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PRIORITY-SETTING IN THE EUROPEAN RESEARCH FRAMEWORK PROGRAMMES

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About VINNOVA

VINNOVA, Swedish Governmental Agency for Innovation Systems.

VINNOVA´s mission is to *promote sustainable growth*
by funding *needs-driven research*
and developing *effective innovation systems*.

Through its activities in this field, VINNOVA aims to make a significant contribution to Sweden´s development into a leading centre of economic growth.

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Research and Innovation for Sustainable Growth.

Priority-setting in the European Research Framework Programmes

Dan Andrée

The views put forward in this paper are entirely the personal views of the author.

VINNOVA's foreword

VINNOVA is the Swedish Governmental Agency for Innovation Systems with the mission to promote sustainable growth by funding needs-driven research and developing effective innovation systems. Understanding the mechanisms that contribute to shape priority setting in public financing of research and development is key knowledge. VINNOVA has taken the initiative to study in considerable depth the prioritisation mechanisms in four settings, in the EU framework programmes, in USA, China and Japan. The purpose is to learn from experiences in those settings when developing VINNOVA strategies and positions. Hopefully also other institutions will find the project useful for other policy developments. The project is managed by Göran Pagels-Fick at VINNOVA's Strategy Development Division.

This report is the first of four studies and covers the Framework Programmes of the European Union. The report was written by Dan Andrée, Special Adviser at the Swedish Ministry for Education and Research. Dan Andrée has a long experience in issues of Swedish and European research policy and he has previously been working for the DG Research within the European Commission. The report describes the intricate mechanisms to come to decisions on the form and contents of a framework programme.

Dan Andrée has provided a significant added value by sharing his personal conclusions how the forming of a framework programme could and should be influenced by member states and stakeholders. Thus the report brings a significant message to VINNOVA and other national stakeholders on how to be more effective in managing input to future framework programmes. The period between the latter part of 2009 and the first part of 2010 will be crucial for such an input.

VINNOVA in June 2009

Göran Marklund

Acting Deputy Director General

The author's foreword

The aim of this paper is to describe how the thematic priorities are set in the Framework Programme (FP), how they have evolved and what lessons can be drawn for future programmes.

One can distinguish between the 'pre-ERA-era' (European Research Area) and the 'ERA – era'. During the 'pre-ERA era', i.e. FP1 – FP5 (1984 – 2020) there was in principle little interaction between the FP and national programmes in the sense that programme owners (Research Councils, Government Agencies etc) were not engaged. The FP was something additional to national programmes. This fact made it fairly 'easy' for the European Commission to prepare the proposal for an FP. This does not mean that the FP did not have an impact at national level; on the contrary it has played a major role depending on the funding structure in different Member States. In some thematic areas, the FP has accounted for a large proportion of national research (e.g. health) but less in other areas (e.g. ICT). In some of the smaller Member States, the share of the FP has been much higher than the average of 5%.

However, with the introduction of the ERA already had many activities aimed at structuring the ERA – a 'trend' which was reinforced in FP7; the rationale being that the FP must be oriented as an important tool in implementing the ERA. This means that FP7 interacts more with national programmes and private investments than any predecessor, especially through ERANET, ERANET Plus, Article 169, JTIs etc.

One consequence is that it will be much more 'difficult' for the Commission to prepare a new proposal for an FP as national/regional/industrial programmes have to be taken into account.

The Ljubljana Process which started in May 2008 means that the Commission and Member States will have to work in partnership. At the Informal Competitiveness Council in Prague, 4th May 2009 Commissioner Potočnik said: 'our objective should be to move from "ERA 1.0", which is an ERA owned by specialist administrations, towards "ERA 2.0" which will be actively owned and developed by all the actors concerned'. Indeed, the EU system is tailored to discuss and negotiate formal proposals from the Commission resulting in legislation. However, the governance of the ERA is not about legislation, it is about involving Member States and other stakeholders in a constructive debate. Europe has to find to new ways of facilitating such a debate. This will be a challenge, not only for the Commission but perhaps above all for Member States and other stakeholders.

It is hoped this paper may stimulate a debate ahead of the preparations for FP8.

Dan Andrée

Brussels, June 2009.

Content

1. A short 'history' of the Framework Programme

There does not appear to be a vast number of publications covering the history of the Framework Programme. A comprehensive overview covering the years until the mid-1990s is given in: A brief history of European Union Research Policy by Luca Guzzetti[2]. A study, by Lucie Carrouée[3], compares national policies with EU polices. The paper[4]: Evolving frameworks for European collaboration in research and technology looks in particular at the evolution of the interrelationship between the EU's Framework Programme, EUREKA and COST. The Impact assessment of FP7 was published as a book: A New Deal for an Effective European Research policy and contains a description of the decision-making process (co-decision) of FP7[5]. Finally, Michel Andree from the Commission has published several articles on the subject.[6]

2007 was not only the 50th anniversary of the EU, the Treaties of Rome establishing the European Economic Community (EEC) and the European Atomic Energy Community (EURATOM) signed in March 1957; it also marked a historic year for European Research. Twenty-five years earlier, on 21st December 1982, the Council agreed a preparatory phase for a Community Research and Development Programme in the field of Information Technologies (ESPRIT)[7]. Previously, research activities had been of an ad-hoc nature linked to policy areas such as agriculture, coal, energy/nuclear energy and steel.

It was challenges from the US which prompted initiatives like EUREKA and ESPRIT and RACE in telecommunications. In that sense,the research policy at this time was more reactive than proactive. It is only in the last 10 years that research policy has become an important political instrument, in particular through the Lisbon Strategy[8] – actually one of the major instruments for Europe to ensure economic growth and the creation of new jobs. Research policy has also been an important instrument in initiating cooperation during the enlargement process and is still very much an important

2 Luca Guzzetti, European Commission, ISBN 92-827-5353-0, October 1995.
3 Policy Networks in the Field of Research and Development, College of Europé, (Master Thesis), 2006.
4 Elsevier Science B.V., Research Policy 1284 (2001) 1-13, Luke Georghiou.
5 Ugur Muldur et al, Springer, 2006.
6 E.g. the European Research Area: history of an idea, revue d'histoire de l'intégration européenne, 2006, Volume 12, edition 2.
7 Official Journal (OJ) L369, 29/12/1982, pp 37-40.
8 European Council in Lisbon (March 2000).

instrument to form cooperation with countries outside Europe through bilateral agreements.

The budget of the Framework Programme has increased steadily since its start and now stands at around EUR 54 billion over the seven years, 2007– 2013, making FP7 the world's largest research programme as well as the largest budget administered directly by the European Commission.

The European Research Area was launched in 2000[9] as a key concept for implementing the Lisbon strategy (by 2010) and later followed up by the 3% goal (increasing national spending on R&D to 3% of GNP, of which 2/3 to come from private investment) set in Barcelona in 2002. However, the idea of an ERA goes back to the 1970s and Commissioner Ralf Dahrendorf (European Scientific AREA)[2] with the creation of CREST and ESF as well as Commissioner Ruberti's European Science and Technology Assembly (ESTA) – see also section 8.

The ERA concept encompasses three interrelated aspects:

- a European 'internal market´ for research, where researchers, technology and knowledge can freely circulate;
- effective European-level coordination of national and regional research activities, programmes and policies; and
- initiatives implemented and funded at European level (mainly the Framework Programme).

A new development in ERA came with the Aho-report[10] which was asked for by the Commission ahead of the 2006 Spring European Council, to give advice on: 'ways to accelerate the implementation of planned new initiatives at EU or national level aimed at reinforcing EU research and innovation performance in the context of the revised Lisbon Strategy'. The main recommendation was to create an 'innovation friendly market'. Research was now truly on the agenda at the highest political level.

The Commission's Green Paper on the ERA[11] of April 2007 took stock and acknowledged that 2010 should not be seen as an end date; also that ERA will be an ongoing process with a 'moving' target. The first formal reaction from the Council came at the Competitiveness Council in November 2007[12] acknowledging the advances made since 2000 but noting that faster progress has been achieved by other major regions. The

9 Towards a European Research Area, COM 2000(6).
10 Creating an Innovative Europé, EUR 22005, January 2006.
11 COM (2007) 161 final, 4th April 2007.
12 The Future of Science and Technology in Europe, Council conclusions, 22nd-23rd November 2007, 14865/07 (Presse 259).

Framework Programme is the main financial instrument in implementing the ERA at EU level but it is clear that many other EU initiatives and in particular initiatives at national and regional level will have to be undertaken. During 2008, the Commission proposed a number of initiatives such as Joint Programming and a legal Framework for Research Infrastructures. The Ljubljana Process has been launched in May 2008[13] looking into the long-term vision and governance of ERA. In December 2008[14], the Council adopted a vision for ERA – '2020 Vision for the ERA' stating that 'by 2020, all actors should benefit fully from the "Fifth freedom" across ERA: free circulation of researchers, knowledge and technology'. The debate continued[15] during the Czech and Swedish Presidencies with emphasis on governance. The debate on ERA vision and governance is likely to continue during the coming years as ERA evolves. The recent financial crisis puts even higher demands and expectations on research at European level.

13 Council Conclusions: 10231/08.

14 Council Conclusions: 16767/08.

15 The Commission publication: The ERA partnership. 2008 Initiatives gives a summary of the debate during 2008, http://ec.europa.eu/research/era/pdf/era-partnership-2008-initiatives_en.pdf

2. ERA Vision and governance

The diversity of regional, national, intergovernmental and pan-European research programmes has both advantages and disadvantages. Several of the European countries, universities and companies are world leaders in many fields of research and innovation. At the same time, many indicators point at Europe's problems with fragmented research resources. In fact, one aim of the Framework Programme is to overcome this fragmentation. During the first 20 years of the Framework Programme, this was mainly done by initiating collaborative projects to generate critical mass and promote mobility of researchers. The Sixth Framework Programme saw the start of more 'integrating' instruments such as Integrated Projects, Networks of Excellence, ERANET, the use of Article 169 and the application of the Open Method of Coordination on the '3% target'. This 'trend' was strengthened in the Seventh Framework Programme with the introduction of ERANET Plus, JTIs (Public Private Partnership), discussion on joint research infrastructure and the ERC. However, by creating all these new instruments more 'fragmentation' is created regarding governance of the ERA and research in Europe.

Additionally, in recent years the work has concentrated on how to make more progress on the implementation of the ERA and the Lisbon process. It is important to be clear in this context what the ERA vision is. One can see it as describing the 'content' of ERA and an 'incentive" to reach the goals set up by the Lisbon process. At the same time, the governance of each new initiative is discussed separately and so Europe risks 'losing control' of the governance of the entire ERA.

The vision and governance of the ERA should be discussed and developed hand in hand. In this discussion, a broad view has to be taken on the ERA and the different policies interlinked with it such as the structural funds, other intergovernmental organisations, higher education and innovation.

Europe needs to be creative in preparing for this discussion. The EU system is tailored to discussing and negotiating formal proposals from the Commission which result in legislation. However, the governance of the ERA is not about legislation, it is about involving Member States and other stakeholders in a constructive debate and partnership.

For the first time in the history of the Framework Programme, Europe now has a 'window of opportunity' to conduct such a debate. FP7 will last seven years, so there is still time before the preparation of the next Framework Programme.

The French Presidency concluded successfully with the adoption of several Council conclusions related to the ERA, especially the 2020 Vision and in regard to Joint Programming and International Cooperation. Before the adoption of conclusions on governance a series of debates will be held covering issues relating to other policy areas, the involvement of stakeholders, the geographical remit of ERA and the instruments used to implement the ERA.

3. Preparation of a Framework Programme

The process of getting a new Framework Programme adopted is a long and complicated one best illustrated by looking at what has happened during previous Framework Programmes.

The process usually starts with the Commission presenting a 'discussion'/'orientation' document around six months before tabling the formal proposal. Once the legal proposal is presented, it takes up to two years before a final decision is taken by the Council and the European Parliament in the co-decision process.

