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Implementation and Management of the Framework Programmes

Karen Siune

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This paper provides an analysis and synthesis of studies and other relevant information concerning the implementation and management of the Research Framework Programmes. It is part of the "knowledge-base" underpinning the Five-Year Assessment of the European Union Research Framework Programmes 1999-2003, which was carried out by a high level independent expert panel in the second semester of 2004.

This publicly available collection of nearly 150 documents includes 22 Community assessments or evaluations, 7 evaluation policy and methodology documents and 12 national impact assessments or evaluations. It also contains 69 policy documents and reviews and reference documents such as previous monitoring or Five-Year Assessments, Annual reports on research activities (art. 173), indicators and the Framework Programmes' legal base.

These documents are available on

<http://forum.europa.eu.int/Public/irc/rtd/fiveyearasskb/library>.

IMPLEMENTATION AND MANAGEMENT OF THE FRAMEWORK PROGRAMMES

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1. Introduction

1.1. Broad context

The *5-year Assessment* of Community research activities enables the achievements and impact of past and ongoing activities to be evaluated and appraised, contributes to making implementation of these activities more transparent and plays a significant role in defining the future direction of research, technological development and demonstration activities. *The 5-year Assessment* is a compulsory stage in the preparation of subsequent Framework Programmes. The forthcoming *5-year Assessment* will cover the period 1999-2003. The present report and analysis will provide information to help the panel of high level experts conducting the *5-year Assessment*.

1.2. Objective

The objective of this report is to provide an independent analysis and synthesis of studies and other relevant information concerning the implementation and management of the Framework Programmes. The analysis will address the issues of appropriateness, transparency and efficiency and effectiveness, in the context of the mandate for the 5-Year Assessment Panel.

This will entail covering issues and questions such as the following:

- Is the implementation of the instruments appropriate to the aims of the Framework Programme?
- The efficiency of the management processes (including the balance between accountability and flexibility and simplification).
- The incentives and barriers to participation of selected target groups.
- Comparison of the implementation of FP5 and FP6 from the perspective of National Contact Points.

The analysis is based on several information sources such as the reports of the Annual Monitoring exercise over the period covered by the *5-year Assessment*; the recent report of the Marimon panel on the effectiveness of New Instruments under FP6 (including the response from the Commission to this Report); other ad hoc studies at Community or national level on implementation under previous Framework Programmes; statistical information describing the implementation of Framework Programme research. Emphasis is given to long-term data sets or other data indicating long-term trends, wherever this is available. The analysis will also be based on the views on the implementation from key persons in the National Contact Point (NCP) system. These views are collected via a web-survey, and will be referred to where it is relevant throughout the text, but will also be treated separately in section 6. In some cases specific statements are drawn to the

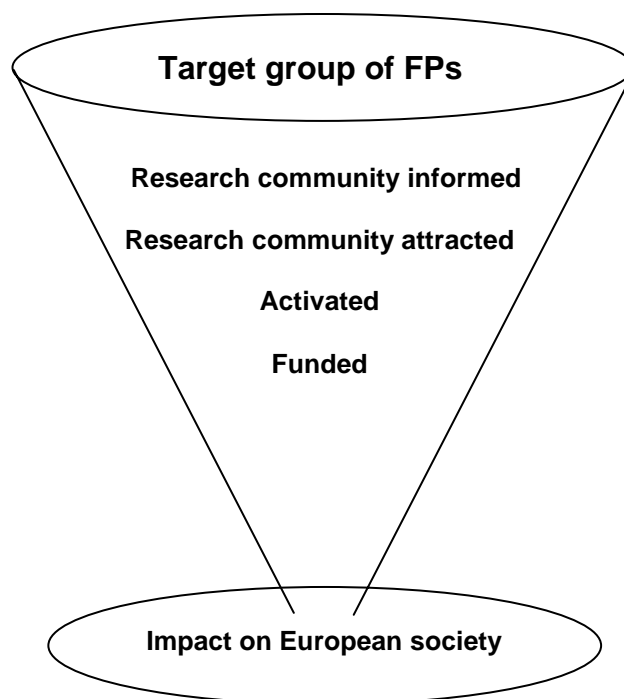
attention of the reader as 'typical' comments made by NCPs, to illustrate perceptions as they exist within the scientific and technological communities.

1.3. From design of the Framework Programmes to actual outcome and impact

The goal of the European research programmes is to activate researchers wherever they are, to influence their awareness and their perceptions of what can be done and to influence their behaviour. Said in another way, the aim is to mobilize researchers with the purpose of reaching an impact on Europe and especially Europe's competitiveness. Specifically for FP6 the target is to create the European Research Area. With this broad goal in mind the efficiency and effectiveness of the implementation process is crucial.

However, the potential group of participants, all European researchers, is reduced several times in the course of the process of formulating the policies, creating the instruments, disseminating the information and handling the applications. The figure below emphasizes the reduction among the mass of researchers and points to the expected reduced outcome of big campaigns with a broad mass of researchers as the target group down to the actual limited number of projects funded. The reduction is created by limitations in exposure to information campaigns, by limited interest in the themes announced and by limited readiness to apply as a result of a number of barriers. The bottom line in the figure, illustrating the impact on Europe, finally points to the likely outcome of the European research programmes to be much greater, than what can be measured in the pure number of projects supported. However, so far the EU- framework programmes share of the totality of money spent on research and development in Europe has been low. The most recent figures show that out of the total amount of money spent within Europe on R&D the EU funds finance approximately 7-8 percent (Key Figures,2002;2003-4).

Figure 1.



The different steps in the reduction of the target group down to the number of supported research activities and the relevant aspects of the implementation process will be treated below in separate sections of this report.

2. The Framework Programmes

During the 5-year period from 1999 to 2003 two different Framework Programmes for Research and Technological Development were implemented and managed, while in reality some administrative matters relating to former Framework Programmes were still attracting attention and taking resources from the management.

This development has taken place in a rapidly changing context. The period covered in this analysis has seen the implementation of FP5 (1998-2002), the development of the "ERA" concept, The Lisbon agenda, several reorganisations of DG Research, planning for FP6, changes in management structures and procedures taking place in the Commission and in the Framework Programmes, the Barcelona Declaration, the termination of FP5 and the simultaneous launch and implementation of FP6 (2002-2006).

Some of these developments have significantly influenced the implementation of the Framework Programmes. As an example FP6 was the first Framework Programme to explicitly take the additional objective of developing the ERA

into account. FP6 and ERA are now closely inter-linked, as FP6 is considered the main instrument for implementing the ERA.

2.1. FP5: a change from FP4 and FP3

FP4 in its time subsumed and built on the aims of the FP3, adding a number of new strategic goals such as creating high level infrastructures in information technology, communications, transport and energy, striving for greater competitiveness in industrial technologies and their compatibility with quality of life, environmental protection and smart, clean production technologies. Specifically it put emphasis on the goal to co-ordinate member states R&D policies with Community research policy.

FP4 was designed to comprise a suite of collaborative, pre-competitive R&D programmes spanning a broad array of scientific and technological disciplines and a multitude of industrial and other application areas. FP4 was structured into four Activity Areas, of which the first was subdivided into 15 Specific Programmes covering research, technological development and demonstration, plus one funding line for the activities of the EUs Joint Research Centre (JRC). The three other more horizontal Action Areas covered international co-operation, the dissemination of research results and the training of researchers.

FP5 in contrast had a multi-theme structure, consisting of seven Specific Programmes, of which four were thematic while three were horizontal. The horizontal programmes should complement the thematic programmes by responding to common needs across all research areas.

The socio-economic dimension of community research became outspoken in FP5, as well as the goal of building a knowledge-based Europe with implications for economic development. The objective was to strengthen the competitiveness and achieve 'European added value'. The objective to improve industrial competitiveness has been sustained during FP5 and later forming the backbone of FP6.

2.2. FP6: a change from FP5

The context of FP6 was significantly different from the context of FP5. At the Lisbon summit in March 2000, EU governments called for a better use of European research through the creation of an internal market for science and technology - a European Research Area (ERA). As a consequence of this new objective it was the political judgement that a radically new Framework Programme-structure was needed. FP6 was accordingly designed as the primary financial instrument to help integrating, structuring and strengthening the ERA. In this respect FP6 should have a structuring effect on research and technological development in Europe, including the Member States, Associated candidate countries and other associated countries. All in all, this

meant that the transition from FP5 to FP6 became more complex than previous transitions between Framework Programmes:

- The Specific Programmes were translated into thematic priorities and horizontal activities under the headings "Structuring the ERA" and "Strengthening the foundations of ERA". For some Specific Programmes this meant an almost one to one transition into a thematic priority area, while other Specific Programmes and their activities were divided across various parts of FP6.
- A new set of instruments was introduced in FP6 with new rules of participation, a new approach to evaluation and a very different way of project management and monitoring.

Figure 2. Comparison of FP5 (1998-2002) and FP6 (2002-2006)

	FP5	FP6
Strategic objectives/focal points	FP5 conceived to help solve problems and to respond to the major socio-economic challenges facing Europe	Main objective of FP6 is to contribute to the creation of the European Research Area (ERA) by improving integration and co-ordination of research in Europe
Budget	14.96 billion EUR (4% of 1999 EU total)	17.5 billion EUR. (3.9% of 2001 EU total)
Structure of FP	4 vertical Thematic Programmes (see below) 3 Horizontal Programmes: <ul style="list-style-type: none"> - International role - Innovation and SME - Human potential and socio-economic knowledge base 	2.3. 2 Specific Programmes The first Programme has 2 objectives: <ul style="list-style-type: none"> - Focusing and integrating research - Strengthening the ERA The second Programme has 1 objective: <ul style="list-style-type: none"> - Structuring the ERA (with 4 activities): Research and innovation; Human resources and mobility (Marie Curie actions); Research infrastructures; Science and society
Main thematic areas	<ul style="list-style-type: none"> - Quality of life and management of living resources - User-friendly information society (IST) - Competitive and sustainable growth (GROWTH) - Energy, environment and sustainable development (EESD) 	<ul style="list-style-type: none"> - Life sciences, genomics and biotechnology for health - Information Society Technologies (IST) - Nanotechnologies and nanosciences, knowledge-based multifunctional materials, and new production processes and devices - Aeronautics and space - Food quality and safety - Sustainable development, global change, and ecosystems - Citizens and governance in a knowledge-based society
Principles	<u>Evaluation/Control</u> : Rather ex-ante control <u>Financing</u> : Eligible cost <u>Ownership</u> : Participants own intellectual Property Rights	<u>Evaluation/Control</u> : Mainly ongoing and ex post control <u>Financing</u> : Grant to the overall budget, or grant for integration. Joint financial reliability of partner <u>Ownership</u> : Participants own intellectual Property Rights
Participation	Every legal entity can enter. Associated candidate countries under special conditions	Every legal entity can enter. Associated candidate countries under <u>same</u> conditions

As the figure illustrates there are important differences between FP5 and FP6. These differences make a direct comparison of the implementation of the two programmes very difficult on any sensible like-for-like basis. There are,

however, a number of recurring issues related to the evaluation of the implementation of both programmes. These issues will be addressed in the following analysis.

