Thinking, debating and shaping the future: Foresight for Europe

Final report prepared by a High Level Expert Group for the European Commission

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The Directorate-General for Research initiates, develops and follows the Commission's political initiatives for the realisation of the European Research Area. It conceives and implements the necessary Community actions, in particular the Framework Programmes in terms of research and technological development. It also contributes to the implementation of the "Lisbon Strategy" regarding employment, competitiveness at international level, the economic reform and the social cohesion within the European Union.

The Directorate " Knowledge-based economy and society" (Directorate K) contributes to the realisation of the European Research Area in the fields of the social sciences, economic, science and technology foresight, and the respective analyses. To this end, it monitors and encourages science and technology foresight activities, conducts the economic analyses necessary for the work of the Directorate-General, and co-ordinates policy as regards the relevant political, economic, human and social sciences. It prepares the European reports on science and technology indicators, and it contributes to the development and implementation of the Framework Programmes in these fields. It monitors the progress made in the implementation of the Lisbon strategy. It is responsible for encouraging investment in research and technological innovation. To this end, it develops policies and measures to improve framework conditions (e.g. Intellectual Property Rights) for private investment and the effectiveness of public financing instruments.

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

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FOREWORD

Two years ago I presented a communication on the European Research Area to re-initiate the policy debate on a true European-wide research policy.

The Lisbon European Council in March 2000 adopted a common vision for economic and social development in Europe aiming to make 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" and identified Research and Innovation as an integral part of the socio-economic policy framework of the European Union.

The European Research Area is a joint effort between Member States and the Union. This is needed in order to identify excellence, to strengthen pan-European collaboration and to strengthen the interaction and coherence among research policies in Europe. This is why the ERA strategy is also aiming at promoting the "open method of co-ordination" in the field of research and innovation policies. If these policies in Europe are to be made more inter-linked, more supportive of each other and will enter progressively into a process of mutual learning, the visions on which they are constructed will gain from being shared and made accessible to all. Moreover the process of European integration has led to the development of common policies that need constant monitoring and rethinking and co-operative foresight is mostly needed to inform the policy debates concerning the future developments of those policies.

That is why the setting up of a High Level Expert Group to work on the European dimension of Foresight was timely. The final Report produced by the Group offers the Commission a number of important recommendations. In particular it suggests the setting up a Knowledge Sharing Platform for the European Foresight community of practitioners and users. Foresight programmes, initiatives and institutions might, in this way, be better interconnected and supported in close co-operation with all relevant actors in Europe and, when necessary, geared towards common problems and issues, at transnational, inter-regional or European level through "open coordination".

The recommendations made here will be examined carefully. The various concrete actions needed to contribute to creating a European Foresight Area in its own right now need to be defined. In this way a knowledge infrastructure that reflects the most crucial future problems and challenges of science and technology related to the European knowledge society can be developed and used by all actors in the European Research Area.

Philippe Busquin
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For the initial meeting of the HLEG, a professional facilitator was engaged to conduct the meeting. **Frank Little** did a marvellous job and contributed to ensure efficient use of resources and optimum output.

The contents of this report are the sole responsibility of the working group, whose views do not necessarily reflect those of the European Commission.

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THE POLICY CONTEXT

Why did the European Commission Services set up this High Level Group?

The present report of the high-level expert group (HLEG) on 'Developing Foresight to strengthen the strategic basis of European Research Area (ERA)' is timely as there are specific European policies that call for a greater and more co-ordinated attention to Foresight thinking. These policies include: the Lisbon Strategy, the development of the ERA, the reform of European Governance (called for by the European Commission) and the preparation of the next Intergovernmental Conference (through the setting up of the Convention on the Future of Europe). Focusing on the long and medium term priorities of the Union, the Heads of State or Government and the European Commission agreed, in March 2000, on a **common vision for economic and social development in Europe**, the so-called **Lisbon Strategy**. It aims to make 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" through "open methods of co-ordination and benchmarking". To move towards this ambitious target effectively, actions have been proposed in a broad range of policy fields, with goals concerning employment, economic reforms, social cohesion, and others. Europe's lagging behind in various research and innovation aspects - with adverse cross-impacts to other policy fields – means that **Research and Innovation Policy (RTDI) has been set to become one of the key instruments for achieving these goals**.

The Council and the European Parliament should adopt by June 2002 the 6th European Community Research Framework Programme (FP6, 2002-2006) to cement this **new, more strategic and co-ordinated approach** against the background of the increasingly interdisciplinary and inter-sectoral nature of research. FP6, therefore, will be a major tool to make a reality of the ERA.

As RTDI policies are based on implicit or explicit visions of the future of science, technology and society, open co-ordination in developing such visions can contribute considerably to the coherent development of these policies in Europe. This is why we consider co-operation in Foresight an important element to **strengthen the strategic basis of the ERA** by raising systematically the ability of a broad spectrum of societal actors to anticipate and develop shared views on research and innovation--related issues at stake for Europe as a whole.

At the Lisbon European Council of 23-24 March 2000, the concept of 'open co-ordination' was introduced in order to better implement the long-term strategy for a competitive knowledge-based economy with more and better employment and social

cohesion. This method aims to achieve a European dimension through a decentralised approach to be applied in line with the principle of subsidiarity in which the Union, the Member States, the regional and local levels, as well as the social partners and civil society are actively involved as such. The 'open co-ordination method' is supposed to be more open to national diversity. In contrast with the policies aimed at building the single market the emphasis here is on learning more quickly and discovering appropriate solutions in those policy areas that concentrate on creating new skills. Such a method could be used well in the field of Foresight. One can think of national reports that describe ongoing activities and that serve as benchmarks in further developing the practices of Foresight throughout Europe.

