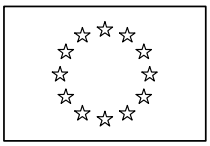

COMMISSION OF THE EUROPEAN COMMUNITIES

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# COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

## On the progress made under the Seventh European Framework Programme for Research

{SEC(2009) aaa}

**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**On the progress made under the Seventh European Framework Programme for Research**

## 1. INTRODUCTION

Scientific research drives the production and exploitation of knowledge, it generates ideas and solutions that foster economic growth, competitiveness and employment and it helps address long-term challenges, such as climate change and population ageing The overarching objective of the Seventh Framework Programme for Research[1] (FP7) is to help build the European Research Area, a European internal market for researchers, scientific knowledge and technology which increases scientific and technological excellence through more competition, more coordination of research activities, and more focus of programmes and policies on major societal challenges With its scientific and technological priorities focused on sustainable development, FP7 is central to the implementation of the Lisbon strategy, to support Europe's sustainable growth in a globalised economy and to transform it into a dynamic and low-carbon knowledge-based economy responding to society's needs.

The long-term challenges we faced before the crisis have not disappeared, and the Lisbon strategy goals are more valid today than ever. It is time to boost, not cut, spending on research and innovation, both to face these challenges and to lay the basis for recovery.

This report assesses progress in implementing FP7 and what remains to be done to fully reach its original objectives. It fulfils a legal obligation of the EC FP7 Decision[2] and provides a basis for the 2010 Interim Evaluation of the programme[3]. The accompanying Commission Staff Working Document provides more details on the topics covered.

## 2. THE START OF AN AMBITIOUS AND COMPLEX ENDEAVOUR

FP7 is considerably bigger in size and scope than the previous FP6 programme. It combines continuity with novelty. Well-proven elements of FP6 are continued, such as the Marie-Curie fellowships, support to European Research Infrastructures and EURATOM activities, and the funding of the Joint Research Centre (JRC) as a provider of robust and independent scientific and technical support for EU policies. At the same time, FP7 introduces novelties and radical innovations in both content and implementation, which require simplification and management changes.

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1 Two Seventh Framework Programmes under the EC and Euratom Treaties (together called "FP7") started in 2007. For information on the FP7 objectives and structure as well as on its implementation up to now, see e.g. the Annual Reports 2007 and 2008 at http://ec.europa.eu/research/index.cfm?pg=reports.

2 Art. 7(2) OJ L 412, 30.12.2006, p. 1.

3 This Report benefits from the opinion by the European Research Advisory Board (ERAB) of February 19, 2009, reproduced in annex to the Staff Working Document.

The available evidence for 2007 and 2008 indicates that FP7 had a good start:

- The response of the scientific community to its calls for proposals shows a strong demand for Community research. Nearly 36.000 proposals were received, and over 5.500 proposals were selected for funding. The overall participation rate is at 21.7 %, taking into account two-stage application procedures.

- The quality of the evaluation process is recognised, with 91% of the evaluators stating that the quality of the evaluation process was similar to or better than national evaluations in which they participated.

The novel approaches embodied in FP7 seem to be paying off:

- The success of the European Research Council is evident from the more than 11.000 proposals received for the first call. Already over 500 frontier-research projects have started in prestigious research institutions across Europe resulting from the first calls of the ERC Starting Grant and ERC Advanced Grant schemes.

- Five large-scale public-private partnerships – Joint Technology Initiatives (JTI) – have been set up, each as an independent legal entity under Article 171 of the EC Treaty: Innovative Medicines (IMI); Embedded Computing Systems (ARTEMIS); Clean Sky; Nanoelectronics (ENIAC) and the Fuel Cells & Hydrogen (FCH) JTI. ARTEMIS and ENIAC have launched projects from their first calls and have just published their second calls. The other JTIs have launched their first calls for which evaluation and selection of first projects are underway.

- Demand for the new Risk Sharing Finance Facility (RSFF) has been strong since its launch in June 2007, with 30 RSFF operations approved and the value of signed loans reaching EUR 2 billion by the beginning of 2009.

- Two agencies - the Research Executive Agency and the ERC Executive Agency – have been set up to ensure efficient management of a continuously growing FP7 budget without direct staff increases in the Commission.

- Progress has been made in simplifying participation in FP7: A new Guarantee fund has made most ex-ante financial viability checks obsolete; a Unique Registration Facility allows one-off submission of legal documents, and audit certificates and ex-ante financial capacity checks have been reduced by a factor of ten compared to FP6.

Some issues deserve further attention and reflection:

- The adjusted overall share of SMEs participation in retained proposals under the specific programmes "Cooperation" and "Capacities" is around 11% in terms of requested EC contribution.

- Below average FP7 participation rates for most new Member States are balanced by higher financial contributions: EU 12 participants obtained almost 5% of the total requested FP7 contribution, compared with a 2.8% share of EU12 in the total EU27 intramural R&D expenditure.

## 3. PROGRESS TOWARDS ACHIEVING FP7 OBJECTIVES

### 3.1 Realising the European Research Area

In December 2008, Member States adopted their joint vision of the European Research Area (ERA) in 2020[4]. Through the "Ljubljana process", they committed to a process of working together to realise this vision, in mutual partnership and with the Commission. The vision of ERA is one which offers the right conditions and incentives for high-impact research and R&D investments, adding European value by fostering healthy competition for excellence, especially between researchers; allowing researchers, scientific knowledge and technology to circulate freely ('fifth freedom'), while supporting coordination between research funders and cooperation between industry and academia.

FP7 acts as a catalyst in the efforts towards the realisation of the ERA through 4 specific programmes with each having a specific mission:

**COOPERATION programme: Gaining EU leadership in key S&T areas through supporting R&D collaboration and open innovation**

The collaborative research instruments of the Cooperation programme enable industry and academia to collaborate in an 'open innovation' environment, contributing to the free circulation of knowledge and technologies. The European added value and structuring effects with respect to ERA are decisive criteria for choosing the priority topics, independent of the size and scope of the instrument. While smaller scale R&D projects may serve individual research teams or specific policy needs, FP7 recognised the need for a more strategic approach for gaining science and technology leadership and for structuring ERA, moving to larger programmes and strategic initiatives with wider scope and critical mass: the 'Joint Technology Initiatives' (JTIs) and public-public partnerships, so-called Article 169 initiatives through which the EU participates in R&D programmes jointly undertaken by Member States.

JTIs embody an innovative approach to public-private partnerships, but their establishment as 'community bodies' has been long and tedious. It is too early to judge whether JTIs will have the expected impact in terms of advancing EU technology leadership in key areas, but they seem promising for leveraging EU research investments, in a more simplified framework, in the future. Three new Article 169 initiatives were launched in FP7: Ambient Assisted Living (AAL), EUROSTARS[5] and European Metrology Research Programme (EMRP). Taking into account the experience and lessons learnt with the first Article 169 initiative in FP6, the European and Developing Countries Clinical Trials Partnership (EDCTP), and building on the ERA-NET schemes, such common endeavours between national programmes are proving their worth, also in view of possible future initiatives to jointly implement programmes.