3. Appropriateness of the Framework Programme instruments

The implementation of a Framework Programme depends to a large extent on the appropriateness and effectiveness of the instruments chosen to reach the Framework Programme objectives. As illustrated in fig.3 one of the major changes from FP5 to FP6 was the launch of a new set of instruments which, in combination with the already existing instruments, were designed for reaching the aims of FP6. The result was a wider range of differentiated instruments available for implementing the priority areas of FP6 than for the key actions of FP5.

Figure 3. Comparison of instruments

	FP5	FP6
FP Specific Instruments	<p><u>Key actions:</u>. Implemented within each of the four thematic programmes. "Key actions" mobilise the wide range of scientific and technological disciplines - both fundamental and applied - required to address a specific problem so as to overcome barriers that may exist, not only between disciplines but also between the programmes and the organisations concerned.</p>	<p><u>Integrated Projects:</u> Multipartner projects to support objective-driven research, where the primary deliverable is knowledge for new products, processes, services etc. They should bring together a critical mass of resources to reach ambitious goals aimed either at increasing Europe's competitiveness or at addressing major societal needs.</p> <p><u>Networks of Excellence:</u> Multipartner projects aimed at strengthening excellence on a research topic by networking the critical mass of resources and expertise. This expertise will be networked around a joint programme of activities aimed primarily at creating a progressive and lasting integration of the research activities of the network partners while, at the same time advancing knowledge on the topic.</p> <p><u>Article 169</u> (for the joint implementation of national programmes) This instrument requires co-operation at the level of national governments. It aims at integrating whole national or regional programmes on a particular topic by their joint implementation, e.g. through harmonised work programmes and common, joint or co-ordinated calls for proposals.</p>

<p>Mutual Instruments of FP5 and FP6</p>	<p><u>Specific targeted research projects (STREPS)</u> Multipartner research, demonstration or innovation projects. Their purpose is to support research, technological development and demonstration or innovation activities of a more limited scope and ambition, particularly for smaller research actors and participants from candidate countries.</p> <p><u>Coordination actions:</u> To promote and support the networking and coordination of research and innovation activities.</p> <p><u>Specific support actions:</u> Single or multipartner activities. Intended to complement the implementation of FP and may be used to help in preparations for future Community research policy activities.</p> <p><u>Specific projects for SMEs:</u> Divided into Co-operative research projects (CRAFT) and Collective research projects. CRAFT are undertaken for the benefit of a number of SMEs from different countries on common specific problems. Collective research projects are carried out on behalf of industrial associations or industry groupings in sectors where SMEs are prominent.</p> <p><u>Specific actions to promote research infrastructures:</u> To support the integrated provision of infrastructure related services to the research community at European level, inducing a long-term integrating effect on the way research infrastructures operate, evolve and interact with each other and with their users, thus contributing to develop the European Research Area.</p> <p><u>Marie Curie actions on mobility, training and excellence recognition:</u> These actions provide a variety of possibilities for individual researchers in different stages of their career as well as for institutions acting as a host for fellows.</p>
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An essential feature of the New Instruments was an intention to mobilize the critical mass of expertise needed to achieve ambitious objectives with a European dimension, while having a structuring and integrating effect on research at European level. With a share of 77% of the funds the New Instruments accounted for the large majority of the total budget from the start of FP6 (Marimon,9).

The five principles which guided the designing of the FP6 instruments have been stated as:

1. Simplification and streamlining to minimize overheads and speed up procedures
2. Increased legal and financial security
3. Flexibility and adaptability to fit widely different research areas and to accommodate changes in circumstances in the course of the work
4. Increased management autonomy for consortia
5. Emphasis on preserving public accountability

However, already prior to the launch of FP6 it was criticized that the Commission, in essence, was introducing new instruments and major change in European research policy without sufficient and preparatory analysis as to how the New Instruments would work, what their level of risk might be, or what their possible outcomes and impact might be. Furthermore there was little systematic preparatory study indicating to what extent and in which respects existing instruments were inadequate (2001,15).

In addition to this critique, the 2001 Monitoring Report expressed concern towards the risk that the New Instruments could lead to a drastically reduced number of participants in FP6. It was stated that, as for the impact of the EU RTD activities one has to consider more than simply critical mass and possible impact at the level of the individual projects or initiatives. At Framework Programme level, critical mass in terms of numbers of participating organisations also has to be achieved in order to have substantial impact at the level of the innovation system.

Also in the 2002 Monitoring Report concern was expressed towards the New Instruments, especially regarding the participation of SMEs and of organisations from Candidate Countries. It was stated that although FP6 had set an even more ambitious target than FP5, namely that 15% of the funds for FP6's thematic priorities should be allocated to SMEs, it was not clear how this target could be achieved as the New Instruments apparently raised the entry barriers for SMEs. The Specific Monitoring Panel on 'Innovation and SME' was also concerned how under these circumstances the promotion of innovation would progress in the new FP6 and felt that attention to the non-technical aspects of innovation should remain an important element of FP6. The Panel was concerned that the New Instruments in FP6 could reduce the capacity of SMEs to participate, even if the promise of procedural and contractual simplification was realised. It was concluded, that it was critical, therefore, that the Commission was aware, from the outset of the new programme, of the potential difficulties ahead.

Not least as a consequence of these concerns, a panel of high-level experts chaired by Ramon Marimon was set up in October 2003 to assess the effectiveness of the New Instruments of FP6. The panel was given the task of carrying out a mid-term evaluation of the impact of the New Instruments and their contribution towards achieving the objectives of FP6.

In this evaluation it was concluded, that in general there is broad consensus on the relevance of the New Instruments. The objectives for which they were created are valid. The instruments correspond to a need and are likely to contribute to the achievement of these objectives. It was also concluded that the New Instruments are powerful means to foster transnational collaborative research in the ERA and should, also with respect to continuity, be maintained in FP7.

However, even though the general opinion on the New Instruments was referred to as positive, it was concluded that in their current format, they have not yet achieved their potential (Marimon,10;71). The design and implementation could, in other words, be improved, and in general there seems to be a need for a learning process with respect to the New Instruments, not only among researchers but also among administrators. (Marimon,1).

Statement from a NCP:

The new instruments present major problems to proposers, e.g. regarding necessary effort for preparation, transparency of objectives, low success rates and reduced opportunities to participate. We are facing a dramatic change in the national participation profile, e.g. participation of industry and SMEs is reduced by 50%. Contract negotiations are much too long, and management of IPs is very complex, so that even successful coordinators have their doubts that the expected results will be achieved.

The Marimon Report, as well as several other studies, has pointed at a number of problems in relation to the New Instruments that need to be addressed. It is emphasized that one of the main problems is the entry barriers that seem to have been raised with the New Instruments.

Main barriers identified in relation to the New Instruments (Marimon,12):

- the high cost of making a proposal
- the complexity and investment involved in managing large consortia and projects
- the high responsibility of the coordinator
- the long duration: risks associated with it and the long term commitments

These entry barriers to participation will be analyzed further in section 5 in relation to specific target groups, and the issue of management will be addressed in section 4. But apart from these barriers a number of other critical issues were mentioned in the evaluation.

The size of the new instruments

It was concluded in the Marimon Report that it is a misunderstanding that the New Instruments should be very large. Critical mass depends on the topic and the concept of "one size fits all" should not be applied (Marimon, 4). The result is artificial enlargement of partnerships, way beyond the potential added value that can be created, sometimes leading to inefficiencies of scale and management problems (Marimon,11). To maintain excellence is more difficult as size increases, and intellectual property issues tend to be more complex with larger and heterogeneous consortia. Furthermore little experience and skill is available in Europe to manage large research consortia. As a consequence, the New Instruments seem more dedicated to large and strong organizations (Marimon,71). The size of the New Instruments reduce the willingness of smaller institutions to coordinate or even participate – which is in particular a concern for SME's (2003,13).

There is, however, a reason to the size of the New Instruments, specific to the FP6, that must also be taken into account. The goals of structuring (NoEs) and integration (IPs) express the potential long-term benefits from relatively

large consortia. This goal must be balanced against the risks of loss of efficiency (Marimon,12)

In the response from the Commission to the Marimon Report, it is recognised that "size" and "critical mass" frequently have given rise to confusion. It is emphasised in the response that "critical mass" relates above all to the "scope" of the action much more than its "size" in terms of the number of partners or the volume of resources involved. In terms of number of partners, it is true that "New Instruments" have very often been construed as "large instruments" and that the partnerships proposed in response to the first calls have often been very large, sometimes even artificially "inflated" with all the difficulties and inefficiencies this entails, in particular in terms of management of actions.

The Commission stresses the need to separate the concepts of "size" (number of partners and volume of resources applied) and "instrument": a larger size in terms of volume of resources or partnership is only a consequence of the nature of the project and does not suffice to define the instrument. Proposals should combine the expertise, qualifications, activities, resources and consequently the partners necessary to ensure the successful attainment of the objectives pursued. The Commission argues that while in some cases it is important to bring together a large number of actors to achieve the project's objectives, this must not be detrimental to the objectives of the instrument as such. In other words, it is important that proposals are confined to bringing together only the resources necessary as the inclusion of superfluous resources only detracts from the efficiency and increases management difficulties. To address these issues a number of Corrective measures have been implemented by October 2004 to clarify the core concepts of the New Instruments.

Specific problems in relation to Networks of Excellence

Besides the problems mentioned above, which seem to be generic for the New Instruments, a number of problems were specifically associated with the Networks of Excellence. Especially the concept of "durable integration" has led to many misunderstandings and misperceptions among proposers and even among staff members of the Commission. Durable integration means depth in the integration, and a commitment that goes beyond the lifetime of the Networks of Excellence, but it is argued that project partners rarely can give a commitment for a longer duration than the network contract (Marimon,13). This is particularly the case with participants from the private sector, which are often ready to cooperate on an ad hoc basis, rather than to integrate on an institutional basis. The result has been reluctance to engage in the type of long term commitment aimed for by the designers of the instrument (Marimon,10).

Another main motive for the reluctance of industry to participate in Networks of Excellence seem to be the handling of intellectual property rights within

such networks (Marimon,13). As a consequence the Networks of Excellence is now perceived as an instrument directed primarily at academia. Furthermore Networks of Excellence are hard to evaluate according to the Marimon Report. This is particularly the case for the criterion "excellence" as far as the status of the members of the consortium is concerned and regarding the access to complementary funding sources (Marimon, 13). The uncertainty exists among evaluators, potential applicants, and even among administrators.

