co-ordinating associated projects within regional organisations.

The North East region is a leading player in the adoption of **Young Foresight**. This programme sits alongside the national Foresight programme and provides opportunity for students (14-18 years of age) to design products and services for the future (from conceptualisation, to design, to adaptability in the marketplace) as part of the UK design and technology national curriculum. Through the use of industry mentors, Young Foresight encourages students to anticipate future trends and consumer behaviour and design products that will perform well in a world that has yet to arrive.

BUILDING MOMENTUM

The first phase of the project was specifically dedicated to building 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 that 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 universities to access funding for innovation and product development.

The ongoing, **distributed and bottom-up** nature of Foresight in the region essentially means that selling the concept and building coalitions of interest is a never-ending activity. As the programme moves from sector to sector, as well as to new domains (e.g. through Young Foresight), momentum-building activities start up again. Typically, these make use of events, such as workshops and conferences, as well as surveys, to elicit wide interest and adoption of Foresight.

STRUCTURE AND ORGANISATION

Despite the 'bottom-up' nature of regional Foresight in North East England, activities are more or less co-ordinated through four **levels of 'governance'**. A **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. An **Executive Board** is a subset of the Steering Committee that meets more frequently (monthly) to implement policy but not to create it. A **Technical Evaluation Panel** is responsible for assessing funding applications for SME Foresight projects. Finally, a **Foresight Forum** constitutes an 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.

As already hinted at, Foresight in the North East involves many different activities. Amongst these are:

- The **'Flagship'** programme, which 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.
- **'Technology Scan'**, which is about keeping abreast of all new technologies but particularly those which have great potential to affect the regional economy.
- **'Industrial outreach'**, which is perhaps the most difficult area since 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. We will say more on this below.

Sector panels are organised separately in response to perceived demand, and are normally chaired by an industrialist who is supported by the Coordinator from RTC North. By their nature, they tend to be more focused than other parts of the work programme. This panel model was adopted from the outset and has continued to be used. Thus, a number of sectors were identified for initial development and significant activity has taken place in the following areas over the last 5-6 years:

- Manufacturing - lead organisation - Thorn Lighting
- Energy - lead organisation - TNEI
- Marine - lead organisation - AMEC Process & Energy
- Chemicals - lead organisation - EPICC
- Leisure & Learning - lead organisation - Sunderland University
- Cross-sectoral - lead organisations - RCID/RTC North

The intention has been that these panels should all become fixed time scale and mission based. These initial sectors were identified by a scoping study carried out by CURDS (Newcastle University), which attempted to match Foresight issues with regional requirements.

METHODOLOGY

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, nanotechnology and other specialist areas. Some events are multi-faceted incorporating a speaking programme with an exhibition, workshops and demonstrations. The **choice of method** is generally a matter for the committee or panel concerned. In the Flagship programme, the RTC North Co-ordinator decides. Foresight North East offers project-based support to SMEs in identifying future R&D and new business opportunities.

Perhaps a good way to further examine the deployment of Foresight methodology in North East England is to look closely at a practical example. We have chosen to focus upon an exercise carried out in 2000 with the **offshore sector** in the region. For over two hundred years, the North East of England was a world leader in the design and building of ships. The massive decline in demand during the 1970s and 80s was a major blow to the regions economy, but it has led to the opening up of a whole new industry. The huge increase in investment in North Sea oil and gas extraction during this same period represented an opportunity for the companies and workforce previously employed in the building of ships to move into the building of offshore oil platforms. A healthy offshore industry has therefore developed over the last twenty years to supply platforms and services to the major oil companies.

In order to gain a better understanding of the sector and it's future, a series of workshops were held at which 20 Managing Directors from SMEs in the sector came together in order to pool their ideas and knowledge of the industry. They were asked to look at the regional sector in terms of its current position and strength and to develop a possible scenario of the sector in 2010, both of these in relation to the

global marketplace. The resulting ideas were compiled into a series of maps that show not only the constituent players and factors in the sector, but also the level of capability or importance of each area.

More specifically, the exercise was organised into four quite distinct tasks:

Task 1 *– Produce a broad outline of the sector*.

Task 2 *– Produce a more detailed map of sector components*. Once the broad outline was agreed participants were asked to make individual contributions to enable a detailed mapping of the sector as it currently exists. It was emphasised that all inputs, drivers and outputs must be included so that the relative importance and sustainability of these could be discussed in the next session. The resulting map showed the main components in more detail, with the relevant linkages between them. It also indicated their perceived capability or strength within the sector, ranging from vital or world class, through to minimal or no capability whatsoever.

Task 3 *– Produce a global scenario for 2010*. The next stage was to produce a worldwide sector map for 2010 using two separate facilitation techniques and then combining the results. The techniques used were as follows:

1. A simple projection of current knowledge based on a brainstorming of the collective knowledge of industrialists in the group (i.e. the conventional wisdom approach)
2. Consideration of opposite but pre-defined sets of circumstances – market economy and green economy (as outlined in UK national Foresight workshop materials).

The resultant map described the global market in 2010, with different colours used to indicate the importance of each area from 'vital' to 'none'. Seen in isolation it simply painted a picture, without indicating the relevance to the current position, or any actions that should occur as a result. It was therefore compared with the earlier map, which describes the level of current regional capability, in order to gain an understanding of the changes that are likely to take place over the next ten years, and their impact on the regional sector. This indicated those areas that were likely to grow or decline in importance, particularly those that were seen to be strong or vital in 2010.

In order to focus on a manageable and achievable number of issues, a number of 'filters' were applied to each of these areas. First they were assessed in terms of their impact on job and wealth creation. For example, offshore processing was rated as being vitally important for the industry, but it will actually have very little impact on employment. Secondly, they were then assessed in terms of whether it was possible to achieve anything in the region, given current levels of capability and expertise. For example, having no current presence in exploration and field development makes it very unlikely that the region could develop this capability to a sufficiently high level.

Task 4 *– Determine actions and strategies resulting from the scenario*. Having described how the global and regional sector may look in 2010, the next and most critical stage was to examine the actions that should result from this analysis. An assessment was made of which changes were likely to have the greatest impact and which action could bring the greatest benefit to the region. A final map was constructed, which showed the same areas in the sector but described them in terms of whether they represented an opportunity, are under threat or are a necessity in order for the sector to be competitive in 2010.

OUTPUTS AND OUTCOMES

Soft outputs include the knowledge transfer and improved working relationships that result from network activity. These are very valuable yet difficult to quantify, so **case studies** are used to demonstrate the success of Foresight with individual companies. Outputs of the Forum meetings have been most influential on regional policy. Government Office North East (national governments presence in the regions) representatives have made funding available for pilot projects as a direct consequence of such meetings, whilst ONE North East uses these meetings to forge a link between Foresight and its

own Strategic Futures programme, which is one of the delivery mechanisms of its Regional Economic Strategy (RES).

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 of the latter was a micro-engineering lecture and demonstration provided by a Swiss engineering organisation. As regards 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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CHAPTER 10 – GRAND LYON (France)22

BACKGROUND

Lyon is a rich city, a fact that permeates both the public sector (tax revenues are high) and the private sector. The Lyonnais workforce is highly skilled and the city contains higher than national-average proportions of scientific and research workers. The industrial base has evolved through high value/design added textiles (silk) to speciality chemicals, and currently research and development in all domains of health and environmental industries feature strongly.

The city is currently engaged in a largely successful campaign to attract (back) to the city head-quarter functions of major companies and administrative hubs of the public sector (still largely centralised on Paris), and international co-ordinatory hubs such as the international crime–centre and database 'INTERPOL'. Its SME sector also demonstrates a greater propensity to 'rejuvenate' itself than the national average, and unemployment traces a path below the national average. Quality of life is high – in terms of beautiful surroundings and temperate climate. The city and Rhône-Alpes region therefore experiences in-migration of highly qualified personnel, and this trend seems set to continue.

Traditionally, the city has had a reputation for displaying a 'conservative' business ethos, and a high degree of collusion between the interests of business/the economy and the powerful local political elites. This traces through the political landscape. Arguably, the left of centre (UDF) administration of ex-French prime-minister Raymond Barre (1995 – 2001), who presided as Mayor over the Lyon City administration and was co-terminously President of the wider 'Grand Lyon' administration, has used the open/participatory methodology of Millénaire3 to address the image and reality of this 'exclusive club', pressing the need for citizenship and local participation in the future 'imagining' of the city.

Thus, in December 1997, Raymond Barre launched the Millenaire3 approach, designed to provide the conurbation with a comprehensive, integrated development project with the stress on sustainable development. There were two rationales for this move: to boost the conurbation's status among major European cities in the context of worldwide inter-territorial competition; and to improve its internal social cohesiveness.

SCOPE

Millénaire3 has enjoyed the personal **endorsement** and support of the nationally, internationally, and locally influential Mayor, Raymond Barre. He personally initiated the project in 1997, two years after his election to office. The project is therefore not without resources and top-level political support, as reflected in the administrative structures put in place to deliver it (see below). A further significant point is that Millénaire3 is not a separate or isolated initiative, but the **evolutionary** child of a 'futures' perspective, which can be traced through previous administrations. In 1989, Michel Noir was elected Mayor on the back of a 'new' economic development strategy, which 'envisioned' the city some 20 years ahead. Called 'Lyon 2010', in fact, much of the content of the plan was a continuation of infrastructure projects initiated by his predecessors. Millenaire3 is therefore the latest in a long line of such strategic initiatives.

[22] This text is based upon S Randles (2000) *Cities in Evolutionary Perspective: Diversity, Reflexivity, Scale, and the making of Economic Society in Manchester and Lyon* PhD thesis, University of Manchester; C Hooge (2001), "Millenaire3 – a light on development strategies in European cities", keynote presentation to the EC Strata project FOREN conference, Creating Vision in the Regions, Dublin, December 2001; and various documents available on the Millenaire3 web site.

Yet, the contemporary 'futures' reflective thinking that is embodied in Millenaire3 demonstrates a *shift* in focus, away from the built environment, and towards a more humanist/social/inclusive agenda. Under the banner of 'the intelligent city', the objective is to nurture an environment where knowledge is 'federated' and shared across participant-agents of the city and internationally. This coincides with the promotion of the city as 'open' to multiple sources of new ideas and contributions of innovative thinking. Alongside this new agenda and set of priorities is the view that previous administrations had largely 'dealt with' deficits of the built environment and infrastructure.

Thus, Millenaire3 is intended to contribute to realising the following overall broad **objectives** for Grand Lyon:

- Reducing social disparities and reconciling the city's historico-cultural identity with today's realities.
- Creating systems facilitating project-style approaches to ongoing development and increased employment opportunities.
- Providing access to information and communication technology, encouraging their appropriation and promoting recognition of the resultant new forms of social bonding.
- Working towards a system of local government more open to dialogue and partnership, more propitious to effective public-sector action and aimed at restoring local government to its rightful place.
- Turning the Lyon Urban Community into a European metropolis of the first rank in terms of environmental management and business activity relating to environmental issues and markets.

Millenaire3 is an **ongoing** activity that has an annual budget of €1.4 million, which is provided exclusively by the Grand Lyon public authority. The time horizon used is variable but stretches as far out as **20 years**. With its participative emphasis, thousands of people from many walks of life have been engaged in Millenaire3 through a variety of means (see below).

BUILDING MOMENTUM

Millénaire3 is heavily branded and a great deal of effort has been expended in raising awareness and interest in the project internationally to the extent that the initiative has come to the attention of international policymakers and observers, e.g. OECD. Central to its execution has been the effective use of **marketing** techniques in awareness raising, communication, promotion, producing the sustained commitment and involvement of a range of audiences. The 'lead' agency, has, for all this, clearly and undeniably been the local authority, *Grand Lyon*.