**IDEAS programme: Stimulating the creativity and excellence of European Research**

The European Research Council has become a highly visible and influential component of the European Research Area. With a budget of roughly €7.5 billion over a 7 years period it provides stable support to frontier research in Europe with a critical mass only achievable at EU level. In recognition of benefits coming from Europe-wide competition, a number of EU

[4] ERA Vision 2020 adopted by the Competitiveness Council on 2 December 2008, see doc 16767/08

[5] The BONUS proposal to be tabled before end of 2009.

Member states have already decided to award national grants to non awarded high performers in the ERC grants evaluation process.

At the core of the achievement has been the establishment of the independent Scientific Council composed of eminent scientists. It has autonomously shaped the scientific strategy for frontier research in Europe and, in partnership with the Commission, set up structures and mechanisms to implement investigator-driven grant schemes in all fields of research based on the sole criterion of excellence.

Despite having coped with the challenges that are inherent in launching an institutional operation of such scale, there is no room for complacency. During 2009, the transition of the implementing structure into the ERC Executive Agency must be completed. An independent review of the ERC should objectively look into the extent of this apparent early success and help in identifying further improvements. This should contribute to the ERC's durable success as one of the most important components of a true European Research Area.

**PEOPLE programme: Strengthening the human potential of European research through 'brain circulation'**

Application numbers in the first calls demonstrate that the Marie-Curie fellowships offered by the PEOPLE programme remains as attractive as ever, contributing to a balanced "brain circulation" both at European and global levels and the creation a high-quality and mobile European R&D workforce. However, the use of industry-academia fellowships could be improved by better communicating opportunities to industries and SMEs.

**CAPACITIES programme: Enhancing the research and innovation capacity in Europe**

All actions under the Capacities programme are in heavy demand, notably those supporting research for SMEs and SME associations.

The limiting factor in building the 44 priority infrastructure projects of strategic European interest identified by the 'European Strategic Forum on Research Infrastructures' (ESFRI) are a lack of Community and national resources, and the insufficient integration with other financial instruments (EIB, Structural Funds). The adoption of new legal framework for European Research Infrastructures should provide a further boost and financial planning security. The most advanced international network in the world, GEANT, implemented an innovative hybrid networking technology and a range of user-focused services, enabling worldwide research collaboration. Together with GEANT, the EGEE (Enabling Grids for E-Service) e-Infrastructure enables scientists to access computational resources all over the world.

The "Research potential" and "Regions of knowledge" activities provide value in building scientific capacity across regions, particularly in convergence regions, but seem to lack budget for having a sizeable impact, in particular in the New Member States. Better and more targeted use of Structural Funds, which have in the period 2007-2013 earmarked for research and innovation a budget of approximately the same size as FP7, could in synergy with FP7 objectives and instruments do much more to raise the level of scientific and technological excellence across the EU.

Efforts to build a European level partnership between research and society have been strengthened. A new funding scheme is enabling Civil Society Organisations to participate in

FP7 and Societal Platforms are developing research agendas, for example on issues like socially cohesive urban settings.

In the context of the ERA, FP7 contributes to the development of more coherent and coordinated research policies in Europe through the support to the Open Method of Coordination and to the development of ERA partnerships under the Ljubljana process.

### 3.2 Contributing to sustainable development

One of the key objectives of FP7 is to contribute to sustainable development, responding to the needs of industry and society and, in coherence with other policies and instruments, to bring about a low carbon knowledge-based economy.

**Responding to interdisciplinary challenges, societal needs and policy priorities …**

FP7 strongly focuses on addressing societal challenges and responding to the policy priorities of the Community. In the first two years of FP7 this resulted in 44% of the cooperation programme's budget being allocated to interdisciplinary research supporting the renewed **sustainable development strategy,** mainly through the environment, energy and food, agriculture and biotechnology themes, and including the "Clean Sky" and the "Hydrogen and Fuel Cells" JTIs as key elements.

FP7 plays an important role in addressing **environmental challenges**, notably in the context of the Climate Action and Renewable Energy package. This includes issues like biodiversity, disaster reduction and earth observation.

Responding to the challenges of **health and demographic change,** FP7 has supported the development of novel tools and services to manage medical knowledge and deliver new ways of healthcare in particular through the Health programme (and notably the Innovative Medicines JTI), the ICT for Health programme, the e-Health lead market initiative, the Ambient-Assisted-Living programme and ICT for Ageing Well.

FP7 has substantially increased its efforts to address **security challenges**, for example by funding initiatives in the field of bioterrorism, both to deliver the technologies to respond to incidences but also to understand the psychological dimension and preparedness which are important elements of prevention, crisis and after-crisis management.

FP7 is responding to **inter- and multidisciplinary challenges** cutting across areas such as environment, energy, transport, and biotechnology - for example in launching a cross-thematic call for proposals on biorefineries[6] - and in helping to establish and to start implementing a European Strategy for Marine and Maritime Research. Efforts to gain a better understanding of the underlying factors shaping societal and economic development in Europe are complementing pure technological research. Support for socio-economic sciences and humanities produces evidence for developing new policy options (as for example in the case of the recent financial crisis).

Joining forces, pooling resources and developing joint strategies through **'joint programming'** is seen as a way ahead for dealing more effectively with major societal challenges. The Strategic Energy Technology (SET) Plan can serve as a model, by delivering processes and tools for more effectively engaging governments, industry and the research

[6] OJ 2008/C 226/06.

community, through a Steering Group of Member States, European Industrial Initiatives and the establishment of the European Energy Research Alliance, respectively – all based on a coherent strategic European research agenda.

**…while addressing the needs of the real economy …**

FP7 has seen a renewed commitment to meeting the needs of industry, in particular through the cooperation with European Technology Platforms (ETPs). The 36 existing ETPs help to coordinate and pool R&D efforts in particular in the thematic areas with high industry participation, such as ICT, Nanotechnologies, Energy, Transport and Space. Through cooperation with Member States and via National Technology Platforms, ETPs bring about a structuring effect that goes well beyond the Framework programme[7]. In some cases, they have resulted in the establishment of JTIs.

Progress in reaching the 15% target for SME participation has been below expectation. With tailor-made SME support schemes, such as the newly launched EUROSTARS initiative addressing research-intensive SMEs, possibly becoming more attractive, the usefulness of targets and of the current SME instruments deserves further analysis and reflection.

The new Risk Sharing Finance Facility (RSFF), jointly funded by FP7 and the European Investment Bank and providing loans for high-risk R&D investments, experienced strong demand from industry, in particular mid-sized companies. Current loan operations cover energy, ICT, life sciences and automotive companies in 14 European countries and will be further extended in 2009.

**… and fully exploiting EU's R&D potential by optimising coherence and synergy between policies and instruments**

In the face of competing priorities, it is more important than ever to stress the value of Community research in attaining the EU's objectives of sustainable growth and jobs. Exploiting the full EU research potential, however, can only be achieved through a better coherence and coordination between policies and instruments related to research, innovation and education, at national and EU level, and in particular between the Community funding instruments, including the Competitiveness and Innovation Programme (CIP), the Education and Life-Long Learning programmes and the Structural Funds. Such coordination should intervene both at the phase of their design as well as during their implementation.