Next to the Lisbon Strategy, the Laeken Declaration, adopted in December 2001, is also of relevance as it poses major questions regarding the future of Europe. These questions deal with different aspects of governance in Europe and will be tackled by a 'Convention' in which not only governments but also civil society will be represented. Enlargement or widening as well as deepening of the European project are on the agenda of the Convention and these issues are linked to questions about governance. So there is clearly room for future-oriented thinking about Europe where RTDI policy and science-society relations play a major role.

Taking into account the emergence of knowledge-based economies, the challenges of enlargement and European integration, and the emergence of new societal patterns, **the reform of European Governance**[1] has become, from early 2000 on, one of the European Commission's four strategic objectives. It aims at adapting institutions, frameworks and procedures under the existing treaties, but also at launching a broader debate on the future of the European Union in view of the next inter-Governmental Conference in 2004. The White Paper on European Governance[2], published in July 2001, proposes opening up the policy-making process to get more people and organisations involved in shaping and delivering EU policy. It promotes greater openness, accountability and responsibility for all those involved.

These issues will also play a prominent role in the 6th Framework Programme. In the proposal for the specific programmes from January 2002, reflecting the common position of the Council and the Commission, Science and Society objectives are organised under three major themes:

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[1] *governance defined as rules, processes and behaviour that affect the way in which powers are exercised*

[2] *SEC (2000) 1547/7 (October 2000): White Paper on European Governance: Enhancing democracy in the European Union; COM (2001) 428 (July 2001): European Governance: A White Paper. http://www.europa.eu.int/comm/governance/index_en.htm*

- bringing research closer to society;
- ensuring that Science and Technology progress takes place in a responsible fashion;
- stepping up the Science, Society dialogue.

The above-mentioned developments certainly call for the creation of a European Area for S&T Foresight, as there is a clear need to think about the future of Europe taking into account that RTDI policies are a major driver for realising the Knowledge Society. Bottom approaches work best but it is hard to see how to organise this at a European level. Open co-ordination approaches might provide a way forward.

Developing Foresight - the strategic basis to address these challenges more effectively

With its broad variety of forward thinking activities (technology assessment (TA,) science and technology foresights (TF)), Europe is now more advanced than the US and Japan in this field. Nevertheless, it is remarkable that, **in spite of this increased importance for policy making and of a few notable co-operative efforts[3], Foresight activities and Foresight supporting policies have not yet reached the same state of integration, or complementary and relatedness, at EU level** as many other policy fields have achieved during the last decades. The following examples might be given:

- Foresight activities are non-existent or remain relatively weak in some Member States;
- important players do often network only loosely at EU level, if at all;
- European policies and issues are not systematically taken into account in national and regional Foresight studies.

In fact, many Foresight exercises are simply repeating and duplicating efforts already made by others, more advanced in the Foresight process, without exploiting possible synergies, and thus missing the advantages of co-operation at European level, e.g. in the form of economies of scale, cost-efficiency and shared knowledge gains.

In the medium to long term, this situation could **impact negatively on the implementation of the 'Lisbon Strategy'**.
This explains why the HLEG group has been set up to prepare a report on options **for supporting a broad spectrum of Foresight related activities, which**

[3] *in addition to work of the Joint Research Centre Institute for Prospective Technological Studies (see below), there is the European Parliamentary Technology Assessment Network consisting of entities performing science and technology assessment, to advise parliaments on the possible social, economic and environmental impact of new sciences and technologies, or the launching of the European Science Foundation's Forward Looks*

contribute to the implementation of ERA and the Lisbon strategy, and complement and strengthen related national and regional activities, including those that might be supported by the next Research Framework Programme (FP6, 2002-2006). Members of this group are both TF/TA practitioners and 'customers' from government and industry.

The establishment of this HLEG has to be framed into a series of activities already undertaken by the European Commission in order to stimulate a European Area of S&T Foresight. At institutional level one can refer to:

- DG Research (DG RTD) where a Foresight Unit (K1) has been established in 2001 within the Directorate K (Technology Foresight and socio-economic research); the main functions of this unit are:
  - Act as DG RTD think tank: Provide input to EU research and innovation (RTDI) policy development;
  - Promote a European Area for TA/TF: Interconnect and support TA/TF activities at European, national and regional level, in close co-operation with all related actors in Europe;
  - Support development of different types of institutions and methodologies, promote dissemination, and use of results;
  - Implement projects in support of RTDI policies development

- The Joint Research Centre's (JRC) Institute for Prospective Technological Studies (IPTS) in Seville is one of its seven research institutes. IPTS was established in 1994 as the Commission's pole of competence in the field of Foresight and prospective studies with the mission to provide techno-economic analysis to support European decision-makers. It monitors and analyses S&T related developments, their cross-sectoral impacts, interrelationships and implications for future policy development

As part of its activities, DG RTD has focused since 2001 on two complementary thrusts to move ahead towards developing Foresight, and an enlarged and dynamic institutional landscape:

- developing **a coherent supportive framework at the European level to ensure systematic use and optimum benefit of Foresight,** and
- identifying and mobilising **all relevant actors, and promoting EU wide networking and further institutional development**

JRC/IPTS and Directorate K/DG RTD, each in their respective and complementary roles, are co-operating closely to realise the development of a European Foresight area. Under the Swedish presidency, a Foresight conference was organised in March 2001, followed by the Foresight seminar in the Belgian Presidency Conference on Social Sciences in October 2001. The Spanish Presidency is holding a Conference

on the policy impact of Foresight in May 2002. Further joint activities for 2002 include a mapping exercise of Foresight competences in Member States and Accession Countries.