Taking into account that the Commission must start preparation about six months before a discussion document is presented, the total timeframe for preparing a new Framework Programme is around three years. This was a serious problem with earlier Framework Programmes (FP1 – FP6) which lasted only four years. In practice, it meant that preparation of a new Framework Programme commenced just a year after the previous one had started. This can be seen from the table below:

	'Discussion' Document	Formal FP proposal	Adoption	Duration[1]
FP5	10th June 1996[2]	9th April 1997[3]	22nd December 1998[4]	1999-2002
FP6[5]	4th October 2000[6]	21st February 2001[7]	27th June 2002[8]	2003-2006
FP7	16th June 2004[9]	6th April 2005[10]	18th December 2006[11]	2007-2013

1 Refers to budgetary duration. Projects can normally run for another 3-4 years.
2 Preliminary guidelines for the Fifth Framework Programme, COM (96) 332.
3 COM (97) 142.
4 OJ, L 26/1, 1/2/99.
5 It should be noted that the Commission's proposal only said 'the multi-annual FP' and not 'the Sixth FP'.
6 Making a reality of the European Research Area and guidelines for EU research activities in the period 2002-2006, COM(2000) 612.
7 COM (2001) 94.
8 OJ, L 232/1, 29/8/02.
9 Science and technology, the key to Europe's future – Guidelines for future European Union policy to support research, COM(2004) 353 final.
10 COM(2005) 119.
11 OJ, L 412/49, 30/12/06.

FP5 was adopted at the end of December 1998 and the first calls were announced in the beginning of 1999. Only a year later, the Commission had to start preparation with the discussion document on FP6 (in fact the preparation started even earlier with the adoption of the ERA Communication in January 2000) which was adopted in October 2000. FP6 was adopted at the end of June 2002 but the programme did not start until

the end of that year. Again, preparations for FP7 started only a year later at the beginning of 2004.

With FP7 there is the possibility, for the first time, to gain more experience of the ongoing Framework Programme and have time for reflection and preparation prior to embarking on preparations for FP8.

4. Objectives of the Framework Programmes – an overview

FP1 (1983 – 1987)

The 'pre-competitive' era

FP1 was established through a Council resolution on 25th July 1983[16] referring to Article 235 of the EEC and Article 7 of EURATOM. The aim was very much about promoting competitiveness (Agricultural and Industrial) but also improving the management of raw materials and energy resources, stepping up development aid, improving living and working conditions and improving the effectiveness of the Community's scientific and technical potential. This resolution laid the ground for such programmes as ESPRIT, RACE and BRITE.

The first ESPRIT programme was adopted by the Council on 28th February 1984[17]. The decision did not lay down any general objectives other than that the programme 'shall comprise pre-competitive research and development projects'. However, objectives were laid out for the six areas covered by the programme. The preamble refers to a declaration by Heads of State from 1979 declaring that 'the dynamic complex of information industries, based on the new electronic technologies, offered a major source of economic growth and social development'. Further, it was stipulated that each contract should have at least one industrial participant.

The first definition phase of RACE was adopted on 25th July 1985[18]. It refers to several statements by Heads of States emphasising the 'importance of telecommunications as a major source for economic growth and social development' and also referred to assessment of the European Parliament stressing the key role of telecommunications. The aim of the definition phase was to prepare a general European framework for the development of advanced systems of communications for the future and promote technical and industrial cooperation'.

In the first BRITE programme[19], the objectives were 'pre-competitive basic technological research and development' in industrial areas other than those covered by ESPRIT and RACE, plus pilot and demonstration projects.

16 OJ C208, 4/8/83 p 1.
17 OJ L067, 9/3/84 pp 54-59.
18 OJ L210, 7/8/85 pp 24-27.
19 OJ L083, 25/3/85 pp 8-12.

Criteria

The criteria used in FP1 were laid down during the German Presidency (first half of 1983) led by the German Research minister Riesenhuber and are usually called 'The Riesenhuber Criteria'. They expressed clearly and for the first time a systematic approach to the justification of European research activities according to their European value-added. A question is of course if they actually played a role in the selection on thematic areas? The answer, which will be elaborated later on, is probably something 'between yes and no'; they were not selection criteria but were intended to identify which activities had European value-added and were therefore justified to be conducted at European level.

THE RIESENHUBER CRITERIA

Community involvement is justified by:

- Research conducted on so vast a scale that single Member States either could not provide the necessary financial means and personnel, or could only do so with difficulty;
- research which would obviously benefit financially from being carried out jointly, after taking account of the additional costs inherent in all actions involving international co-operation;
- research which, owing to the complementary nature of work carried out at national level in a given sector, would achieve significant results in the whole of the Community for problems to which solutions call for research conducted on a vast scale, particularly in a geographic sense;
- research which contributes to the cohesion of the common market, and which promotes the unification of European science, and technology; as well as research which leads where necessary to the establishment of uniform laws and standard.

The Single European Act

The Single Act[20] added Title VI to the Treaty on Research Activities for the first time and gave the legal basis for the Framework Programme and its objectives in Articles 130f-q. With some modifications, these articles are still the legal basis for the existing FP.

Article 130i 'defines' the FP:

'The Community shall adopt a multi-annual framework programme setting out all its activities. The framework programme shall lay down the scientific and technical objec-

20 OJ L 169, 29/6/87.

tives, define their respective priorities, set out the main lines of envisaged activities and set the necessary amount, detailed rules of financial participation by the Community in the programme as a whole and the breakdown of this sum between the various activities envisaged'.

Further, the objectives are spelled out in Article 130i:

1 The Community's aim shall be to **strengthen the scientific and technological basis of European industry and encourage it to become more competitive at international level.**
2 In order to achieve this, it shall encourage enterprise including small and medium-sized enterprises, research centres and universities in their research and technological development activities; it shall support their efforts to cooperate with one another, notably aiming to enable enterprise to exploit the Community's internal market potential to the full, especially through the opening up of national public contracts, the definition of common standards and the removal of legal and fiscal barriers to that cooperation.
3 In the achievement of these aims, special account shall be taken of the connection between the common research and technological development effort, the establishment of the internal market and the implementation of common policies, particularly regarding competition and trade.

FP2 (1987 – 1991)

The criteria were the same as the Riesenhuber criteria but with the **social cohesion aspect added**:

"Research which contributes to the strengthening of the communities' economic and social cohesion as well as to the promotion of its harmonious and widespread development, while maintaining its consistency with the objective of technical and scientific quality".

Annex III of FP2 stated that a 'particular aim of R&TD shall be to strengthen the scientific and technological basis of European industry, including SMEs – especially in strategic areas of high technology – and to encourage it to become more competitive at international level'.

FP3 (1990 – 1994)

The objectives and criteria were mainly the same as in FP2 but the Council added six 'concerns' that guided its choices in FP3:

1 Improve industrial competitiveness whilst maintaining the pre-competitive nature of Community actions.
2 Cope with the challenges for standards linked to the Single Market, thus boosting pre-normative research.
3 Modify the attitude of industrial operators, by orientating it towards transnational initiatives.
4 Instil a European dimension into the training of staff engaged in scientific research and technological development.
5 Increase economic and social cohesion while ensuring the scientific and technical excellence of research projects.
6 Take account of safeguarding environment and quality of life.

The Maastricht Treaty (came into force 1st November 1993)

An important addition was made to the FP criteria:

'while promoting all the research activities deemed necessary by virtue of other Chapters of this Treaty' which widened the scope of activities.

This is probably one of the most important changes ever made as it opens up the possibility of including almost any topic in the FP, provided its EU interest is accepted.

FP4 (1994 – 1998)

FP4 stated that the 'following criteria in particular should be used to justify Community action:

- research on a very large scale for which Member States could not, or could only with difficulty, provide the necessary finance and personnel,
- research, the joint execution of which would offer obvious benefits, even after taking account of the extra costs inherent in all international cooperation – research which, because of the complementary nature of work being done nationally in part of a given field, enables significant results to be obtained in the Community as a whole for problems whose solution requires research on a large scale, particularly geographical,
- research which contributes to the completion of the internal market and research leading, where the need is felt, to the establishment of uniform norms and standards,
- research which contributes to the strengthening of the economic and social cohe-

sion of the Community and the promotion of its overall harmonious development, while being consistent with the pursuit of scientific and technical quality,

- research actions which contribute to the mobilisation or improvement of European scientific and technical potential and actions which improve coordination between national RTD programmes, between national and Community RTD programmes, and between Community programmes and work in other international fora.

It was also stated that that 'activities should contribute to meeting the general objectives of the Community, such as promoting sustainable development and improving the quality of life of the Community's citizens'.

However, it was also stated that 'research activities should continue to focus on generic and precompetitive research of multisectorial application'.

FP5 (1998 – 2002)

The criteria in FP5 built on FP4 (competitiveness and promoting other activities deemed necessary according to the treaty. It also spelt out in some more details the subsidiarity principle:

'Moreover, in pursuit of a cost-benefit approach dictated by concern for optimum allocation of European public funding and in accordance with the subsidiarity principle, themes for the Fifth Framework Programme and related objectives are selected on the basis that the Community shall take action only if and insofar as its objectives cannot be sufficiently achieved by the Member States.'

Further, the criteria were broken down in three categories:

1. Criteria related to the Community 'value added' and the subsidiarity principle
   - need to establish a 'critical mass' in human and financial terms, in particular through the combination of the complementary expertise and resources available in the various Member States,
   - significant contribution to the implementation of one or more Community policies,
   - addressing of problems arising at Community level, or questions relating to aspects of standardisation, or questions connected with the development of the European area,

so as to select only objectives which are more efficiently pursued at the Community level by means of research activities conducted at that level

2. Criteria related to social objectives
   - improving the employment situation,
   - promoting the quality of life and health,
   - preserving the environment,

in order to further major social objectives of the Community reflecting the expectations and concerns of its citizens.

3. Criteria related to economic development and scientific and technological prospects
   - areas which are expanding and create good growth prospects,
   - areas in which Community businesses can and must become more competitive,
   - areas in which prospects of significant scientific and technological progress are opening up, offering possibilities for dissemination and exploitation of results in the medium or long term,

in order to contribute to the harmonious and sustainable development of the Community as a whole.

The new FP: FP6 (2002 – 2006)

The Commission proposal was 'The New Framework Programme' but the title was changed during the Swedish Presidency to FP6.

Overall criteria were the same as for FP4 and FP5 as stated in the Treaty. In order 'to contribute to the creation of the European Research Area and to innovation, this programme will be structured around the following three headings, under which the four activities as set out in Article 164 of the Treaty will be undertaken:

- focusing and integrating Community research,
- structuring the European Research Area,
- strengthening the foundations of the European Research Area.

This was the first time the European Research Area was mentioned in an FP.

FP7 (2007 – 2013)

FP7 forged stronger links with ERA and other EU policy areas:

'contributing to the creation of a knowledge-based society, building on a European Research Area and complementing activities at a national and regional level. It will promote excellence in scientific and technological research, development and demon-

stration through the following four programmes: cooperation, ideas, people and capacities.'

However, it may be noted that the emphasis on 'structuring' as articulated in FP6 is not so prominent in FP7.

FP7 refers to the objectives set out in the Treaty but does not elaborate on any other criteria. However, each theme or part has a stated objective and rationale.

Summary:

From this overview, it can be seen that the criteria and objectives were important at each stage in the evolution of the Framework Programme because they encapsulated the rationale which Member States saw for action at European level under the FP. From this perspective, the most significant change with regard to Criteria/Objectives apparently comes via the Maastricht Treaty where it was stated that the FP should also promote 'all the research activities deemed necessary by virtue of other Chapters of this Treaty'. This is an important addition as it means that research activities are implicitly included when new areas are added to the Treaty.

In fact the Riesenhuber criteria (which promoted the unification of European science, and technology) could already be used to justify the ERC.

The major change in terms of objectives came in FP6 where it was stated that the FP needed to be structured in a specific way in order to contribute to the creation of the ERA. This new approach opened up for an even 'clearer' structure in FP7.

Although the Lisbon Treaty also includes specific references to ERA (and Space) it will not significantly change the criteria for the FP. The FP can continue to develop in order to contribute to the implementation of the ERA as long as the Council and the Parliament are 'on board'. However, the new Treaty could lead to the Commission 'feeling' more empowered to propose new initiatives.