The Commission has responded that while perfectly aware of the need for clarification and further specification of the concept of Networks of Excellence, the Commission considers that the objective of providing a "durable structure" for European research activities in areas where fragmentation is an obstacle to competitiveness should be maintained, in particular in view of its potential contribution to achieving the European Research Area. A Network of Excellence is intended to integrate functionally a significant part of its participants' capacities for a period exceeding that in which Community funding is provided. Moreover, while the requirement of durable integration necessitates the mobilisation of a significant number of researchers, it does limit the size of possible partnerships and, in general, the direct participation of industry and of small and medium-sized enterprises. However, this in no way means that these categories of participants have no interest in the Network of Excellence instrument. Although they are often reticent to participate directly, they often also wish to be associated with the way it functions, for instance through their presence in steering committees or other scientific committees authorised to provide advice and guidelines on the conduct of networks.

The Commission draws attention to the fact that it can support less advanced forms of cooperation and coordination than the durable integration provided for in Networks of Excellence, through "coordination actions" and "specific support actions".

The survey among the NCP's showed that in general the Networks of Excellence are perceived as not so efficient. However, the picture is not unambiguous, as a small minority find them very efficient.

The role of the traditional instruments

That instruments should be more open to risk taking, and that they should be more ready to include industry, participants from new Member States and small players has been emphasized recurrently (Marimon,7). However, since the New Instruments in their current format were perceived to be unable to reach these aims to a sufficient degree, this left an important role to play for the traditional instruments.

The problems in relation to the New Instruments meant that the traditional instruments remained very popular across all programme areas (2003,11). It was concluded that especially STREPS play a key role within the portfolio of

instruments of FP6, as they appear particularly adequate for small players such as SMEs, small teams, as well as actors from the new member states. However, the introduction of the new instruments left much less resources to STREPS, which were used for the bulk of funds under FP5. The Marimon Report emphasizes, that there is a strong tendency in favour of the continuation of the co-existence of New and traditional Instruments, with a strong trend in favour of enhancing the traditional instruments' share. This opinion is shared by all types of participants and appears clearly from the survey results presented by the Marimon Panel (Marimon,14).

The same conclusion was also reached in the 2003 Monitoring Report, where the Panel concluded that balance in funding between instruments would need to be maintained to provide the full range of opportunities to researchers. It was argued that it would not be appropriate to shift funding too soon or too strongly towards the New Instruments before their approach and procedures are properly established and their effects fully understood (2003,11).

Also the NCPs, interviewed especially for this analysis, in general responded to questions about the appropriateness of the New Instruments that they are good in addition to the traditional instruments.

Statements from NCPs:

1) FP6 is ambitious, but bigger is not always better and more of a balance between new and traditional instruments would have improved the operation of FP6.

2) If the new instruments are reshaped and redesigned according to the results and recommendations of the Marimon Report, they have the potential to be a meaningful addition to the old instruments. As for the budget, not more than 30% should be spent on the new instruments, mainly for IPs of reasonable size. The NoE concept should be redefined following the Marimon recommendations, and should be applied only in areas where fragmentation has really been identified as a problem.

In their response to the Marimon Report, the Commission stated that it is correct that the largest part of financial resources earmarked for priority thematic areas of the FP6 has been allocated to the New Instruments in the first calls for proposals. The Commission admits that certain types of participants, such as small and medium-sized enterprises, young teams and actors from the new Member States, will be more inclined to use STREPs, and that there has in fact been considerable oversubscription in this regard. The marked preference for STREPs among these actors results mainly from their reticence to assume the burden of management involved in participating in projects larger than the average ones supported under previous Framework Programmes. Moreover, partnerships in the New Instruments often include "big" actors (research institutes, companies) in the face of which small actors fear being marginalised in negotiations.

However, the Commission is convinced that once the question of "size" has been cleared up, integrated projects may prove to be as attractive an instrument as STREPs for the above types of actors. Moreover, the Commission emphasises that Integrated Projects are just as likely to allow "risky" activities as STREPs.

The Commission considers that the proportion of resources allocated to the New Instruments and to "traditional" instruments respectively has on the whole been consistent with the need for balance between the objective of structuring and integrating the European Research Area and the need to provide continued support for "simpler" research projects. Nonetheless, The Commission takes the view that the proportion of financial resources allocated to STREPS could be increased in certain priority thematic areas.

All in all it must be concluded, that the concern expressed prior to the launch of FP6 in certain respects was justified. Even though the New Instruments are found valid and appropriate to reach the stated objectives of FP6, a lot more needs to be done to ensure that smaller and less experienced entities are able to participate in the programmes. Furthermore it is important that the traditional instruments are allowed to exist alongside the New Instruments. From more than one side it has even been recommended to enhance the share of the traditional instruments. However, it is also clear that the scientific community has a definite need for continuity. It is, in general, not in favour of a complete overhaul of the instruments available, the rules applicable, or even the vocabulary used, at regular four-year intervals as may well have been too often the case in the past.

4. Management of the Implementation

The question of the appropriateness and effectiveness of the instruments, which was discussed above, is, however, not the only determinant of the success or failure of a Framework Programme. Equally important is the efficiency of the management processes.

One of the key points of the Commission is the capacity to combine the role of policy-maker and implementation agency. The main challenge in relation to this is to translate long-term visions into a policy strategy, and to implement this strategy in the day-to-day work. Two very different Framework Programmes with different objectives were managed in the period from 1999 to 2003, and the task of translating the different objectives into day-to-day management procedures has proved to be a major challenge for the Commission. From the proposer's point of view, the difficulty arises on the one side from the complexity of the processes, but on the other side also from the lack of transparency and the associated uncertainty in the application / evaluation / contract / payment cycle. Accordingly the appropriateness and efficiency of the Commissions management processes

has been a recurring theme in evaluations and monitoring reports throughout the period (2002,7;2003;Marimon).

This analysis focuses on three key challenges for the Commission in the management of the implementation process. The challenges are: 1) to ensure that clear and transparent information of the Framework Programme is communicated to all potential users, 2) to evaluate and respond to all incoming proposals in a fair, transparent and efficient fashion, and 3) to make the negotiation process as smooth and efficient as possible for the projects retained for funding.

A key consideration linked to all elements of the management processes is the question of balancing accountability with simplification and flexibility. On the one hand it has to be ensured that public money are properly spent, but on the other hand the control elements and administrative requirements of the management processes have to be minimized as they tend to increase bureaucracy and create barriers to participation as well as to the actual research.

4.1. Communication and transparency

The first step in the implementation of a Framework Programme is to make the objectives and possibilities of the programme known to all potential users in a clear, accurate and transparent fashion. This step is crucial to attract the best possible participators and to lay a sound foundation for the application-, evaluation- and negotiation-process. Accordingly the quality of the information provided to the R&D community by the Commission has been a recurring theme in evaluations and Monitoring Reports throughout the 5-year period covered in this analysis.

FP5

The transparency, accuracy and user-friendliness of the information from the Commission in relation to the implementation of FP5 have repeatedly been the target of critique. In general, it was the impression that the concept of FP5 had no sufficient time to unfold (2001,14). The transition from FP4 to FP5 was troublesome and the execution of the first contracts and transfer of funding to the contractors was much delayed (2003,11). According to the Monitoring Reports of the period one of the main problems in this process was the dissemination of information from the Commission.

The information related to the Community R&D programmes was made available to the public by means of brochures and information packages, the bi-monthly CORDIS Focus magazine and the CORDIS website. In addition, various supports for proposers were established at the EU level and in each EU-, candidate- and other associated countries.

In the 1999 Monitoring Report as well as in the 2000 Monitoring Report (2000,15) it was concluded that while the brochures, leaflets and special

reports are of high quality and content, the same could not be said of the information related to the R&D programmes and to those addressed to proposers. It was stated that the information packs issued for each programme remained complicated, that the forms for proposal submission were similarly complex and that the requirements lacked focus on detailed description of the project, the scope, the basic investment and the financial results. Furthermore the CORDIS website was criticized of being complicated and difficult to use. It was slow, without a search tool, and often lacking updates (2000,15). Likewise the 2001 Monitoring Report (2001,22) expressed concerns regarding the special language used in Commission documents, which reflects the legal and financial requirements, but is often very difficult to understand by users. In addition, it was mentioned, that Framework Programme terminology undergoes major changes every five years. This leads to a situation where substantial time and efforts have to be invested to re-train even experienced participants. Accordingly the Report recommended a more user-oriented approach. This recommendation was repeated in the 2002 Monitoring Report (2002,7).

FP6

As a consequence of the critique of the quality of the information in relation to FP5, great efforts were taken to improve the communication of information in relation to the launch of FP6. Increased transparency and quality of the information of FP 6 was aimed for in many ways and definitely to a greater degree than when launching FP5 or any other preceding programme.

The dissemination of information went on through many channels of communication.

The web site CORDIS was restructured and used extensively. In addition to CORDIS a number of other types of dissemination activities took place to facilitate the implementation of FP6. Conferences were organized both at European and national level to give information and stimulate interest about FP6. Letters were sent to all national research councils and similar types of national advisory boards and funding agencies, and from there the flow went on to all public as well as to the majority of private research entities. Direct contact with EC officials was another major source of information in the preparation process (Marimon,70).

However, not all potential participants can be expected to be reached using the types of communication listed above, since these channels of dissemination primarily succeed in reaching the researchers already experienced in EU activities. The probability of reaching public research institutes are in general much greater than the probability of reaching small and medium sized enterprises. Here National Contact Points play an important role as mediators of information from the Commission.

Despite the increased focus on the dissemination of information concern was expressed in several Monitoring Reports prior to the launch of FP6, that confusion remained in the European RTD community about the intentions and the exact rules of the New Instruments. It was emphasized that the new structure and terminology of FP6 was causing confusion amongst the users and needed substantial efforts of information and training. The 2001 Monitoring Panel was concerned that at a very advanced state of FP6 preparation, many details of the New Instruments were not clear - neither for the Commission services responsible for translating the political visions and ideas into practical arrangements, nor for the science and research community in Europe. The panel took note of impressive and forward-looking considerations on the New Instruments by responsible Commission officers, but stated that there was an urgent need that these ideas were translated into user-friendly working documents and transmitted to the Framework Programme users communities (2001,14). Also in the 2002 Monitoring Report it was stated that the information that had been circulated, including those by the Commission's project officers, had not always been consistent. More efforts were needed to inform the research community on the exact details of the New Instruments and to ensure consistency in the information (2002,16).

In general, the Marimon panel repeated this critique regarding the quality of information in relation to the New Instruments. It was stated that the clarity of the instruments in general had not been sufficient, and that clearer guidelines and criteria are needed (Marimon,2). More specification of the portfolio of instruments should be available as well as more information about the strategic objectives of the Framework Programme. It was also concluded that the efforts to ensure transparency that the European Commission pursued in some cases led to "evolving" communication material, which some times had as a consequence the creation of false expectations and distorted perceptions among stakeholders and administrators (Marimon,11). Adequate training of all EC staff involved was therefore seen as a necessity to avoid inconsistency in communication and interpretation (Marimon,29).