Europe is still lagging behind when it comes to transforming knowledge and research results into innovative products and services. Barriers to the free circulation of knowledge and technologies and the products in which they are embedded need to be removed, and demand side measures such as standardisation, public procurement and regulation can help the emergence of markets for innovative products that respond to the needs of society ('lead markets')[8].

A continued challenge, particularly in the current crisis, is to balance the need for short term actions that boost demand with "smart" R&D investments which reinforce Europe's move towards a low-carbon knowledge-based economy. This is emphasised in the context of the

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7 ftp://ftp.cordis.europa.eu/pub/technology-platforms/docs/evaluation-etps.pdf

8 COM(2009)116: A Strategy for ICT R&D and Innovation in Europe: Raising the Game

European Economic Recovery Plan[9]: by investing in energy efficiency to create jobs and save energy; clean technologies to boost sectors like construction and automobiles in the low-carbon markets of the future; and infrastructure and inter-connection to promote efficiency and innovation.

### 3.3 Opening EU research to the world

Major global challenges such as climate change, poverty, infectious disease, threats to energy, food and water supply and security of the citizen highlight the need for effective **international research cooperation**. FP7 aims to support joint research activities in areas of common interest that are of benefit to both the EU and third countries through a variety of new schemes such as Specific International Cooperation Actions, targeted open calls, 'twinning of projects' and coordinated calls at programme level. International cooperation activities are thus better integrated into the whole programme and no longer treated as a separate activity.

The newly developed European Strategic Framework for International S&T Cooperation stresses the need for a strengthened partnership between Member States and the Community if we are to contribute effectively to stability, security and prosperity in the world. The framework facilitates the opening of ERA to the world by integrating Europe's neighbours into the ERA through association to FP7, by fostering co-operation with key third countries through geographic and thematic targeting, and by improving the framework conditions for international S&T co-operation, such as for global research infrastructures, the mobility of researchers, mutual opening up of research programmes and intellectual property rights.

Science and engineering provide many solutions for poverty reduction and socio-economic development in Africa. The Africa-EU Partnership on Science, Information Society and Space[10] provides the basis for combining development and research funding from European and national sources around projects which respond to needs identified by the African Union and its member states.

The **International Thermonuclear Experimental Reactor** (ITER) represents a major step towards the demonstration of viability of provision of clean and plentiful energy through nuclear fusion technology. As a unique and truly collaborative global project it also represents an important and challenging test case for conception, management and financing of international large scale scientific infrastructure.

### 3.4 Improving Management, Control and Simplification

The fundamental management objective of FP7 must be to maximise the research impact of each Euro invested (performance), whilst providing assurance that research funding complies with the rules (legality and regularity) and ensuring that the financial impact of errors is minimised (correction). Although not mutually exclusive, there are trade-offs between these objectives and achieving the right balance between them and between the limited resources allocated to each is critical to the success of the programme.

Performance of the programme is guaranteed by highly competitive calls and by their independent scientific evaluation. Management processes, procedures and tools need to be

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[9] COM(2008)800: A European Economic Recovery Plan

[10] http://ec.europa.eu/development/icenter/repository/EAS2007_action_plan_science_en.pdf

simple and effective to ensure responsible and accountable investment of Community funds and to avoid administrative burden. In addition to achievements outlined in section 2, progress towards simplification is evident:

- Cost reimbursements are being simplified through gradual introduction of flat rates and lump-sums, with actual cost reporting retained where beneficiaries say that this is simpler.

- Average personnel costs methodologies are being progressively introduced. This is a very important step as personnel costs remain the principal cause of errors. However, their use will only be possible for a limited number of beneficiaries in a first pilot phase.

- Documentation has been streamlined and harmonised across the entire programme, and new electronic tools facilitate the negotiation of contracts.

- Frequency of reporting has been reduced and a web-based system for collecting financial reports has been launched.

- Clear written guidance and a helpline are available to help beneficiaries avoid the most frequent errors.

But simplification can take place only within the given legal context, in particular the Communities' Financial Regulation, and Rules for participation and dissemination. As it cannot change these rules itself, the Commission's efforts outlined above focus on removing administrative hurdles, streamlining procedures and providing clear guidance. While these incremental changes go in the right direction, there is a growing recognition that real and substantial simplification will require changing the rules themselves[11], while keeping errors in transactions at an acceptable level. This will entail:

- Agreement of all actors concerned on the proper balance between accountability and risk-taking. The European Research Advisory Board has called upon the European Parliament and the Council to enable a risk-tolerant and trust-based approach in research funding. The Commission has launched proposals to achieve this into inter-institutional debate in its Communication "Towards a common understanding of the concept of tolerable risk of error"[12] and intends to put forward a detailed tolerable risk analysis, inter alia, for the Research policy area in 2010 should there be sufficient encouragement from the Budgetary Authority.

- A substantial review by the legislative authorities of the Community financial rules relating to framework programmes in the future. This should pave the way to greater clarity and fewer burdens, but also enable effective operation of the new instruments, which provide the basis for a more strategic approach to research programme management.

A Commission Communication is planned for 2010, which would be the occasion for reflecting on these issues.

The EU's research agenda is increasingly geared towards reaching policy objectives which relate to wider economic, societal and environmental challenges. Alternatives to direct

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[11] Report on the Ex-post evaluation of FP6: http://ec.europa.eu/research/reports/2009/pdf/fp6_evaluation_final_report_en.pdf

[12] COM(2008)866.

management should therefore be considered in order to increase the leverage and structuring impact of EU research policy and the associated funding in support of the EU's overall policy objectives. The two agencies created to implement parts of FP7 - the Research Executive Agency (REA) and the ERC Executive Agency - have enabled the increased budget of FP7 to be managed efficiently without direct staff increases in the Commission. They will fully assume their responsibilities during 2009. Evaluations of these agencies will contribute to further optimise their operation, in order to allow for the management of far larger research budgets whilst separating project and financial management from policy making. More emphasis may also need to be given to approaches which aim to increase the structuring effect of financial support in partnership with stakeholders and Member States, such as in the case of joint technology initiatives and article 169 investments.

## 4. CONCLUSIONS

The 7th Framework Programme is adapting to help the EU meet its goals of creating a low carbon, knowledge-based society. It seeks to increase its leverage effect on public and private R&D investment and to diversify its instruments in order to maximise European added value.

FP7 remains a crucial instrument to promote scientific excellence and technological development, responding to EU policy priorities and the needs of industry and society. The current adverse economic context underlines its importance even more. FP7 contributes to sustained research efforts, both private and public, as exemplified in the public private partnership initiatives for green cars, energy efficient buildings and factories of the future launched as part of the European Recovery Plan.

In order to obtain advice for further improving and possibly adapting FP7, the Commission will be seeking advice from an independent expert group, which will undertake an **Interim Evaluation of FP7**. Their mandate should be adopted in autumn 2009, and the evaluation should be completed in the autumn of 2010.

The analysis and the specific issues presented in this Communication and its accompanying staff working document provide a basis for the forthcoming Interim Evaluation and further political discussions in the Council, the Parliament and with stakeholders. These should address the following key questions:

- How can the impact of FP7 and future FPs on shaping the European Research Area be improved?

- Are the novel measures (ERC, JTIs, Article 169, RSFF) efficient with respect to reaching their intended objectives?