EXECUTIVE SUMMARY

1. The HLEG report supplies the Commission with recommendations that could support a European development into a stronger capability of future-oriented thinking as a basis for strategic planning and policy and decision making . The report has been developed by a group of actors and users of Foresight with very different cultural and professional backgrounds. It has been the intention of the group to supply the Commission with a broad set of options that reflect the diversity of foresight-related activities.

2. **Why is Foresight important?**
   Due to accelerated social and technological change, a new culture of future-oriented thinking in society is needed. Decision-makers need to acquire new skills in the face of the declining role of traditional value systems and the erosion of traditional interest groups combined with calls for more accountability and accelerated technological change. This new culture should focus on producing a strategic framework for better-informed policies, based upon transparent, participatory and flexible decision-making in the face of complex challenges.

3. **What can Foresight do?**
   As science and technology are amongst the main drivers of change, foresight activities are an important vehicle in prompting broad social debates based upon expert inputs and mobilising broad sections of all stakeholders to give collective thought on priorities and actions. Bringing together experts with people from different disciplinary and sectoral backgrounds, makes it possible that next to possible impacts on policy-making of the products of Foresight activities, the processes that lead to that output also change the perceptions and beliefs of the participants.

4. **Foresight has an impact on all policy fields**
   Starting from a science & technology perspective, and then integrating horizontal “science-society” questions, Foresight activities contribute to the development of the European knowledge-base and propose visions for the future of European society. They thus offer a framework for policy development, allowing a coherent development of these policies in all fields.
   Strengthening the European dimension of Foresight, therefore, highlights one of the key messages of the Lisbon strategy: the design and implementation of RTDI policies play an important role in policy development, in general, towards achieving the Lisbon goals.

5. **The actual implementation of Foresight in Europe** should be conducive to building new competencies in all societal sectors at all levels and should take the potential benefits of economies of scale into account. The following five functions would benefit from being organised at a trans-national European level:

   - **Creation of a learning space :**
     Formal and informal learning processes should be supported in order to ensure that lessons learnt are passed on to ensure increasing Strategic Intelligence.
   - **Open co-ordination of foresight exercises :**
     In order to exploit economies of scale in terms of expert recruitment, shared resources and the building up of comparative experiences, foresight exercises should be co-ordinated and run in parallel wherever possible.
   - **Monitoring[4] :**
     A continuous monitoring activity accessible via the website would represent a useful resource for practitioners.
   - **Common European Foresight projects :**
     Common analysis of main generic issues and trends would produce strategic intelligence outputs on common drivers and trends in policy areas with Community level competencies.
   - **Dissemination :**
     Foresight products should be disseminated via an Internet Foresight portal. Secondary analysis of the results should be undertaken in seminars, working groups, dissemination activities and separate publications.

6. By implementing the HLEG recommendations the European Commission could **contribute to develop European Foresight efforts** in a co-ordinated way, while at the same time encouraging multiplicity and competition. In addition, Foresight's role as a catalyst for the **advancement of the European Research Area** would also be supported by the recommended actions. These can contribute considerably to joint visions and goal setting and can help facilitate the European Research Area.

[4] *By monitoring we mean identification of the multiple Foresight activities we call for at all levels, compilation and analysis of best practice and results.*

RECOMMENDATIONS

Foresight activities at a European level:

1. Two broad strands of activities should be developed at the European level:
   - activities to tackle European-wide issues;
   - the development of open co-operation between Foresight activities implemented at the various levels in Europe.
2. Foresight should be encouraged through a series of targeted projects, based on appropriate issues that are inherently transborder and/or particularly complex. These projects should involve key stakeholders in an open and interactive process.
3. A Knowledge Sharing Platform should be developed as an intellectual infrastructure for experience-sharing and discussions. It could allow actors to benefit from the diversity of their activities and should provide services to support the development of a European-wide foresight community.
4. Evaluation instruments for assessing the quality of foresights in Europe need to be developed.

Short term recommendations to the Commission:

5. The European Commission should undertake a feasibility study on the establishment of a Knowledge Sharing Platform to be set up during the 6th Framework Programme.
6. With regard to the 6th Framework Programme, it is recommended to the Commission that:

   - A sufficient number of targeted Foresight projects on European Futures should be initiated.
   - Networks of excellence on Foresight in Europe should be supported under FP6.
   - An infrastructural support service for cross-connecting regional or transborder foresight projects should be set up.

THE HLEG REPORT

Introduction : Mandate and working method

The European Commission has constituted the high-level expert group (HLEG) on Developing Foresight to strengthen the strategic basis of the European Research Area (ERA). The terms of reference of this HLEG are to **prepare a report on options**

- to support European Co-operation in Foresight
- for supporting a broad spectrum of Foresight related activities, which contribute to the implementation of ERA and the Lisbon strategy,
- for complementing and strengthening related national and regional activities,
- which could be implemented in the course of the next Research Framework Programme and beyond.

The HLEG has worked through a number of activities to prepare and produce its final report. This includes three plenary sessions, and a series of Work Groups, examining specific issues:

- Work group 1: Role of Foresight in Society
- Work group 2: European dimension of Foresight
- Work group 3: Methodology and organisational issues of Foresight

The present report builds upon the reports of these Work Groups as well as on the individual position papers produced by all HLEG members and the discussions during the plenary meetings. It focuses on concrete recommendations shared by all members of the group, and is organised around three main parts:

1. a general assessment of the added value of Foresight in today's society;
2. a more specific analysis of European activities that could/should be developed at European level; and
3. a concrete list of possible and desirable practical steps for implementing Foresight in Europe (with special attention to the role of the European Commission).