Furthermore it was emphasized that Integrated Projects and STREPS were insufficiently differentiated and that the differences between the instruments should be clarified (Marimon,6,13). This lack of adequate distinction between the New Instruments and between them and traditional instruments, led to uncertainty with regard to the context, the conditions and the exact objectives with regard to which each of them ought to be used, and this uncertainty was further exacerbated by the fact that the opening-up of various thematic areas to several instruments could give the impression that these were to a large extent interchangeable.

In the response to the Marimon Report, the Commission recognises that a clear differentiation of the New Instruments according to their specific objectives has not always been made and implemented as clearly as desirable. The Commission is aware of the confusion existing between the two instruments designed to advance knowledge, Integrated Projects and

STREPs, the former often being considered as a "larger" version of the latter. While the two instruments do appear to have certain points in common, such as the fact that research should be finalised in both cases, they are nevertheless profoundly different:

- STREPs are based on a project approach, focused on solving a single problem, whereas Integrated Projects are based on a "programmatic" approach of "multi-problem" scope;
- STREPs cover a single component whereas Integrated Projects comprise several
- components integrating various activities (research, demonstration, training);
- STREPs, generally of shorter duration, entail a fixed partnership and work programme in principle right from the start of the action whereas Integrated Projects may in the course of their implementation extend their partnership and adapt their current work programme of implementation in a more flexible manner, taking account, in particular, of their usually longer duration and the necessary adaptation to market trends;
- Finally, while STREPs are generally monodisciplinary, Integrated Projects are often multidisciplinary because in general they deal with more complex problems.

As they have a broader scope, Integrated Projects in most cases require the establishment of a wider partnership and mobilisation of a larger volume of resources than STREPs.

Beside this clarification from the Commission a number of Corrective Measures are in the process of being implemented to avoid future misperceptions.

Also the process of submission of proposals for FP6 was criticized. It was not sufficiently mature at the time of launching the first calls. Participants had to provide the same information more than once in different formats. Furthermore the informatics tools were far from being ready. This created unnecessary costs for the participants and created a bad image for the Commission services (Marimon,16).

Statements from NCPs:

1) In general, a lot of effort has been invested in preparing FP6, e.g. EoI Call and early information on the new instruments. However, the information was unclear, changing and not consistent across different Thematic Priorities. In addition, the fact that important documents were not available created a lot of problems for the NCPs work, especially the Financial Guidelines.

2) The concept of the Networks of Excellence are not yet fully understood due to unclear specifications in the first calls, therefore efficiency still seems to be small.

Finally the information in relation to the Expressions of Interest was criticized. The research community did not clearly grasp the purpose of the Expression of Interest exercise or understood that feedback would not be given on individual EoIs. It was stated that if this tool is going to be used in future, it should be made clearer to the user community how these EoIs will be used and published by the Commission (2002,12).

All in all, more needs to be done to ensure that the programmes are correctly understood. The objectives of the New Instruments need to be clarified as well as the concepts of critical mass and durable integration. However, it should also be mentioned that the policy documents and promotional publications for FP6 and the separate specific programmes are comprehensive. Taking into account the increasing number and diversity of members and associated members, it is to be expected that such major changes will not always be immediately understood and adopted by those user groups at whom they are targeted (2003,11).

4.2. Evaluation of proposals and feedback

When the research community has been informed, attracted and activated and send in proposals, the next key challenge in the implementation is the process of managing the evaluation. The evaluation of incoming project proposals is not only one of the most difficult steps, but also one of the most critical elements of the implementation. The evaluation process is a fundamental part of the discussion on the efficiency of management. In competitive public research funding, the critical evaluation process is the main guarantee that public funding is properly spent.

Also here there is a delicate balance between accountability and efficiency on the one side and flexibility and simplification on the other side. From an administrative point of view, evaluations of very well defined, narrow calls with fixed and objective evaluation criteria are easier to handle and reduce the amount of oversubscription, while the same calls from a researchers point of view are perceived as a limitation of research possibilities.

The large number of proposals and the limited time and resources reserved for evaluations, means that the evaluation process has to be planned well in advance. The evaluations of incoming project proposals involve a great number of evaluators, coming from all over Europe. Evaluators are chosen among a group composed of self-listed experts, from experts recommended by national research councils and from experts chosen by the Commission. 25% of the evaluators are replaced every year. Evaluators of proposals of a given call are chosen months in advance of the evaluation, before the actual applications are sent in. Confidentiality is requested and is an element, which is highly underlined. Nevertheless many potential industrial participants are worried about the risk of access to the ideas presented in their proposals (Summary Report,4). This perception of risk may be one of the causes of the limited number of applications from industry.

This section primarily focuses on the evaluation procedures in relation to the first round of calls of FP6. In the Monitoring Reports covering FP5 the comments concerning the evaluation of proposals were limited to a recommendation of clarification to evaluators of the socio-economic requirements of the Programme, and a recommendation of installation of an effective feedback system to proposers on the proposal evaluation.

In relation to the evaluation of proposals of the first round of calls of FP6, however, the issue has been targeted extensively in Monitoring Reports, in the Marimon Report as well as in special studies of the evaluation of proposals procedure.

Furthermore, all evaluation sessions of the first FP6 calls for proposals have been observed by Independent Observers and the observer teams have prepared reports on their views and experiences on the observed sessions including their comments for future evaluations.

Overall, the Independent Observers considered the first round of FP6 evaluations to be of excellent to outstanding quality. Conflicts of interest were openly addressed and handled when coming up. It was concluded, that the quality of the evaluators was good to excellent and partly even better when compared to evaluators in national evaluations with international participation. However, it was also stated that for the coming rounds of FP6 evaluations there is room for improvement (Summary Report,1). This view was shared in the 2003 Monitoring Report where the evaluation procedures in general were described as fair and of high quality (2003,12). However, the Marimon Panel also concluded that at some points there is an urgent need to improve the evaluation process in relation to the New Instruments. Although the evaluation process is similar for the New Instruments as for the other instruments, the Marimon Panel detected this to be a cause of concern that may influence the efficiency of the instruments and the trust of the scientific and technological communities in the process. According to the Marimon Report participants seem to be convinced that some discrepancies exist in the implementation of the evaluation criteria among the different thematic priority areas. Especially the absence of any benchmarking references regarding the "excellence" and "integration" criteria for Networks of Excellences, make it possible to have variable interpretation by the different teams of evaluators. These criteria have, however, been clarified since the beginning of FP6.

Another problem identified in relation to the evaluation procedure is, that failure to succeed in one call may result in failure to succeed in the whole of FP6, since many programme topics were covered in only one call in the course of the Framework Programme cycle, and if not funded the preparatory work would eventually be lost. The combination of the use of New Instruments and a budget limitation means that the winner takes the entire budget, while other excellent teams and proposals lose the opportunity to get funded. Of course, the work is not completely lost, as the contacts established and the ideas created still might be fruitful in other ways.

An equally important issue of the evaluation process is the feedback procedure. Feedback is sent to participants as an "Evaluation Summary Report" (ESR). The general perception is that these are of very variable quality, which can be explained in part by the choice of evaluators and in part by the fact that the short ESR does not reflect the work done during the evaluation process (Marimon,17). The hearings conducted by the Marimon Panel have shown that there are sometimes strong doubts on the quality of evaluators. Improvements mentioned include the need to select real experts on the given topic, the need for evaluators to be properly trained and to have sufficient time to evaluate very long and complex proposals (Marimon,17). Evaluators have in particular had difficulties in assessing the horizontal aspects of the proposals and the complexity of the evaluation process meant that that guidance and briefings were not always sufficient (2003,13).

Independently of the perception of quality, there is a general feeling of lack of adequacy between the investment in a proposal and a one page feedback, which is the usual format of an evaluation summary report. The content does not necessarily allow for unsuccessful proposers to learn from their experience and improve for a possible resubmission. Another reason behind the expressed negative remarks about the response is that the actual response returned to the applicant is a consensus message, since consensus has to be reached among the evaluators of a given project. In relation to this it has been stated that applicants often have difficulties in understanding eventual reductions in funding after a positive evaluation of a given project has been communicated to the group behind the project. This has in particular been a problem for Networks of Excellence

The Marimon Report recommends that a two-step evaluation procedure should be introduced to improve the efficiency of the evaluation process (Marimon,11). This procedure is considered as a solution to address the problems of low success rates and to reduce the total costs of preparing a proposal. Today the two-stage procedure, introduced in relation to nanotechnology projects and formalized under FP6, is applied to approximately one out of four proposals. However, the procedure has been criticized by both the EC and participants of having the opposite effect in some cases. Even when a two stage procedure is intended, the applicants some times use as much energy on the first application as they would on an application to be evaluated only once. The evaluation criteria are not necessarily reduced in number in the first step and therefore the two stage procedure run the risk of costing extra both for those behind the projects and for those evaluating the project proposals. The Marimon Panel argues, that this critique is mainly due to the way it has been implemented rather than to the principle itself. The independent observers conclude that for very large projects the introduced two-stage process is appreciated. However, the first step should be restricted to scientific and technological aspects only and not expand to almost all aspects as was sometimes requested in the first round of FP6.

In the response to the Marimon Report, the Commission recognizes that two-step evaluation may reduce the overall costs of participants, provided that the first step is "light". Two-step evaluation also makes it possible to ensure better feedback to participants because of the smaller number of proposals evaluated in the second phase. However, the Commission emphasises that two-step evaluation for the first calls for proposals under the 6th Framework Programme has led to longer delays in processing the proposals and also to a significant additional workload, virtually doubling the work normally involved in one-step evaluation. Mainly intended to reduce the costs of participation, it now includes a first "light" phase requiring the submission of a brief proposal (20 pages maximum) evaluated on the basis of a limited number of criteria (relevance, potential impact, scientific excellence). Moreover, the Commission draws attention to the delicate balance to be maintained, in the event that a two-step evaluation is adopted, between alleviating the first stage (limitation of volume of the proposal, reduced range of evaluation criteria) and the need for evaluators to nevertheless have sufficient information to be able to deliver a reliable judgment on proposals at the first stage.

However, it should be noted that it lengthens the period needed to process proposals ("time-to-contract") and that other methods may also contribute to reducing participation costs such as more focused targeting of calls for proposals, information days and pre-screenings, for example. This is why, while two-step evaluation as described above is now an option open to all thematic priority fields, it is not obligatory and will be implemented by the various programmes where they find it appropriate.

4.3. The negotiation process

After the evaluation process has been finalized, the next step in the implementation of the Framework Programme is the management of the negotiation process in relation to the projects retained for funding.

One of the key-points in the discussion of the negotiation process has been the question of the duration of "time to contract" or "time to payment". In the 2000 Monitoring Report it was emphasized that the signing process seems to be a matter of particular concern with delays varying from a few weeks to close to a year. This seemed in particular to be a problem with SMEs, where the legal negotiations were very time consuming. It was therefore concluded that the legal process should be evaluated with the objective of arriving at less rigorous and time-consuming administrative procedures. In the same report it was recommended to set acceptable targets for procedures and time to contract. In essence, this was a repetition of the critique expressed in the 1999 Monitoring Report (2000,16-18).