- How can the impact and added value of collaborative research that cuts across scientific disciplines, industrial sectors and policy fields be further enhanced with a view to better address large societal challenges?

- Does FP7 play an adequate role in positioning Europe on the global map of science and technology?

- To what extent have simplification measures been effective? Will further steps create the desired results or do we need to consider radically new approaches?

The findings of this Interim Evaluation will not only be relevant for a possible revision of FP7, but also be of great influence on the emerging debates on future financial frameworks of the European Union, the post-2010 Lisbon strategy and the next Framework Programme.

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**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**On the progress made under the 7th European Framework Programme for Research**

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# 1. INTRODUCTION

## 1.1. Context

This Commission Staff Working Document, together with a Communication from the Commission[1], constitutes the FP7 Progress Report. The FP7 Progress Report provides initial findings on the effectiveness of the new actions initiated under the 7th Framework Programme for Research[2] (FP7) and of the efforts made with regard to simplification, but also aims at going beyond by sketching a road map in view of mastering the challenges ahead. It responds to the legal obligations included in the FP7 Decision and provides a basis for the Interim Evaluation of FP7 to be undertaken in 2010.

While the Communication provides a summary of highlights and challenges, this Commission Staff Working Document presents a detailed assessment of the implementation and the achievements of FP7 so far.

## 1.2. Structure, Coverage, Indicators

This Commission Staff Working Document is structured along the lines of the new FP7 Monitoring System. The FP7 Monitoring system marks a relevant change in the field of Framework Programme monitoring. It is based on a core set of performance indicators addressing a broad spectrum of implementation issues. The FP7 Monitoring system is intended to cover all activities under the Framework Programme, with direct (in house) research actions carried out by the Joint Research Centre (JRC)[3] being the only exception. The coverage is predominately for implementation issues and in a more limited way (reflecting data availability) research outputs.

The core of the new monitoring approach involves the selection of key indicators on priority and sensitive issues. Taken together, these are expected to provide a clear snapshot of the effectiveness and efficiency Framework Programme implementation, as well as the level and quality of output. The list of indicators and sub-indicators applied for the FP7 monitoring system is presented in Table 1. Further details can be found in the First FP7 Monitoring Report (Monitoring Report 2007)[4].

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1 [to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions]

2 Two Seventh Framework Programmes under the EC and EURATOM Treaties (together called "FP7") started in 2007. For information on the FP7 objectives and structure as well as on its implementation up to now, see e.g. the Annual Reports 2007 and 2008 at http://ec.europa.eu/research/index.cfm?pg=reports.

3 Monitoring of JRC direct actions is carried out through the Annual Activity Reports (http://ec.europa.eu/atwork/synthesis/aar/doc/jrc_aar.pdf) and by the JRC Board of Governors based on the information contained in the JRC Annual Report.

4 http://ec.europa.eu/research/reports/2009/pdf/first_fp7_monitoring_en.pdf#view=fit&pagemode=none

Table 1: List of key indicators used for the FP7 monitoring system.

| INDICATOR / ISSUE | SUB-INDICATOR | |
|---|---|---|
| **1. Promotion of FP7** | 1.1 | Number of attendees at launch days |
| | 1.2 | Number of information days |
| | 1.3 | Commission organised meetings of NCPs |
| **2. Performance of the calls** | 2.1 | Success rate (overall) by priority area and funding scheme |
| | 2.2 | Success rate for different types of organisation by priority area and funding scheme |
| | 2.3 | Success rate for different types of organisation by priority area and funding scheme & success rates per country |
| **3. Performance of the proposal evaluation and redress procedures** | 3.1 | Overall quality assessment of the proposal evaluators on the FP proposal evaluation process (evaluators survey) |
| | 3.2 | Assessment of quality by the evaluators between the FP evaluation process and other equivalent systems (evaluators survey) |
| | 3.3 | Time to contract/grant |
| | 3.4 | Percentage of experts reimbursed within the specified 45 days |
| | 3.5 | Redress cases upheld (i.e. leading to a re-evaluation) – numbers and percentages |
| **4. Quality of on-going research projects** | 4.1 | Average results of independent project review process by priority area |
| | 4.2 | Percentage of projects by priority area covered by reviews |
| **5. Project performance by outputs** | 5.1 | Average number of project publications per project by priority area and funding scheme |
| | 5.2 | Average number of other forms of dissemination activities per project by priority area and funding scheme |
| | 5.3 | Average number of different types of intellectual property protection per project by priority area and funding scheme |
| **6. FP activity** | 6.1 | Total number of active projects by priority area |
| | 6.2 | Average financial size of projects by priority area and funding scheme |
| | 6.3 | Participation by types of organisation by priority area funding scheme |
| | 6.4 | Participation totals per country |
| **7. Achieving gender equality** | 7.1 | Number of male and female coordinators in proposals |
| | 7.2 | Number of male and female coordinators in projects |
| | 7.3 | Gender breakdown (by seniority) of project participants |
| | 7.4 | Percentage of male and female members in Advisory Groups and Programme Committees |
| **8. Observing sound ethical principles in FP research** | 8.1 | Number of projects going through the review process/ % by area/ programme |
| | 8.2 | Number of ethical reviews where the result showed sufficient or insufficient attention had been given |
| | 8.3 | Number of projects stopped as a results of the ethical review |
| | 8.4 | Number of screenings by services |
| **9. Performance of International Cooperation activities** | 9.1 | Total numbers of participations of 3rd countries by priority area and funding scheme |
| | 9.2 | Success rates of 3rd countries in calls by priority area and funding scheme |
| | 9.3 | EC contribution to 3rd countries |
| | 9.4 | Number of international outgoing / incoming fellowships |
| **10. Simplification of the FP** | 10.1 | Do stakeholders perceive that the FP is getting simpler to use in terms of financial and administrative procedures? |
| | 10.2 | How do stakeholders find the ease of use of the FP compared to similar international research actions and large national schemes? |
| | 10.3 | Are there any aspects of FP procedures which are adversely affecting to a significant extent the quality of research carried out and the quality of participation in the FP? |

This Commission Staff Working Document covers the years 2007 and 2008. It should be kept in mind that at the time of the writing of the report, information on grant agreements resulting from "2008 calls" can only be limited, considering that negotiations related to some of these "2008 calls" are still ongoing. One consequence of the limitations in data availability is that it is not possible to be both informative and consistent in the definition of "2008" throughout the report. Where reference is made to "2008 calls", calls with a "2008 call-ID" are included. Where little or no information is available for 2008, the report refers to the latest available data.

## 2. FP7 IMPLEMENTATION – GENERAL OVERVIEW

### 2.1. Aims and Objectives of FP7

The legislative basis for FP7[5] states that "the overriding aim of the Seventh Framework Programme is to contribute to the Union becoming the world's leading research area. This requires the Framework Programme to be strongly focused on promoting and investing in world-class state-of-the-art research, based primarily upon the principle of excellence in research [...]. The objectives [...] should be chosen with a view to building upon the achievements of the Sixth Framework Programme towards the creation of the European Research Area and carrying them further towards the development of a knowledge-based economy and society in Europe which will meet the goals of the Lisbon strategy in Community policies."