Millenaire3 is present at a host of different **events**, including forums, trade fairs, seminars and the like. Within the conurbation, the Foresight approach has also been presented to community associations, administrative departments and other bodies in the interests of across-the-board appropriation. It has also given rise to a range of publications – 7000 copies of the seven **Newsletters** detailing application of the approach were distributed, while the Millenaire3 **Bulletins** covering the debates – 23 issued to date – are available free on request. "Subject Booklets" are intended as aids to decision-making on such matters as dance, nightlife, theme parks and carnivals. The 6000 print-run European Cities in the Making Newsletters are the voice of the Eurocities Economic Development and Urban Renewal Committee (EDURC) and bring the development strategy experiences of other European cities to bear on Lyon's thinking in this domain. Lastly, Millenaire3 has its own **Internet** site, www.millenaire3.com, which allows participants to follow the approach's progress and participate directly in discussion of the issues.

STRUCTURE & ORGANISATION

Millénaire3 is entirely co-ordinated, managed, resourced, and reported on by officers and politicians of Grand Lyon – the conurbation scale of government. The Unit responsible for the execution, communication and (importantly) promotional aspects of Millénaire3 is the 'Mission Prospective et Strategie' (MPS) – the **Forward Planning and Strategy Unit**. The Unit reports directly to the Secretariat General – the nerve centre of any local authority. Here, are typically located cross-departmental co-ordinating activities, where cross-departmental input, response or priority is required. Importantly, in terms of 'departmental hierarchies', placing units within this Dept affords them symbolic privilege, and also symbolises a project/unit beyond and above inter-professional or inter-departmental conflicts and boundaries. That the MPS is thus located indicates its degree of symbolic importance and 'leverage'. It is not, for example, located in a 'Planning Department' where 'strategic planning' might more traditionally reside. Official or formal communication from the Unit is addressed from the Vice-President charged with the future strategy of the conurbation, reinforcing the point that it is politically endorsed at the highest level.

The MPS is an eight-strong team and is charged specifically with:

- Organising Millenaire3
- Ensuring full-time monitoring of all topics relating to the conurbation's development
- Coordinating the Development Strategies for European Cities working
- Group set up by the Eurocities Economic Development and Urban Renewal Committee (EDURC).

The approach adopted has seen the establishment of **working groups** for key phases of the project, whilst at the start, a **committee of 'wise ones'** was assembled to deliberate on the strengths, weaknesses, opportunities and threats facing Grand Lyon.

METHODOLOGY

Driven by the objective of 'permanent consultation', and past criticism concerning 'distance' between elected representatives and the citizens of Lyon, a great deal of emphasis has been placed on the participatory involvement of a large number of Lyon citizens, reflecting, systematically the whole range of sub-groups and interest groups (e.g. informants from higher education, schools, voluntary groups, business etc), and geographically focused groups of Lyonnais society in the various thematic strands of Millénaire3 (see below).

Methodology has taken the form of the slow build up, over 3 years, of a **database** of participating groups and individuals, who have responded to 'trawls' or requests sent out across Lyon through the **press**, **leaflets**, and targeted **letters** to attend various **meetings**, **'open forums'** and group discussions. These are supplemented by in-depth **interviews** (almost 'journalistic' in style) with key 'experts' from the city across the various themes. Thus the methodology is more akin to a large-scale, longitudinal and on-going research programme. 'Consultation' has not taken the form of eliciting responses to a set of proposals, but rather it has sought input through discussion, and provides output in the form of research reports of findings, which have fed into the formulation of proposals. A set of proposals for the development of the city over the next 20 years has now been produced following this 'reflective' period, under a Committee comprising the six vice-presidents of Grand Lyon, chaired by Raymond Barre.

The approach is said to be in keeping with Habitat Agenda articles 44 and 45 h adopted in Istanbul, where local authorities were invited to adopt a **participatory** approach for development at all levels, and particularly at the local one, based on a continuing dialogue among all actors involved in urban development (the public sector, the private sector, NGO's and communities). In practice, a number of tools have been used to foster public debate, including:

- Regular Forward Planning Sessions, which provide a forum for public debate on such issues as socio-cultural change in the Lyon conurbation, memory and identity, work and job training, intellectual life, leisure, etc. These sessions have attracted between 100 to 250 people and last for half to one day.
- Small 'Working Groups', which have been set up to find solutions to the challenges currently facing Lyon and to draw up proposals for concrete action. These groups are made up of civil servants, elected members of the Urban Community Council and representatives of other bodies and civil society.

It is interesting to note that little attempt was made in the 23 'themed' reports produced by the exercise to derive a single 'shared' vision. Rather, the future is glimpsed through a **range** of perspectives and viewpoints.

The systematic and sustained nature of the methodology, covering a 3-year period, with dedicated staff time and resources, has been a key feature of the initiative. It has not been a 'quick' or 'reactive' response mechanism. The initiative culminated with a presentation of the set of proposals to underpin the development project of the Lyonnaise conurbation, on 19 Sept 2000. All participants from all forum meetings were invited, as were 'all citizens concerned about the future of the metropôle'. Also present were politicians and officers of Grand Lyon, together with representatives from other cities and international invitees, to witness the 'elaboration' and culmination of 3 years work. Following this meeting the Grand Lyon Council met to vote on the proposals (see below).

OUTPUTS AND OUTCOMES

In September 2000, Millenaire3 presented Lyon's civil society with its "**Conurbation Project**: A Competitive, United City – 21 Priorities for the 21st Century". The outputs of the project were also debated by the Urban Community Council at this time. Summarised in the form of five main strategic lines, the results reveal expectations having more to do with "How?" than "What?" issues. The Conurbation Project is a full-time affair and with residents now an integral part of the process, the first issue was how to establish and organize the appropriate preconditions for public debate. Once a simple territorial planner and provider of urban services, the Lyon Urban Community is now also assuming the role of motivator and facilitator of all-round development, concerned not only with economic growth but also with social unity.

The five lines of **strategy** set out in the Conurbation Project document are as follows:

1. A city receptive to other cultures and the world
2. An attractive, liveable city
2. A city that fosters the spirit of enterprise
3. A city conducive to lifetime learning
4. A city putting the accent on consultative democracy

The priority areas identified had, as their target audience, mostly the regional government. With this in mind and with the Millenaire3 emphasis upon participation, the consultative democracy priorities have been immediately addressed with the establishment of a **Development Council**, which involves civil society in conurbation development as provided for by the legislation on territorial planning and sustainable development. Comprising representatives of official bodies, well-known specialists, representatives of community associations and residents from economic, social, cultural and environmental circles, the Council works closely with the President of the Urban Community. With more than 300 people involved in the Council, its work has been divided five working groups, each of which addresses one of the strategy lines set out in the Conurbation Project document. As a permanent monitoring tool, the Council will warn of any new challenges that arise in terms of the conurbation's overall development performance.

Reflecting on the whole process, whilst Millenaire3 has involved a broad range of stakeholders, the types of reactions and degree of commitment have varied widely. Four main categories of actor have been identified by Millenaire3 officials:

- **Groups that joined immediately:** civil servants and administrative departments (especially at State level), together with members of community associations. The civil servants need a sense of social purpose, while the associations are home to people with specific projects and interests in search of an audience for their ideas.
- **Groups showing increasing commitment:** academics, researchers and representatives of the cultural scene. Relevant problems and issues arise in all these domains, but it took a certain amount of time to get the approach's message across.
- **Groups that have moved from a background role to an expression of increasing interest:** the reactions of decision-makers – especially politicians, the crucial element – ranged from scepticism about the method's innovative character to a genuine interest that may or may not lead to commitment. Contributing factors here include the destabilizing effect of community involvement and the break with the traditional reliance on specialists. For politicians, the shift from purely representative to participatory democracy generates anxiety about new forms of opposition, whereas the approach can in fact reinforce their power and status. For the major institutions, the issue is governance, their anxiety being sparked by fears of a global Urban Community takeover. Over time, however, these points of view have evolved positively.
- **Groups of the relatively uncommitted:** the business world (company heads, executives) and students have shown highly varied, fairly passive reactions. Their mode of functioning is far removed from that of the public-arena actor – company heads have their special timetables, students their "zapping" style of behaviour – and the preconceptions and entrenched codes on both sides are hardly conducive to cooperation with the public sector stakeholder and the politician.

With Millenaire3, the Lyon Urban Community set out to modernize its approach to the shaping and implementation of conurbation strategies. The approach now being applied is also bolstering the Urban Community's role as coordinator and mediator at conurbation level. Based on cooperation between stakeholders, Millenaire3 has already made possible greater synergy between three vital functions: public debate, networking of stakeholders, and projects. **Public debate** is a core aspect of Millenaire3: by generating exchange and helping create a climate of mutual confidence, it yields new ideas and contributes to project construction. Situated at the interface between all the relevant fields, **networking of stakeholders** facilitates the de-compartmentalisation that Lyon so badly needs. Via its organization of debates and ongoing dialogue between stakeholders, Millenaire3 plays its part in this process. Last but not least, this approach is leading to the emergence of new **projects** or increased visibility for existing ones. In this respect, the Urban Community works as a facilitator in its setting up of a host of partnerships. At stake here are ongoing, everyday functions and everything depends on their synergy: public debate is vital to a climate of trust, but cannot on its own sustain that trust indefinitely. Only projects and concrete initiatives can ensure continued stakeholder mobilization; and this in turn is essential to achieving the goals chosen by stakeholders and civil society for a project vital to Lyon's future.

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CHAPTER 11 – WEST MIDLANDS (UK)[23]

BACKGROUND

The West Midlands lies at the heart of the United Kingdom and has a population of some 5.3 million people. It is the country's manufacturing and agricultural heartland and the hub of the national transportation network. The region covers an area of 13,000 square kilometres, its western edge bordering Wales.

Historically the urban areas have been internationally famous for manufacturing of a wide variety of products. North Staffordshire is the centre of UK ceramics, Birmingham has long been known as the city of a Thousand Trades, Coventry grew with the cycle, vehicle and aircraft industries and the Black Country towns of Wolverhampton, Walsall and Dudley were the focus of metal production and fabrication. Restructuring of those industries has reduced the number of people working in the sector, but the West Midlands is still the UK's main manufacturing centre. Manufacturing now produces 30% of the region's GDP and 27% of employees rely on manufacturing for their livelihood although growth in the service sector – particularly retail, distribution, hotel and catering and business services – has been the fastest of any UK region.

Many manufacturing businesses have diversified away from their traditional markets in order to reduce dependence on the automotive sector, but key products are also designed and made in plastics and rubber, electronics and telecommunications, food and drink, jewellery, glass and leather and ICT Software. As with other UK regions business growth has been in the small to medium enterprise sector.

The region became involved in regional Foresight in 1999 as a direct result of the UK national programme implementing a policy of encouraging regions of the UK and small- and medium-sized enterprises (SMEs) to adopt Foresight. The development of a programme within the region was also one of the first initiatives set up by the development agency, Advantage West Midlands, established in April 1999, and was a delivery mechanism of its Regional Innovation Strategy (RIS) published in June 1999.

The central objective of the regional programme has been "to utilise the proven and respected methodology adopted by the UK Foresight programme and to build on this for the development of a regional Foresight programme which actively involves the SME community in the region". The programme was part-financed by the European Regional Development Fund and the key partners in its delivery were Advantage West Midlands and Coventry University Enterprises.