The result is a broadening of the scope of the FP; so much so that we have now reached a stage where almost *any* action could be justified at European level, the benefit of action in terms of wider spin-offs and value-added alone being sufficient to justify the activity when compared with purely national activity. If this is indeed the case, then the task of selecting those specific activities which should be addressed at the European level under FP8 becomes even more of a challenge than ever before.

5. From objectives to project selection procedures

Bottom-up versus top-down

A common denominator for all the Framework Programmes is that most of the funds go to support research defined by 'thematic topics' fulfilling the objectives and criteria set out for the FP. Traditionally, the FP is top down with politically decided 'themes, the exception being mainly the mobility grants and, from FP7, the ERC grants too. This is the consequence of the subsidiarity principle – i.e. actions at EU level should only be taken if they cannot be more efficient at national level. In fact, one might ask the question:

How can subsidiarity be ensured with a totally bottom-up programme?

However, it can be argued that the transnational requirement always gives an additional value to the FP compared with national programmes which hardly ever require transnational collaboration.

The top-down approach is also motivated by the fact that the budget for the FP is very limited compared to all national programmes[21], thus avoiding over-subscription as well.

In that sense, FP7 with the ERC is a major shift in policy in which the "holy" transnationality requirement is dropped and replaced with the aim of increasing excellence in research through competition.

FP7 is also new in the sense that it acknowledges the need to support capacities in the whole of Europe in order to utilise full research potential.

Top-down priorities versus strategic decision

So far, the main method of selecting projects has been by Call for Proposals specified by 'topics' in the annual Work Programmes. However, from FP6 there are several examples of more 'strategic decisions'.

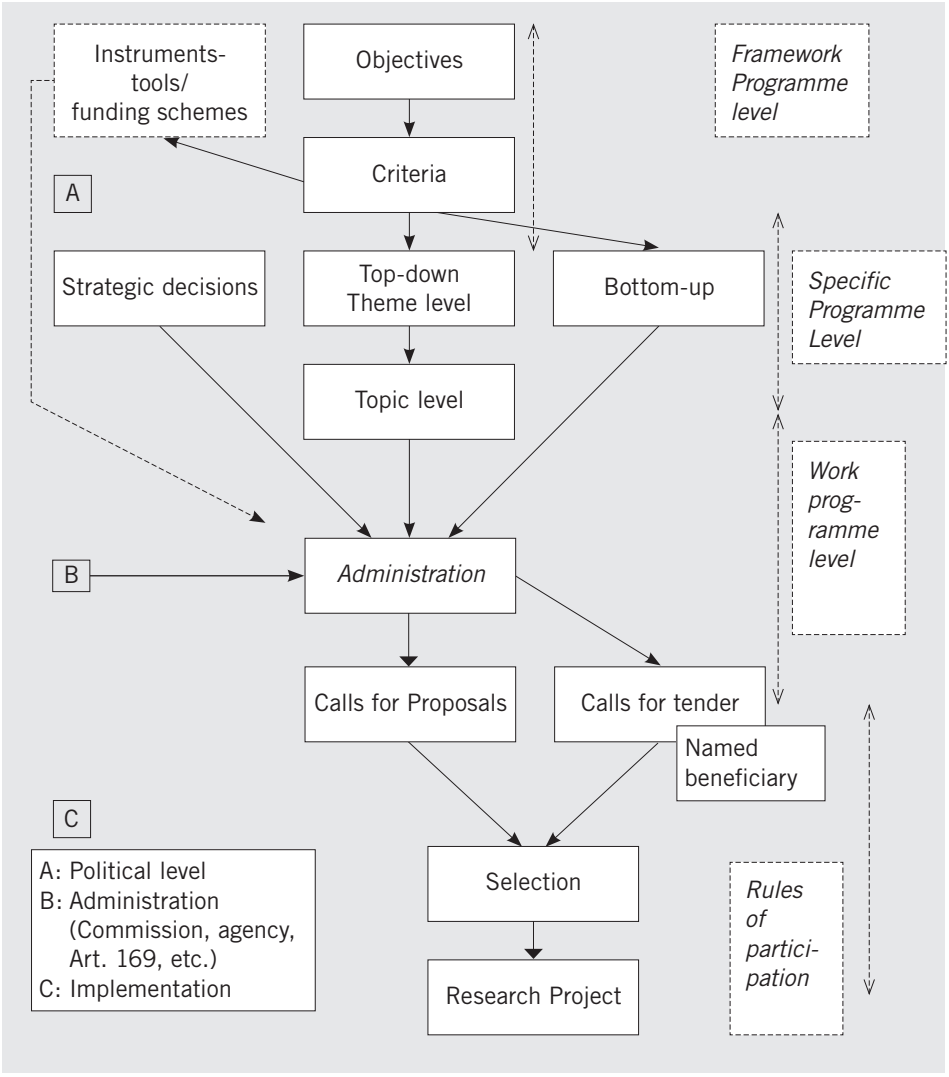
The area of Research Infrastructure is probably the best example so far of strategic decision at the political level (through the ESFRI-group[22]).

21 As pointed out in the Preface, the share of the FP averages 5-6% of public funding in the EU but in some areas/countries it is substantially higher – up to 30%.

22 European Strategy Forum on Research Infrastructures.

Another example of strategic decision is the selection of industrial fields for Private-Public-Partnership – Joint Technology Initiatives. Joint Programming is the last addition to this 'trend' towards strategic decisions.

Framework Programme Priority Setting/Selection Procedure



A: Political decision

The objectives, criteria and priority-setting are set on a 'high political' level – e.g. in the Framework Programme decision and/or in the Specific Programmes**.** However, the thematic priorities are usually only specified down to 'area' or 'activity' level and not 'topic' level[23].

Objectives and Criteria (see section 4)

The Framework Programme and/or Specific Programmes specify objectives and criteria concentrating on what kind of research should be supported at European level – subsidiarity criteria – such as transnational research, forming critical mass etc. and supporting areas corresponding to EU major policy areas such as agriculture, energy, health etc.

Instruments

The activities are implemented using a number of different instruments/tools/funding schemes, the most common of which is collaborative research. Another example in FP7 is the new Joint Technology Initiatives. In principle, the instruments and the Themes are not formally correlated but in the implementation they form a 'matrix'.

Bottom-up

By definition the bottom-up principle does not need any political decisions. The mobility scheme and the ERC are in principle bottom-up with no pre-defined areas.

Top-down

This is the dominating principle in the Framework Programme in particular for cooperative research. However, surprisingly little discussion has taken place on the principles for this top-down procedure on European level. In the Commission, a mixture of internal and external consultations (such as the Advisory Groups) is used combined with the criteria/objectives of the Framework Programme. In the Council/Parliament decision this is specified down to the level of activity/area of research but not on topic/project level.

Topic level

The Work Programmes specify down to topic/project level following the areas specified in the Council/Parliament decisions. This is very much an internal procedure inside the Commission.

23 In FP7, a consistent terminology was introduced: Theme (e.g. ICT), Activity (e.g. ICT Technology Pillars), Area (e.g. embedded systems) and Topic level which is the level for specifying projects in the Work Programmes.

Strategic decision

The best known example so far in the Framework Programme is the procedure to develop the so called ESFRI-list in Research Infrastructures – which involved lengthy consultation with the scientific community – and recently the proposed method for identifying areas for Joint Programming.

B: Administration

So far, most of the administration has been carried out by the Commission services but FP7 in particular saw a new trend towards more decentralising in particular using Articles 169 and 171 as well as establishing two executive agencies.

C: Implementation

The implementation, often through calls for proposals, is usually specified in the annual Work Programmes. It should be noted that it is usually on this level that the 'topics' are defined. The rules for participation are connected to the implementation but do not influence the Themes/topics.

Calls for proposals

The top-down procedure to select topics combined with calls for proposals is the dominant procedure for allocating funds from the Framework Programme, but calls for proposals are also used for bottom-up as well as strategically decided priorities.

Call for tenders

This procedure has not been used much except in limited studies. In this context, the financial regulations also provide an opportunity to fund a named beneficiary – specified either in the specific programme or the work programme. The 'best' examples are probably the funding of COST and the European Space Agency.

Selection

The Framework programme is characterised by a rigorous selection procedure involving peer review through the evaluation of external independent experts with S&T quality as the main criterion, but other criteria are also involved such as impact and management.

6. Summary of Characteristics of the FPs

FP1: 1984-1987, (EUR24 937 million/year)

Policy areas, transnational cooperation, industrial, pre-competitive, pre-normative, ICT, Materials/Energy

FP2: 1987 – 1991 (EUR 1.35 billion/year)

Single Act, quality of life and mobility added

FP3: 1990 – 1994 (EUR 1.425 billion/year)

Themes

FP4: 1994 – 1998 (EUR 3.304 billion/year)

Maastricht Treaty, Four activities, Transport, social sciences

FP5: 1998 – 2002 (EUR 3.74 billion/year)

Key Actions, socio-economic research, societal problems (ageing population)

FP6: 2003 – 2006 (EUR 4.375/year)

New FP, European Research Area, coordination, integrating projects, network of excellence, support to policies, new and emerging technologies, ethical issues

FP7: 2007 – 2013 (EUR 7.767 billion/year[25])

Seven years, aligned for the first time with the Financial Perspectives with budget discussions on the highest political level, Lisbon, Frontier Research, Public Private Partnership, Research Infrastructure, Regions, RSFF

FP8: 2014 – 2020 (EUR 10 billion/year +?)

Cooperative Research (Joint Programming, JTIs, Societal Challenge, Private Public Partnership, 'Pre-commercial Procurement), ERC, Research Infrastructure, Mobility, EIT?

24 EUR is used throughout this paper although before 1st January the ECU (European Currency Unit) was used.

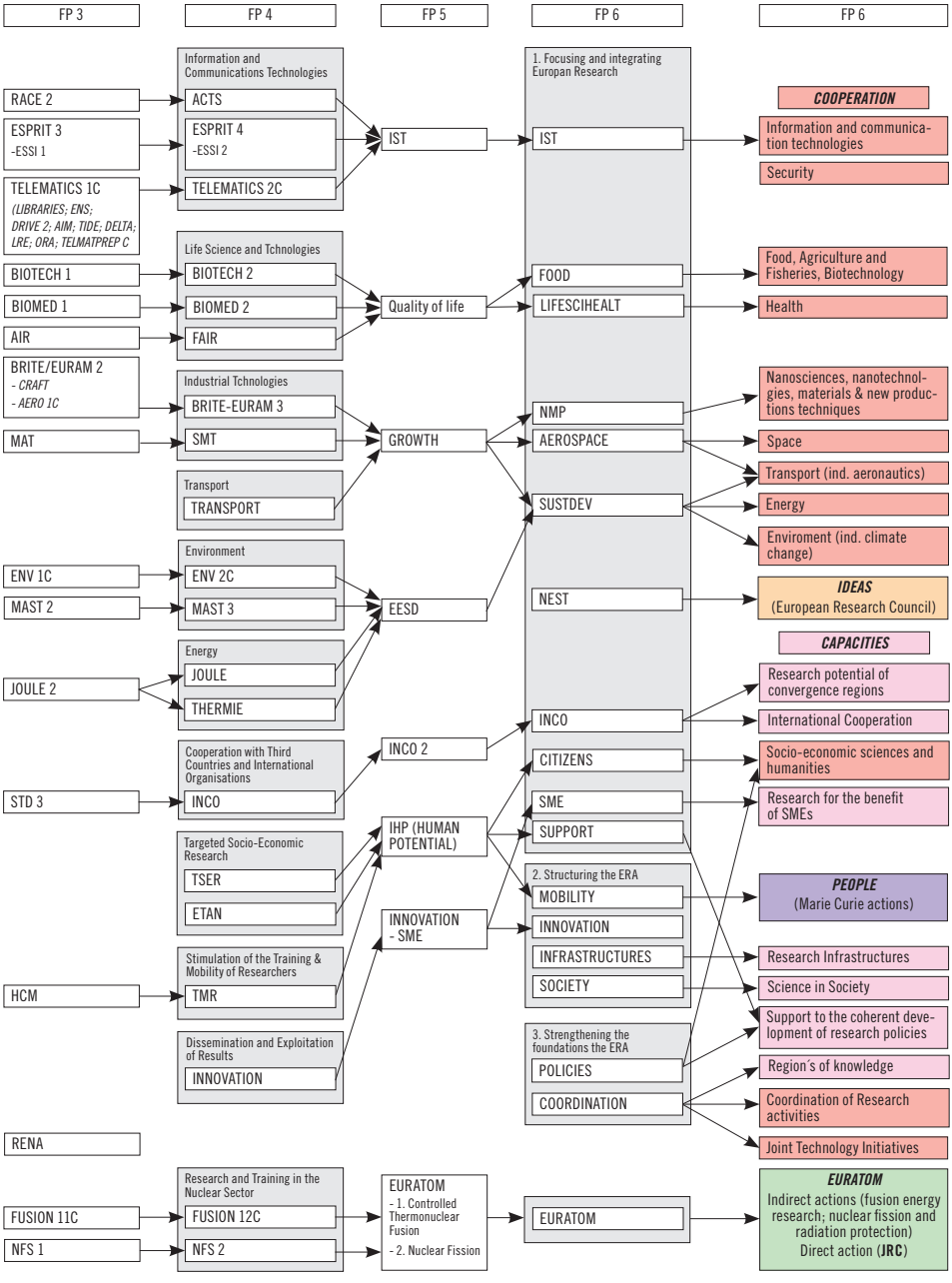
25 Note that the budget for 2010 is over EUR 10 billion.