In the Marimon Report it was also recommended that administrative procedures and financial rules should be significantly simplified and further improved to allow more efficiency and flexibility in the management of the instruments (Marimon 12,28). It was also concluded, that further

simplification is needed to allow for projects, valued on a general cost-based form, to be given enough flexibility regarding the final allocation of expenses. Assistance on such matters could be channeled through a specialised help desk. Risk management (rather than risk avoidance) combined with service level standards, should be used to define procedures. Procedures and their interpretation should be common for all Directorates /Directorates- General (Marimon,29).

As a consequence much effort has been expended in reducing "time to contract" or "time to payment" durations. However, such efforts place major strains on all concerned and, as some note, may cause problems in other management priorities. Accordingly some have been concerned that pressure to reduce "time to contract" may be deleterious to the core processes of proposal evaluation and contract negotiation. There may be a possible trade off between increasing the speed of procedures (allocate funds efficiently) and increasing the value for public money (to enhance effectiveness). Value for money can be expected to increase with careful contract negotiations, it is argued. However, there has been concern in some quarters, as to the necessity of some elements of the formal procedures (2003,10; 2001,20; Marimon,18).

In the interviews collected in 2004 the criticism of the negotiation process still exists. Contract negotiations still take too long time, is the statement from many, and that is a management problem that has to be handled internally with clearer instructions, guidelines and deadlines.

Statement from a NCP:

With the New instruments it is taking very long to get through evaluation and especially negotiation. Taking 18 months from application to starting (and then add some months for writing).

All in all the duration of the negotiation process is still a problem. In spite of efforts to improve procedures in comparison to FP5, the legal, financial and administrative requirements are still overwhelmingly. There is a need of further simplification and improvement of the negotiation procedures. However, the Commission is aware of the problem. In the response to the Marimon Report it is emphasised that the Commission is trying to find ways of reducing delays in the submission of a proposal following conclusion of the contract ("time-to-contract") and, in general, to "improve the regulatory and administrative environment", the aim being "to increase the transparency of the evaluation process, to reduce delays, and to minimize the cost of preparing projects".

4.4. The management processes in general

FP5

As mentioned above the key challenge for the Commission is to translate its long-term vision into a policy strategy, and to implement this strategy in its day-to-day work. In FP5 such a systematic approach seemed to be missing and Monitoring Reports have repeatedly addressed this issue (2002,11). FP5 was characterized by an overburdening complex legal and administrative system, which led to overloading of scientific officers and frustration along with excessive administrative reporting requirements being placed on participant researchers (2001,33). The programme was also characterized by a chronic difficulty in coordinating both administrative and research activities across both Specific Programmes and the wider Framework Programmes (2001,33;2002,16). This led to difficulties surrounding programmes and priority areas managed by more than one DG. The consequence was a lack of coherence as well as a lack of synergy, which could have been achieved otherwise. Furthermore there have been continual and consistent calls for simplification of proposal, evaluation, selection and, most of all, contractual procedures. These are not just from Monitoring or Assessment Panels, but also from Project Officers, Heads of Unit, and Directors. As a consequence the 2002 Monitoring Report concluded that in general FP5 was not considered to be user-friendly. The researchers had to study a number of lengthy documents and types of forms, the electronic submission facility (Pro-tool) was problematic and it did not stimulate researchers to submit their proposals electronically. It was stated that the financial rules and financial reporting appeared to be the most difficult part of projects (2002,49).

FP6

The question of to what extent these management problems of FP5 continue to exist in relation to the implementation of FP6 cannot be directly answered based on the accessible material. But the material definitely shows that major management problems exist in relation to FP6 as well. These problems exist even though attempts to increase the efficiency of the management processes have been launched.

The Commission has implemented a number of simplifications to project management in FP6 compared to FP5 (2003,9).

- Simplified approach in that contractors can now use their own accounting system and cost categories;
- Existence of a single model contract applicable to all instruments;
- Elimination of the differentiation between principal and associated contractor, so that now contractors have the same rights and obligations;
- Entry into force of the contract once it has been signed by the coordinator alone, reducing the time required compared with previous Framework Programmes;
- Greater flexibility of internal management for contractors in terms of transfer of funds between activities, changes to work programmes,

distribution of the Community contribution, etc. In terms of presentation of proposals, efforts towards simplification have focused on introducing a better system for electronic submission, implementing much simplified proposal forms, and ending of the requirement for a signature on proposals.

However it is concluded, that there is a further need for an effective decentralization of financial control and delegation of responsibilities to lower levels in the hierarchy in order to speed up decision making processes. Also sub-contracting is handled in a rigid way, which goes against the very principles pursued by the New Instruments. For some projects the audit costs become prohibitive. These rules should be reconsidered and the actual way to implement them clarified so that the New Instruments can reach their potential impact for an acceptable cost. Furthermore, the 2003 Monitoring Panel concluded that management of FP6 process could be better supported and recommended revision of the objective and indicator setting. The Panel also suggested some principles of efficient and effective implementation and possible outline indicators.

On the other hand it was also concluded, that some of the rules that have been defined in FP6 as part of the drive for more flexibility and autonomy need to be reconsidered. The types of problems that are appearing because of the higher level of autonomy have to be monitored closely. This is particularly the case for Intellectual Property related issues. It is the Commission's responsibility to help participants and particularly to protect the weaker players (Marimon,28). So even though the control dimension still seems to be dominant in the implementation on the cost of simplification and flexibility, there are examples of the opposite tendency.

One recommendation by the Marimon panel that is rejected entirely by the Commission relates to flexibility and the selection of objectives and instruments. The Marimon report stated: 'The European Commission should specify the portfolio of instruments available and the strategic objectives. Participants on the other hand should define the specific research objectives they will pursue and why this can best be met by the instrument they have chosen.'

The Commission claims that this proposal is 'tantamount to calling into question the very principle of the work programmes on which the Union's research programmes are based.' It emphasises that the work programmes are drawn up in collaboration with advisory boards, and claims that giving participants the freedom to define research objectives would lead to a reduction in the effectiveness of EU support for research. This would be the unavoidable result of spreading resources over too many themes, says the Commission. Similarly, leaving participants to use an instrument of their choosing 'would make arbitration between the many proposals very difficult', states the Commission.

Finally the Marimon Panel states, that a matter of very high concern is the perception of participants that the bureaucracy is increasing rather than decreasing. The same perception can be found among the NCPs, where only one third among the interviewed NCPs found that the management of FP6 has become better than the management of FP5. Very few among the NCPs perceive the simplicity in administration, flexibility and adaptability of FP6 to be better than that of FP5.

Statement from a NCP:

The simplicity of administration should be further improved. More flexibility is necessary.

In the response to the Marimon Report, the Commission admits the difficulties associated with implementing the New Instruments resulting, in particular, from giving participants the greater autonomy and flexibility in managing their actions, which they requested under previous Framework Programmes. The Commission argues, that these difficulties, arising partly from the new nature of the provisions, should logically diminish as users familiarise themselves with the New Instruments.

A number of Corrective measures have been adopted by the Commission to make it easier to manage the autonomy granted to participants:

- Provision of a checklist of the various aspects that may be covered by the consortium agreement.
- Setting-up of an "IPR5 Help Desk" providing participants with professional assistance in dealing with questions associated with intellectual property rights.
- Setting-up of a "legal Help Desk" to assist the scientific community as well as the
- Commission's departments in getting replies to their questions concerning the
- interpretation of the contract and in connection with financial and accounting management.
- Publication of "frequently asked questions on contracts and costs" on the CORDIS site.

Furthermore a number of other efforts have been made since the actual launch of FP6:

- Improving "training" for evaluators and scientific officers is taking place to harmonise the interpretation of new concepts.
- "Hearings" of participants, which in the opinion of all the parties concerned (participants, evaluators, Commission departments) have proved very positive, will be put in place more systematically and in any case for proposals relating to the new instruments.

In connection with the commitment it made in its Communication of 16 June entitled "Science and technology, the key to Europe's future – Guidelines for future European Union policy to support research", the Commission has been studying funding mechanisms in order to examine the means, such as lump sum mechanisms, which would further alleviate the obligations of participants while at the same time ensuring the necessary transparency in the use of public moneys. In this context, the Commission also recalls the revision of the Financial Regulation planned for the middle of 2005, which will cover these simplification measures.

Human Resource Policy

The management problems are, however, not only the result of inefficient or inappropriate procedures and processes, but are often also the result of excessive workloads and lack of adequate training of staff. A key aspect of good management is therefore an adequate policy for Human Resource Development for the Commissions staff. There is, however, some concern over the general state of HR management within the Framework Programme. There is concern that the Framework Programme systems generate an excessive work-load on the scientific Officers – while this may be ameliorated by the introduction of improved management, it is possible only the full system reform or the contracting-out of administrative work will make a major change. Due to the new content in FP6 the workload for the research managers at DG research was for a period doubled. Reorganisation of the staff had to take place due to the new tasks while at the same time the closing of FP 5 was still going on. This has led to a number of concerns expressed in the Monitoring Reports. Some of the problems mentioned have been: excessive workloads; the lack of directorate and unit level management tools as responsibilities are moved downwards; and possible weaknesses in the training policy (2002,13). Also the 2003 Monitoring Report expressed concern towards the continuing staff overload (2003,5).

A recurring theme has therefore been the need for a training plan for Commission staff (1999,2000,13;2002,7). It was emphasised that the training structures – and the implied training philosophy - may be inappropriate. Director and Head of Unit levels will require strong support as Commission reforms move responsibility and decision making down the management chain and calls for the introduction of modern management methods continue.

5. Incentives and barriers to participation of different target groups

Taken together the design of the general Framework Programme (including the design of the instruments) and the efficiency of the management processes represent a set of incentives and barriers to all potential participants. In principle, the whole variety of European researchers is invited to participate in the Framework Programmes. The young, experienced, public

and private individual researchers as well as public research institutes, universities and private companies (large companies as well as small and medium sized enterprises and companies) are all potential participants. Furthermore the programmes are not only open to member state researchers but also to researchers from Candidate Countries, associated countries and third countries with S&T cooperation agreements.

However, there is reason to believe that unwillingly the design of the Framework Programmes respectively favours and discourages specific groups of potential participants. In this section the barriers and incentives of specific target groups will be analyzed.

The incentives to participation are straightforward. The possibility of getting funded and thereby become part of a unique European research activity with access to new partners attracts a large number of applicants. Unfortunately, at the same time there are a number of potential barriers that reduces the willingness to participate. Some of these barriers are generic to all potential participants, while others are specific for different target groups.

Figure 4.