Hence, FP7 is a cornerstone in the European Union strategy to realize the knowledge economy as the best way for Europe to foster sustainable growth in a globalised economy. It plays a fundamental role in stimulating competitiveness and welfare in Europe by being a catalyst in the efforts towards the achievement of the European Research Area (ERA) and the attainment of the 'fifth freedom', i.e. the free circulation of researchers, knowledge and technology within a European 'internal market' for research.

FP7 introduces novel elements relating to both content and implementation. It is endowed with a budget significantly higher than its predecessor (41% increase at 2004 prices), which clearly reflects the importance of research in the broader European political context.

### 2.2. Structure and Novelties of FP7

#### *2.2.1. Structure*

A new structure was designed to capture the broad range of research activities funded by the European Union under FP7. The broad objectives of FP7 have been grouped into four categories: "Cooperation", "Ideas", "People" and "Capacities". For each type of objective, there is a specific programme corresponding to the main areas of EU research policy. In addition, the Joint Research Centre's (JRC) direct actions relating to non-nuclear research are grouped under a specific programme with its own budget allocation. JRC direct actions in the field of nuclear research and the indirect actions supported by the EURATOM 7th Framework for Programme for Nuclear Research and Training Activities comprise distinct strands of FP7. This structure is illustrated in the diagram below.

[5] Decision No 1982/2006/EC of the European Parliament and of the Council of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-2013), OJ L412, 30.12.2006

Figure 1**:** Structure of FP7 – Specific Programmes and Thematic Areas.

| SPECIFIC PROGRAMMES | Thematic areas |
|---|---|
| COOPERATION | Health |
| | Food, Agriculture, and Biotechnology |
| | Information and Communication Technologies |
| | Nanosciences, Nanotechnologies, Materials and new Production Technologies |
| | Energy |
| | Environment (including Climate Change) |
| | Transport (including Aeronautics) |
| | Socio-economic Sciences and Humanities |
| | Space |
| | Security |
| | General Activities |
| IDEAS (ERC) | Starting Independent Researcher Grants |
| | Advanced Investigator Grants |
| PEOPLE (Marie Curie Actions) | Initial Training of Researchers |
| | Lifelong Learning and Career Development |
| | Industry - Academia Partnerships / Pathways |
| | The International Dimension |
| | Specific Actions |
| CAPACITIES | Research Infrastructures |
| | Research for the Benefit of SMEs |
| | Regions of Knowledge |
| | Research Potential |
| | Science in Society |
| | Coherent Development of Research Policies |
| | Activities of International Cooperation |
| EURATOM | Fusion Energy |
| | Nuclear Fission and Radiation Protection |
| JRC (Direct Actions) | Prosperity in a Knowledge Intensive Society |
| | Solidarity and the Responsible Management of Resources |
| | Security and Freedom |
| | Europe as a World Partner |

That structure can be further broken down into the general headings given in the diagram below. In broad terms:

- The "Cooperation" Programme provides project funding for collaborative, transnational research. The programme is organised through thematic priorities such as health, energy, transport etc.

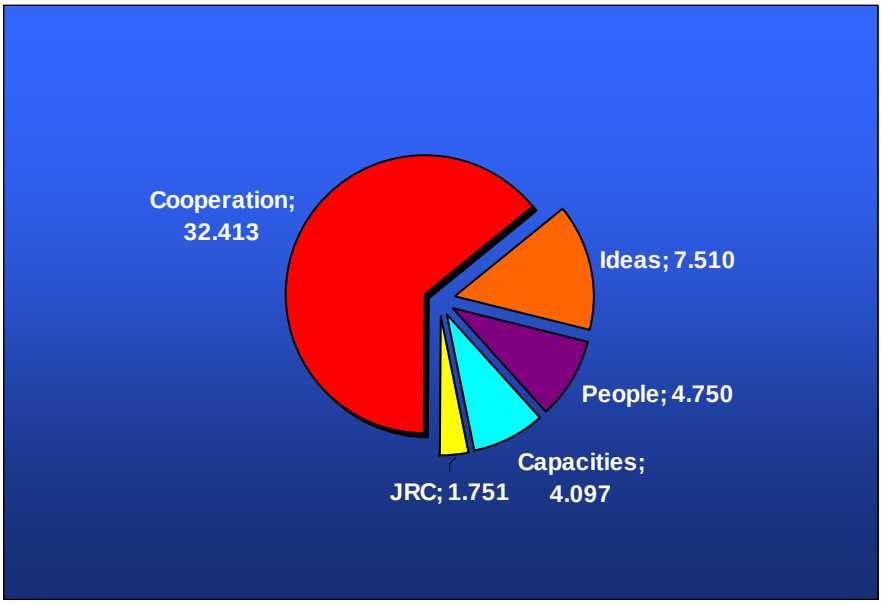
- The "Ideas" Programme provides project funding for individuals and their teams engaged in frontier research. This programme is managed by the European Research Council (ERC).

- The "People" Programme funds actions to improve the training, career development, and mobility of researchers between sectors and countries world wide. It is managed under the Marie Curie programme and also includes specific actions to support the implementation of the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers and researchers' mobility under the umbrella of "EURAXESS– Researchers in motion".

- The "Capacities" Programme funds actions that are designed to improve Europe's research infrastructure and the research capacity of SMEs. It also hosts smaller programmes relating to *Science in Society*, *Regions of Knowledge*, *Research Potential* and *International Cooperation* and the *Coherent Development of Research Policies*.

The budget breakdown for each of these elements is shown below.

Figure 2: FP7 budget breakdown in € million (EURATOM FP budget of €2.7 billion over 5 years not included).




### *2.2.2. Novelties*

FP7 builds on the achievements, good practice and proven instruments of earlier Framework Programmes and there is a good deal of continuity both at an operational level and in terms of strategic objectives. There are, however, some novelties which represent a significant change compared to previous Framework Programmes. These are highlighted below.

The *European Research Council*: The European Research Council (ERC) is the first trans-European funding body set up to support investigator-driven frontier research. It was formally launched in February 2007. Its main aim is to stimulate scientific excellence by supporting and encouraging the very best scientists, scholars and engineers to be adventurous and to take risks in their research. ERC grants are awarded through open competition to projects headed by starting and established researchers, irrespective of their nationality, who are working or moving to work in Europe - the sole criterion for selection is scientific excellence. The aim here is to recognise the best ideas, and retain and confer status and visibility to the best brains in Europe, while also attracting talent from abroad. It currently operates two major grant schemes: The ERC Starting Independent Researcher Grant scheme (for early career researchers) and the ERC Advanced Investigator Grant scheme.