SCOPE

The Regional Foresight programme sought to demonstrate that regional Foresight can encompass clear and tangible benefits for industry in adopting long term visionary planning for the region as a whole. It was designed to act as a first concrete step to begin to change the culture of business planning which currently exists in many of the region's business and industries (i.e. short term focus). In order to achieve this strategic aim and to increase in quantifiable terms the number of companies in the West Midlands participating in the longer term strategic planning, the programme had a number of long-term and short-term objectives. The most important long-term objective was to provide a source of knowledge and expertise based on the work of the regional Foresight panels to instil confidence in the

[23] This text is based upon C Winters (2002), "Methods to improve the efficiency and effectiveness of regional foresight activities", Paper to the EC STRATA-ETAN Expert Group on Mobilising the Regional Foresight Potential for an Enlarged European Union.

region's business and industrial communities. Amongst the more immediate **objectives**, the programme was designed to:

- Create for the West Midlands region a regional Foresight programme which commands the same respect as that enjoyed by the national Foresight programme and, in so doing, to ensure that the West Midlands becomes a *'region of excellence'* in terms of the interaction between regional policy and business practice
- Provide access to a knowledge base for SMEs considering involvement in adopting a culture of long-term business planning
- Offer non-discriminatory access to the Foresight process for small and large companies alike
- Target several important sectors in the West Midlands on which the work of the regional Foresight panels will be based and to ensure full inclusion of information currently available
- Provide access to best practice examples in other regions of the UK and Europe within the regional Foresight process so that companies in the West Midlands can see the tangible benefits of visionary planning
- Ensure that the Foresight process has a place within the long term regional strategy of the West Midlands
- Effect a small 'milestone' change in culture among selected sectors of West Midlands business and industry so that exemplar companies can assist in the sustainability of the Foresight project for the region in the longer term.
- Co-ordinate existing research and to commission new strategic research in the sectors chosen so as to ensure that a 'knowledge' base within Foresight is underpinned by information which is accurate and current. Specifically this would be targeted at the sectors selected by the project in the first instance.

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** of 5-10 years. The **budget** for the project was £472,000 (approx. €750,000) 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. The programme is now to be extended to 2004 using regional funding only (see below).

BUILDING MOMENTUM

Private sector involvement (the main target audience) in the West Midlands Regional Foresight programme has been achieved through:

- A partnership with the West Midlands Industry Foundation (WMIF).
- Regional Foresight Panels (see below).
- The involvement of Industry Associations and Professional bodies in the dissemination of information and the regular programme of seminars which was targeted at their members (e.g. The West Midlands Business Consortium – A network of over 50 West Midlands Business Clubs).

It was important to establish, at a very early stage, the distinct nature of this project as a REGIONAL Foresight activity with a clear focus on how Foresight could benefit SMEs and other organisations in the region. For this reason the project was designed to include a large launch seminar for the whole of the region followed by several mini launches at sub-regional level.

Working with the national Foresight programme managers, the programme also included in these seminars practical case studies on how the Foresight process has affected the thinking of national government and provided some case studies of Foresight adoption from the West Midlands region.

Throughout the duration of the project, regular regional Foresight **events** were planned to explain the development of the project and to generate ideas on how the work of the regional Foresight could best be implemented to improve the long-term competitiveness of industry in the region. The stimulus for these ongoing seminars was the work undertaken by the regional Foresight panels.

A variety of printed **literature** and stationary was designed to support the promotion of the project and encourage the creation of a corporate image for the project as a whole. It was essential for the West Midlands region to be aware of the Regional Foresight programme at an early stage as the long-term sustainability of the project would be dependent on the penetration into the consciousness of the region's industry. The printed literature included brochures, letterheads and business cards and step-by-step guides to the Foresight process that would include case studies and clear descriptions of the results of the national Foresight process and addressed the potential benefits to West Midlands industry of their involvement in regional Foresight.

One of the most important sources of marketing material for this project was the 'interactive' **web** based information made available to those in the region who might benefit from becoming involved in this West Midlands regional Foresight initiative. A dedicated web site was created in order to provide information on both events generated by the project and relevant information on sectors and markets being examined by the Foresight panels. To view the West Midlands Regional Foresight website visit: www.foresightwm.co.uk

In addition to the project website, publicity for the programme was developed through press releases detailing seminars being delivered by the network.

STRUCTURE AND ORGANISATION

The project co-ordinator was Advantage West Midlands, the Regional Development Agency, which formally came into existence in April 1999. The work in which Advantage West Midlands is involved incorporates functions that are targeted at improving the economic competitiveness and social well being of the region. For the most part, the Regional Development Agency is not a delivery mechanism for individual initiatives within the region but is concerned with the development of strategy and policy, which is implemented by the West Midlands regional partnership of business support organisations. Thus, in the case of the regional foresight programme, the principal contractor was Coventry University Enterprises Ltd. (CUE), which has considerable experience in delivering projects on a regional basis that are targeted at the SME community, and the Centre for Local Economic Development (CLED), which is one of the region's premier research and consultancy organisations in the area of economic development.

The UK's national Foresight programme was used as the **benchmark** for the regional project. Accordingly, a **steering group** was appointed and a **sector panel** approach adopted. In selecting sectors to be targeted, Advantage West Midlands and its partners identified five sectors that were characterised as a mixture of strategic and traditional industries for the region and 'areas' of business activity that are expected to grow rapidly on the basis of current 'predictions'. This mixture was chosen to provide the project, and more importantly the region, with a test bed on regional foresight activities that could help support or counter the predictions on which the selection was being made. For these reasons, the following sectors were identified as those on which the project would be focused:[24]

- Medical Technology

[24] These had already been identified as key sectors in the preparation work of Advantage West Midland's Regional Economic Strategy (RES)

- Ceramics
- Engineering Design
- Tourism and Leisure
- Creative industries

The regional Foresight panels were intended to mirror but NOT replicate the work of the national Foresight thematic panels. Moreover, it was hoped that they would add credibility to the implementation process and, just as importantly, provide 'local ownership' of the Foresight *process* in the West Midlands region. This was achieved by involving industrial and other representatives from the West Midlands region in the regional Foresight panels. It was also central to the success of the programme to involve representatives of the SME community in the West Midlands in the Foresight panels. The panels were comprised predominantly of leading industrialists and business sector representatives from within the region. These individuals were asked to perform one of the key functions of the foresight process in examining issues, utilising research and data and creating 'visionary' scenarios for the region and specifically individual sectors and to make recommendations on actions which can create a more competitive environment in the West Midlands (see below).

METHODOLOGY

Prior to the creation of the sector panels, focus groups were established to define the objectives for the panels, their membership, and the background research required. Following the meeting of these focus groups, the Centre for Local Economic Development (CLED) was tasked with developing a **review** of the various sectors related to the programme. These reports were designed to give a broad picture of the sector to serve as a framework within which discussions relating to the issues faced by the sectors in the West Midlands could take place. As such, they gave an overview of the Strengths, Weaknesses, Opportunities and Threats (SWOT) faced by each sector and the Social, Technological, Economic, Environmental and Political (STEEP) issues.

These **SWOT** and **STEEP** analyses made it possible for panels to identify where competitive advantage in the region exists and to diagnose weaknesses in the general environment. They enabled the panels to map the region's future activity around its customers, its supply base, learning and skills and its universities. Essentially, the process was about capturing the distinctiveness of the region and developing goals to identify the next steps forward. The scenario method was used to do this.

The **meetings** of Regional Foresight panels in the West Midlands region were **facilitated** by an experienced consultant who encouraged the group (by reviewing the work undertaken by CLED) to evaluate the distinctive capabilities and core competencies of the region on which the future could be developed. Key **driving forces** for the development of each sector and for the region were then identified by each foresight panel. Further research was then undertaken in these areas (e.g. Trends in Medical Device Technology from the US) – research groups were established for this purpose and were briefed to assimilate the results of existing research and to incorporate this information into a 'knowledge pool', which included new empirical and primary research commissioned by the project. Using all of this regional intelligence, the panels developed regional scenarios. These **scenarios** focused on a period of between 5 to 10 years and included a time-line identifying key events and interventions. In addition to a direct focus on sector developments, the scenarios also included consideration of more social issues, including the ageing population and issues such as health in inner city areas.

There were three pro-active mechanisms by which representatives of the West Midlands SME Community were involved:

- Representatives of SME enterprises who are recognised for their success in specific sectors were invited to join the regional Foresight panels as full members. This ensured that issues affecting SMEs were embedded into the discussion process.

- In addition to the provision of research and information from the 'knowledge pool' to the regional Foresight panels (which underpinned much of their deliberation), evidence from 'witnesses' representing the SME community also formed a part of the process.
- In order to engage the SME community in the process at regional level, the Business Link network and other business support organisations were invited to contribute to the direction of the Regional Foresight Programme by:
    - Providing information and research conducted in the sub regions which could assist in the Foresight process
    - Attending as representatives of the SME community when meetings of the project management group took place
    - Providing evidence for the regional Foresight panels

OUTPUTS AND OUTCOMES

The outputs of the panels and the wider programme were packaged and disseminated to the target audience, i.e. SMEs. By adopting a sectoral approach within the region, the programme management team quickly became aware of key bodies in the region with an SME membership. Rather than directly target individual SMEs, a strategic decision was taken to work with these membership organisations related to the chosen sectors. This focus enabled the programme management team to identify the major issues concerning regional SMEs and to design seminars and workshops to address these.

Three key dissemination mechanisms were utilised:

- **Seminars and Workshops** – A large variety of events took place, from over 150 people attending an ICT event to 6 people attending a Foresight Interactive Toolkit workshop (see below). The events were also distinctly different with leading industry figures (some of whom were involved in the National Foresight programme) presenting their views at larger events and with the project team and other facilitators leading smaller groups.
- **SME Assistance** programme – The programme has also worked with individual SMEs and networks to encourage them to think proactively about their future. Project work in this area has assisted these organisations in developing a vision for their future, and evaluating their Strengths, Weaknesses, Opportunities and Threats and examining the STEEP factors that could affect their business. This has resulted in the establishment of new SME networks, the development of new products, and companies accessing new markets.
- SME **Foresight Toolkit** – In delivering assistance to SMEs the programme management team recognised the need for a "vehicle" to enable other businesses to adopt the principles of Foresight. Funding was then allocated to develop an interactive toolkit for use by SMEs. The toolkit was designed to be highly user-friendly both in terms of the content and the way it is used. Throughout Autumn 2001, seminars were held in the West Midlands for SMEs to support them in the use of the toolkit, which is now available online at the programme web site.

Engaging SMEs in the programme has been a complex task. The West Midlands, as a diverse region, has a plethora of business support activity and it has proved difficult to develop the programme to ensure the engagement of regional SMEs. In this environment, the programme benefited greatly from its linkage to the national Foresight programme and by being managed by the regional development agency, Advantage West Midlands.

In addition, the programme has linked its activity to the work of local business groups ensuring that the needs of their member SMEs are met. In the programme's work with these SMEs, the project team also tried to ensure that their business objectives were met. This was achieved by relating the seminars and workshops to topical issues, including accessing new markets or developing new products, and sessions were designed to ensure that every SME left with a either a new technique they could apply, a

view of their future markets, or a new business idea. This activity was supported by the development of the Foresight toolkit.