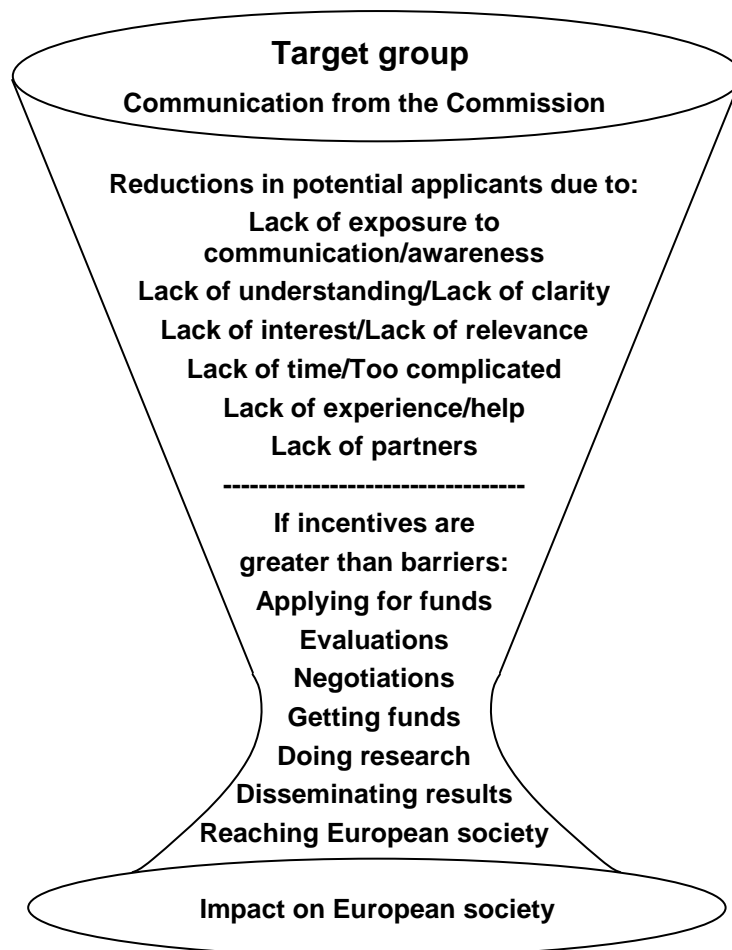


Figure 4 illustrates how the mass of potential applicants is reduced due to a series of mechanisms. The first barrier is the communication from the

Commission. Inappropriate information channels means that not all potential participants are reached. For those who are reached, insufficient, intransparent or unclear information results in lack of awareness, interest and understanding. For others a perceived lack of relevance will further reduce the potential mass of applicants. Other reduction mechanisms that can be mentioned are lack of experience in EU-application, lack of time and for many lack of partners. Taken together these barriers reduce the mass of potential applicants to a number who finds the incentives of the Framework Programmes greater than the barriers.

Apart from these generic barriers, it appears that there are specific barriers to participation for industry in general, for SMEs, for all types of participants from accession (and third) countries, and for smaller and emerging groups of scientists. These barriers seem specific to the New Instruments with the exception of the accession countries, where the problem is more generic (even if exacerbated in the case of the New Instruments). The ambition to increase the impact through substantial funding of fewer projects creates two types of biases: towards research groups, which have already proven their excellence and towards well accepted objective driven research. As a consequence new approaches, higher scientific risk and emerging research groups tend to be excluded (Marimon,15). This is a major problem of FP6, and in the Marimon report it is emphasized that emerging groups should be attracted rather than discouraged from participation (Marimon,8). In general application costs and risks of participation are intrinsic to any competitive funding process, but the Marimon panel argues that there are reasons to believe that both costs and risks are unreasonably high in relation to FP6 (Marimon,10)

The following section will look more closely into the specific barriers of two different target groups, which have been the centre of special attention; respectively the industry (and especially the SMEs) and the Candidate Countries.

5.1. Industry

One of the most important target groups of the Framework Programmes is the industry, and in particular the small and medium sized enterprises (SMEs). Accordingly the issue of industrial participation in Framework Programmes have been discussed extensively, and especially the need for support for SMEs has been mentioned in all Monitoring Reports (2002,7).

FP5

FP5 was successful in increasing the number of SMEs taking part in projects and in achieving the 10% participation rates required in the Council Decision (2002,52). Many Specific Programmes moved well past this participation rate. The specific measures for SMEs (CRAFT) and the use of the Single Entry Point are seen as particularly successful in working with SMEs. Also the SME NCP network consolidated its co-operation. Furthermore Economic and

Technological Intelligence initiatives and accompanying measures played a positive role in stimulating cross-border SME co-operation in CRAFT projects and other participation modes.

However, it was the perception that there was a further need to foster support for SMEs (2000,23) and to improve the efficiency of NCPs (2003,13-14; 2002,9+52). Furthermore concern was expressed towards the fact that limited data and little in-depth analysis were available to indicate that participation by SMEs in the Framework Programmes has been beneficial to either the research or the SME itself – over and above the funding which received. It was emphasized that, indeed, the small amount of impact analysis, which were undertaken raised important and unanswered questions as to how SMEs might most beneficially be associated with the new structure and participation rules of FP6. Consequently, there were no well-researched objectives for SMEs, over and above participation rates. Similarly, there was no logic or reasoned guidance to the modes of participation of SMEs across the very different research activities and research fields of the Framework Programme. No information was available on the specific problems SMEs are facing in transnational research and technology co-operation, and there were also limited in-depth analysis on the specific benefits that SMEs are gaining from participation in the Framework Programmes (2001,12).

Even at the level of participation rates, increased to 15% for FP6, major concerns are being expressed as to the possibilities of SME participation in the next Framework Programme: The size and nature of Integrated Projects causes particular apprehension as to the role of SMEs (2001,12). At the same time the level of support from NCPs seems variable. That means there are not equal standards of information and assistance services available for SMEs across Europe, handicapping some regions' SMEs' access to information and practical assistance relating to Framework Programme application.

FP6

As mentioned above serious concern in relation to industry and especially SME participation was expressed prior to the launch of FP6, as the New Instruments were expected to raise entry barriers (2002,14 + 2001,12). Regarding industry in general the large size of consortia is one of the factors creating significant barriers. The fear is that increased consortia size leads to less focus, less concrete results, lack of strategic focus and in general increased risks associated with managing large projects. A special risk in this relation is the handling of Intellectual Property Rights, which tend to be more complex with larger and heterogeneous consortia.

These concerns proved to be somewhat justified as industrial participation according to the Marimon Report reduced significantly in certain areas. The low number of industrial participants in Networks of Excellence is one of the factors explaining this change, but many other factors are playing a role, including the formulation of the Work Programme topics (Marimon,9).

The SMEs are encountering the same types of problems in relation to the New Instruments as industry in general, but to an even larger degree. The problems relate especially to the processes of consortium building and the evaluation and contract negotiation. Guidance is missing at the level of SMEs themselves, but is also missing for scientific officers and contract negotiators in order to ensure that SMEs, like other weaker players, are protected from exploitation by stronger consortium partners (Marimon,15). In general SMEs require lower levels of bureaucracy, short-term projects, short time to market topics and flexibility to join and to leave long term projects. Durable integration makes SME participation in Networks of Excellence an almost impossible requirement. It is also very difficult for SMEs to be involved in the coordination of very large Integrated Projects.

Taken together this meant that the participation of SMEs followed the downward trend of industrial participation. The overall average of 13% seems promising but there are some difficulties in interpreting the figures (e.g. small public sector institutions are also categorized as SMEs) (Marimon,9). There is, however, clear evidence that SME's are having some difficulties with the New Instruments, especially Networks of Excellence. Meanwhile SMEs are continuing to participate enthusiastically in the specific research activities for SMEs (Collective research and CRAFT) (Marimon,15).

The SME participation rate varies between priority areas and themes. For example, it is naturally low in aerospace and global change research, but in (nano) materials and food - which are traditionally SME sectors - one would expect a higher participation rate. This range of involvement is not surprising and reminds us that uniform targets are inappropriate. DG InfSo addressed a related concern, noting that there seem to be no SMEs in FP6 that were not already participants in FP5. This is worrying in terms of Community innovation strategies, which aim to have a broad and long lasting impact on the industrial fabric of Europe. The conclusion is that the participation of SMEs in the New Instruments so far has been unsatisfactory and that SMEs prefer the traditional instruments (Marimon,9)

From the responses received from NCPs we know that the majority of them perceive FP6 to be attractive to public researchers, but not so attractive to industry and SME's. Several find FP6 less attractive to SMEs than FP5. Regarding efficiency in establishing cooperation between public and private organizations FP6 was not doing worse than FP5, and four out of 10 meant that FP6 was doing better in this respect than FP5. The survey also shows that the majority of those who applied to the first rounds of FP6 have tried it before. It is difficult for those who have not tried to apply for EU funding before, therefore the need for help from intermediating institutions like National Contact Points or information centres is crucial.

The Commission responded that it is fully aware of the importance of SMEs in terms of competitiveness and job creation in Europe and of the need for SMEs to have access to the fruits of science and technology. The existing measures

adopted for their benefit (such as cooperative and collective research, requirement to devote at least 15% of resources earmarked for thematic priorities to them) play a significant role in encouraging them to participate. The Commission argues that at this stage of implementation of FP6, the level of SME participation, while not reaching the 15% required, is nevertheless encouraging because for all instruments together it reaches 13% (in terms of financial participation in the actions) on the basis of the results of only the first calls for proposals. However, it is clear that this level is most favourable for STREPs (17.1%), compared with 12.9% on average for integrated projects. SME participation is distinctly lower in networks of excellence.

The Commission concludes that support for SME participation under the FP6 therefore essentially should be focused on Integrated Projects and STREPs which are their preferred instruments. Networks of excellence are not really an instrument "oriented" towards SMEs, apart perhaps - to a very limited extent - from SMEs with a strong research role, provided that they meet the durable integration requirement. Action aimed at promoting Integrated Projects or STREPs coordinated by SMEs has already been taken in particular priority thematic areas. The continuation and intensification of such action, combined with other measures such as "economic and technological intelligence activities" which started in 2004, will likewise encourage SME participation in STREPs and Integrated Projects. Furthermore, the results of the initiative undertaken in the priority theme of nanotechnology (priority 3), consisting of the launch of calls for proposals for Integrated Projects specifically aimed at small and medium-sized enterprises will be analysed in detail in order, where appropriate, to extend application to other priority thematic areas. In addition, in the perspective of the FP7, the Commission considers that specific actions to support research in SMEs "need to be rationalised and regrouped to form a coherent whole with a critical mass.

5.2. The Candidate Countries

Another major objective of the Commission has been to integrate the Candidate Countries, of which the majority is now new Member States, fully into the Framework Programmes. For simplicity both the new Member States and the current Candidate Countries will in this section be referred to as Candidate Countries, as this was their status in the period covered by the 5-year assessment.