Chapter 1. The added value of Foresight

The term “Technology Foresight” can be - and has been - misunderstood as dealing only with specific technologies in a very narrow sense. This report, however, employs the term “Foresight” to emphasise that the future is determined by interaction between technology, science and society.

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

As such foresight can improve anticipatory intelligence and contribute to an increased awareness of knowledge resources and strategic orientations of the actors that participated in the foresight activities.
Foresight can be carried out by a broad set of analytical & participatory methods ranging from desktop research, expert groups, stakeholder involvement to interactive brainstorming processes or broad participatory arrangements. The scope for foresight can be any issue of societal relevance, in which knowledge, science and/or technology plays a considerable role such as

- understanding the possibility of different futures, and hence the opportunity of shaping our futures,
- enhancing flexibility in policy making and implementation,
- broadening perspectives and
- encouraging creative thinking.

The increasing number of national Foresight programmes suggests that Foresight can be a useful policy tool in a range of national innovation systems, as well as addressing different societal concerns.

A socially constructed future
*The future is there to be made. It is something shaped by people through their purposeful acts and through the unintended consequences of their acts. As such, the future is not there to be ‘predicted’ but to be socially constructed. Systematic thinking what might or could happen can be part of such a construction. As a field of enquiry, the systematic study of the future is nothing more then a tool in choosing and creating the most desirable future. As Hamel & Prahalad once said: “The goal is not to predict **THE** future, but to imagine **A** future made possible by changes in technology, life style, work style, regulation, global geopolitics and the like.”*

In the following paragraphs, the main societal drivers for Foresight are briefly discussed (par. 1.1.) together with a presentation of the present-day role and value of Foresight (par. 1.2.). This chapter tries to give answers to two main questions: why is Foresight important and what can it do for “you”?

1.1. The Societal Drivers for Foresight

Today, a number of major trends affect all countries and most areas of policy-making in such a way that a new *culture of future-oriented thinking* is needed. Indeed, globalisation and localisation, sweeping technological and organisational changes, as well as the ever-increasing importance of learning capabilities and application of knowledge have significantly altered the 'rules of the game'. This suggests that policy-makers will have to take on new responsibilities (as well as dropping some previous ones), while industry must find new strategies to remain, or become, competitive in this new and constantly changing environment.

Attempts at predicting the future by means of however sophisticated a model cannot be the answer, because:

- Planning or forecasting our future becomes more and more ridiculed in the light of rapid and fundamental changes.
- History also teaches us valuable lessons about the (im)possibilities of planning and predicting the future. Flexibility, open minds, and awareness of possible futures are essential.

Diversity is a key word: diversity in scope (in terms of possible futures, differing analyses etc), as well as diversity in solutions or policy options.

Accelerated social change

As C.P. Snow once noted, there was a time when social change was much too slow to be noticed in a lifetime. Today, social change is occurring so rapidly that it is difficult to understand it. Societies everywhere are going through a tremendous series of changes that question their socio-economic and policy orientations. Just imagine that, about ten years ago, the term "internet" was unknown. Today the Internet is regarded as one of the major technological influences in history since the invention of printing. Not only is the world rapidly changing, there also seems to be a growing awareness of global challenges that are regarded as problems that need new and more changes in order to secure a sustainable future for all, including future generations. Such challenges include issues such as population growth, scarcity of resources, global climate change, growing energy demand, poverty, the North-South divide etc.

What these developments amount to is an ever widening gap between the speed of technological changes and the ability to formulate appropriate policies (which requires a sound understanding of the underlying causes and mechanisms at work).

Decision-makers, in particular, face complex challenges: socio-economic and technological factors interact in defining issues of strategic importance, e.g. education and life-long learning (new demands on education systems; new, mainly IT-based tools and methods for teaching and learning; the growing need for interaction and co-operation with businesses); environmental issues; quality of life (health, education, demographic changes, especially the growing share and special

needs of elderly people, living and working environment, social conflicts, crime prevention, etc.); competitiveness (at national and EU-level for attracting talents and capital, at firm level maintaining and increasing market shares nationally and internationally, etc.), regional disparities.

1.1.1. Improved Political decision making process

Most policy problems no longer have 'self-evident' solutions, guided by established value systems. Policy-makers therefore have to learn to cope with the growing complexity and uncertainty associated with policy issues themselves.

This implies the need for improved decision making processes - in areas such as problem-solving, communication and co-operation in multidisciplinary, multicultural teams who often meet only "virtually".

The traditional social bases for decision-making are also quickly eroding. The conventional social groupings to which people belonged (e.g. Catholics, socialists, entrepreneurs and other 'pillars') are no longer providing guidance for all areas of decision-making. People/citizens can, and nowadays do, belong to a multitude of different interest groups. Thus, the role of the traditional intermediaries (political parties, unions, etc) is becoming less dominant. More and more specific interest groups (new intermediaries, e.g. NGOs) have sprung up, and become more and more important. This can be seen as a supplement to democracy; citizens are exercising 'voice' in new ways (not only during election periods). Therefore decision-making is becoming ever more complex. Coalitions (not those of political parties, but of stakeholders) are not fixed, they tend shift issue by issue. All this calls for openness on possible futures, flexibility, and room for diversity as mentioned above.