*Joint Technology Initiatives (JTIs)*: JTIs are one of the flagships of FP7. JTIs are public-private partnerships set up at European level in areas where industry-driven research and development can help boost European competitiveness in key areas. They are legally established bodies ('Joint Undertakings'), set up on the basis of Article 171 of the EC Treaty. Strategic Research Agendas have been developed by the JTIs involving collaboration between industry (including SMEs), the research community, civil society organisations and other stakeholders. JTIs arise primarily from the work of European Technology Platforms. In line

with the FP7 Cooperation Specific Programme, Council Regulations have been adopted in the following five areas on the basis of Commission proposals:

- Innovative Medicines Initiative (IMI)
- Embedded Computing Systems (ARTEMIS)
- Aeronautics and Air Transport (Clean Sky)
- Nanoelectronics Technologies 2020 (ENIAC)
- Hydrogen and Fuel Cells (FCH)

*Article 169 Initiatives:* The Article 169 instrument, although introduced already under FP6, can also be considered as a novelty. The first application of Article 69 is the *European and Developing Countries Clinical Trials Partnership (EDCTP)*, launched under FP6. Based on the experience with and the evaluation of the EDCTP the Article 169 instrument is being applied on a broader basis and has found its form under FP7, with two initiatives for joint implementation of national programmes adopted by the European Parliament and the Council in 2008, one awaiting adoption and one proposal to be launched during 2009 (for details, see section 3.1.2). An indicator of the relevance of these new initiatives to the dynamics of the ERA is the variable integration capacity which each of them is able to display. There is real inventiveness in combining national funds for common objectives, which continuously enriches the typology of priority-setting and funding methods between groupings of dedicated countries.

*Redress Procedure*: The quality of Commission evaluations have been consistently rated very highly by the experts who take part (see Section 2.8). In order to ensure that this standard is maintained, and that the evaluation process is consistent with the principles of transparency and equal treatment that underpins all Commission evaluations, a formal redress procedure has been introduced as part of FP7 (see FP7 Rules for Participation[6]). The procedure also has the advantage of formalising, in a more coherent way, the *ad hoc* approaches for dealing with complaints that existed (at least in part) in previous programmes.

*Guarantee Fund***:** The Guarantee Fund is a mutual benefit instrument that establishes solidarity among participants in research projects. It replaces the financial collective responsibility between participants that was a feature of FP6. It aims primarily at covering the financial risks incurred by the Community and the participants during the implementation of the projects. It can be viewed as a kind of insurance contract by the participants in the research project to protect against financial losses that might be incurred. The introduction of the fund also allows the abolition of ex ante financial viability checks for the majority of participants, thereby helping to reduce the overall administrative burden on the research community.

*Risk-sharing Finance Facility (RSFF)***:** It has long been acknowledged that finding private funding sources for R&D projects can be difficult due to a number of factors – the complex products and technologies involved, the market for these technologies and products is often

[6] Regulation (EC) No 1906/2006 of the European Parliament and of the Council of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme and for the dissemination of research results (2007-2013), OJ L391, 30.12.2006

unproven, and the intangible assets underpinning them can be difficult for the financial sector to manage and evaluate.

In response to these difficulties, the European Commission and the European Investment Bank (EIB) have joined forces at the outset of FP7 to set up the Risk Sharing Finance Facility (RSFF). RSFF is an innovative scheme to improve access to debt financing for private companies or public institutions promoting activities in the field of research, development and innovation (RDI). RSFF is built on the principle of credit risk sharing between the European Community and the EIB and extends therefore the ability of the Bank to provide loans or guarantees with a low and sub-investment grade risk profile (involving financial risks above those normally accepted by investors). The facility will create an additional financing capacity of up to € 10 billion in support of eligible RDI activities.

## 2.3. General Participation Patterns

This chapter aims to provide a comprehensive statistical overview of FP7 participation in 2007 and 2008. Data presented here mainly originate from the CORDA data warehouse. Further details can be found in the report *FP7 Subscription and Performance during the first year of implementation*[7].

**Data Collection and Reporting Methods and Data Quality**

The FP7 proposals and participants database contains information on calls for proposals for which validated evaluation and selection data is available centrally and has already been communicated to the respective FP7 Programme Committee configurations. Call-specific evaluation and selection results enter the system almost on a daily basis and are then validated by the responsible Commission services. Commission services cannot be held responsible for the quality and content of applicant-supplied information contained in submitted proposals.

In FP7 the problem of the existence of multiple entries on participants is addressed by the introduction of a 'Unique Registration Facility' (URF) for participants. During the first year of implementation of FP7 this new facility was not globally implemented and, as a result, reported data was still subject to some measurement error.

Information on the type of activity and legal status, including SME status, at the proposal submission phase is provided by the applicant organisation; this information is not verified by Commission services before the proposal is retained for negotiation. This imposes limitations to the reliability of this type of data: The 2nd Progress Report on SMEs in FP7 reports an error rate in the SME self-declared status of 33% in signed grant agreements in 2007. It is also reported that 26,9% of Public Bodies in eligible proposals are SMEs, when it is known that only in exceptional cases can a public body be considered as an SME. It is expected that such inconsistencies will be sorted out with the introduction of more intelligent data acquisition system, such as a revised version of the Electronic Proposal Submission System (EPSS).

Summary statistics on FP7 including proposals, applicants and success rates by funding scheme, applicant activity type and nationality are based on (i) eligible proposal and participants data submitted to single stage calls for proposals and (ii) second stage eligible proposal and participants data for FP7 calls for proposals involving two-stage proposal submission and evaluation procedures, without taking into account data from proposals submitted to the first stage of the calls. First stage proposals are, in most cases, reduced or outline versions of the full proposal and they do not provide data on participants other than the coordinator and, therefore, no meaningful statistics on participant nationality or type of activity can be compiled. Following evaluation, each proposal is associated to an Evaluation Summary Report (ESR) and the resulting evaluation outcome. Those proposals that pass to the second stage of the evaluation are submitted in full together with complete participants' data thus allowing for statistical analysis, and first stage data are overwritten by second stage data. Following the second stage evaluation each proposal is once again associated with the corresponding ESR, evaluation outcome and, finally, an EC decision.

The following limitations in the availability of financial data in "Ideas" and "People" proposals need to be carefully considered when drawing conclusions on the basis of reported statistics: Applicants' data in proposals submitted under the "Ideas" (ERC) and "People" (Marie Curie Actions) specific programmes generally refer to hosting organisations rather than to individual applicants. In proposals submitted under "Ideas" no activity types are specified for the hosting organisations. In proposals submitted under "People" data on total cost and requested EC contribution are generally not provided; the only

[7] European Commission (2008): FP7 Subscription and Performance during the first year of implementation. Brussels. (http://ec.europa.eu/research/reports/2008/pdf/fp7-1st-year-subscription-performance.pdf)

exception is a limited number of "People" related calls for proposals for Coordination and Support Actions (CSA), which contain data on total cost and requested EC contribution both at proposal and applicant level.

### *2.3.1. Overall Participation Patterns*

#### 2.3.1.1. Calls, proposals and grant agreements

This report is based on statistical data on 110 calls for proposals concluded[8] at the time of data extraction (25/02/2009), of which 97 were one-stage calls. These calls attracted 37.698 applications for funding, about two thirds (24.902) of which were submitted to one-stage calls.

Much of the analysis of participation patterns and success rates in this report is based on the dataset of "included proposals". This dataset excludes:

- ineligible proposals, i.e. submitted proposals that do not fulfil the formal eligibility criteria set by the respective calls for proposals;
- duplicates as well as proposals that are withdrawn by the project coordinators;
- in the case of two-stage calls, all eligible first stage proposals.