The integration of the Candidate Countries in Community RTD was a reality earlier and to a greater extent than in other sectors because these countries were associated to FP5 from the beginning. Since 2000, structural and Institution Building measures were discussed between the Member States, Candidate Countries and the Commission. The objective was to ensure the Integration of Candidate Countries into ERA and to ensure improved participation of Candidate Countries in FP6.

FP5

A range of measures were taken to improve Candidate Countries' participation in FP5. In 2001, the Commission implemented several measures to support the integration of Candidate Countries into the EU RTD activities. A special working group, launched in 2000, with delegates from the Member States and Candidate Countries had the task to prepare an ERA Action Plan for the support of the integration of Candidate Countries. Unfortunately, this Action Plan was never finished nor implemented (2001,10). But several Calls for Proposals addressed the issue and information and training measures were carried out. All Specific Programmes report a strong effort in working with and integrating the Candidate Countries into the Framework Programmes. However, despite permanent dialogue and monitoring, it turned out that the participation of certain Candidate Countries in FP5 was lower than expected both by the Commission and by Candidate Countries. Concern was also expressed in the 2002 Monitoring report that the potential participants from Candidate Countries are facing huge barriers to enter FP5 and also FP6 (2002,15). The efforts to prepare for the full integration were accordingly not fully successful, and it was concluded that problems to still exist (2002,15).

In the same report it was stated that there was high interest of research institutes in Candidate Countries to participate in the Framework Programme research projects; a good general knowledge of the FP5; good co-operation between European NCP systems and well-established collaborative links to EU research organisations.

On the other hand, it was also concluded that there was an extremely low readiness and interest of large industrial companies in most Candidate Countries to participate in the FP5 projects; low readiness of SMEs to participate in the FP5 projects while their interest to participate was reasonably high; obsolete technical equipment of research facilities; mobility schemes not suited to the needs of Candidate Countries and relatively low co-operation between research teams of Candidate Countries (2002, 48).

As a consequence in 2002 the Commission stepped up efforts to prepare for the full integration of Candidate Countries in FP6 (2002,15):

- Through Awareness and Training Accompanying Measures (INCO)
- Strengthening of NCPs in the Candidate Countries
- Extensions of on-going FP5 projects to include Candidate Countries partners
- Promotion activities by Commission staff

FP6

As was the case with SMEs, there was concern that FP6 would create additional barriers for participants from Candidate Countries (Marimon,25), as they face a number of general problems in relation to participation in the Framework Programmes (2001,10):

- Lack of experience in competitive tendering, lack of established networks with EU researchers, lack of capital resources and the necessary equipment in research facilities
- Lack of associated industrial infrastructure, high tech companies, industry associations, etc.
- Lack of information in the old EU Member States on Candidate Countries research landscapes and potentials
- Lack of cooperation between research institutes and industry

Furthermore the barriers to be a coordinator of a project submitted under the New Instruments are high:

- The costs of the preparation process with the needs to travel and to have pre- contractual meetings
- Access to information
- To coordinate large groups one must have management capacity. Scientists in Candidate Countries do not always have access to this capacity.

As a consequence participants from Candidate Countries do not often contact the EU directly. They rely on their partners within the EU to do this (Marimon,16).

The concern expressed in the 2002 Monitoring report about the low expected participation rates in FP6 from Candidate Countries and of SMEs were justified as success rates for proposals from the Candidate Countries were lower in all priority areas than for partners from the member states and associated countries and lower than expected. The biggest difference (11 % candidate compared to 26 % member) was in "Life Sciences, Genomics and Biotechnology for Health" while the smallest difference was in "Food Quality and Safety" (14 % cf. 17%) and "Nanotechnologies and Nanoscience" (8% cf. 11%). Particular disappointment was caused by the low number of coordinators from acceding and candidate countries. Thus far there have been no coordinators of IPs or NoEs from those countries (2003,14).

Statement from a NCP:

" Old EU countries have an advantage, especially with the new instruments. They have well established and managed networks. New member state participants have a hard time finding a place in these big projects. If new member states and SME participation is really a priority, then all consortia should be required to address these issues. They could be a part of the evaluation or threshold criteria"

However, special actions have already been taken to strengthen Candidate Countries' capacity to participate in European research through continuation of the regular activities of the Action Plan for supporting Candidate Countries. In 2003, there was a special call aimed at funding entities to network national contact people in each candidate country, to undertake individual actions for

SMEs, to network centres of research excellence, and to organize information events. A second call, restricted to candidate countries, is envisaged this year with the aim of improving research capacities in other ways. These measures should improve the opportunities for new member states and candidate countries to contribute to the ERA. FP6 new instruments place significant requirements on the management capacity of participant organisations. This might reduce the willingness of smaller institutions to coordinate, or even to participate in, the IPs or NoEs. Nonetheless, participation from Candidate Countries (7%) is still growing too slowly.

5.3. Implementation effectiveness assessed by reactions from target groups

The question is to what degree these incentives and barriers have influenced the overall participation in FP6. The statistics in relation to the Expressions of interests (EoI's), the proposals to the first round of calls of FP6 and the number of projects retained for funding can indicate an answer to this question.

Expressions of Interest

The first indication of the interest of the surrounding scientific community in FP6 was found in the Expressions of Interest (EoI's) process. The Expressions of Interest process was as a forerunner to FP6 taking place in 2002. The report on the analysis of Expressions of Interest reveals that more than 12.000 EoI were received. So measured in pure number of expressions, the interest was great. However, the Expressions of Interests' were dominated by academic institutions (46 %), followed by public research organizations (32%), while only 14 % came from industry. This distribution in the EoI's has been taken as a sign that the programme did not reach the balance between target groups it aimed for. The Expressions of Interests were also used as instruments for finding partners for the different project ideas.

Calls and proposals

However, the number of proposals draws a more accurate picture of the interest in FP6.

By March, 2004 (2003,9-10)

- 92 calls
- More than 23.000 proposals involving 140.000 participants from over 50 countries

This response demonstrated, as anticipated by the Commission, a high level of interest among the research community in the opportunities presented by FP6. The Commission concluded that the average quality of proposals has been good, that the coverage of the work programmes is very satisfactory and that excellent partnerships in key areas of research have been supported. All in all the Commission sees a clear movement towards greater critical mass (2003,8).

Evaluations and negotiations

By January, 2004,

- 11.500 proposals had been evaluated
- 5085 reached evaluation threshold (44%)
- 2187 proposals retained for funding
- 1300 Contracts signed, with another 650 contracts in the process of being finalized
- Total funding requested: 28736,3 Meuro
- Those passing evaluation 9426 Meuro
- Funding allocated: 4550,08Meuro (19% of all; 43% of proposals passing evaluation)

The large number of proposals means that oversubscription has increased in comparison with FP5 and has caused administrative problems, but it cannot be seen as abnormally high. The high oversubscription rate was, for the research community, a major issue with these first calls. It has led to disappointment for many in the user communities and particularly with those whose proposals passed the evaluation thresholds. However, a positive aspect of this oversubscription is that it shows that the Community actions and instruments are well appreciated and are attractive to large parts of the research community. Competition allows a good level of selectivity and appropriate value-for money to be maintained across the Framework programmes. The Commission aims to address the over-subscription issues through continued focusing of the work programmes and being more prescriptive about the instruments to be used.

It is still too early to draw any conclusions about the overall effectiveness of FP6, but the results measured in form of Expressions of Interests and proposals so far indicate a relatively high degree of effectiveness of FP6 in terms of activating research environments across Europe. This is in particular true in relation to the academic institutions and the Public Research Institutes. The lack of participants from the Candidate Countries, the Industry in general, and the SMEs in particular are nevertheless still a problem. Compared to the intention of FP6 the results so far with respect to involvement of these target groups are not satisfying.

6. The perception of National Contact Points

Several fora with different functions have been set under FP5 and FP6 in order to help contractors, and in particular SMEs, in different phases of a RTD project cycle, from design to outcome. National Contact Points (NCPs) set up for each programme and for the overall Framework Programme, give upstream information and guidance to all potential or current contractors on community RTD programmes, calls for proposals, project selection procedures, etc. The structure of NCPs vary a lot, in some countries there is only one, in others there are up to 30 NCPs each having different areas of

responsibilities. The NCPs are particularly important to the SMEs. They are structures created by the Member States, at the request of the European Commission. The NCPs provide potential contractors with information and assistance and direct them to the existing European Union structures. Accordingly the NCPs play an intermediating role between the Commission and the research community. This unique position means that the NCPs can offer valuable insight to the processes of the implementation of Framework Programmes.

The following is the result of a survey among representatives of NCPs from 33 countries, most of them national coordinators of NCPs, who were questioned via a web-based survey about their overall impression of FP6 compared to FP5. NCPs from 24 countries responded (with more than one response from certain countries) resulting in a total of 42 responses. Of the 24 different countries, who responded, 13 were old member states, 9 were new member states or current candidate countries, and the last two came were associated countries. The majority of those who responded had worked actively with finding partners, and had been involved (in a high degree or somewhat) in helping writing proposals for FP6. Among the NCPs the involvement with preparing expressions of interests for FP6 had been less extensive.

The number of interviews collected for this report is limited and can not from a statistical point of view be taken as representative of all NCPs. Nevertheless the responses indicate some trends in NCPs perception and evaluation of FP6 versus FP5. They will be used for this report as they draw a significant picture of the processes of the implementation of the Framework Programmes. Furthermore a number of the qualitative statements from the survey have been used throughout the report in order to illustrate perceptions of important aspects of FP6 among the NCPs.

Main findings and issues

The majority of the NCPs interviewed for this report state that they perceive their own role as NCP as both reactive and proactive. They generally find their role important as a link between the Commission and researchers, proactively informing of possibilities and looking for proposals and reactively helping those who seek information and guidance. Evaluating their own performance some realized that they had been more reactive than they intended. A number of NCPs emphasized that more information is needed from the Commission to NCPs, and some stated that the whole structure of NCPs should be reorganized.

The general impression among NCPs was that **the design of FP6** compared to the intentions was not so well functioning (2 out of 3 were of this opinion). Likewise critical voices were heard about the **simplicity of administration**, where 9 out of 10 were of the perception that the administration was not functioning as well as intended.

The flexibility and adaptability of FP6 was perceived as not so well functioning by 2 out of 3 and assessed as better than FP5s by only 1 out of 4. And critical voices were heard referring to Networks of Excellences in particular, where only 1 out of 10 gave the expression that Networks of Excellences were functioning efficiently in this respect. In contrast almost half of the NCPs questioned found that Integrated Projects were efficient.

The large scale nature of projects was assessed as setting more obstacles than incentives by most (8 out of 10) when asked about **Networks of Excellence**.

Positive statements were given by NCPs in relation to questions about **“new and emerging sciences and technologies”**, to **interdisciplinarity** and with respect to facilitating **cross-boundary** activities. With regard to FP6s ability to stimulate **transnational and regional** involvement there were very few negative statements.