1.1.2. Political & societal accountability

Policy-makers have to deal with intensifying social concerns about new technologies (mainly ethical and safety concerns in the case of biotechnology or nuclear technologies, and fears of unemployment and social exclusion caused by the rapid diffusion of information and communication technologies). At the same time, new technologies open new possibilities and potential benefits which need to be incorporated in the way societal needs are met.

More generally, individualisation, as a major recent trend in the EU, has several repercussions. The ever more mature and independent citizens want their individuals needs to be catered for. This calls for 'mass customisation' not only in manufacturing and services, but to some extent also in policy-making. Citizens are also more and more knowledgeable about possibilities, possible negative effects, and will not hesitate to voice their preferences and render policy makers truly responsible for their decisions.

1.1.3. Adding Foresight to the equation

In sum, participative, transparent, forward-looking methods are needed when decision-makers are trying to find solutions for the above challenges. Foresight can offer a valuable tool for this endeavour:

- It helps in making choices in ever more complex situations by discussing alternative options, bringing together different communities and stakeholders with their complementary knowledge and experience.
- It thus leads to a more transparent decision-making process, and hence provides a way to obtain public support.
- Foresight can promote a common understanding of issues and sometimes shared visions about the future. It might even go so far as to establishing joint agendas for action.

1.2. The added value of Foresight

The fact that the world is rapidly changing and the perceived need for more changes to solve pressing global problems can be attributed to a complex set of historical, geo-political and socio-economic issues. However, amongst the main drivers of change are undoubtedly science and technology. They generate new possibilities, and new sources of wealth. Successful and acceptable exploitation of technology has become critical to achieving economic competitiveness as well as for achieving sustainable consumption and production processes. New technologies creates new possibilities and solutions but also new problems and uncertainties. The care for environment and sustainable development demands a forward-looking approach and a vision on what future(s) we want.

All over Europe, Foresight type exercises have been successfully used as policy tools, not only because of their intrinsic value of providing difficult-to-acquire strategic information for decision-making, but also as socio-economic mobilisation tools to raise awareness and to create consensus around promising ways to exploit the opportunities and diminish the risks associated with new S&T developments.
The HLEG has identified three 'basic statements' about the role of foresight in society. These are outlined below.

Statement 1: Decisions that take into account Foresight tend to be better[5]

It is clear that today's decisions form and shape the societies of tomorrow. This is, of course, not new, but - compared to previous eras - the speed, number of interactions, and widespread effects are of a much higher magnitude. The future, beyond the immediate period is much more open. It is possible, therefore, to shape it to a greater

[5] *By "better", we mean both more effective and reflecting future options.*

extent than before. The basic condition, here, is that better decisions are made, based on multifaceted and relevant, long-term oriented, facts and visions.

The 2001 review of the UK Foresight programme has shown that the track record of Foresight there and in other countries is that it creates new networks, committed to take the actions they have identified as important, and sensitised to the importance of working with others to think creatively about the future.

In a dialogue between all selected members of society and the research community, the German Foresight process FUTUR, aiming to formulate those questions that will yield the answers for tomorrow, puts the main emphasis on dialogue between the disciplines.

They must be better in several ways. - considering not only the possible future trajectories of Science and Technology developments, but also two dimensions of expectations for the future:

- on the future consequences of current actions,
- related to the preferences or interests in future outcomes of Science and Technology developments.

Better decisions, however, also require society and relevant actors to build a strong awareness and understanding of possible diverging trends. This implies the need for preparation, and an ability to adapt to unforeseen changes. Future oriented thinking is an appropriate tool to respond to this requirement for flexibility too by integrating socio-economic, technological and scientific aspects; involving relevant actors, i.e. citizens, enterprises, SMEs, NGO, public research organisations, etc and focusing on open questions and problems.

Statement 2: Foresight can make a unique strategic contribution to social actors' forward thinking and develop adaptability and readiness for change

As a mechanism for the production and sharing of anticipations and visions by the actors and stakeholders, Foresight activities serve as a tool to develop the flexibility, adaptability of political bodies, companies and organisations through the strengthening of a long-term, futures-oriented approach.
Foresight activities can therefore contribute positively to strategic intelligence:

- Foresight is aimed at producing orientations rather than predictions; It provides scenarios to decision makers thus opening their readiness for change;
- Foresight includes multiple perspectives, multiple actors and multiple disciplines;
- Foresight is focused on opportunities and risks alike;
- Foresight emphasises the interrelations between the technological, economic, social, political and cultural sectors of society.

Statement 3: The societal value of Foresight is both in the process and in the products generated.

Process:

- Typically a wide range of different stakeholders from the society, science and technology fields, is involved in long-term structured dialogue. This can open up new opportunities for communication among all stakeholders.

A recent IPTS/ESTO study comparing four European foresight exercises (France, Italy, Spain and Portugal) shows Foresight processes to be at least as important as substantive findings. Notable outcomes include the strengthening of communities of experts concerned with technology futures and technology watch activities. In Portugal, for instance, panel members are now regularly in contact with the authors of the report and there was growing interest in the analysis and consideration of future trends to assist in policy-making. Networks have been built, with people being more interconnected than before, and new links being built between industry and research organisations.[6]

- The gathering of visionary and experienced people from multi-disciplinary and multi-sector backgrounds helps to build an understanding of the future.
- The process itself can have profound effects on the participants themselves, and on their networks.