Almost two thirds (25.419) of all submitted proposals are included and about a fifth (5.520) of these retained for funding negotiations. This led to 3.551 signed grant agreements, or 64,3% of the retained proposals, so far. Figures on signed grant agreements are continuously updated as new grant agreements are added to the CORDA database.

More than a third (13.835) of all proposals were submitted under the Specific Programme "Cooperation". 45,3% (11.514) of all included proposals and more than a third (2.032) of all retained proposals were concentrated in this programme, leading to 1380 grant agreements so far.

The Specific Programme "People" (Marie Curie Actions) received 23,5% (8.857) of all applications and constituted the second most sizeable group of included proposals (7.973 or 31,4% of the total) and the most sizeable group of retained proposals (2.376 or 43,0% of the total). 1304 grant agreements have been signed so far under this Specific Programme.

The Specific Programme "Ideas" (European Research Council) received almost a third (11.350) of all submitted proposals. Only a quarter (2.594) of the applications were included and 467 were retained for funding negotiations. Under this Specific Programme 474 grant agreements have been signed so far.[9]

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8 "Concluded" means that data on the evaluation and selection outcome are available and have already been communicated to the respective FP7 Programme Committees.

9 In this particular case the number of signed grant agreements exceeds that of retained proposal as some grant agreements are drawn directly from the reserve list.

Table 2: Submitted, included and retained proposals and success rates.

| SPECIFIC PROGRAMME | Submitted | | Included | | Retained | | Success Rates |
|---|---|---|---|---|---|---|---|
| | no. | % | no. | % | no. | % | |
| COOPERATION | 13.835 | 36,7% | 11.514 | 45,3% | 2.032 | 36,8% | 17,6% |
| IDEAS | 11.350 | 30,1% | 2.594 | 10,2% | 467 | 8,5% | 18,0% |
| PEOPLE | 8.857 | 23,5% | 7.973 | 31,4% | 2.376 | 43,0% | 29,8% |
| CAPACITIES | 3.545 | 9,4% | 3.235 | 12,7% | 607 | 11,0% | 18,8% |
| EURATOM | 111 | 0,3% | 103 | 0,4% | 38 | 0,7% | 36,9% |
| Total | 37.698 | 100,0% | 25.419 | 100,0% | 5.520 | 100,0% | 21,7% |

Table 3: Signed grant agreements, participants and funding (in € million) by specific programme.

| SPECIFIC PROGRAMME | Number of grants | Number of participants | Project cost | EC financial contribution |
|---|---|---|---|---|
| COOPERATION | 1.380 | 14.704 | 6.912,7 | 4.847,7 |
| IDEAS | 474 | 502 | 671,9 | 671,2 |
| PEOPLE | 1.304 | 2.463 | 455,4 | 451,9 |
| CAPACITIES | 365 | 3.435 | 842,1 | 603,7 |
| EURATOM | 28 | 393 | 141,1 | 77,4 |
| Total | 3.551 | 21.497 | 9.023,2 | 6.652,0 |

### 2.3.1.2. Applicants and budget

Included proposals involved 159.662 applicants and a total estimated project cost of € 66,4 billion with a requested Community financial contribution of € 47,7 billion. After evaluation and selection, the number of applicants in retained proposals was reduced to 34.605, the total estimated project cost to € 14,1 billion and the requested EC contribution to € 10,1 billion – approximately 72% of the total estimated project cost. Signed grant agreements involve 21.497 participants with a Community contribution of € 6,7 billion, of which the lion's share, namely 73% or € 4,8 billion, goes to projects under the Specific Programme "Cooperation".

Table 4: Applicants in included and retained proposals and success rates.

| SPECIFIC PROGRAMME | Included | | Retained | | Success Rates |
|---|---|---|---|---|---|
| | no. | % | no. | % | |
| COOPERATION | 112.616 | 70,5% | 22.859 | 66,1% | 20,3% |
| IDEAS | 3.325 | 2,1% | 548 | 1,6% | 16,5% |
| PEOPLE | 18.959 | 11,9% | 4.794 | 13,9% | 25,3% |
| CAPACITIES | 23.637 | 14,8% | 5.850 | 16,9% | 24,7% |
| EURATOM | 1.125 | 0,7% | 554 | 1,6% | 49,2% |
| Total | 159.662 | 100,0% | 34.605 | 100,0% | 21,7% |

Table 5: Estimated project cost of included and retained proposals and success rates.

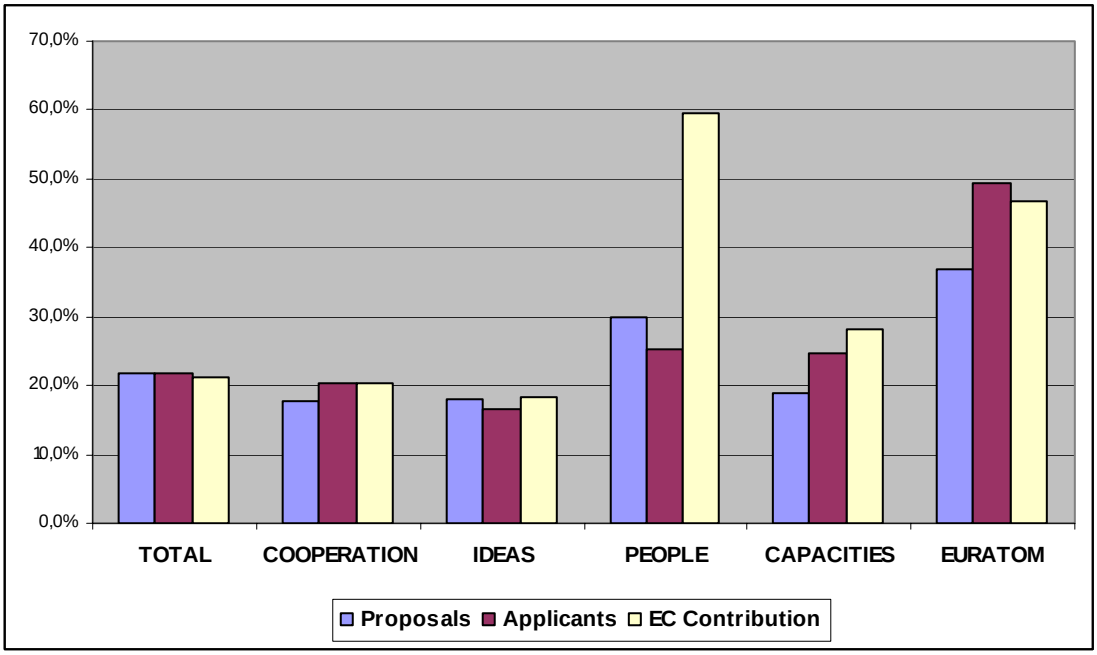
| SPECIFIC PROGRAMME | Included | | Retained | | Success Rates |
|---|---|---|---|---|---|
| | € M | % | € M | % | |
| COOPERATION | 54.684,4 | 82,4% | 11.002,2 | 78,0% | 20,1% |
| IDEAS | 4.918,3 | 7,4% | 883,8 | 6,3% | 18,0% |
| PEOPLE | 21,4 | 0,0% | 13,3 | 0,1% | 62,4% |
| CAPACITIES | 6.293,0 | 9,5% | 1.947,4 | 13,8% | 30,9% |
| EURATOM | 472,9 | 0,7% | 255,2 | 1,8% | 54,0% |
| Total | 66.390,0 | 100,0% | 14.101,9 | 100,0% | 21,2% |