On a programme level, the West Midlands approach to regional foresight has resulted in over 3000 SMEs advised, over 500 SMEs assisted and nearly 200 SMEs 'improved'. On a more visible level, the project has created 33 jobs and levered around €3.5 million of investment in two years. On a practical level, and from a regional and business viewpoint, the **outcomes** have included:

- New business start-ups
- Strategic partnership between regional companies
- Development of new products
- Evaluation of strategic direction within the business
- Strategic response to succession planning

All of the events were **evaluated** using a standard feedback sheet. With over 500 companies attending the events, this provided a valuable feedback mechanism for the project. The results show that the workshops and seminars were very well received by the business community, with nearly all of those companies attending looking to embed Foresight within their business process. However, another perspective on these workshops and seminars is offered by the response rate to invitations to these events. At around 5%, this shows the difficulty in engaging with SMEs on a large-scale and highlights the resources needed to make this type of regional foresight approach a viable exercise.

But on the positive side, regional Foresight has now become an integral part of the work of Advantage West Midlands. Primarily linked to innovation, the use of foresight is highlighted within the Agenda for Action (linked to the Regional Economic Strategy).

Following the successful programme outlined above, the Agency has committed itself to the **continuation** of Foresight in the region until December 2004. A formal model has been developed, which will see SMEs assisted in identifying future trends and opportunities to generate business growth, through the facilitation of businesses and business networks. The programme will use a three-phase process of engagement:

- Phase 1: Will identify the key long-term trends and drivers in technologies/markets. Working with key business groups, the findings of this "futures research" will be brainstormed and subsequently consolidated. This will lead to the identification of key strategic issues facing a particular group. Information will be gathered from Foresight reports and other sources of research.
- Phase 2: Themed workshops will be developed based on the key strategic issues facing the group – these will be targeted at known clients within the area of activity and will additionally attempt to engage with new clients.
- Phase 3: Where applicable, networks (4/5 companies) will be established to support collaboration, the development of ideas and to share experiences. In addition, practical "how to" sessions can be developed, based around identified key strategic issues relevant to companies.

The weakness of the West Midlands foresight approach to date has been ensuring its development into mainstream delivery, but this extension will enable the region to further develop its foresight activity before it becomes fully mainstreamed within the UK Small Business Service and their Business Link network. In addition to supporting the development of the RDA cluster approach, the newly emerging foresight programme in the West Midlands region will support the development of High Technology corridors, where there is particular potential to attract and grow high technology industries included in the target clusters.

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CHAPTER 12 – BALTIC STRING25 (Denmark, Sweden, Germany)

BACKGROUND

Since the end of the 1980s, the European Community has reserved substantial funds to promote cross-border cooperation 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 cooperation 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 cooperation 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 cooperation 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 cooperation 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 cooperation 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 36,800km^2. The density of population is 215 (hab./km^2) and the annual Gross Domestic Product per capita is one of the highest in Europe at 27,500 Euro.

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 Femer 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 organizations, cultural institutions, Agenda 21 actors and other NGOs.

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

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 cooperation 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 Femer 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

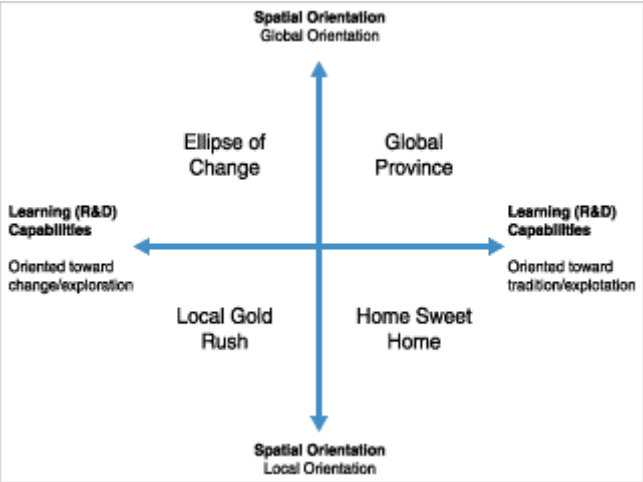
Language, in the literal sense of the word, was one of the first things to agree on as the cooperation crosses three countries, each with its own language. From the very beginning it was agreed that the common language should be English so that all participants could communicate on equal terms. It was 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 organizations (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 organizations 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 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 working groups assured coordination 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, characterized 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

1. Business Development –based on innovation and creativity
2. Learning Society –social capital as a prerequisite for technological innovation
3. Exchange of Knowledge – to foster potential synergies between private corporations, public research institutions and academia as well as between different academic disciplines
4. Mobility of People – meaning physical mobility as well as professional, educational, mental and cultural mobility
5. Infrastructure and Transport – aimed improving technical facilities
6. Environment, Nature and Landscape – as a general challenge for regional development
7. 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 cooperate 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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Annexe – Foresight Methods

Most of the methods used in Foresight studies that are oriented to examining longer-term futures stem from the disciplines of forecasting and Futures Studies, and it is mainly these we will be examining here. People wanted to examine longer-term issues throughout the twentieth century – H.G.Wells called for the establishment of "Professors of Foresight"! - and methods of extrapolation and technology assessment were already being developed in the 1930a. But methods that could deal with the sorts of surprises, qualitative and structural changes such are almost inevitable in the longer term were mainly developed in the 1950s and '60s. They came from various sources, but one of the most important was as tools to deal with military problems and strategies, and to elicit opinions on issues that were difficult to analyse using scientific methods (e.g. technological change as often studied through such tools as. the Delphi method).

Chapter 2 provided an introduction into the use of such techniques and methods in Foresight. We saw that these can help to structure information concerning the future and may help Foresight being used as an interactive approach. If they are allowed to take over, however, they can render Foresight more expert-driven and less participative.

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. This provides helpful background intelligence for many types of Foresight activity, but we would not regard it as essentially being a Foresight method itself.

ENVIRONMENTAL SCANNING

First, note that "environmental" here does not refer solely to the natural environment; the methods involved here are to do with examination of the environments (social, political, technological etc.) that organisations or regions confront, and how these are changing. Scanning involves a commitment to a continuing process of monitoring change, often with an orientation toward longer-term issues. Environmental scanning systems are intended to provide early warning about important changes – not just the obvious trends, but also 'weak signals' that indicate new developments suggesting that plans should be amended. Finding early indications of possible important future developments allows us to gain as much lead-time as possible in dealing with them.

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. Often an individual or a small set of individuals entrusted with the task of reporting regularly back to the organisation (sometimes with talks by outside experts, videos, etc.)

There are various scanning techniques, some of which be contracted out to consultants. Material and information can be identified systematically by searching the Web and on-line databases, as well as by structured examination of specialist and general media. Literature reviews may be prepared. Primary research may be undertaken using databases – for example, looking at trends in research around a topic of interest to the region from bibliometric databases, or at trends in innovation through patent databases. Research may involve small programmes of interviews with key experts. Often such material is fed into Foresight workshops, but *expert panels* can also be used for scanning purposes. 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: rotation is encouraged to bring in fresh views into the process, specific experts may need to be recruited.

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. Though not a Foresight method as such, it is usually a necessary input to Foresight.

Broad classes of Foresight methods

Many tools, some of them coming in many variants, are used in Foresight exercises. Chapter 2 distinguished between explorative and normative, between qualitative and quantitative methods, and between methods based more on expertise and those based on the analysis of assumptions. In this Annexe, we organise the discussion of Foresight methods in terms of three criteria:

Criteria	Methods
1. Quantitative (assumption-based) methods using statistics and other data to develop forecasts.	- Trend extrapolation - Simulation modelling and System dynamics -
2. Methods based on eliciting expert knowledge to develop long-term visions and scenarios.	- Expert panels - Brainstorming - Mindmapping - Scenario analysis workshops - Delphi method - Cross impact analysis
3. Methods for identifying key points of action to determine planning strategies.	- SWOT analysis - Critical / key technologies - Relevance trees - Morphological analysis

Assumption-Based Quantitative Methods - Foresight-relevant though mainly focused on forecasting

Numerical data, of many types, are useful in thinking about and forecasting longer-term developments, and to a certain extent they can be useful ways of presenting Foresight results, too. Such data can be manipulated in powerful ways, especially using computers. Trends may be identified and projected forward; interactions between variables can be mapped out; results can be dramatised in graphs and charts. It is no surprise that putting information in numerical form is very popular – indeed, where these methods can reasonably be employed, they are more or less essential. The reasons for this include:

- It is possible to manipulate the information in consistent and reproducible ways, combining or comparing figures, extrapolating trends, 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.
- Quantification 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 from a disease, or be in need of housing, etc.). Such comparisons can inform decision-making in significant ways – though statistics can only inform, not substitute for political debate and decisions. For instance, they can help to validate or undermine claims how serious the problems confronted by specific groups are. But remember that indicators are by necessity partial – they just tell us about the parts of the situation we are measuring, and other elements may be judged equally or even more important. However, the data may help to push us beyond mere assertion of the seriousness of problems, to more systematic attempts to document and understand them.
- 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. Researchers themselves sometimes reach new insights when data are “visualised” in these ways.

There are several limitations to the use of quantitative data, for example:

- Some things are hard to represent numerically. This does not mean that they are necessarily less tangible, less significant, or less amenable to serious analysis - or to appraisal within Foresight.
- The quantifiable elements of a phenomenon should not be taken as encompassing the entire phenomenon (or even all of the most important features of the phenomenon). But often they are accorded particular attention: frequently discussion will be focused on the graphical elements of a report, partly because of the value of such graphs in communication, partly because of the “objective” appearance of numerical data (even if these are only forecasts or “guesstimates”).
- Not everyone is comfortable with working with, or even reading, statistical information. Some people are extremely suspicious of “lies, damned lies and statistics”, knowing that often so-called hard facts are actually misleading. We are all familiar with statistics that are based, for example, on inappropriate samples, that use inadequate indicators, or that are being misinterpreted or used selectively in various ways. Certainly it is important to use reliable sources (e.g. official statistics) wherever possible (unfortunately these are often not as up-to-date as we would like); and to seek the advice of independent experts as to the use and presentation of such data.
- Good quality data are often not available to inform a Foresight exercise. When we noted that official statistics are not always as up-to-date as we would like, there are two elements to this.

First, the data often lag by some months or even years behind events. Second, in order to maintain consistency over time, official statisticians are unwilling to modify their indicators and series too often – with the result that measures that can capture emerging phenomena (e.g. new skill requirements, new technologies) are not available for some time after the phenomena's significance has become established. The production of new data may be costly or excessively time-consuming.

- Some advanced statistical methods and modelling techniques are highly complex. 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 may discount other experts' reservations as to their uses and limitations.

Data may be generated in various ways. *Secondary data* are data that were 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 the records produced by people's contact with tax, health or other authorities; or from other sources which in some way "capture" their behaviour. (For example, a new source of data is websites. 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. Commercial organisations may capture data, e.g. on market trends. Scientific publications and patents are used to monitor developments in science and technology.)

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 two 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. There are a large number of introductory and more advanced books that detail such approaches. Quantitative data may also be produced by the use of other methods top be described later, e.g. the expert-based techniques of Delphi and cross-impact analysis.

TREND EXTRAPOLATION

A trend is a pattern of development over time. Some common patterns of development are:

- steady increase or decrease (linear trends);
- accelerating or decelerating increase or decrease (the accelerating increase is often an exponential trend);
- an S-shaped curve (slow increase followed by rapid increase and then by slowing down – often this is a logistic curve);
- a U-curve (usually an upside-down U – increase followed by decrease);
- cycles of various kinds – such as sine waves. Many natural phenomena display cyclical trends (e.g. temperatures through the seasons of the year) and so do some social affairs (e.g. business cycles - where the cycle appears to be superimposed onto a long-term growth trend, in many cases).

What is trend extrapolation?