The table below (from the evaluation of the FP6[26]) shows how priorities have developed from FP3 to FP7. The first observation is that the structure has mainly been 'thematically' oriented with one exception in FP5 where the structure reflected more the political priorities (e.g. quality of life) complemented with problem-solving 'key actions'. Another reason for the change in FP5 was the general feeling that FP4 with its 16 different thematic areas was becoming difficult to manage. However, even though the number of areas was reduced in FP5, in practice it did not significantly change the implementation as the areas were divided into different configurations. One conclusion is that there was a large degree of continuity in the thematic structure even if the actual content, especially on 'topic level' (specified in the Specific Programmes and in the annual Work Programmes) has changed significantly.

One interesting aspect pointed out in the paper, FTA (Future-oriented Technology Analysis) for Research and Innovation Policy and Strategy[27] is the 'extreme reluctance of panels to identify negative priorities or "posteriorities" from which resources may be transferred to positive priorities'. In the Framework Programme this problem has so far been 'solved' with an increasing budget. The best example may be the IT area which had around a 40% share of the budget in FP2 but 'only' around 20% in FP7. However, the budget increased from EUR 2.275 billion in FP2 to EUR 9.05 billion in FP5 – an increase of 400%. It is actually hard to find any areas which have been 'de-prioritised' in the history of the FP, except fusion/fission which was drastically reduced from FP1 to FP2.

26 FP6 evaluation, Report of the Expert group, February 2009.
27 Luke Georghiou Jennifer Cassingena Harper, http://forera.jrc.ec.europa.eu/fta_2008/anchor_paper_3.pdf.

Table from the FP6 evaluation, Report of the Expert Group, February 2009.



7. Actors involved (beneficiaries) and level of intervention

As stated in the rules of participation, a general rule has been: 'at least two mutually independent legal entities established in two different Member States or in a Member State and an Associated State'[28]; As mentioned earlier this also 'guarantees' European added value.

Another principle of the FP has been and still is 'cost-sharing'. Normally the Community contribution will not exceed 50% (75% for universities and SMEs from FP7) with other rules for mobility and ERC grants.

Further, the beneficiaries have mainly been industrial organisations, research organisations and universities but have been broadened to ministries, agencies, public authorities and other 'users'.

In the beginning, there were special requirements in the more industrially related programmes, such as FP1:

'Normally, research institutes and universities should participate in a group with industrial organisations, and projects should be carried out by participants from more than one Member State (BRITE)'.

'Projects should involve at least two independent industrial partners not all established in the same Member State (ESPRIT, RACE)'.

FP2 offered the chance for universities to get 100% funding for additional marginal costs.

In FP3 and FP4, the BRITE/EURAM stated: 'Projects in which, say, universities, research organisations and industrial firms, including small and medium-sized enterprises, may take part must provide, as a general rule, for the participation of at least two partners, independent of each other and established in different Member States. These two partners will normally be industrial firms, except in the case of projects in the field of basic research. Where basic research is undertaken by a group consisting solely of research centres and universities, industrial support will be sought'.

28 This means it is necessary but not sufficient to have organisations from two different Member States. They must not be part of the same group of companies for instance.

FP5 involved researchers from a wider field (socioeconomic) and end users in the Key Actions.

FP6 saw a major shift from project intervention to programme and policy intervention involving policy administrators/managers from national and regional agencies, research council and ministries.

Also, due to the enlargement it was stated that 'the minimum number of participants established by the Work Programmes shall be no fewer than three independent legal entities established in three different Member States or associated states, of which at least two shall be Member States or associated candidate countries'.

In order to stimulate participation of SMEs, the Council and Parliament introduced the '15% rule', meaning that at least 15% of the budget should go to SMEs.

A major novelty in FP7 was the rules for ERC grants allowing only one legal partner per project instead of three. Article 169 and Joint Programming are further steps in the attempt to tackle fragmentation and involve the ministries in implementing ERA.

In order to further help SMEs, the level of funding was increased to 75% (as well as for universities).

The nature of the Framework Programme and in particular how the Framework Programme has gone from an instrument at project level to an instrument at programme and policy level, is illustrated in the figure in Annex 1.

8. Advisory bodies and groups

The Scientific and Technical Research Committee (CREST) was set up through a Council resolution of 14th January 1974 to help both the Council and the Commission in the task of 'coordination of national policies effectively and the definition of projects of Community interest in areas of science and technology'. In principle, CREST was a successor to PREST which had been set up back in March 1965 as a working group of the Medium-term Economic Policy Committee to examine scientific research and technology policies. PREST had members only from Member States but in 1969 this was extended to states who had applied for membership (the UK, Ireland, Denmark and Norway) and other countries (Sweden, Switzerland, Austria, Spain and Portugal). Seven areas were identified, by PREST, with over 47 proposals: plans for high-performance computers, standardisation of software, electronic aids for motor traffic, a gas turbine engine for trains, a giant hovercraft, standardisation of meteorological instruments and numerous suggestions for the battle against air and water pollution.

Based on a proposal from the Commission, the European Science Foundation was set up at the same time (1974) to oversee development of fundamental scientific research. However, its mandate did not go as far as the Commission had proposed (to be a consultancy service in matters of basic scientific research), as it was not a Community interest.

The late 1970s saw a rapid growth in information technology with European companies having problems competing since many of them were "national champions" operating mainly in domestic markets. Cooperation was more frequent with US companies than on a European level. Commissioner Davignon invited senior executives of the major electronics companies to discuss the situation and this led to the setting up of the Information Technology Task Force as well as the Round Table with members from the 12 largest European Information Technology Companies at the end of 1981. This lead to the launch of the pilot phase of Esprit at the end of 1982.

During 1982, CODEST (Committee for the European Development of Science and Technology) was set up and chaired by the Commission Director-General Fasella with 26 members mainly from academia. Prof. Kafatos, now the chairman of the ERC, was a member for many years. In 1984, IRDAC (the Industrial Research and Development Advisory Committee) was set up to advise on industrial research and development. It had 16 members appointed by the Commission.

In order to create closer links between the scientific community, industry and the

Community ESTA (The European Science and Technology Assembly) was set up in 1994 with 100 members recommended by e.g. ESF, Academia Europaea, European Rectors' Conference, and European Industrial Research Managers Association. It replaced CODEST at the same time, but IRDAC remained. Formally, their role was to assist the European Commission in implementation of the European Union's research and development policy.

By establishing the new European Research Forum (ERF) (Commission Decision 98/611/EC/Euratom of 23rd October 1998), the Commission stressed the need for streamlining the previous high-level consultation instruments of ESTA and IRDAC into a single body with two chambers (an academic and scientific on the one hand, and an industrial services and users' chamber on the other).

At the ministerial colloquium on the management of Community R&D programmes held in London on 28th April 1998, the Commission was asked to get advice on the content and directions of the research to be carried out in the context of the key actions'. Seventeen "External Advisory Groups" (EAGs) were set up for this purpose.

Four additional "ad hoc expert groups" were set up, with an advisory function similar to that of EAGs, in relation to areas of generic research activity. Similar AGs (Advisory Groups) have been set up to give input to the Work Programmes in FP6 and FP7. The ICT programmes has a 'CREST-type' of advisory group with 'ICT-Directors' from national administrations.

EURAB, the European Research Advisory Board, was the result of a long and broad consultation process. In May 2000, Commissioner Busquin, realising the need for an independent advisory committee in the field of research policy, set up a large working group of high-level European experts to advise him on how best to establish such a body. The recommendations contained in the Group's final report (issued in February 2001) were the basis of the Commission decision establishing EURAB. On 3rd June 2004, the Commission appointed 45 members to EURAB 2.

EURAB delivered advice and opinions on specific issues either at the request of the Commission or on its own initiative. The board was free to cooperate with organisations and institutions interested in European research, to create working groups on specific themes and to consult with other experts who could enrich its reflection.

Following the public debate on the Green Paper, "The European Research Area: New Perspectives", the European Commission established the European Research Area Board (ERAB) as the new consultative body responsible for advising the EU on realising the ERA. This was a smaller body than EURAB, comprising 22 high-level experts.

During FP6 and FP7, CREST gained a more 'visibly active' role working in different formations on issues such as the Open Method of Coordination. The latest additions are the two CREST configurations for International Cooperation (SFIC) and for Joint Programming (GPC). In addition, there are working groups on Knowledge Transfer and Mobility. It is perhaps symptomatic of the new emphasis on the ERA and the key role of the Member States there that, whilst CREST itself is chaired by the Commission, it was agreed that the SFIC and the JPC should be chaired by someone chosen from among the Member States.

A very important development, particularly for input to the annual Work Programmes, was the establishment of the European Technology Platforms – which may in fact now be the most important source of input to the Work Programmes[29] (in the areas covered by the ETPs).

29 Rough Guide to the FP7 Work Programmes, http://www.sweden.gov.se/sb/d/574/a/119275.

9. Consultations

Before the Commission presents a formal proposal for an FP there are mainly two types of consultation – internal and external. The internal consultation is the ISC – Inter-Service Consultation between the Research Directorate-General, which takes the lead, and all the other interested services of the Commission – and is a formal procedure for the Commission to adopt a decision. In fact in FP7, the Cooperation part was jointly between DG Research, DG Enterprise, DG Information Society and DG Transport and Energy.

As described in section 3, there are two 'phases': a discussion document and the formal FP proposal.

The discussion document and the FP proposal are both Commission decisions and require an ISC. Normally, at least so far, the main external consultation with the wider science and technology community has been on the discussion document, as when the formal proposal is on the table it is in the hands of the Council and the Parliament.

This paper does not elaborate on details of the ISC although it is a very important part in shaping an FP. For those who would like to give input to the Commission in an early phase, contacts with the various so called policy DGs of the Commission, such as DG Environment, DG Health etc. are very important. The rough Guide to the FP7 WPs referred to in the section 8 gives a detailed description of the ISC procedure.

External consultations

One can distinguish between formal and informal external consultations. Formal consultation means an open consultation giving wide publicity and the possibility to contribute, whereas informal consultations are more targeted at the interested S/T community and not necessarily open, or at least not widely publicised.

Formal consultations

FP7 saw the first real large open consultation which was carried out with the discussion document on the 'six axes' as a basis, as well as one on the thematic content of FP7.

FP7 – Consultation on the discussion document

The online consultation on the Commission Communication "Science and Technology,

the key to Europe's future – Guidelines for future European Union policy to support research", COM (353)2004, was open between 30th July and 15th October 2004. Over 1,700 organisations and individuals from across Europe and other countries and including universities, large companies, SMEs, associations and government bodies responded to the consultation. In addition, there were over 8,000 written comments on the various aspects of the guidelines. Also, over 150 contributions were sent to the Commission in the form of 'position papers'. Most Member States (and associated states) send a 'position paper' as some stage. These papers are read and analysed carefully and many aspects, at least on a general level, are taken into account. For example, the continuity aspect was stressed by many countries ahead of FP7. A weakness in these position papers is that they are not coordinated between Member States and have very different form and content. It is therefore difficult for the Commission to use the input systematically.