Supported by the UK Foresight programme, Young Foresight is a project aimed at giving students direct experience in all the skills needed to create a successful product or service: from conceptualisation, to design, to adaptability in the market place. It encourages students to anticipate future trends and consumer behaviour and design products that will perform well in a world that hasn't yet arrived. The project aims to bring design and technology alive in the classroom by introducing local industry to its future workforce and helping teachers meet the standards set by the new curriculum. Across the UK companies will be working alongside schools to brainstorm about the future and develop real products for tomorrow's world.

- A further benefit of the Foresight process is that it can help to balance the many short-sighted and 'instant' activities of today's media, opinions, shareholders and so on.

***Product**:*

- Foresight aims to provide a basis for sounder policy-making. Thus the production of reports and other communication products allowing decision-makers to discuss and use the results is key to the actual value of such a process.

[6] *Jordi Molas-Gallart, Rémi Barré Mario Zappacosta & James Gavigan (2001), A Trans-national Analysis of the Results and Implications of Industrially-oriented Technology Foresight Studies (France, Spain, Italy & Portugal) IPTS Technical Report Series, EUR 20138 EN (an ESTO/JRC-IPTS report)*

Chapter 2. Activities to be developed at European level

This chapter tackles the questions why and what Foresight activities are needed on a European level.

2.1. Why Foresight at a European level?

Europe has many common **goals and priorities** (knowledge-based competitiveness, innovation, establishing the ERA, cohesion, crisis prevention and so on) as well as common and **complex challenges.** (e.g. environmental issues, unemployment, common security threats, the management of water resources, traceability of foodstuffs, global climate change, infectious diseases, transport, energy and so on).

These goals and challenges can only be addressed by co-operative action, across national borders and cultures. The same can also be said for the Foresight approach, where, programmes have traditionally taken place at national or regional level with very little attention being given to the inherently international dimensions of these issues.

Foresight activities can also make a major contribution in raising **awareness, co-operation, and participation** of several actors in political and socio-economic development. At the EU level, Foresight can have a role in building solidarity and shared agendas by giving stakeholders a chance to contribute creatively to shaping a new Europe. European Foresight processes are therefore in a strong position, to make such joint vision and goal setting possible.

Furthermore, Foresight can make an important contribution towards the promotion of the European Research Area (ERA). EU level Foresight, for example, can help to identify those areas of emerging and strategic technologies where there is a requirement for joint responses to global developments in science and technologies without hampering competition.

Foresight is also frequently orientated towards identifying strategies to build a competitive position for the future. In this respect European Member States, as well as regions within Member States, might be seen as entities in competition with each other. But, even if member states are competitors, they are also co-operating in many fields in the framework of the European Union. Thus, for example, a joint, co-ordinated Foresight could help identify areas of industrial strength and research excellence that are based on common training infrastructures, market systems, regulatory structures.

Foresight at a European level could provide strategic intelligence to contribute to achieving the Lisbon goals.

This can be done by facilitating learning between Member States and by raising awareness about activities and alternative approaches in other Member States and by the Commission fostering activities a European Research Area on Foresight.

In short, European level Foresight processes could help to

- Develop a more strategic & co-ordinated approach in the EU;
- Bring research closer to society;
- Improve communication and co-operation between actors from different sectors of society and between different policy levels on EU-wide issues;
- Contribute to the democratisation of EU policy making.

RECOMMENDATION 1:

The HLEG recommends that two broad strands of activities should be developed at the European level :

- **Activities to tackle European-wide issues**
- **The development of co-operation between Foresight activities implemented at the various levels in Europe, including new co-operative Foresight activities, involving different socio-economic actors.**

2.2. Tackling European wide issues

There is a need for Foresights that target the big questions of the European future. Such foresights could be driven by specific issues as well as taking on multi-thematic topics. There should be room for synthesis actions on commonly defined issues. Co-ordinated national and regional foresight activities in order to tackle European issues should also be encouraged.

The HLEG recommends that in order to be successful, Foresight processes at European level, should be targeted at specific issues. This could include, for example, actors/regions that are trans-border, in twinning partnerships or share special interests.

RECOMMENDATION 2:

The HLEG recommend that European wide Foresights should:

- **Be targeted at specific issues**
- **Identify and address issues that are inherently trans-border and/or particularly complex**
- **Involve both experts and key stakeholders in an open and interactive process.**

As the focus of a Foresight exercise will be on different sectors or territories, topics for European Foresights should be selected using an appropriate procedure. A European approach therefore implies that the topics to be chosen should fulfil criteria such as:

- Related to issues that are shared at a European level, especially where they are related to accepted European policy competences (e.g. environment, agriculture, border security)
- Contributing in areas where there are important European dimensions that are currently not well addressed.
- Tackling trans-border problems that cannot be addressed at a national scale such as transport and logistical issues within the Single Market.
- Relating to a particularly complex or large-scale issues that perhaps have to be tackled on a common basis.
- Starting with the right timing (including quick identification of emerging issues) since working too soon on an issue might prevent a large enough mobilisation.

In the process of a Foresight, different actors should intervene. Foresight participants can include: policy actors, experts from science, companies, managers from SMEs, as well as large and multinational enterprises, citizens, as individuals or NGO-drivers. Individual projects should be selected following a study of the pool of knowledge and the identification of important issues. As they serve as experiments, they should be targeted and display different characteristics each. They should serve as learning experiences to identify and develop adequate forms of organisation.