The basis of extrapolation is to project forward a trend. This may be done "by eye" – manually plotting a line or curve through a series of points, and extending it forward into the future. **Interpolation** is

involved when one estimates values that lie between actual data points.) More systematically, and less likely to be swayed by extreme values and the human tendency to search for patterns in all sorts of visual images, the trend may be detected by mathematical or statistical analysis, an equation fitted to describe it, and this equation used to determine future values.

In shorter-term forecasts this is often a matter of extending a linear trend – simply continuing a straight line - or exponential curve (often represented in terms of a straight line as plotted against a logarithmic axis, in which increasingly large increments can be represented in terms of the same intervals on the axis). Many phenomena - e.g. economic growth (ignoring the business cycle fluctuations), or increases in the power or diffusion of a technology – can be represented in this simple way in the short term, and sometimes for longer periods of decades. But few trends can continue to increase indefinitely. In the longer-term, limits to growth will often be encountered. Thus, there may be a limit to the size of the population to whom a technology or cultural practice can diffuse: it is not usually realistic to extrapolate the trend beyond 100% of the population (though where people may own multiple items – e.g. electric motors or microprocessors built into our domestic appliances – this may be more reasonable!) Various other types of trend curve may be fitted to the data to take into account the "ceiling" that is involved here - the well-known S-shaped logistic curve is probably best known, being used to describe such things as the progress of an epidemic disease, or the uptake of a popular new product, through a society.

Other sorts of extrapolation are sometimes employed when we do not have adequate time series data to work with. For example, it may be reasonable to assume that a richer country (or region or social group) provides a model for what a poorer country (or region or social group) will be like when it achieves that level of wealth. Data about things such as ownership of material goods, food or energy consumption, even social values may be projected on this basis. Groups that are believed to be cultural vanguards may similarly be used as indicative of what the majority tastes or lifestyles might be like in the future. Such approaches can be very illuminating, but care has to be taken about the basis of such extrapolations. For example because rich people in 1930 had servants, it does not follow that when the mass of the population attained similar levels of income some decades later that they would all have servants – the rise in affluence meant that fewer people were economically motivated to take on that role.

Why and when is extrapolation useful?

Extrapolation can forcefully indicate the scale of change that can be anticipated if a trend is to continue into the longer-term. Sometimes this will be so unrealistic that we will be forced to consider where there might be a ceiling encountered, or countertrend brought into play. Sometimes the projection will be fairly plausible, if surprising at first. (For instance, "Moore's Law" has fairly accurately predicted the dramatically increasing power of microelectronics for several decades, and is anticipated to remain effective for several years to come at the very least.)

Extrapolation is least viable where there are few or no solid data to rely on. Extrapolations based on cross-sectional comparisons (e.g. of groups supposed to be more in the vanguard than others) are most suspect, though even this can be a helpful start to thinking about the future. Extrapolations based on a good volume of time-series data are far more plausible, though we discuss below several cautions that need to be borne in mind here. Most satisfactory are extrapolations based on some reasoned analysis of what it is that is driving a trend forward, and why it is that we should expect it to persist, or to turn out to be an S-curve with a particular ceiling rather than an exponential one. Understanding of the underlying dynamics, of trends and countertrends, means that we have a mental model of the system whose behaviour is resulting in the visible trend. Otherwise, trend extrapolation is relying on a very simple model, in which some unknown variables (represented by the passage of time) are causing trend in the observable indicators.

What are the drawbacks?

Trends are not always robust, and we need to confront various issues when using trend extrapolations:

- If we are not really working with time-series data, but rather inferring a trend on the basis of cross-sectional comparisons between population groups, regions, or countries, then we need to ask about whether there are important structural differences between these entities such that one cannot be expected to be a good model of the future for the others – and especially if there are relationships between the entities that help to determine these apparent trends (like the relationship between richer and poorer social groups in the example outlined above).
- If we are dealing with time-series, can we really be confident that the underlying driving forces will persist? Do we have some idea of why there is a trend, and of whether the factors that give rise to it are stable or even self-reinforcing ones? Is there any reason to expect instead that these factors could change dramatically, rendering the trend exhausted or even reversed? Might counter-trends come into play? For example, resistance may grows to a particular cultural development (increasing pollution levels engender environmental regulations; increasing crimes of a particular sort lead to new forms of policing to curtail them, etc.) Or it may be that business or regional competitors learn how to challenge the power behind a trend – other regions copy your successful efforts at attracting inward investment, for instance.
- Similarly, we need to ask 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. Thus 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 (reflecting Moore's Law, incidentally)! Similar changes may be involved in cultural practices – the meaning of a cultural practice is liable to change when it stops being avant-garde and becomes fashionable. Even diseases mutate. One consequence is that the implications of later adoption of the new product or practice are liable to be very different from those experienced in early adoption. Such things as the skills required to use a new product, the cultural meaning of a new practice, and the utility of a new strategy - these are all liable to mutate over time.

SIMULATION MODELLING AND SYSTEMS DYNAMICS

"Simulation" can refer to two quite different things. Here we are concerned with computer simulation models, of which systems dynamics is a particular variety.

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). Role-playing simulations can be amusing, gripping, and educational for the participants, and illuminating in terms of throwing up possible interactions of strategies and counterstrategies. They have thus been extensively used in circumstances where it is the interplay of human agents that is vital to the pattern of developments – for example in military and diplomatic affairs. There have been a few efforts to bring role-playing and computerised simulation together, for example by using a model to calculate the consequence of players' actions for economic growth, energy use, etc., or to examine the relative positions of different actors. Such approaches are well-developed in computer gaming for entertainment purposes, but remains fairly rare in mainstream futures studies and Foresight at the time of writing.

What are simulation models?

Computer simulations simply attempt to represent a state of affairs in terms of a series of variables and relationships between these variables (some of these may represent the states of particular entities, or of different components of a larger system). A computer model based on such insights can be constructed and "run" to examine how the values of the variables will change over time, given the assumed relationships between them. Unlike the very simple models used in extrapolations, simulation models allow for feedback relationships between variables – A can affect B, and B can affect A. How this works in practice in dynamic simulations is that the model treats future history as a series of small intervals, and across each of these the state of variable A at each time is calculated on the basis of the state of A and the state of B at the previous time: likewise B's later state is a consequence of the earlier states of both A and B.

Modelling has been developed most widely and to greatest extent 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, since the key variables are often contentious and have limited high quality data to provide good indicators of them, and the relationships between them remain obscure.

Computer simulations can be extremely complicated affairs, with so many variables and relationships involved that a large team is 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 about the appropriate styles for modelling. 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 a relatively basic general model with "optional" satellite models to examine particular issues in detail – a model of modules, as it were. There are also major debates as to other elements of modelling style. For example, many economic models essentially assume that the evolution of an economic system is toward equilibrium, and the task of the model is to tell us what that equilibrium should look like. These models rely on software that "solves" the equations in the system to give equilibrium values. Other approaches dispense with the notion, and examine the dynamic processes between variables with no assumption that they are tending toward such an idealised state.

Modelling requires at a minimum a modeller or modelling team, and adequate computer hardware and software. A simple model may be constructed rapidly (perhaps in a few hours in the case of a simple model of a well-understood system), a complex one may take person-years of effort. A critical issue in model construction is how to deal with uncertainties – lack of available data, poorly understood relationships, opposing theories about how the system operates. These uncertainties can be the opportunity for constructive dialogue; what is important is that hey are dealt within a transparent way, so that key assumptions and uncertainties are open for discussion.

What is system dynamics?

Systems dynamics is one of the best known forms of computer simulation, achieving fame through its use in studies such as Limits to Growth. It uses a specific computer language (DYNAMO) to represent complex situations in terms of stocks, flows, and feedback loops. A system dynamics application starts with the identification of a problem: the modellers then seek to identify the major elements of the 'system' that produces the problem, and to describe them in terms that can be modelled. (This method searches for the causes of system behaviour that lie within the system, with events 'outside' serving as triggers rather than causes.). The factors that contribute to the problem, and their structural relationships

are thus listed, and characterised as levels and rates. The next step is to quantify these factors and the assumptions behind them. The model "run" will begin from the initial quantified values for the variables (the "calibrations") and step through them at discrete time intervals, which are small enough so that system behaviour appear continuous. A successful model is able to simulate the patterns of behaviour of the real system, for example in terms of the trends in key indicators. Different calibration values for key variables may then be introduced, in order to simulate how the system would respond to different circumstances or policy initiatives; different relationships may be introduced to examine the implications of different theoretical assumptions.

Why and when is simulation modelling useful?

Simulation models are used to understand and anticipate changes over time in puzzlingly complex systems. Developing such a model can be a consciousness-raising exercise for the modelling team, as they come to grips with what we do, and do not, know about the relationships between variables. A model may be used to provide a kind of reality-check on scenarios, to help users recognise how important or unimportant particular developments are in the time scale under consideration – for example we might see that a carbon tax could be introduced with relatively little effect on employment, under appropriate circumstances; or that in the longer-term climate change is liable to transform the temperatures experienced in our regions.

Systems dynamics has been used fairly often with what are thought to be 'data poor' problems, with experts being able to construct models that seem plausible to them and many others on the basis of quite sketchy data and assumptions. This method can be useful to gain insight and understanding in a messy situation by constructing (and, hopefully, debating) increasingly sophisticated causal loop diagrams. More commonly, methods of statistical modelling are used, to capture relationships between different parts of an economy, or theories about how social or environmental processes interact are used, to structure models of complex phenomena.

The output can help policy-makers ask better questions, and may help anticipate patterns of future development and highlight sources of emerging problems. However, the dynamics generated by information feedback and circular causality are difficult to distinguish without computer support and/or expert advice.

Models are often used to provide some of the backdrop to a Foresight exercise, by indicating the range of assumptions we might have concerning, say, economic growth or climate change. They can be used to inform scenarios; and it is also possible for models to be calibrated so as to illustrate alternative scenarios. With increasing available of powerful computation, we might expect to see more "real-time use of models to explore the consequences of assumptions in workshops f various kinds, and perhaps more use of models as a framework within which to conduct role-playing simulations.

What are the drawbacks?

A major problem with simulation modelling is that people often treat the output of computer models uncritically, as if the computer were an objective, neutral, omniscient player in the process. In reality, the computer is a tool that simply does what it is told to, with the data it is given. What it does can be very powerful, and extremely useful – but it rests upon assumptions that are made by human participants. There can be considerable difficulty for nonexperts to unpick these assumptions = to the extent that in some planning processes, counterexperts have been called in to challenge models and sometimes to build alternative models showing the possibility of alternative futures. (In one case, for example, a model of a town was developed with a different degree of spatial disaggregation, demonstrating that a proposed planning development could have adverse impacts on some existing shopping centres: the planners' own model had treated several existing shopping centres as if they were just one centre in one average location.)

A simulation model captures one representation of the situation under analysis. While there is scope for exploration of a great deal of variety in changing values of the variables and even the relationships, this

still embodies one particular worldview. Different worldviews may be articulated by some stakeholders (e.g. groups with different cultural or political agendas), suggesting that a different set of variables should be used as the basis for the model. It is rare for very different models to be used in a single futures study (though some discussions of shorter-term national economic prospects do contrast the predictions of different economic models constructed by academics and consultants). There are some cases of alternative models being constructed as part of a political debate. In the wake of Limits to Growth, a number of different models (as well as modifications of the Limits model), were developed to represent different views of the world's future, for example. As mentioned above, there have been occasions where those opposing some planning development have generated their own model to highlight issues neglected in the model used by proponents of the plan.