The majority of NCPs interviewed did not find FP6 efficient in **reaching young researchers**, and very little efficient with respect to **reaching SMEs**. FP5 was evaluated as better than FP6 in reaching SMEs. 2 out of 3 stated that FP6 was not attractive to industry and half of them were of the opinion that FP6 was not as attractive to industry as FP5.

The **Visibility** of FP6 was by the majority perceived as better than FP5’s (2 out of 3), and the **announcement** of calls was perceived as better than that of FP5 by 4 out of 10. **Dissemination** of FP6 was assessed as being good or very good by 2 out of 3, and all in all transparency was considered to be good by more than half of the respondents. Only 1 out of 7 said that it was not so good.

Knowledge on the function of article 169 is extremely limited among NCPs.

Increased **management autonomy for consortia** was considered good or acceptable by 7 out of 10, but still some of the NCPs found it not satisfying.

The NCPs in the survey had divergent opinions on the **legal and financial security** and hence no pattern can be found to explain their differences in perceptions.

All in all the **efficiency** of FP6 was found good or acceptable by 2 out of 3 and so was the **effectiveness** of FP6.

Nation-specific differences

Focusing on differences between countries we find a clear pattern in NCPs from Candidate Countries being more active than NCPs from the old member states in particular in helping searching for partners. NCPs from the Candidate Countries indicate that more of them have received positive remarks from policymakers than the NCPs from the old member states; but besides that

they are as critical as NCPs from the old member states. A few aspects are remarkably stronger emphasised among NCPs from Candidate Countries, and that is: more care for the ethical perspectives, more care for gender perspective, more care for science and society. Finally, the flexibility in national programmes in Candidate Countries is not as great as indicated among the NCPs from the old member states. They are in addition more positive in their perception of the dissemination process and the efficiency in general.

Other differences

Focusing on the thematic priorities of FP6, cross-cutting activities, activities for strengthening and structuring the ERA, specific activities and other aspects of FP6 we can identify the following differentiated patterns between areas of activities:

The general perception of FP6 instruments among those having **food quality and safety** as their area of responsibility is that the instruments are "very efficient" and that the new instruments are good in addition to the traditional. FP6 also offers greater opportunities for a broader and deeper cooperation in broader areas than FP5, according to these national coordinators. Both Networks of Excellence and Integrated Projects provide greater incentives than obstacles to participating in FP6. FP6 is assessed as efficient in promoting transnational-regional cooperation, interdisciplinarity, cross-boundary research activities and NEST. FP6 is also more efficient than FP5 in promoting cooperation between the public and private sector and in reaching out to new research environments. Focusing on the different sectors, the NCP are of the opinion that the attractiveness for public researchers is greater than for industry and especially very little attractive for SMEs. Aspects of FP6 such as transparency, dissemination, legal and financial security, efficiency and effectiveness, and increased management autonomy for consortia have been characterised as good or especially on the issue of management autonomy as very good by those having food quality and safety as their area of responsibility.

The perception within NCP being responsible for the thematic area **Information Society Technology (IST)** is as regards the attractiveness of the new instruments that it is not functioning well for SMEs and that FP6 not as attractive as FP5, while the attractiveness for public researchers is perceived as very much the same as FP5. According to NCPs responsible for information technology FP6 is not as attractive for industry (but one respondent has the opposite view) as FP5 or that FP6 is not very different from FP5 in this perspective. The general perception is that the opportunities that FP6 provides for a broader and deeper cooperation in broader areas are not greater than in FP5. At the same time the NCPs underline that it is too early to evaluate FP6. The new instruments are not efficient and the obstacles to participating in FP6 are greater than the incentives. Reaching out to new research environments has not been a success and the cooperation between the public and private sector has not been enhanced. However, they agree

that transnational-regional and NEST activities as well as interdisciplinarity have been stimulated. Aspects of FP6 such as transparency, dissemination, legal and financial security, efficiency and effectiveness, and increased management autonomy for consortia have been characterised as good or acceptable by these NCPs.

The new instruments are according to the NCPs having **nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes** as area of responsibility attractive to public researchers, some industry but not to SMEs, according to the experiences of NCP with this area of responsibility. FP5 functioned better for SMEs than FP6. Integrated Projects provide greater incentives than obstacles to participating in FP6. Networks of Excellence, on the contrary, create more obstacles to participation. In general, the opinion is that there are many obstacles to participation in FP6. But due to the adaptation of the interpretation of the instruments the attractiveness to industry is perceived as improving. However, the general impression is that FP6 offers greater opportunities for a broader and deeper cooperation in broader areas than FP5, and that the New Instruments are efficient in promoting interdisciplinarity and NEST. The perceptions on the efficiency with regards to transnational-regional cooperation and cross-boundary research are divided. FP6 is also more efficient in reaching out to new research environments according to these NCPs.

The experience of NCPs responsible for **Industry, SMEs and Innovation** is that the attractiveness of FP6 is not functioning well for any of the sectors even though FP6 offers equal or greater opportunities for a broader and deeper cooperation in broader areas than FP5. But there are many obstacles for participating in FP6 that are greater than the incentives. Integrated Projects have functioned well while NoE create more obstacles than opportunities. FP6 has been proved good in reaching new research environments and stimulating transnational-regional cooperation as well as interdisciplinarity, cross-boundary research and NEST activities. Perceptions on FP6 stimulating cooperation between public and private sector are divided from very positive to very negative. How FP6 is functioning with regards to transparency, dissemination, legal and financial security, efficiency and effectiveness, and increased management autonomy for consortia have been characterised as very good, good and acceptable by those responsible as contact points for this theme.

The perception among those functioning as national contact points for **Science and Society** is that FP6 is functioning better or equally good as FP5. However, this horizontal theme is perceived as more attractive for public researchers than for industry and SMEs. Of the totality of respondents only little more than half of them responded that the European programmes care more for the interplay between science and society than national programmes. The care for **gender** perspectives was perceived as much greater than at national level by 4 out of 10 and additional 4 said somewhat.

With respect to the **ethical perspective** it does not make any difference according to 4 out of 10 albeit other 4 out of the 10 said that there is much or somewhat more care on the ethical perspectives in European compared to the national programmes.

Within the other thematic areas there are too few NCPs within the material collected to make a detailed analysis. Their responses are included in the general overview.

The dominant perception among NCPs is that it is **much easier to apply to national research programmes than to European**, and it is also the perception that European programmes are less flexible than national programmes.

7. Conclusion

European research policy is operating in a rapidly changing social, environmental and technological context, bringing a range of challenges for European research. Framework Programmes are attempts to meet these challenges. With FP6 the Commission has launched by far the most ambitious Framework Programme in the history of the EC.

The overall implementation of this programme has been carried out in an efficient fashion and actions to address problems have been undertaken. In general, the transition has been better than the troublesome one from FP4 to FP5.

Nonetheless, ambition and change always comes at a cost. This report recognises the scope of and the visions behind FP6, but also attempts to address the problems in relation to the transition between the two very different programmes FP5 and FP6. Only by focusing on the difficulties it will be possible to further improve the system in the future.

The appropriateness of the instruments

The objectives of the New Instruments are valid, and their design is compatible with the idea of establishing a European Research Area. The New Instruments will accordingly be maintained during FP7. However, the definition and application of these instruments has led to some dissatisfaction among the European research community. Both the Commission and the different panels recognize that the STREPs remain popular among SMEs, young research teams and researchers in the new EU Member States. While the proportion of resources allocated to the New Instruments compared to the traditional instruments (which favours the former) has been in line with the objective of structuring and integrating the European Research Area (ERA), the Commission does offer the prospect that 'the proportion of financial resources allocated to STREPS could be increased in certain priority thematic areas.'

The efficiency of management processes

The management problems acknowledged during the implementation of FP5 have not yet been fully solved in relation to FP6. The launch of FP6 has in particular led to problems in relation to the dissemination of information, where inconsistency and lack of clarity have created confusion, and in relation to the negotiation process, where the time to contract duration still needs to be reduced, and where the legal and financial requirements need to be simplified. The evaluation of proposals are in general perceived as good, but also here there are room for improvement at certain points.

Incentives and barriers to participation

One of the main issues prior to the launch of FP6 was a concern that the New Instruments would raise the barriers for participation for important target groups. This concern proved to be justified, as the participation from industry

(in particular the SMEs) and Candidate Countries turned out to be lower than expected. The ambition to increase the impact through substantial funding of fewer projects tends to exclude new approaches, higher scientific risk and emerging research groups. There are furthermore specific barriers to participation for industry in general, for SMEs in particular, for all types of participants from New Member States and Candidate Countries, and for smaller and emerging groups of scientists. This has so far been a major problem in connection to the implementation of FP6.

Effectiveness

It is still too early to conclude about the overall effectiveness of FP6. But in terms of effectiveness in reaching out and activating the European research community the results of the first round of calls indicate a high degree of effectiveness. This is particularly valid in relation to academic institutions and Public Research Institutes. There is a high level of interest among the research community in the opportunities presented by FP6, and the Commission concluded that the average quality of proposals has been good, that the coverage of the work programmes is very satisfactory and that excellent partnerships in key areas of research have been supported. All in all the Commission sees a clear movement towards greater critical mass.

With regards to long term effectiveness in terms of outcome and impact a time horizon of 5 to 10 years must at least be expected before these factors can be evaluated in their full range.

Follow up of previous recommendations

The analysis of consecutive monitoring reports in FP5 and FP6 and the Marimon Report shows that the Commission often responds by pointing out that work on a specific issue is in progress, studies are being prepared, discussion papers are to be published, or expert groups and panels will be formed. This is partly due to the fact that many recommendations are of a strategic nature and could only be picked up in the context of the next FP. Organisational inertia, work overload and legal constraints prevent the Commission from addressing many of these issues from one year to another. These organisational changes apparently need a long preparation time.

However, in relation to the FP6 recommendations and conclusions formulated by the Marimon panel, the Commission emphasises that many "corrective measures" have already been adopted. The Commission undertakes the task to continue the implementation of these "corrective measures", to strengthen them where necessary and to adopt additional measures as and when required. The Commission will follow up implementation of all these "corrective measures" so as to be able to assess their effectiveness and make adjustments where necessary. However, the Commission also recalls that "corrective measures" incompatible with the existing legal framework can be provided for only in FP7.

Finally it should be mentioned that this report coincides very much with the beginning of the implementation of FP6. The first calls for proposals were issued on 17 December 2002 and the first proposals were received in March 2003. Accordingly, the evaluations and monitoring of the programme, which are the foundation of this report, have been carried out during the year in which most Integrated Projects and Networks of Excellence were launched. The period reviewed is therefore only to a relatively limited extent representative of the full term of a Framework Programme. Furthermore, as this was the first implementation of the New Instruments, the Commission's departments and the participants had to familiarise themselves with the new concepts. The Commission expects that the need for clarification, which has arisen will decrease over time as the Framework Programme is fully implemented.

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