Four criteria to assess projects include:

- *Usefulness to the actors / needs orientation*
  - *Helping the decision makers and relevant actors in politics, business, science etc to develop priorities and make decisions*
  - *Helping the actors to get awareness of their own challenges and future requirements*
- *Enhancement of sustainable competitiveness*
  - *Contributing to future competitiveness of Europe and its economy*
  - *Helping to set priorities and resource allocation to building regional comparative advantage in Europe*
- *Integration and reflection of different perspectives*
  - *Integrating different perspectives on problems and their solutions*
  - *Helping to improve present processes by learning from good practices within and outside the EU*
  - *Helping the participants and others to learn about appropriate organisational and procedural forms of Foresight projects*
- *Network building / collaboration*
  - *Setting up networks, ties and fora for knowledge transfer, communication and mediation*
  - *Improving cohesion of economic, social and political actors within Europe*
  - *The issue should not be so new that it does not attract attention from several stakeholders.*

2.3. Developing co-operation in Europe

Currently the wide diversity of foresight efforts indicates that Europeans are embracing the possibilities for engaging in various forms of foresight. This diversity is certainly an asset for Europe. Some issues need to be addressed, however, if Foresight is to succeed in the European context.

- Across all these efforts there is scope for greater co-operation and of exchange of best practice results. Networking foresight activities seems the most effective way to build synergies and learning effects across the different efforts. There is a need for a mechanism to allow these actors to benefit from this diversity (including regional and international activities).

In spite of the rapid diffusion of Foresight, there has been little effort to draw together accumulated experience, although this would no doubt benefit those planning to embark upon a Foresight exercise. This suggests a need for some initial mapping and perhaps ongoing monitoring of territorial and sectoral Foresight activities, especially since the field is in a constant state of flux. With this in mind, the European Commission has recently asked the ESTO network to undertake a project to map Foresight activities across the EU15 and a selection of Pre-Accession Countries. Moreover, the project will also set out to map the competencies of those individuals and organisations actively engaged in organising and managing Foresight activities. This information is likely to be used by the European Commission and other policy makers, as well as those planning to undertake Foresight, when seeking to identify expertise in the Foresight area. The collected data is being directly entered into a searchable web-based format, which should prove useful to both Foresight practitioners and policy makers alike.[7]

- Despite the progress made by Foresight programmes in recent years, there is also a need to develop a European-wide foresight community and to contribute to its professionalisation. Foresight methodology includes a variety of novel tools[8]. But new methodological developments are also needed, for example those that will help address both science and technology oriented Foresights and societal oriented Foresights.

[7] *See: http://futures.jrc.es/ESTOeurofore*

[8] *e.g. Expert analysis, stakeholders' involvement methods, modelling techniques, etc.*

The broadening of the 1999-2000 UK programme into socio-economic issues worked well – the panels examining the implications of an ageing population and the future of crime prevention were probably two of the most successful, both in the applicability of their visions and the engagement of the wider public. However, because they were embedded within what is effectively a scientific programme, they were not able to engage policy makers at the centre of Government as quickly as would otherwise be possible. This suggests that the time needed for such influence should be recognised when instigating such projects.

An essential aspect of Foresight is the shared learning of how to conduct and how to use Foresight. There is a great deal of tacit knowledge involved in managing these processes and very little chance that a recipe book approach can ensure effective learning. Given that many of the Foresight exercises are national, there is no basis for a purely national level build-up of Foresight expertise – it has to be undertaken by transferring know-how between national programmes.

- **To achieve this co-ordination objective, there is a need for the development of an innovative Knowledge Sharing Platform, e.g.** including a website providing access to data, as well as a platform for discussion and exchange. This could provide
  - a vehicle for managing access to the cumulative work done on the experiments and exercises that have taken place to date.
  - access to accumulated know-how, and data such as sectoral background reports, ICT tools and so on.

RECOMMENDATION 3:

The HLEG recommends the development of a Knowledge Sharing Platform as an intellectual infrastructure for experience-sharing and discussion. It could allow actors to benefit from the diversity of their activities and it should provide services and support the development of a European-wide foresight community.
Such a community should benefit from the diverse, distributed future oriented activities and not become a substitute to it.

Without the support of evaluation evidence it is hard to justify the continuation of a programme, and the assertion that the networks created by Foresight are the main tangible, and most valuable outputs cannot sustain a programme indefinitely. Evaluation procedures focusing on the process itself as well as the results and effects on different stakeholders, should therefore be built into the programme before its launch.

However, because of their characteristics Foresight activities are also difficult to evaluate. Foresight should, however, be evaluated according to criteria for good scientific practice: *validity, credibility, quality assurance and ethical norms.*

The development of sound evaluation instruments and practices is thus vital to the progress of Foresight in Europe. As such the Commission could contribute to the establishment of the best possible quality in the diverse Foresight activities ongoing in Europe. Even a "code of good practice" following the procedural steps of the European Quality Organisation might be considered.

RECOMMENDATION 4:

Evaluation instruments for assessing the quality of foresights recognised at European level need to be developed.

Chapter 3. Practical steps for Implementing Foresight in Europe

It is clear from the above that for implementing Foresight in Europe, new competencies are needed at all levels (including the Commission). Moreover, some functions such as stimulating foresight activities can benefit from economies of scale.

3.1. Functions to be organised at European level

The HLEG has identified the following five functions that can benefit from being organised at a trans-national European level:

1) Creating a learning space for foresight

An essential aspect of European foresight would be shared learning on how to conduct and how to use foresight. One of the main challenges facing foresight is how to ensure that lessons from one exercise are successfully transferred to the next one. Very often experiences are lost between one programme and the next. There may be a need to support formal and informal learning processes. For example, postgraduate courses, shared peer review and evaluation processes, registered consultancy services, etc, might be developed at a European level. Informal learning can come through running joint events or funding secondments from one programme to another.