Models are to a large extent subject to similar questions as we raised for extrapolation. (This is not surprising, since extrapolation is really very simple modelling, with one or two variables only – and time as a driving variable). 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, which can make it very hard for "users" to see how it is working, what the dominant variables and relationships are that drive it? (Most models' main results are the result of only a small fraction of the whole components in the model.) Do even the designers understand how it works? (There are known cases of modellers misinterpreting their own results.) 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 that may be on the horizon? If it is supposed to be dealing with some future event or transformation, 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?

Foresight-relevant methods of forecasting and futures studies, based on the use of expertise

Many people know something about the specific topics addressed in Foresight activities. But relatively few people have a well-informed view of the longer-term developments associated with these topics. Foresight can mobilise expertise to address more fundamental questions about the problems, innovations, and opportunities arising in their areas. Sometimes the experts will be practitioners, sometimes researchers.

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.
- A broad range of expertise can help overcome blinkered vision. Some experts know a great deal about their subject area but have little knowledge of other relevant developments (even in adjacent fields); some find it difficult to communicate with non-experts, some are convinced that their sort of expertise can sufficiently address **all** of the problems posed by Foresight (rather than wider participation they see the issue as being wider dissemination of their views).
- In some areas it is difficult to establish true expertise – especially where we have issues such as social innovation or cultural change to deal with. Are social scientists or practitioners and activists more expert here? Including members of each group (and subgroups) may be important – and sparking debate between them can be very fruitful.

Consultation of a broad range of views - 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 is *identifying relevant expertise*, and going beyond the people that are immediately familiar to the Foresight team. It is possible to find experts in existing databases and through web searches, etc. It can be helpful to use **reputational** approaches – to use questionnaires asking known experts to nominate others who they believe to be particularly knowledgeable in specified areas of expertise. Professional organisations can be useful sources of names. In the **snowball** survey, you contact the people nominated by your first contacts, then contact their nominations, and so on – in **conomination,** the frequency of naming of particular people as expert in particular fields, in a snowball survey, is used for guidance. Such techniques for identifying and recruiting expertise are important for all of the methods to be discussed below.

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 methods that are most often utilised below. The first few methods are widely used in planning and networking activities, as well as in the more futures-oriented components of Foresight.

EXPERT PANELS

Panels of sectoral and/or technological experts are commonly used in national and regional Foresight studies. 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.

The use of Panels in all sorts of work is so widespread that we tend not to think of it as a methodology. Specific methods may be employed to select and motivate the panel, assign tasks, and elicit sharing and further development of knowledge. The selection of panellists raises issues common to all methods based on the use of expertise. For Panel work, it is important that I addition to technical qualifications, the individuals concerned are creative thinkers, who can bring diverse viewpoints to bear; who can work well in groups; and who are prepared to speak freely without feeling that they always have to represent one or other particular interest group. Panels need to avoid too narrow representation, which is liable to result in little challenging thinking, and, if not the actual the “capture” of the Panel by well-resourced interest groups, at least perceptions that such vested interests are in charge, Panels need to be chaired and facilitated effectively, to maintain motivation and morale, to resolve conflicts, to keep an eye on timetables and external constraints, to prevent over-dominance of strong personalities, etc.

In Foresight activities, the main task of a Panel is usually that of synthesising a variety of inputs – testimony, research reports, outputs of forecasting methods, etc. – to provide a vision of future possibilities and needs for the topics under analysis. Reflecting the networking elements of foresight, it is valuable to bring together different types of player who might not normally meet in the course of a Panel – e.g. innovators, financiers, policymakers, academic researchers, “users” of the innovation, etc. We set out below some methods frequently used with Panels and expert groups – Brainstorming and SWOT analysis. These are techniques that can be used in the main Panel activities, and in more specialised Scenario Analysis Workshops themselves.

BRAINSTORMING

Brainstorming is a widely used group method. Again it is one of the terms that has been widely misused, but in its original form brainstorming involves a period of freethinking, which is used to articulate ideas, followed by more rigorous discussion of these ideas: the aim is to reduce participants' inhibitions about throwing out "wild" ideas, to stimulate creativity and thinking "out of the box", to let dissident viewpoints enter into discussion at an early stage.

How does brainstorming differ from other sorts of discussion?

The main objective of brainstorming is to elicit ideas from a group of people. Brainstorming is founded on the principle that, while the quantity of ideas may not increase their average quality, there is more chance of a wider range of approaches being generated if people are given more chance to let their imaginations roam. This technique has the following basic components:

- Generating as many ideas – e.g. creative solutions to tackle a problem - as possible, and listing every idea presented without comment or evaluation. Deferring the judgement of ideas improves the volume of participant input and consequently should encourage creativity. Groundrules need to be clearly stated and enforced. All participants have equal status and opportunity to participate. The facilitator needs to introduce the topic and the purpose of the specific brainstorming session, and begin by asking a specific open-ended question to focus the discussion.
- The ideas should be recorded down and collated without critical comment (though ideas may be spun off from earlier ideas). Individual ideas will not normally be subject to critique or further analysis (except for points of clarification) until a sufficient number have been generated. The ideas may be spoken out loud, put onto pieces of paper or post-it stickers, or entered into computers. Sometimes it is helpful to define a target number of ideas in advance. When the group feels comfortable that there are no more ideas to add, it may be useful to ask clarification or more information on what was meant by each item
- Having collected a large number of ideas, on whiteboards or flipcharts or, in some recent implementations, on computer screens, we enter a phase of working with them. Typically the ideas are now grouped, to reduce redundancy and allow for related ideas to be brought together. Mind-mapping may be employed here.
- The ideas and/or groups can now be prioritised for more analytic discussion. The group may be asked to evaluate different solutions in terms of feasibility or cost, for example, or to explore the connection between different ideas.

The basic requirements for brainstorming are a facilitator who understands the process and tools with which to record the ideas (e.g. whiteboard, flipchart, post-its, or computer-based group decision aid software tools and PCs). There is no rule for the length of a session.

Why and when is this method useful?

Brainstorming brings new ideas on how to tackle a particular problem – the freethinking atmosphere encourages creativity. Even imperfectly developed thoughts and "off the wall" ideas may promote fresh thinking among participants. The problem itself may come to be seen in a new light, novel approaches to an issue can arise during the process. Under some conditions, brainstorming can helps to reduce conflicts – it helps participants to see other points of view and possibly change their perspective on problems. It may also help break the ice and inject some humour into a dull process.

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. It may be employed in expert panels or in scenario workshops, among other things. The suggestions that are developed can be fed into later stages of group work, or into other steps in the policy process.

Who participates and how?

The participants in a brainstorming session will depend on the purpose of the session – often it will be a small part of a larger group process or workshop. Effective brainstorming sessions are relatively small ones (from 7 to 12 participants), and larger groups should be divided into smaller groups.

What are the drawbacks?

Often, some of the ideas produced in brainstorming are unworkable, and will be rejected by other participants on this ground. Sometimes, people with opposing views may refuse to consider each other's ideas. On occasion, ideas may be expressed that are oppressive, racist, or injurious to the feelings of some group members. The skill of the facilitator in keeping the discussion alive and preventing animosity is vital: groundrules must be reiterated and enforced. It is important to explain to participants how the results will be used, so that they can see that they are not wasting their time. Similarly, it is important to manage the task of collating, grouping and synthesising ideas in an effective way, so that participants have the sense of their contributions having been valued and played a role in producing the final output.

MINDMAPPING

We provide a brief note only on this technique, which has not been used much in Foresight to date, but which has shown considerable potential where it has been used. Mindmapping is a technique that can be applied to brainstorming and other group discussion methods (for example where people are talking about the relationships between a large number of factors, about the forces driving or shaping a course of development, etc.). It is possible to implement it with 'pen and paper', but dedicated software tools[26] allow users to rapidly create visualisations of linkages that have been articulated in a group's discussions (or in an individual's thought processes).

Mindmapping involves outlining information in non-linear ways. It allows for a quick charting of a group's ideas into logical groupings and connections between them. This is possible even when ideas are given in a non-sequential manner. This technique can be used in the course of brainstorming for ideas, and can help establish a skeletal framework for later categorisation of the information generated. Mindmapping works well when issues have many components and subcomponents. The output is typically a chart, or set of charts, outlining key issues and the linkages between them: this can be used for communication purposes, for scenario construction, or in many other ways.

SCENARIOS AND SCENARIO ANALYSIS WORKSHOPS

Scenario methods can be extrapolative or normative (see Part 2 for a discussion of these terms). The critical point is that scenario methods should enable us to build internally consistent pictures of future possibilities, that are useful for envisaging the implications of uncertain developments and examining the scope for action.

What are scenarios?

Scenarios consist of visions of future states and paths of development, organised in a systematic way as texts, charts, etc. The term may be used to identify either the "history of the future" – a sequence of events and trends – or an "image of the future" – an account of circumstances at a particular point in the future. It is usual in Foresight exercises to work with "multiple scenarios", so as to allow for alternative courses of development to be taken into account. However, Foresight exercises may also make use of "aspirational scenario" approaches, where a substantial effort is made to elaborate on a vision of a desirable and feasible course of development.

[26] For example http://www.mindjet.com/index.htm

Scenarios are tools for synthesis of various elements being considered in the course of Foresight; for structuring thinking. They also allow us to be surer that the visions have been developed and articulated in internally consistent and systematically comparative ways. They can be used for purposes of presentation of visions of the future and of specific possibilities in dramatic and comprehensible ways. A scenario should shed light on current action in view of possible (and more or less desirable) futures. Some commentators have remarked that since scenario development requires that we understand the system under study and can identify critical trends, issues, and possible events, we really are using the approach to find out more about the present, not just to envisage the future.

Scenarios are pictures of future possibilities, typically composed of a mixture of quantifiable and non-quantifiable components, which are arranged as sequences of events or trend developments in the case of a "future history". Scenarios may be presented in discursive, narrative ways, and illustrated with snippets of fiction and imitation newspaper stories, etc. This can be particularly useful for presentational purposes. But for analytic purposes, to compare scenarios and check their consistency and comprehensiveness, it is very helpful to prepare scenarios in the form of tables and similar systematic frameworks. Examining how each scenario looks (or how each point in the development of a scenario looks), in terms of the same set of elements, provides a basic check for the scenario development process.

It is common to work with a relatively small number of alternative scenarios – three to five is most usual for any sort of detailed exploration. The alternatives must be chosen to reflect important developments, and to contrast with each other sufficiently to give a good sense of the range of future options, the sorts of events that might transpire. Another criterion for selection is plausibility, though it has to be recognised that what is plausible is very contingent on one's perspectives and worldviews, and it is well worthwhile to examine some "wild cards" and remote possibilities – even if these are not eventually at the core of the scenarios developed.

How are scenarios produced?

A number of questions need to be considered in scenario building: What are the driving forces? What are more or less likely developments? Do we have a particular end point in mind (in normative scenario work)? The basic steps that have to be followed are to:

- identify the focal issue or decision;
- identify the key forces and trends in the environment;
- examine the main uncertainties in these forces and trends;
- select the scenario logic – either by selecting particular "what if?" assumptions, or by choosing one or more end-points of particular interest;
- fleshing out the future histories and images;
- assess the implications;
- select the leading indicators and signposts that might be used for monitoring movement towards or away from the scenario;
- consider critical actions that might be undertaken to effect movement toward or away from the scenario, or to enable the organisations involved to cope with its development.