As a result of the open consultation, over 97% of respondents agreed or mostly agreed that support for research at European level should be strengthened (only 1.4% disagreed or mostly disagreed).

Regarding the impact of strengthened European-level research support:

- Over 95% agreed or mostly agreed that this would have an important impact (1% disagreed or mostly disagreed);
- Over 92% agreed or mostly agreed that this would contribute significantly to Europe's competitiveness, social welfare and sustainability (only 1.6% disagreed or mostly disagreed).

A very strong signal in many position papers was the need for continuity in terms of both the thematic content and in procedures.

FP7 Thematic consultation

An open consultation was undertaken by the Commission during November and December 2004 to allow interested individuals and organisations to submit contributions regarding thematic 'domains' for transnational collaborative research to be supported in the Seventh Framework Programme for research and technological development. There were also a number of more specific consultations on thematic domains in fields such as Information and Communication Technologies, Social Science and Humanities, Foresight and Nanotechnology.

Over 1,800 contributions were received.

The results suggested that the thematic priorities of the Sixth Framework Programme,

together with the new areas of Space and Security, covered the vast majority of the topics which stakeholders would like to see supported in the Seventh Framework Programme, although in many cases a wider range of topics would need to be supported under each priority.

Criteria to identify thematic domains

The Commission used the following three criteria in order to identify which thematic domains would be included in the proposal for the Seventh Framework Programme. These criteria were published in the open consultation.

1. Contribution to EU policy objectives

The research in the thematic domain must generate new knowledge to meet societal needs and catalyse the delivery of a **European policy objective(s),** including the objective to transform Europe into a **dynamic and competitive knowledge-based economy**, capable of **sustainable economic growth.** Relevant policy objectives include those in the areas of health, consumer protection, energy, the environment, development aid, agriculture and fisheries, biotechnology, information and communication technologies, transport, education and training, employment, social affairs, economic cohesion, justice and home affairs. The thematic domain may be one of **current importance** or likely to **become important in the medium to long term.**

2. European research potential

The thematic domain must be one where there is a strong **potential for excellent research and technological development and for disseminating and converting the results into social and economic benefits**. For example future support should, wherever possible, build on past and current investments and successes in relevant areas of research and its application.

3. European added value

There must be a strong need for additional public funding and for such intervention to be at a European level.

- Additional public funding to be justified by the **externalities** and **wider benefits** from the research and by the need to attract **increased public and private investments**.
- European level intervention to be justified by the need for **European centres**

> **of excellence** through collaborative research: to create the necessary **multi-disciplinarity** and **critical mass of scale and scope**; to **overcome fragmentation and unnecessary duplication, lack of connections and of interoperability;** to **complement other intergovernmental, national and private actions;** to **address shared or European level problems;** or to **enhance visibility** of European research excellence.

A wide and extensive range of other meetings, expert groups and events were organised to gather advice on the design of the Commission's proposal for FP7. For example, in the summer of 2004 an expert group was appointed to advise the Commission on its preparations for a new mechanism to fund basic research; the Commission organised separate stakeholder conferences on SMEs and human resources in December 2004, and a major conference was held under the Dutch presidency on "Investing in Research and Innovation" in October 2004. Finally, a large number of meetings were held at national level on issues such as technology platforms.

How the consultations were used

The results of the consultations were used in preparing the FP7 proposals. Particular examples include: the significant budget increases for researcher mobility and SME-specific actions were in response to the strong support from stakeholders and their concerns about oversubscription in these areas; the concerns regarding the administrative burdens of participating in the Framework Programme were taken into account in the simplification measures proposed; and a large number of the research topics (including those proposed by Technology Platforms) were covered in the proposed thematic priorities.

Summary

It is clear that the Commission has been increasingly open in soliciting input for the preparation of each FP, particularly so for the most recent. It is also encouraging that the research community has responded positively to these overtures and has provided the Commission generally with support and ideas. Nonetheless, it is likely that these general consultations have had only a limited impact on the thematic content as eventually put forward in the Commission's proposals. One problem is that the input to the Commission is often not very easy to use. The proposals put forward might be too detailed, or might not address problems where the European interest was clear. Instead, they might address the particular 'wishes' or interests of a researcher or research group hoping to ensure continuity of funding for their specialist area. Another problem with spontaneous input is that it often comes at the wrong time. In order to be use-

ful for the Commission, it needs to be the right sort of input at the right time – that is, forward-looking thematic ideas in the initial phases of the preparation of an FP, with more focused and concrete proposals only coming later at each update of the Work Programmes. There are many individual lobbyists and groups but few are coordinated and consequently they have limited impact.

One of the few real examples of where the Member States have succeeded in 'convincing' the Commission ahead of its proposal is the ERC in FP7. The Swedish minister Östros pointed out in the Council the need to already be funding basic research at European level prior to the 2001 Swedish Presidency. Ahead of this first discussion in the Council, there had been numerous debates and discussions in the research community. However at this stage, support in the Council was only forthcoming from a limited number of countries such as Portugal and Denmark. An expert group was set up during the Danish Presidency (autumn 2002). Following an invitation from the Council, the Commission presented the communication "Europe and basic research" (end of 2003). The Irish Presidency (February 2004) organised a symposium on "Europe's search for Excellence in Basic Research". In March 2004, the Competitiveness Council recognised the need to stimulate excellence in basic research by encouraging more competition in science-driven research. The Spring European Council in March 2004 endorsed these conclusions. Ultimately, this led the Commission to include a proposal for the ERC in the FP7 proposal in April 2005. All in all, this process took around five years.

10. Implementation of the FP

Programme Committees (PCs)

Since the very start of the FP, the Commission has been 'assisted by a Committee' with two representatives from Member States. The first Work Programme for Esprit was adopted by the Council acting by qualified majority rather than by the Commission following the opinion of a programme committee. The Commission had to consult the PC on 'the definition and updating of the WP and on assessment of projects with a Community contribution more than EUR 5 million' (Esprit), but in other programmes the PC was advisory in nature.

In FP2, these procedures were "streamlined" with the PC formally adopting WPs. In Esprit, only projects above EUR 5 million had to be formally 'assessed' by the PC. However, participation by bodies from non-Member States (such as associated States) had to have the opinion of the PC. Evaluation and dissemination were added to issues dealt with by the PC. In other programmes, all projects would have to go through the 'comitology', i.e. not only projects over EUR 5 million.

In FP3 the 'ceiling' was lowered to EUR 1 million in Esprit and a ceiling of EUR 0.75 million was introduced in BRITE/EURAM.

In FP4 the ceiling was increased to EUR 2 million for Esprit and to EUR 0.9 million for Brite/Euram.

In the Commission's proposal for the SP Brite/Euram for FP4, the Commission proposed a ceiling of EUR 1 million and from FP5, the Commission proposed that there should be no opinions on any projects in return for more transparent information for the Committees. This was not accepted by the Council.

In FP5, the ceiling was set at EUR 1.5 million for key actions in Brite/Euram. The special condition for third country participation was abolished.

In FP6 and FP7, a general ceiling was set at EUR 1.5 million for most parts and EUR 0.6 million for others.

In summary, more or less since the start the Commission has tried to avoid having projects "passing" the PC, thus avoiding a situation where Member States might lobby for their "own" projects and, perhaps more importantly, speed up the time-to-contract period. In particular, in the most recent FPs the Commission has instead offered more

and more transparent procedures and argued that more time should be spent on strategic discussion. In the end, the result has always been a compromise with a ceiling but in practice this means all projects must undergo a special internal ISC within the Commission, which delays the decision. It is worth noting that Member States are unlikely to have the same insight into the selection of projects administered by the JTIs and areas implemented through Article 169[30].

FP7 has also seen a trend towards more strategic discussions on draft WPs and if this turns out successful the procedures might become more streamlined in FP8.

NCP

The National Contact Point network is nearly as old as the Framework Programme. They are set up under the responsibility of the Member States but are supported by the Commission in order to carry out transnational activities. In general, the Commission is very keen to take into account the concerns of NCPs. In most cases, this would be on 'practical' implementation issues rather than, say, thematic content.

Outsourcing/Decentralisation.

Outsourcing and decentralisation have been keywords especially in the run-up to and implementation of FP7. It should be noted that what is usually meant by outsourcing is the contracting out of non-policy tasks such as the organisation of evaluation, managing calls for proposals etc., whereas decentralisation could also involve more policy-related work such as the JTIs and Article 169 initiatives.

There are different ways to do this, such as Executive Agencies (as with the ERC and the Research Executive Agency) which are a part of the Commission and more independent structures as under Article 171. It should be noted that the Financial Regulation applies in all cases and it seems that a limit has been reached regarding what can be done in regard to 'simplification' without changing the Financial Regulation.

Instruments/Funding schemes

It is beyond the scope of this paper to elaborate in detail on instruments/funding schemes. However, there is an indirect correlation between the thematic priorities and the instruments/funding schemes used to implement the activities –particularly in order to 'articulate' the 'European added value'.

30 It should be noted that with regard to setting political priorities, JTIs have to be fully in line with the Specific Programme. Also, for Article 169 the Council and the Parliament are fully involved as it is a co-decision. The difference is on the Work Programme level (topic/project level).

In the firsts FPs, the main instrument was 'cooperative research projects' often with industrial participation as a requirement. Brite/Euram also had 'focused fundamental research projects' which required 'industrial endorsement' but not industrial participation. In the energy-related programmes, demonstration projects were introduced at a lower level of funding (35%).

Concerted actions (coordination of research activities in MSs) were also introduced early but on a very small scale. Finally, Accompanying measures were also introduced.

In FP4, the Esprit-programme introduced 'longer-term-research' projects as well as a number of 'focused clusters' such as the Open Microsystems initiative and high performance computing and networking.

Thematic networks where introduced, in Brite/Euram for example, to bring together manufacturers, end users, universities and research centres.

In FP5 with its new structure including 'key actions', the following 'actions' were specified:

- Research and technological development projects, demonstration projects or combined RTD/demonstration projects
- Enhancing access to research infrastructures
- Technology stimulation to encourage and facilitate SME participation in RTD activities (CRAFT)
- Training fellowships
- Support for research training networks and thematic networks
- Concerted actions and accompanying measures.

In FP6, Annex III introduced 'new instruments' in the form of:

- Networks of Excellence
- Integrated projects
- Specific targeted research or innovation projects
- Cooperative and collective research projects (SMEs)
- Integrated infrastructures initiatives
- Coordination actions (used to implement ERANETs)
- The use of Article 169.

A novel element of FP6 was also 'specific activities covering a wider field of research' in the form of activities to support Community policies and research responding to new and emerging scientific and technological needs (NEST).

FP7 tried to distinguish between Funding schemes on the one hand (such as collaborative projects) and Instruments (such as ERANET) on the other.

The following funding schemes were used:

- Collaborative projects
- Networks of Excellence
- Coordination and support actions
- Support for frontier research
- Support for training and career development of researchers
- Research benefitting specific groups (in particular SMEs).

Collaborative projects could be of two types: small and medium-scale focused research actions and large-scale integrating projects. In the Work Programmes, upper and lower limits for these projects were applied with sometimes different levels depending on the Theme. The ICT programme followed an approach more similar to FP6.

Further, the concept of 'multi-financed large scale initiatives' was introduced as a contribution to:

- Article 169 initiatives
- The implementation of Joint Technology Initiatives
- Development of new infrastructures.

In addition, there was a contribution to the Risk-Sharing Finance Facility.

As an example, the instrument European Technology Platforms is implemented mainly through Collaborative projects and ERANETs as Coordination and support actions.

In order to avoid a possible overlap with the activities of the ERC, the NEST activities were less prominent in FP7 although the ICT Theme kept their Future and Emerging Technologies. In fact, there is the possibility to use 'NEST'-activities but has hardly been used so far. The support for policies was integrated in the themes, along with other aspects such as international cooperation.