2) Parallel and co-ordinated foresight exercises could further enhance tacit learning and sharing of results.

This could permit economies of scale in terms of recruiting experts to run workshops, developing shared resources such as formal modelling capacity or background literature. In the case of smaller countries it could raise the critical mass of experts available. For all countries it would increase the cross-fertilisation and possibilities for creativity. It provides scope for greater experimentation with different ways to tackle particular topics. It also introduces an interesting element of comparative experience.

3) Monitoring the landscape of Foresight in Europe

A complement to the foresight portal would be a continuous monitoring[9] activity to map the landscape of foresight activities and actors[10]. This could be a useful

[9] *see note 4 page 10*

[10] *The JRC/IPTS pilot project aims to monitor foresight activities, organisations and experts on an-going basis through its ESTO network see: http://futures.jrc.es/ESTOeurofore. This new project is complementary to a series of one-off comparative reviews of foresight that have attempted to map the shifting landscape of foresight exercises, the latest of which has been produced for this expert group but includes Dutch Radar report, the UKDTI review, the Finnish review document and the work of Gavigan*

resource for practitioners, helping them to develop a common sense of identity and awareness of other exercises. This in turn could contribute to the spirit and purpose of the ERA policy. In addition, it could provide a profile of expertise that would be useful for users of foresight. It would help locating experienced foresight practitioners as well as providing a possibility for policy makers to identify examples of good practice in the use of foresight.

4) Running common European Foresight projects to develop strategic intelligence on common European drivers and trends

It is desirable to have common Foresight projects to develop strategic intelligence outputs (i.e. products) on common drivers and trends. For example there will not be too much difference in the analysis of main trends in the evolution of generic technologies such as nanotechnologies, ICT or biotech. Major differences only arise at the stage of interpreting the significance of these issues for concrete implementation. Common analysis of main generic issues and trends therefore can be very useful, again particularly for smaller countries that do not necessarily have a sufficiently diversified expert mix to be able to assess the full range of such trends.

Collaborative European level Foresight processes should be considered where relevant to support policy competencies that are actually exercised at Community level. For instance in research policy, food safety, environmental protection or enlargement there is an actual need to develop European visions that are developed in a more holistic way than is possible through democratic representation (e.g. at the negotiating table of Member States). This is important not least because sometimes these decisions affect stakeholders that have no voice in such arenas. EU-level Foresight might therefore complement existing representation structures and thus go some way in tackling the democratic deficit identified in the recent White Paper on Governance.

5) Dissemination

Foresight is explicitly process-orientated but products are clearly of wide interest and value and yet, not everyone can be involved in the processes. The large number of foresight exercises (and other future orientated & participatory processes) that has been undertaken or launched in recent years indicates that much might be gained from improving the accessibility of the outputs. ***A centralised resource such as a Foresight Internet portal might be useful to provide links to these efforts***[11]. However, in addition it will be necessary to add value to the reports by providing secondary analysis of the results. This could take place through seminars, working groups, dissemination activities and separate publications.

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and Cahill and Gavigan and Scapolo.

[11] *This portal could be based on the web site already developed by Directorate K of the EC.*

3.2. Short term recommendations to the European Commission

The HLEG has not tried to develop the terms of reference of a Foresight Knowledge Sharing Platform as mentioned above. But the above listed functions can be regarded as the main tasks to be performed by such a Knowledge Sharing Platform.

RECOMMENDATION 5:

The European Commission should undertake a feasibility study on the Knowledge Sharing Platform.

A feasibility study on the Knowledge Sharing Platform is regarded as a major step forward by the HLEG and thus recommended to the Commission.
Such a Platform would enable stakeholders across Europe to access to the large volume of Foresight related data, as well as the reflexive, evaluative and cumulative learning associated with existing experiments and exercises.

RECOMMENDATION 6:

The HLEG recommends to the Commission the following actions with regard to the 6th Framework Programme:

- **A sufficient number of demonstrator projects on European Futures should be supported** in order to stimulate a wide and open debate on issues of crosscutting concern. These 'Great Debate Foresight' could be large-scale pitched towards Europe's societal evolution (e.g. Europe in the Global Society or the knowledge society in the service of the citizen). They could also more targeted (e.g. The Future of Science as a Career). Some could be aimed at particular social groups (e.g. "Life begins at 40 - Europe in 2025 as seen by 15 years olds).
- **Networks of excellence on Foresight in Europe should be supported under FP6.** These networks would provide a mechanism for interchange between practitioners of foresights on state of the art methods, quality, and impact evaluation. They would also provide a function for developing a shared infrastructure for collecting and synthesising results and mapping and measuring the European Foresight landscape. These networks should be focused (e.g. level of governance, thematics, technological areas…).
- **An infrastructure for cross-connecting regional or transborder foresight projects should be found**. This might link together the growing efforts at regional and local foresight in order to increase their ability to develop a vision of the region in Europe as well as to increase the visibility of the regional viewpoint on Europe. Ways to do this through co-ordinated actions between FP6 and the Anticipatory Actions ('article 10') of the European Regional Development Fund.

In implementing all of the above, it should be noted that European Foresight efforts are not an exclusive task for the Commission, but can and should be initiated and driven by other organisations as well. No institution should have monopoly on Foresight; multiplicity and competition should be encouraged. Realising the ERA will need a substantial amount of visionary thinking as well as efforts to relate the many different aspects of RTDI and all other policies. Here Foresight can play an enormous catalyst role and the European Commission has a big potential to realise a truly European Foresight area. After all, as is often said: the best way to predict the future is to invent it.