With minor variations, such an approach can be worked through within a number of distinct methods. Scenario workshops are just one way in scenarios may be produced. There are many other scenario development methods. Often scenarios are produced by smaller expert groups, for example. An individual with good understanding of a topic may construct a scenario by following through the consequences of a "what if?" assumption (an extrapolative scenario), or asking "how?" a particular future might be achieved. One approach that has been used relatively rarely, but which can be useful in explicating different points of view, is to develop and contrast scenarios based on different theoretical perspectives (e.g. different worldviews concerning the functioning of the international economy) or on different political programmes. In any case, it will be helpful for the efforts of an individual (or different individuals working on different scenarios) to be reviewed by a bigger group with several viewpoints represented

Scenarios may also be used in modelling exercises (more on which is presented later). A scenario can be used to structure the operation of the model, special efforts will be required to frame the features of the scenario in terms of the parameters of the model. Alternatively, scenarios may be derived from different model "runs", where the model is used to elaborate on (some of) the consequences of different assumptions (e.g. about growth rates)..

What are scenario workshops?

Scenario workshops are a popular way of building scenarios. They offer two main advantages:

- The workshop can bring together a range of knowledge and experience which is difficult for a smaller team to muster, and the scenario construction provides a crucible in which views can be exchanges and insights developed. Thus it is useful to have experts and practitioners involved with the topics of the workshop among the participants. Diversity of experience is an asset to the exercise.
- The scenarios are much more "real" and vital for the participants than if they were simply presented them from an outside source. They have "ownership" of the scenarios, and are better-equipped to carry them within their organisations, to explain them to others, to use them in decision making. Thus it is useful to have final "users" of the scenarios among the participants.

The workshop requires at least one facilitator, and it is helpful to have other helpers who can take notes, record material that is written on wall posters, and the like. Scenario workshops will usually extend over at least one day, and two and even three days are common. Up to thirty or so people may be involved in the workshop, but this is too many to work on a scenario in detail. It is common for individual scenarios to be constructed with smaller groups – say 6 to 12 people in parallel small groups exploring different scenarios.

It is typical for a scenario workshop to begin with participants reviewing some background material that has been prepared for the Foresight exercise – a SWOT analysis, some research on the area of interest, even relevant Delphi material. Some scenario workshops begin with an existing (usually sketchy) background scenarios prepared by an expert team, which they may proceed to elaborate (this is a popular approach in business applications, criticise, or use as a launchpad for constructing aspirational scenarios.

The workshop can be conducted in various ways – with more or less use of brainstorming, for example – but a common way of beginning involves examining "drivers and shapers" – factors that could be critical to influencing the course of events, promote one or other sort of development, and lead to distinctive futures.. A commonly used method for eliciting relevant drivers is the use of STEEPV – people are asked to identify factors and issues under the headings Social, Technological, Economic, Environmental, Political, and Value-Based factors – this serves as a useful prompt as well as a classification framework

The most important of the drivers and shapers will then be selected and examined in more depth. Attention will be directed on how they might evolve: what sorts of events might unfold, what end-states might be reached, how these factors would look in different types of future. The group will then typically be requested to consider what the strategic options might be for the specific scenario to be achieved, or (if not desirable) how the key actors might be able to cope with the situation represented or even avert it If there have been break-out groups, they will be asked to bring back the results of their deliberations for discussion within the wider workshop.

Why and when is this method useful?

Scenarios help direct attention to driving forces, possible avenues of evolution, and the span of contingencies that may be confronted. They are particularly useful when many factors need to be considered, and the degree of uncertainty about the future is high.

Scenario methods can provide planners with “compass points” with which to orient thinking about the innumerable possible futures. Policies can be examined in terms of their robustness across a range of possible futures: instead of focusing on the supposedly “most likely future”, a balanced evaluation of the range of strategies that may be required in different circumstances can be developed. Especially where involved in workshops, participants should understand better the strategies and policy options needed to build alternative futures, and the ways of establishing images of these futures that can help action. They should also come to understand the viewpoints and strategies of other participants better.

What are the drawbacks?

There are dangers with scenario approaches, in that the end-states developed may be perceived as the only possible futures, rather than as indicative examples. In reality, the future is likely to be some fusion of elements from different scenarios. One problem with some scenario studies is that one scenario is implicitly the “most likely” scenario (even if it is not labelled as such) – and then others are typically minor variations deviating from it. For this reason, some scenario facilitators deliberately decide to rule out any “business as usual” of “central” scenario altogether.

Users may find difficult to deal with images of multiple plausible futures – which is why we typically only develop three to five scenarios in studies. This may run the risk of limiting the range of approaches and dynamics which we can consider – so it is always useful to have some time devoted to examining “wild cards” and the like.

The articulation and presentation of scenarios depends very much upon the intended users. Some scenarios stay at the level of broad generalities lacking supporting analysis and quantification, are not very operational, and are thus not found useful by policymakers – though they may be appreciated as giving a taste of the future by the general public. Some scenarios are presented in extremely technical and formalised ways, and may be hard for ordinary readers to assimilate.

DELPHI METHOD

Delphi involves a survey of people – who should be expert in the areas being studied. In the most common form of Delphi, the opinions sought are forecasts concerning when particular developments that are anticipated in these areas are believed likely to happen. Such Delphis, forecasting technological developments, have been widely used in Technology Foresight studies as well as in more traditional futures research. Most often, questions concern the anticipated date of occurrence of an event or development, and supplementary questions such as the possible constraints and facilitating factors (economical, technological, social, political) to the occurrence of event or development, its economic or social benefits, and so on..

But many other types of Delphi are possible: the term actually refers to a particular sort of opinion survey. Delphis may focus on forecasts of different topics – on social developments, for example. Instead of asking for forecasts of dates of development, Delphis can be used to estimate probabilities of developments having happened by particular dates. Or they may be applied to things other than forecasts - to help identify and prioritise policy goals, for example, or to determine expert opinion about some aspect of affairs that cannot be measured directly by conventional statistical means.

Additionally, though Delphis have mainly been conducted by means of postal surveys, there is a long tradition of using the method in the context of one or more group meetings, and more recently computer- and Internet-based methods have also been the focus of some attention.

What makes Delphi different from an ordinary opinion survey?

Delphi was designed to provide the benefits of a pooling and exchange of opinions, so that respondents can learn from each others views, without the sort of undue influence likely in conventional face-to-face settings which are typically dominated by the people who talk loudest or have most prestige. So each individual should complete the questionnaire, and then be able to receive feedback on the whole set of

responses, and fill the questionnaire in again with this information to hand. Essentially the same questionnaire should thus be completed several times by the set of experts. Those with views significantly divergent from a developing consensus are required to explain their reasons for their views, and this serves as useful intelligence for others – the idea is that dissenting views that are based on privileged or rare information can thus be weighed up by the majority.

This is the ideal. Unfortunately, it is very time consuming, and corners are often cut. Many Delphi studies have only two rounds of the survey; quite often there is little effort made to capture the reasons behind dissenting views. But there are even some so-called Delphis that do not have any iterations of the questionnaire - these opinion surveys are 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 elicit poor information, and may fuel criticisms of the overall Foresight activity with which it is associated. The task of preparing the questions and the topics that are to be addressed is a challenging but essential one. Discussing through what topics are worthwhile ones to include in a survey is itself a very helpful exercise for illuminating shared views and points of disagreement as to future possibilities. It is unwise simply to replicate the topics used in someone else’s study. The task of identifying appropriate topics is one that can itself be the subject of a survey of expert opinion, which opens the possibility of collecting ideas and viewpoints that would otherwise be missed. However, the final topics to be presented in the questionnaire will typically need to be framed very carefully by people with skill in survey design – avoiding, for example, such common faults as overcomplicated questions; questions that compound two different things; questions that, by being too specific about how something might be achieved, miss out the possibility of it happening by other routes; and so on.

Clarity of the questions is thus critical. They should be brief and unambiguous. Before sending the questionnaire out more widely, it should be piloted among a small sample of experts to refine it.

Often the goal (and the result) of a Delphi study is to achieve convergence of opinions. Evidently, it can make planning easier if a wide range of experts agree that a particular development is likely to happen at a particular point in time. But convergence should not always be expected – the existence of disagreement within an expert community can be very important, and understanding the underlying reasons for this is far more enlightening than just going with the majority. Sometimes the disagreement is telling us that here are very different views of how the world works (thus one of the relatively rare instances where many experts were wrongfooted in their forecasts concerned the speed and ease with which machine translation of language would be possible: the most popular view of language structure at the time was soon after overturned!). Sometimes it is telling us that there are different scenarios in mind – for example, some experts believe that technology A will never be developed because other technologies will have moved on so rapidly that it will be effectively obsolete. Finally, it should be noted that there are even implementations of Delphi that are explicitly designed to identify different clusters of opinion, rather than to focus on the zones of consensus. Delphi methods are capable of being applied to many more purposes than is generally recognised, despite the great preponderance of forecasting applications.

Why and when is this method useful?

Delphi is very useful to collect and synthesise opinions, especially about emerging developments where there is little or no empirical data available, or about future developments where simple trend extrapolation is believed to be insufficient. Delphi inquiries are a valuable tool of communication for exchanging opinions on a topic - this is why the Delphi method has been described as a controlled debate.

The questionnaire should be administered by a person or team that is responsible for the management of the questionnaire and to communicate results to the panel members. 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 than would

be possible through face-to-face meetings – especially in conditions where there is limited evidence and experts may be reluctant to explain their opinions openly.

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, and it is common to have some self-rating of the extent of knowledgability concerning each topic, so that it is possible to contrast the views of those who consider themselves highly expert with those having more limited knowledge.. As with other expert-based methods, there can be real problems in identifying expertise on some topics, especially those concerning social, cultural and political change.

Care is thus needed in recruiting the panel; and the criteria for selection should be made explicit. Experts recruited into a Delphi inquiry should understand the purpose of the inquiry and be aware that their expertise will be required in several rounds of the inquiry. If the exercise is to maintain its credibility the tendency for panel members to drop out after the first round should be minimised.

Normally, the number of respondents is small compared to that of conventional opinion surveys, Delphis are not intended to produce statistically significant results that can be used to predict the response of a larger population. The outcomes represent the view of a particular group of experts, ideally the best group that can be assembled to address the topic. We would normally hope for there to be at least ten people answering each topic, with an average response rate per question of several times this. This implies sending out a questionnaire, if postal surveying is being used, to (at least) several hundred potential respondents in the broad theme areas being studied.

Delphis may be implemented through the used of computer technology. In a face-to-face meeting an anonymous Delphi can still be conducted by means of participants inputting their data from their own PCs: this has considerable advantages of immediacy of feedback, and possibilities for rapid revision of judgements. It is likely that this sort of method can allow for better use to be made of open-ended inputs, since a great deal of material can be rapidly captured and circulated. Online Delphis, making use of the Internet, are also attracting considerable interest. These can be very effective, but the nature of many people's use of the Web is such that long surveys are not appreciated, and drop-out rates are liable to be quite high as people abandon the process some way through.

How can we use the output?

The data emerging from the survey consist largely of ratings (effectively quantifying qualitative opinions), with some open-ended responses. The data treatment is mainly quantitative, with results being presented in terms of the sample characteristics (e.g. distributions of responses) rather than the views of specific individuals. A common approach is to present a graphical or numerical account of the distribution of responses. A simple method is simply to display the percentages of respondents assigning a development to each of a succession of time periods. Another common approach – arguably one that tends to overstate consensus and understate disagreements - is to present a simple graph indicating, for each question, the median response (i.e. the central tendency) and interquartile ranges (i.e. the range within which 50% of the responses fall, and outside of which lie the upper and lower 25%, or quarters, of the range).

This information is sent to the same group of respondents, who are asked to review their estimates. (Sometimes people are asked only to fill in their responses if they wish to change them – this probably encourages them not to make changes!) Members who maintain an estimate outside the interquartile ranges are (ideally) asked to provide a brief justification for their opinion. A new median and interquartile ranges can be calculated from the new set of responses, and can be either used as the final forecast or circulated again in further iterations.