An important discussion emerged during the preparation and negotiation of FP7, namely how pre-determined the funding schemes should be. On the one hand a very pre-determined funding scheme, i.e. a prescribed budget, has an advantage in terms of planning the budget and making evaluation easier. On the other, total freedom (more or less the ICT programme approach) to propose projects of any size leaves the proposers freer but at the same time makes the selection process more complicated as comparisons between widely diverse proposals are much more difficult.

International cooperation

International cooperation can be divided into three categories: association agreement on full participation in the FP on equal terms (either through EEA agreement or separate agreement), agreement without formal financial commitments (most common for countries outside Europe) and other international agreement such as the ITER agreement.

The FP is often a first step for countries neighbouring Europe to formalise cooperation in order to show political commitments, such as with Turkey. The recent talks with Russia add a new dimension to this debate.

One issue is how to set priorities as regards cooperation with third countries (i.e. countries not associated with the FP). From the outside, the FP is very top-down with its themes and this can pose a problem when discussing priorities with third countries. However, in practice there is much freedom to set priorities in the annual Work Programmes.

The new CREST configuration, SFIC (the Strategic Forum on International Cooperation), will report directly to the Council on issues such as:

- Mapping of international cooperation activities (whether ongoing or planned) between the EU and third countries,
- Identification of common priorities and proposals for measures to implement them,
- Overall assessment of the impact of the EU's actions in international S&T cooperation.

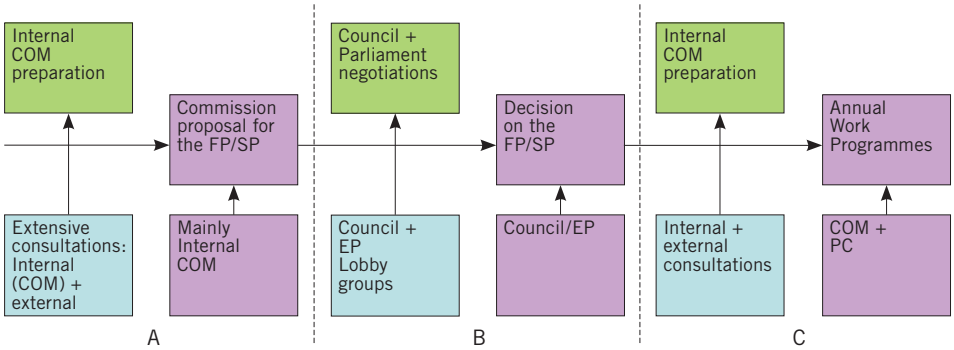
11. Shaping the thematic content

Three different processes can de distinguished in determining the thematic priorities in the Framework Programme:

A. The internal process within the Commission to prepare the formal proposal and

B. Negotiation with and between the Council and the Parliament leading to the decision, and finally

C. Implementation of the Framework Programme through the annual Work Programmes.



A. The Commission has the 'right of initiative' but the proposal is preceded by extensive internal and external consultations. Taking the European Technology Platforms as an example, Lucie Carrouée[3] points out that 'policy networks' at European level seem more transparent than those on a national level and that these networks are important in forming policies. The internal consultation (ISC) is also very important in defining the thematic content. In fact, the research DGs are literally 'flooded' with areas to be added. This phase is *a priori* not the most important as the Council/Parliament can change the proposal in phase B. However, as shown below, in practice it turns out that the main part of the thematic content is determined by the Commission in its proposal.

B. In principle, the Council and Parliament can rewrite the proposal completely but in practice it is difficult to, say, remove parts or themes/topics as soon as the Commission has put the proposal on the table as there are always 'interest groups' protecting 'their' areas – see the discussion in section 6 on the inability to deprioritise. This means the process in the Council and the Parliament usually results in additions to the Commission's proposal rather than replacements/deletions. Moreover, these additions usually stem from national/regional priorities, often with unclear European Added

Value. However, as shown in FP6, the structure can also be changed even if the main content is kept. Another example is from FP5 where a key action was added in the field of social sciences which introduced a totally new area. In FP7, the split of Space and Security into two separate themes changed the structure but not the content. One of the major changes in the joint proposal by the Council and Parliament was to substantially reduce the budget for Research Infrastructures. In fact 'bottom-up'-activities are usually the 'victims' when it comes to budget discussions, as these activities seldom have the strong 'lobby groups' that thematic domains do; the ERC budget being the exception that proves the rule. The book by Muldur et al mentioned in section 1 gives a good overview of the political decision-making process of FP7 in the Council and Parliament.

C. In order to implement the Framework Programme, the Commission must adopt annual Work Programmes that set out such things as detailed topics. In some ways, this could be said to be the most important document as projects are selected and thus actual funding determined based on calls in the WPs. The process to develop the Work Programmes and how MSs could be more proactively involved is described in 'A Rough Guide to the FP7 Work Programmes'[31].

In terms of 'setting the scene' for an FP, by far most important document is the actual proposal from the Commission – as illustrated below.

Example illustrating the importance of the proposal from the Commission

The Commission proposal for FP7 had a budget of nearly EUR 73 billion (EC part). The revised proposal from the Commission taking into account the Financial Perspectives for 2007 – 2013 had a budget of just over EUR 50 billion. However, to avoid 'disturbing' the ongoing negotiations between Council and Parliament, the number of topics was not reduced. Comparing the Commission's original proposal with the decision of the Council and Parliament, the main changes to the themes involve additions.

Example from the Health theme

Comparing the Commission proposal and the adopted FP in the Health theme, no areas seem to have been removed by the Council/Parliament but there are numerous additions, often introduced with the wording 'such as', or 'as well as'. E.g. 'such as hepatitis'.

31 http://www.regeringen.se/sb/d/108/a/104454.

There are also several cases where the scope has been broadened:

- 'and technologies such as new preventative tools for regenerative medicine (e.g. through molecular imaging and diagnostics)'
- 'such as new therapeutic tools for regenerative medicine'
- 'and in brain diseases and relevant age-related illness (e.g. dementia)'
- 'other chronic diseases including arthritis, rheumatic and musculoskeletal diseases and respiratory diseases, including those induced by allergies'.

These are all well-known areas with strong 'lobby-groups' and where both Council and especially Parliament is keen to react on their behalf.

Considering that the additions were made on the basis of the original Commission proposal (EUR 73 billion) which was reduced by 30%, FP7 ultimately contains topics which could easily consume a 50% higher budget. This poses a problem in itself in that it illustrates an inability by the political process to prioritise if that means relegating topics to a less important position. Even less so, if it means dropping them altogether.

To add to this complexity, the final themes are defined on a fairly general level and the topics covering the real research content are defined in the Work Programmes.

What are the lessons for planning future FPs? There are at least three options:

- Proactive involvement from MSs and stakeholders in the process leading up to the Commission proposal
- Better prioritisation by MSs/EP in the political negotiation
- Proactive involvement of MS and other stakeholders in the process of drafting the annual Work Programmes.

Indeed, ideally all three options should be pursued. However, the **most important stage from a political point of view is the process leading to the Commission proposal since so much of that proposal, as experience shows, will survive in the final decision.**

- The consequence is that the most interesting period is before the Commission presents their proposal[32].

There are three aspects which are important for defining the thematic priorities in the FP proposal:

32 A project has recently started at Wissenschaftszentrum Berlin für Sozialforschung Gemeinnützige Gesellschaft mbH on: Position Formation in the EU Commission including case studies on FP6 and FP7.

- Objectives/criteria
- Structure of the thematic part of the FP
- Instruments/funding schemes

A very important factor here is the choice of those on the Commission who actually hold the drafting pen. In the final analysis, this could well be the relevant Project Officer for the particular area (the same person often being involved in formulating the proposal, in Work Programmes, in organising evaluation and monitoring etc.) and, depending on their background, he or she will use a combination of their own expertise, experts groups, input from policy DGs etc. to draft the thematic content. This drafting is done in parallel with the more political discussion on objectives/criteria, structure and instruments/funding schemes. In fact, one could argue that the thematic content is rather independent of the structure as the structure is more a way of presenting the content. The same argument is also largely true for the relationship between the thematic content and instruments. However, in FP7 there was a real attempt to use the three criteria (see section 9) of: European Added Value, Contribution to EU policy objectives and European research potential when defining the thematic content in combination with the 'continuity' aspect.

However, if the structure were to be defined before the thematic content was drafted, the result could be different. This is one reason why the discussion on issues such as Grand Challenges[33] could change the priority-setting in the Framework Programme. However, identifying the challenges will be a challenge in itself. If Member States and other stakeholders do not act together, it will very likely be the Commission that has to take responsibility for identifying those challenges.

33 For example, as proposed in the Report of the ERA Expert Group on "Rationales for the ERA", EUR 23326.

12. Preparation of FP8 drawing on lessons from earlier Framework Programmes.

The first question is of course whether there will be an FP8?

The answer to this question is a simple: Yes. The reason for this is that, regardless of which treaty will then be in force, it will still contain more or less the same articles that were in force under the previous Framework Programmes. In other words:

'A multiannual framework programme, setting out all the activities of the Union [in research], shall be adopted by the European Parliament and the Council, acting in accordance with the ordinary legislative procedure after consulting the Economic and Social Committee.'

This means the Commission is given the right, indeed the obligation, to present a proposal although it does not have to be called FP8.

Detailed planning for FP8 is unlikely to start until there is a new Commission and certainly no formal work will start before that in the Commission. However, the outgoing Commission has presented a 'progress report on FP7' as well as a response to the evaluation of FP6.

An assumption for FP8 is that it should be adopted by the middle of 2013 in order to prepare calls at the end of 2013 for a formal start in 2014. Bearing in mind the inevitable length of the negotiation process, this means a proposal from the Commission should be tabled in the early autumn of 2011. This would indicate that any discussion document should appear in the beginning of 2011 and that preparation would have to start in the Commission by mid-2010. This also fits in with the timetable for the FP7 interim evaluation which must be presented before the end of 2010. In addition, there is the mid-term review of the Financial Perspectives (2007 – 2013) which might theoretically result in additional money for FP7 but this is perhaps not a realistic option today. Ultimately, one cannot rule out the FP8 proposal coming later (spring 2012) as there must be an ex-ante impact assessment for each part of the FP8 proposal, probably six months before. In principle, this assessment could be presented at the same time as a discussion document.

The conclusion from these assumptions is that the period from mid-2009 to mid-2010 should be a very important one for Member States and other stakeholders in preparing for a debate, but more importantly in preparing to give input to the Commission.

The above description relates to the Framework Programme(s) (the EC Framework Programmes and the EURATOM Framework Programme[34]). To this should be added the Specific Programmes as well as the Rules for Participation.

The experience has shown that both the Council and Parliament are unwilling to progress very far with the negotiations of the Framework Programme, especially until they know the details of the thematic parts of the Specific Programmes. This means there is heavy pressure on the Commission to present the Specific Programmes very soon after presentation of the Framework Programme.

Tentative timetable for FP8

1. COM preparation	2. 'Discussion' Document (Impact assessment)	3. Consultation	4. Formal proposal	5. Adoption	6. Start
Autumn 2010	Beginning 2011 (latest autumn)	Spring/summer 2011	Autumn 2011 (latest spring 2012)	Mid-2013	January 2014

In addition, the Commission should present a proposal for the next Financial Framework (2014-) in 2011 which will ultimately determine the budget of FP8. An agreement has to be reached on the Financial Framework by the end of 2013.

1. Commission's preparation of a discussion document

This is an internal and not very transparent process and so far, one could argue that there has been little need for any formal interaction with stakeholders outside the Commission. The rationale for this view is that the Commission draws on experience from previous Framework Programmes and that it is difficult to consult without having anything to consult on.

Usually the 'thematic' Directorates within the Commission would have very strong views and for obvious reasons they would like to 'preserve' their own areas. One important input for the Commission is from the Policy DGs such as Environment, Health, Agriculture, Regional etc. In the end, the discussion document is highly political and the Commissioner would be in the driving seat with the Director-General. The new requirement to present an Impact Assessment ahead of the actual proposal could also be expected to have an 'impact' on the thematic content.

34 Note that according to the Treaty, the EURATOM Framework Programme can only last up to five years. In practice, this means there will be two EURATOM Framework Programmes, one for five years and one for two years in order to synchronise with the EC Framework Programme. In fact, matters are even more complicated as there must be a new decision for EURATOM for the period 2012 – 2013. In practice, this will be the start of the FP8 debate. A proposal for EURATOM 2012-2013 would have to be tabled by the Commission as early as 2010.