Most commonly, Delphi is used to produce a prediction of dates of occurrence of events, and assessments of the topics involved. 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 for

Foresight. For open-ended comments or additional explanations, qualitative analyses may be employed, though often these are simply recorded and listed alongside the quantitative 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. Delphi is a time consuming method (a single round can easily require three weeks; a three round Delphi questionnaire requires several months, including preparation and time to analyse outcomes; further qualitative assessment of Delphi inquiry may produce useful information, however this step is often not carried out due to lack of time).

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. Some participants drop out during the process (especially after the first round): the incentive of receiving the results is often insufficient to encourage continuing involvement. The increasing drop-out rate after successive rounds is one reason (on top of limited time) for limiting many Delphis to 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, given this anonymity.

CROSS IMPACT ANALYSIS

Like Delphi, cross-impact analysis has received a great deal of attention as a major tool of futures and prospective studies, though it seems to have been applied to a much smaller extent. Like Delphi, too, it is an expert-based method producing quantitative results, but there is a more complicated statistical processing of the data required to reach these results.

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 event occurring *if* each of the others does or does not occur. The cross-impact method forces attention to chains of causality: *'x'* affects *'y'*; *'y'* affects *'z'.* This creates a matrix of conditional possibilities. This matrix can be subject to mathematical analysis (via specialised software programs) to assign probabilities of occurrence to each of the possible scenarios resulting from the combinations of events.

Cross impact analysis is often described in manuals of forecasting and futures methods, and has very strong proponents. It seems to be a logical step beyond methods like Delphi, that treat events as completely independent of one another: examining the relationships between events allows us to approach dynamics more closely. In practice relatively few people use it regularly, and there has been limited independent analysis of its utility, probably because of two main limitations:

- It is very demanding of the experts, who have to make a fairly large number of difficult judgements about combinations of events.
- Because the number of judgements involved doubles with each new variable added, only a small number of key variables can practically be examined. Any influences not included in the event set will be completely excluded from the study The choice of events is thus crucial.

Foresight-relevant 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 does Foresight. Foresight is likely to deal with uncertainties that are sufficiently high to reduce the credibility of many restricted planing tools. These tools also tend to take the objectives and aims of the eventual activities as givens: they are **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, to make us rethink these objectives (are they our ultimate ends, or merely historically contingent indicators or means to these ends?).

Some tools that have been employed in Foresight exercises for defining key actions and priorities will be briefly described below. One other approach is so widely used as to require little further discussion here: **Benchmarking**. This refers to the identification of the state-of-the-art of something (e.g. use of a given technology or business or policy approach, and comparing it to the state of affairs in 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 approach is immensely popular, and is a valuable source of insight – but it can be misleading, where very different situations are compared as if they were naturally to be expected to be similar. In reality, it might be that "best practice" in one region would not be appropriate in another!

The methods that we will describe in ore depth 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, with which we begin, might also be seen as such a method: it is certainly often a component of Foresight exercises.

SWOT ANALYSIS

What is SWOT?

SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis is an analytical tool used to categorise significant internal and external factors influencing an organisation's strategies – or, in the case of Foresight, its possible futures.

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 analysis of its environment identifies.

The SWOT is often portrayed as a 2x2 matrix, which presents an overview of major issues to be taken into account in developing strategic plans for an organisation – and in preparing Foresight studies in expert panels and workshops.

	Positive Factors	Negative Factors
Internal Factors	STRENGTHS Competencies and capabilities to mobilise these effectively • • •	WEAKNESSES Lack of competencies or of capabilities to mobilise these effectively • • •
External Factors	OPPORTUNITIES Circumstances where positive initiatives can be taken to considerably improve one's situation • • •	THREATS Circumstances which will lead to considerably deterioration in one's situation unless initiatives to deal with these are undertaken • • •

The idea is that such an appraisal will enable strategies to be developed which match strengths with opportunities, while warding off threats and overcoming weaknesses where feasible. SWOT is thus not a static analytical tool, but a dynamic part of the management, business development, and organisational learning.

How does it work?

SWOT may be prepared by an expert group (and often a SWOT analysis will be used as the starting point for a scenario or other workshop). But SWOT methods may also be used in workshops involving a wide range of participants. They can be prepared in various ways, but a sketchy outline is as follows:

1. Use a brainstorming procedure to list opportunities and threats: there may be prompts provided ion terms of some major categories of environmental challenge. Prioritise this list, indicating major and minor threats and opportunities, using, for example, simple rating scales. It may be helpful to assign a probability of occurrence to each factor, too. The facilitator may create a graphical plot of factors, displaying probability of occurrence on one axis, and the extent of threat/opportunity on the other.
2. Undertake a brainstorming concerning the Strengths and Weaknesses internal to the organisation or region: what are the crucial competencies and factors influencing their effective deployment? How do they affect performance? Prioritise this list, indicating major and minor strengths and weaknesses, using, for example, simple rating scales. It may be helpful to assign a rating of importance to performance to each factor, too. The facilitator may create a graphical plot of factors, displaying extent of strength/weakness on one axis, and the importance to performance on the other.
3. Create a SWOT summary table by selecting the major factors identified through group discussion following the preceding steps. What strengths need to be built on, what weaknesses overcome? Where are resources being misapplied? Which opportunities should be exploited, what threats avoided?
4. Articulate the alternative strategies emerging from this analysis. Rule out those most obviously flawed, use others for scenario analysis or decision making.

The management literature contains much advice about how to carry out these various stages, for example how to select the factors on which to concentrate. There are thus various guidelines for moving from the graphical plots of factors to choosing items to focus on or neglect. A Performance-Importance matrix highlights those factors which are both important and where the organisation's performance is low, and thus towards which strategy should be addressed.

What are the drawbacks?

SWOT analysis is widespread, and widely regarded as a useful preliminary step in planning – and as a valuable check when renewing strategy periodically. Failures in SWOT analysis often reflect inadequate definition or prioritisation of factors – especially associated with inability to speak out about real weaknesses in an organisation or region. It is even possible to underestimate one's strengths, where a sort of "learned helplessness" may be at play after repeated failures.

CRITICAL/KEY TECHNOLOGIES

This method could in principle be applied to things other than technologies. It has a lot in common with SWOT analysis. But there has been considerable development – for example in France and the USA – of methods involving the application of sets of criteria against which to measure the importance or criticality of particular technologies.

What are critical technologies?

The method is usually based on interviews with industrial and research experts on the field of technology concerned. Sometimes, a benchmarking analysis is used to provide comparisons with other countries or regions. A first step is to generate an initial list of technologies to examine – this can be produced from existing lists (e.g. from previous Foresight studies), or by such methods as brainstorming, bibliographic searches, expert panels, environmental scanning and so on. Then, criteria are applied to examine the technologies selected, and identify those of most relevance to the organisation concerned (in this case a region). These are SWOT-like criteria. But criteria useful for a critical technologies analysis should be:

1. *Policy-relevant.* Analysis should indicate whether there are points of potential policy intervention in the linked processes of R&D, commercialisation, diffusion and utilisation of a given technology, and where they are to be found;
2. *Discriminating.* We should be able to discriminate unequivocally between critical and non-critical technologies. Our analysis should be as consistent as possible in level of aggregation and in clarity of classification;
3. *Reproducible.* The approach adopted should be sufficiently functional and transparent to be robust, and accessible to those not directly participating in the exercise.

The resultant lists can be *technology-push (supply-side) oriented*, *demand*, *or industrial needs* driven, depending on whether and how far the focus is on future technological capabilities, or rather on the emerging/future needs of society or industry. In practice, it may be that 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 of this.).

Why and when is this method useful?

Critical technology studies permit informed assessments to be made about technological developments. They can be used as a springboard for recommendations to be discussed at the political level and evaluated with reference to practical factors and normative concerns. The approach is often an exploratory step, drawing on a wide range of expertise, to scope afield of analysis. It does not directly create decisions or relating to technological policy (or the economy more generally) though – again like SWOT analyses – it can inform them in important ways.

What are the drawbacks?

The method often lacks in transparency, with it proving hard for outsiders to see exactly why particular technologies have been selected as priorities. It is difficult to exclude special pleading, and the method is often limited in terms of the level of participation involved. It is less oriented to network-building than

fully-fledged Foresight approaches, and may tend to focus attention of technologies when other approaches (such as social innovations) should also be considered.

RELEVANCE TREES and MORPHOLOGICAL ANALYSIS

These are two of the best-known normative forecasting methods, both of which start with future needs or objectives, and then seek to identify the circumstances, actions, technologies, etc. required to meet these. They can be used together, though relevance trees are probably the most commonly used of the pair.

What are relevance trees?

A relevance tree is an analytic technique that subdivides a broad topic into increasingly smaller subtopics, presenting this in terms of a tree-like diagram. Distinct levels of hierarchy are identified, in which each successive lower level involves finer distinctions or subdivisions. A relevance tree thus sets out various aspects of a system, a problem, or even a proposed solution so as to enable us to reach a more complete understanding of the topic and deduce what might be required to reach a particular outcome. The approach may be used to determine the relative importance of efforts to implement policies or increase technological performance.

A relevance tree looks much like an organisational chart, with a similar hierarchical structure. The hierarchy begins at a high level of abstraction (e.g. the problem to be solved) and descends with greater degrees of detail in succeeding level of the tree. The entries at each level are intended to describe completely the item to which they are connected in the level above. Ideally, no entry at a particular level should overlap with any other entry at this level, and the items at one level should all be addressed from the same point of view.

What is morphological analysis?

This method involves mapping options to obtain an overall perspective of possible solutions. Morphology refers to the "shapes" of a given “object”; morphological analysis involves identifying all possible combinations of these "shapes" in order to determine different future possibilities. For example, if the “object” is a goal such as achieving an effective transport infrastructure, the “shapes” might involve various transport modalities being highly efficient in their own right, or various multimodal combinations being efficient. (The most famous examples of morphological analysis come from the US space program, and involve different ways in which an astronaut could be safely landed on, and returned from, the moon. The various elements of the mission are explicated in a relevance-tree-like fashion – means of transport means of life-support, etc. – and alternatives for each are outlined – rocket propulsion, nuclear propulsion, and so on.)

Morphological analysis has been used for new product development and in constructing scenarios – and in both cases is a tool for thinking systematically about the topic of concern. The technique allows for a systematic analysis of the topic, and provides a strong stimulus for thinking laterally about alternative ways of meeting challenges. The approach involves:

- Formulation and definition of a problem;
- Identification and characterisation of all elements required for a solution;
- Construction of a multidimensional matrix (the “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.

Why and when are these methods useful?

These approaches are demanding, and require in-depth and lengthy analysis, using expertise in the problem fields concerned. Given this, they provide powerful intellectual stimulus to tackle problems or issues in comprehensive detail. They can throw up unexpected possibilities that can provoke refreshingly new thinking.

The output is usually a combination of commentary and a graphical representation with a hierarchical structure, showing how a given topic can be subdivided into increasingly finer levels of detail, or how a given problem can be solved in a variety of ways.

What are the drawbacks?

These methods require considerable inputs of time and critical judgement. They are limited by human error and shortsightedness. They do not directly deal with the likelihood of the alternative futures or solutions examined in terms of funding, technological feasibility, etc. These sorts of issues need to be addressed separately.

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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.sfutures.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 DG Research "Science and Technology Foresight; links to the IPTS" unit's website, with information on recent and future activities to support foresight, and links to programmes, institutes and resources throughout Europe:
www.cordis.lu/rtd2002/foresight/home.html

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