The start of the Ljubljana Process means it is unlikely that the Commission can work in exactly the same way as before. One possible scenario is that the Commission itself will acknowledge the need to embark on an even more ambitious and systematic consultation than in the past.

2. The discussion document

This is a very important political document which sets out the Commission's intentions for the next Framework Programme. It usually indicates the expected structure and broad intentions of the Commission.

Experience from the last three Framework Programmes shows that in their formal proposal, the Commission follows the policy set out in the discussion document very closely. In practice, this means that when the discussion document is presented it would require a very substantial 'lobby' in order to completely change the direction proposed by the Commission. A new element in FP8 will also be that the Commission will have to present an impact assessment of the FP8 proposal around six months before. The end result may therefore be a combination of a discussion document and impact assessment.

On the other hand, one can also argue that if the Council and EP are unhappy with the proposal they can significantly change the Commission's proposal. However, with a much larger EU it is becoming more difficult to get large enough majorities in the Council to make such drastic changes.

3. Consultation

The preparation of FP7 saw the largest public consultation ahead of the adoption of the Commission's proposal. This was partly because of new requirements but also because the Commission realises it needs more input.

Unfortunately, these consultations have limitations and the results are difficult to use for the Commission in practice. The output from these consultations are either very general (simplify procedures, importance of different thematic areas, etc.) or very specific (detailed thematic topics). Very few inputs address aspects such as European Added Value, creating critical mass, tackling fragmentation etc.

One problem for the Commission is striking a balance between the need to have very open and fair general consultations on the one hand and more targeted/systematic (and possibly more useful) processes on the other.

4. Formal FP8 proposal

It is difficult to speculate on the content of FP8.

Some issues/questions are:

- *Will it be business as usual?*

  It is unlikely to be business as usual! FP7 took the step of making the Framework Programme much more integrated with national, regional and industrial activities than its predecessor; there were initiatives such as ERA NET Plus, Article 169, ETPs/JTIs, Research Infrastructure etc. In addition, there is the discussion on Joint Programming which is bound to impact on the Framework Programme, i.e. whether FP8 will fund Joint Programming or not.

- *What will the consequence be of integrating the Framework Programme and national programmes?*

  The obvious consequence should be that it will be more complicated for the Commission to prepare FP8 as national programmes and cooperation between them would have to be taken into account. In addition, there will be the expectation from industry with regards to ETPs/JTIs. Other substantial issues are research infrastructures, mobility and the role of the ERC.

- *What is the likely structure of FP8?*

  Important blocks (in terms of funding) could be: Cooperation *(Joint Programming, JTIs, Societal Challenge, Private Public Partnership, 'Pre-commercial Procurement)*, ERC, Mobility and Research Infrastructure and Capacity-building. On top of that, there are other important horizontal aspects as well as the Risk Sharing Finance Facility. There will also certainly be a discussion on the EIT.

- *How will the discussion on ERA vision and governance influence FP8?*

  It is likely that the discussion on the Knowledge Triangle will have an impact. So far, the Commission has ensured complementarity between different policy areas but a more ambitious approach could be asked for, including new instruments to stimulate interaction. A new governance structure could enable new forms of discussion ahead of FP8.

- *What instruments are to be used to implement FP8?*

  The instruments are closely connected to the structure and implementation. A very important aspect will be the instruments for implementing the thematic part/cooperation of FP8. After the 'experiments' in FP6 with 'new' instruments such as Networks of Excellence and Integrated Projects which were heavily re-

designed or abandoned in FP7, the Commission will have to get it right in FP8! The instruments are also closely connected to the implementation – see below.

- *Thematic structure and content of FP8?*

  Regardless of structure and instruments used, the most important aspect of the Framework Programme so far has been its thematic content. The thematic content is the basis for the annual Work Programmes which in turn specify the way the funds are used. An important question is whether the thematic content will continue to be very prescriptive or more bottom-up? A very important aspect is if the structure is decided before the discussion on thematic content. There are different options regarding the structure itself. In FP7, the Commission opted for 'continuity with change' meaning that the thematic structure built on the FP6 thematic structure with the addition of Space and Security. However, even if the structure was mainly the same, the content is very different. This strategy was also very much asked for by stakeholders in the consultation. Maybe it is less likely that the same strategy will be used in FP8. There are at least three possible scenarios for the thematic structure, which also could be combined[35]:

  1. Major European/Global Challenges expressed either in more general terms (as in FP5) such as 'Quality of Life' or more problem-solving, such as 'Towards a clean, zero-waste society'. A political process should be started in order to identify these challenges which could also be linked to Joint Programming.
  2. Technology/thematic approach expressed by a combination of enabling and/or converging technologies[36] such as nanotechnology, biotechnology, information technology and cognitive science, space research and interdisciplinary research.
  3. Competitiveness-driven research such as new medicines and application of genomics, manufacturing technologies, aeronautics, ICT building on ETPs and JTIs and complemented by policy-driven research such as public health, food quality, climate change etc.

  It would be clearer if there were agreement on one of the three, but in all three cases there would be the usual problems of intersecting issues. A combination

35 See also OECD, 'Choosing Priorities in Science and Technology', Paris 1991 identifying three types of priorities: thematic priorities, mission-oriented priorities and functional priorities

36 See for example high-level group on: Foresighting the New Technology Wave, P. Caracostas, European Commission, 2004. **Converging technologies** are enabling technologies and knowledge systems which enable each other in pursuit of a common goal. **"Enabling technologies"** prepare the ground for a wide variety of technical solutions. Because they unlock vast potential and open the door to radically novel technological developments, they are also referred to as "key technologies." Nanotechnology is a prominent enabling technology. Biotechnology and information technology are also enabling, as is the knowledge base of cognitive, social, and other sciences.

might ultimately be a solution- see figure in Annex II.

- *What is the likely budget of FP8?*

  FP7 will have a budget of EUR 10 billion in 2013 and it seems unlikely the Commission would propose less for 2014 and onwards. This implies a budget of at least EUR 70 billion on the assumption that FP8 will last seven years (which should not be taken for granted). There again, the budget proposed by the Commission for FP7 was already over EUR 70 billion so a more 'realistic' budget might be in the order of perhaps EUR 100 billion. In the end it will depend on the financial perspectives for the period 2014 – 2020 which will be in the hands of the finance ministers rather than research ministers. In this context, EU research funding is unlikely to be the first question addressed, however positive the experience of EU research has been. First and foremost, it will be the question how much Member States are prepared to "afford" for the EU budget given the increased pressure on national budgets following the financial crisis. There will also be great pressure from other major budgets, such as agriculture and regional policy. What is clear, however, is that it would be a major missed opportunity for investing in the EU's future if the research element of the future financial perspectives was left simply as a "residual". In other words, what is left after other policies have been given their share. One way to avoid this would be to help the Commission make proposals for the next FP which carry conviction in all quarters and at the highest echelons of national governments as well as in parliaments (national and European), not just among the interest group for the science and technology community. This is ultimately why input to the Commission and the consultation process is so important.

- *How will FP8 be implemented?*

  The 'trend' to externalising would almost certainly continue (there is a general pressure on all Commission services to externalise, larger budgets with the same number of staff and increasing tasks in relation to, say, Lisbon). So far, externalisation has been achieved using a number of different instruments: executive agencies (ERC, Research Executive Agency), Article 171 (JTIs), Article 169, ERA NET, ERA NET (+), through agreements such as with ESA and the EIB. Presumably after an initial euphoria, there are likely to be some negative experiences from these instruments.

- *How will FP8 be simplified?*

  Within the present rules (Financial Regulation), a limit has very probably been reached of what can be done in terms of 'simplification'. Any further attempt to find 'smart' new solutions ultimately runs the risk of only transferring the rules of the Financial Regulation to another structure. The way forward would there-

fore be to change the Financial Regulation and/or get derogation for research. This decision is ultimately in the hands of the Council and Parliament. To put it another way, the Commission will hardly be encouraged to put forward appropriate proposals for such a derogation from a regulation which is intended to apply generally to EU expenditure, unless it has received strongly positive indications from all relevant quarters about such favourable treatment.

5. Adoption

The aim has normally been to adopt the Framework Programme at least six months before its intended start in order to allow time to prepare the first Work Programmes. In practice, this has been impossible. However, as described above, the conditions for achieving this desirable goal are more favourable in FP8.

6. Start of FP8

In order to avoid a gap between FP7 and FP8, the latter must start at the beginning of 2014. This timetable is also determined by the timeframe for the next Financial Perspectives.

Summary – lessons from preparation of earlier Framework Programmes

Drawing on the evaluation of FP6 and the interim evaluation of FP7, the Commission will have to present a proposal for FP8 that has a convincing structure, budget, thematic content, instruments and implementation.

The Commission has right of initiative and will also once again be empowered to implement the Framework Programme. However, taking into account the increased integrating effect of the Framework Programme on national/regional programmes as well as industrial research, it is anticipated that the Commission will have to undertake even more ambitious and systematic consultations ahead of proposing FP8. Particularly in advance of presenting any discussion documents laying out the vision for FP8. A further contributing factor to this need (i.e. for the Commission to seek expert advice) is the 'new' Staff Regulation of 2004 stipulating mandatory rotation for officials in 'sensitive posts' (i.e. those with budget responsibility). The regulation makes it difficult for the Commission to retain S&T experts in areas of their own expertise even if the rules have been relaxed recently and apply mainly to directors, heads of unit and key personnel responsible for the Work Programmes. The stricter rules as to which tasks national experts can undertake also reinforce this problem.

Such a consultation would have to involve an identification of the major European, national and regional stakeholders to be consulted. It would also require some kind of input from the Commission, but should be very open in nature and not prescriptive.

Perhaps ERAB and/or CREST and the two new CREST configurations on international cooperation and Joint Programming could give the Commission input on formulating the issues to be addressed in such a consultation, plus input on relevant stakeholders to be consulted? Perhaps the discussion on governance of the ERA might lead to new structures being set up enabling new types of discussions?

This new approach would also be very much in line with the spirit of the Ljubljana Process which emphasises the partnership between Member States and the Commission, as well as involving stakeholders in the governance of the ERA.

For this new approach is to succeed will require MSs to be much better prepared in order to give 'constructive' input to the Commission. Such input must be based on national strategies. Further, such input cannot be a set of 'wish lists' but must have real European Added Value. In this context, Member States also need to get advice 'at European level'. Such advice could come from new forms of interaction with stakeholders at European level, via the Commission or using CREST to advise the Council (CREST is mandated to advise the Commission and Member States but it is very seldom for the Member States) and/or a combination of these forms.

This paper will have served its purpose if it helps Member States and other stakeholders in being better prepared to provide such input.

13. How has the financial crisis influenced FP7 and how might it influence the structure of FP8?

The ambition of FP7 was to have more broadly defined themes and leave the specification of the detailed topics to the Work Programmes. The main argument was the difficulty in predicting the needs of a programme lasting as long as seven years.

Initial experience of the financial crisis indicates that FP7 has the flexibility to react, at least if there is no need to transfer budgets between themes. The planned calls in 2010 WPs seem able to take into account a rapid response to the need for new Private Public Partnership in a number of areas. In fact, the instrument JTI is a far slower instrument in handling short-term needs than the implementation through the Work Programmes. In some themes, 20 – 30% of the remaining budget is expected to go to these new initiatives which clearly demonstrate the flexibility of FP7.

It is clear that the lessons of the crisis could also influence the debate on FP8. For example, it could provide a push for even more flexibility in the FP and actions aimed at trying to foresee emerging future needs in the form of 'reintroducing' the NEST activities (new and emerging scientific and technological needs) from FP6 as a separate block (which it still is in the ICT programme). This could be seen as an instrument combining the bottom-up principle of the ERC with the top-down one of the cooperation programme, i.e. bottom-up in selected strategic areas (this is also proposed in the FP6 evaluation). There could also be an ambitious approach in identifying Grand Challenges so as not to merely react to crises but to anticipate and forestall them, justifying further investment in R&D.

14. Conclusions

It is not very difficult to describe how the priorities in the Framework Programmes have changed. However, it is much more difficult to try to describe how they are determined.

Nevertheless, the following observations/conclusions can be made based on past experiences:

The three phases:

1. In practice, as soon as the Commission has proposed a Framework Programme the major part of its thematic content is fixed.
2. In the negotiations with and between the Council and Parliament, numerous additions are made but seldom any reductions or major shifts in priorities. Hardly any 'deprioritisation' has been done in the history of the FP – new priorities have been added whilst maintaining old ones. This has been possible because the budget has increased.
3. The selection of projects, i.e. funding from the Framework Programme, is based on the annual Work Programmes (where the detailed thematic topics are defined) determined by the Commission following opinions from the Programme Committees. The 'correlation' between the political decision and the actual topics are not always clear.

- The most important period is before the Commission presents its 'discussion document', normally around six months before the proposal. Up until now, the Commission's consultations have been large, open, public consultations combined with smaller focused ones (including less transparent ones such as working/experts groups, seminars and workshops).
- The criteria and objectives for the Framework Programme are presented in the proposal but do not play a major role in the selection of priorities – these criteria are more a consolidation of the rationale for activities under the Framework Programme than an operational tool for their selection. However, at least in FP7, there was a real attempt to follow the three criteria: European added value, Contribution to EU policy objectives and the European research potential taking continuity into account.
- The thematic structure is an important political decision rather than a purely technical one and is always carefully considered at the political level within the Commission. The 'granularity' of the description of themes is also determined

at this level. However, detailed thematic content is very much in the hands of the different directorates and does not really depend on the structure. In fact the treaty and general criteria mean that more or less any 'topic' could fit into the Framework Programme.

- The Commission has right of initiative to present the proposal of the Framework Programme but it gets more and more difficult for the Commission to anticipate what MSs and other stakeholders want as the FP becomes more and more interlinked with national and industrial programmes. In addition, there is the problem of retaining expertise in the Commission, partly due to the stipulations regarding "rotation" of staff and more stringent adherence to the rules as to what national experts can and cannot do.
- The discussion on ERA vision and governance could lead to more interaction between the FP and other policy areas, particularly innovation and education.

The paper gives some answers to the following questions:

1. Who is in charge of priority-setting in the FP?

The 'road' to setting priorities in the FP is a long process with many actors involved. Formally, the ultimate decision is in the hands of the Council with the Parliament as legislator, but in practice it is very much in the hands of the Commission. They ensure the 'end product' complies with the objectives and criteria in the FP.

2. Who has influence?

It goes without saying that the so-called research DGs (RTD, ENTR, TREN, INFSO and in principle JRC) are in the 'driving seat' but they are very much influenced by policy DGs, such as environment, health, agriculture, maritime, fisheries within the Commission and well-organised stakeholders such as the aeronautics industry. The example of the ERC shows that it is also possible for Member States to have an impact even if it may take a long time for an idea to find its way into the Commission proposal.

3. What are the criteria for the priorities?

Clear criteria are set up, mainly by the Commission in the proposal but amended by the Council and Parliament. They are very much built on established principles with different forms of European Added Value as the cornerstone. However, in practice they have had limited influence in the actual selection of priorities. Maybe there is time to replace the term European Added Value with European Research Area Added Value[37]?

37 As mentioned earlier in this report, in this sense the establishment of the European Research Council represents a new form of ERA Added Value.

4. Is the process of priority-setting transparent?

The transparency of the process is limited. The procedure up until the proposal is presented by the Commission is mainly internal and not transparent. The subsequent political process up until the final decisions by the Parliament and the Council is laid out in the Treaty but is not very transparent, at least from the 'stakeholders' perspective, for whom (probably as a direct consequence of their complexity) the processes of "consultation" and "co-decision" remain opaque.

The main recommendations of this paper are:

- The Commission should be encouraged to embark on a much more detailed and systematic consultation ahead of the planning for FP8. In the light of the considerations developed earlier in this paper, such consultations would have to include an identification of all major stakeholders at European level and representing all three levels: political, programme owners, beneficiaries and other users and stakeholders. Further, the Commission would have to be much clearer about the type of input it needs at different stages. The discussion on the Ljubljana Process and the ERA governance should facilitate this new approach.
- Member States and stakeholders must be much more proactive, i.e. not only reacting to the Commission's proposals but also developing a strategy in order to give constructive input, including getting advice at European level. It should be pointed out that being proactive should not mean putting forward 'one's own' priorities and/or shopping lists. This will require substantial work, especially in articulating their priorities and including the interaction between the national/regional programmes and the FP. This approach should be facilitated by the Ljubljana Process and should include structured dialogues between the Commission, Member States and other stakeholders at European level – a real partnership.

This new approach should lead to a more transparent process and a speeding-up of the process to adopt a Framework Programme. This process should also include the European Parliament at an early stage.

The FP7 progress report[38] can be seen as a start of the discussion on FP8 as it poses some questions which need answering in the coming year such as how the impact of FPs can be improved, whether the new instruments (ERC, JTIs, Article 169, RSFF) are efficient, how to address major societal challenges etc.

The new Commission must present an interim evaluation of FP7 before the end of

38 On the progress made under the Seventh European Framework Programme for Research, COM(2009).

2010. This is expected to signal the start of the preparation of FP8. Thus the period from mid 2009 until autumn 2010 is a very important period for starting the discussion on how to set priorities and prepare for the FP8 debate. The actual proposal for FP8 should be presented during the autumn of 2011 or beginning of 2012 at the latest.

Annex 1: Evolution of the Framework Programme illustrated by FP7

Level	Evolution of the Framework Programme	COOPERATION Strengthening Collaborative Research	IDEAS Strengthening Scientific Excellence	PEOPLE Human resources	CAPACITIES	Supporting and coordinating Polices
Policy Level[1]	FP7 and partly FP6	Article 169, Joint Programming	'Independent ERC'	Legislation (Human resources)	ESFRI, Regional Authorities, International Agreements, SFIC	OMC, Coordination of policies, 3% (benchmarking), legal measures,
Programme Level[2]	FP6, FP7	JTI through art 171, ERA-NET, ERA-NET +, Article 169		Co-funding of national programmes	SME Exploratory Awards, Article 169	[ERA-NET, ERA NET +, Article 169]
Project Level[3]	FP1 – FP7	Collaborative projects, Networks of Excellence	European Research Council (grants to teams)	Grants to mobility	SME actions	

Interventions on different levels using instruments to address the objectives

FP1-FP5 intervened mainly on Project Level in forms of Strategic Collaborative Research. With FP6, a shift was seen to actions on Programme Level in forms of the start of ERA-NET and using Article 169 for the first time. Actions were also taken on policy level in forms of OMC in regard to the 3%-goal. The process of using the FP as a tool to intervene on both Policy and Programme was increased in FP7.

1 Ministries on national and/or regional level depending on the structure of the relevant MS.

2 Funding agencies, research councils, ministries and stakeholders (in the case of JTIs) depending on the structure of the relevant MS.

3 Research performers (industry, academia, users etc.)

Annex II. Scenarios for 'thematic structure' of FP8 – 'cooperative part of FP8'

Options		Advantages	Disadvantages	Implementation
Themes	Health, ICT, Environment, Energy etc.	Continuity, proved to work, flexible, fits COM structure	Difficult to deprioritise, non-political, cross-cutting issues difficult	COM/Executive Agency, Cooperative projects
Grand Challenges	Zero-waste society, Quality of life	address political priorities, focused, European added value	How to agree? Does not fit into COM structure, how to address key technologies?	COM/Executive Agency, JP, Article 169, ERANETs
Competitive-ness-driven research	New Medicine, Manufacturing technologies	addresses the main aim of the FP,	How to agree? Does not fit into COM structure, how to avoid covering all sectors?	JTIs, PPPs
Policy-driven research	public health, food quality	address political priorities,	How to avoid 'shopping-list'	COM/Executive Agency, cooperative projects
Key technologies	Bio-technology, nano-technology, parts of ICT	enabling technologies needed for most applications	difficult to address political priorities	COM/Executive Agency, cooperative projects

Ultimately, the different options could be seen as building blocks with Grand Challenges as the major novelty in FP8 complemented by competitiveness and policy-driven research. In addition, curiosity-driven research would be supported within the ERC. The final piece in the jigsaw would be 'targeted curiosity-driven research' in the form of support for 'emerging needs'. Two other important 'bottom-up' activities are foreseen in actions to support transnational mobility and actions to support capacities in Europe, especially through research infrastructures and ensuring all MSs are fully involved in the FP.

A structure taking into account all the above building blocks should enable FP8 to play an even more important role when it comes to acting as a facilitator to initiate and fund activities such as Joint Programming, JTIs, and Research Infrastructures etc. This should also entail a more flexible approach to funding levels ranging from, say, 10% up to 75% in some special cases (SMEs).

Annex III: Abbreviations and explanations of some expressions

AG	Advisory Group (set up to give advice to the COM on different parts of FP6/FP7).
Article 169	Integration of national research programmes
AS	Associated States (agreement to take part in the FP with conditions similar to MSs).
BRITE/EURAM	Industrial and Technologies Materials Programme
COST	European Cooperation in the Field of Scientific and Technical Research
Co-decision	Main legislative procedure by which law can be adopted in the European Community
Commission	European Commission
CRAFT	
CREST	Scientific and Technical Research Committee
DG	Directorate General
DG ENTR	DG Enterprise and Industry
DG INFSO	DG Information Society and Media
DG RTD	DG Research
DG TREN	DG Energy and Transport
EEC	European Economic Community
EC	European Community
ECU	European Currency Unit (before the Euro)
EIB	European Investment Bank
EIT	European Institute of Technology
EP	European Parliament
ERA	European Research Area
ERAB	European Research Area Board
ERANET	Cooperation and coordination of research activities carried out at national or regional level (FP6). ERANET Plus introduced in FP7 offers also co-funding.
ERC	European Research Council
ESA	European Space Agency
ESF	European Science Foundation
ESFRI	European Strategy Forum on Research Infrastructures
ESPRIT	European Strategic Program for Research in Information Technologies
ETP	European Technology Platform
EU	European Union
EURAB	European Research Advisory Board
EURATOM	European Atomic Energy Community
EUREKA	A pan-European network for market-oriented, industrial R&D
FP	Framework Programme
FP7	Seventh Framework Programme for Research
GPC	CREST configuration on Joint Programming
ICT	Information and Communication Technologies

IP	Integrated Projects introduced in FP6 to increase Europe's competitiveness and addressing major needs in society
IPR	Intellectual Property Rights
ISC	Inter-Service Consultation (internal procedure in the Commission)
JP	Joint Programming; One of the Commissions five ERA initiatives to stimulate Member States
JRC	Joint Research Centre
JTI	Joint Technology Initiatives
Ljubljana Process	see section 2
MEP	Member of the European Parliament
MS	Member States (of the European Union). In most cases in this report when MSs are referred to, it also applies to ASs.
NEST	New and emerging scientific and technological needs
NCP	National Contact Point
NMP	Nanosciences, Nanotechnologies, Materials and new Production
NoE	Networks of Excellence introduced in FP6 NoE to strengthen scientific and technological excellence on a particular research topic through the durable integration of the research capacities of the participants.
OJ	Official Journal
OMC	Open Method of Coordination (soft law through benchmarking and best practice)
PC	Programme Committee
Policy DGs	Directorates within the COM without own research budget
PPP	Public Private Partnership
PREST	Committee on scientific research and technology policies
RACE	Research and Development in Advanced Communications Technologies
REA	Research Executive Agency (under DG RTD to implement FP7)
Research DGs	Directorates within the COM with their own research budget (RTD, ENTR, INFSO, TREN and JRC)
RSFF	Risk Sharing Finance Facility
R&TD	Research and Technological Development
Rules of Participation	Legal Framework to implement FP7
SFIC	CREST configuration on International cooperation
SP	Specific Programme
WP	Work Programme

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VINNOVA Analysis

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05 Effektanalys av ”offentlig såddfinansiering” 1994–2004

06 Summary – The GSM Story – Effects of Research on Swedish Mobile Telephone Developments. *Brief version of VA 2008:04, for brief version in Swedeish see VA 2008:07.*

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