Table 6: Requested EC contribution to included and retained proposals and success rates.

| SPECIFIC PROGRAMME | Included | | Retained | | Success Rates |
|---|---|---|---|---|---|
| | € M | % | € M | % | |
| COOPERATION | 37.776,8 | 79,2% | 7.702,4 | 76,5% | 20,4% |
| IDEAS | 4.780,0 | 10,0% | 868,2 | 8,6% | 18,2% |
| PEOPLE | 16,8 | 0,0% | 10,0 | 0,1% | 59,5% |
| CAPACITIES | 4.852,1 | 10,2% | 1.362,8 | 13,5% | 28,1% |
| EURATOM | 280,5 | 0,6% | 131,1 | 1,3% | 46,7% |
| Total | 47.706,2 | 100,0% | 10.074,5 | 100,0% | 21,1% |

In this report, success rates are calculated as *ratios of retained to included proposals* following the *FP7 Subscription and Performance during the first year of implementation* report[10] as well as the First FP7 Monitoring Report[11]. The overall success rate for proposals submitted under the 110 calls for proposal launched in 2007 and 2008 under FP7 is 21,7%.

Figure 3: Success rates by Specific Programme.




### *2.3.2. Participation by funding Scheme*

Data on FP7 participation is aggregated according to the following funding schemes:

- *Collaborative Projects*, including combinations of Collaborative Projects and Coordination and Support Actions (CP/CP-CSA)
- Networks of Excellence (NoE)
- Coordination and Support Actions (CSA)

[10] European Commission (2008): FP7 Subscription and Performance during the first year of implementation. Brussels. (http://ec.europa.eu/research/reports/2008/pdf/fp7-1st-year-subscription-performance.pdf)

[11] European Commission (2009): First FP7 Monitoring Report (Monitoring 2007). Brussels. (http://ec.europa.eu/research/reports/2009/pdf/first_fp7_monitoring_en.pdf#view=fit&pagemode=none)

- *Research for the benefit of specific groups and Marie Curie Actions* (Support for training and career development of researchers) (BSG/MC)

- Support for frontier research (European Research Council), risk sharing finance facilities and others (ERC/RSFF/OTH)

In retained proposals Collaborative projects have by far the largest share in FP7 budget both in terms of total project costs (83,2%) and requested EC contribution (79,8%) and the highest number of applicants (60,7%). BSG and Marie Curie Actions have the highest number of retained proposals (2.534 or 45,9% of the total). Networks of Excellence, on the other hand, have only 21 retained proposals with 404 applicants and 1,1% of total requested EC contribution. In signed grant agreements the picture is similar: BSG/Marie Curie Actions and Collaborative projects have each about a third of total signed grants (1.337 and 1.196 respectively), but in terms of numbers of participants and Community contribution Collaborative projects enjoy the largest share (61,7% and 71,6% respectively).

Figure 4: Numbers of retained proposals, applicants and EC financial contribution by funding scheme.

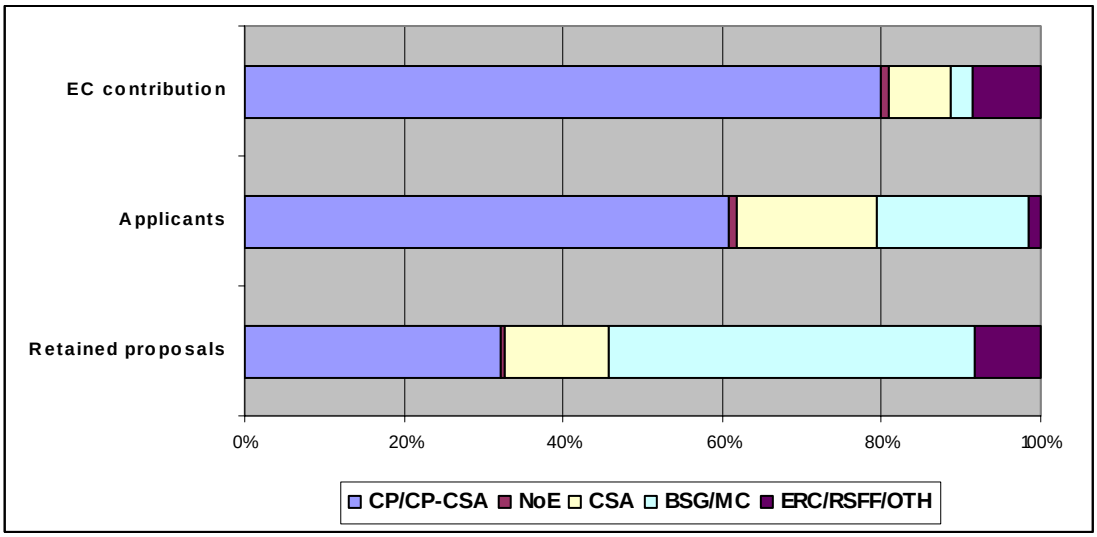
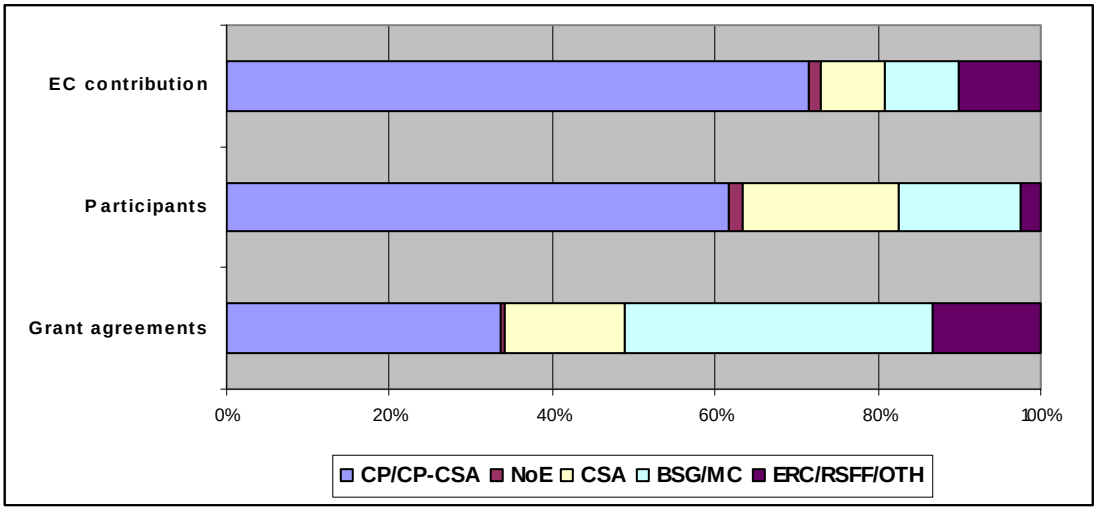



Figure 5: Numbers of grant agreements, participants and EC financial contribution by funding schemes.



### *2.3.3. Participation Patterns by Organisations*

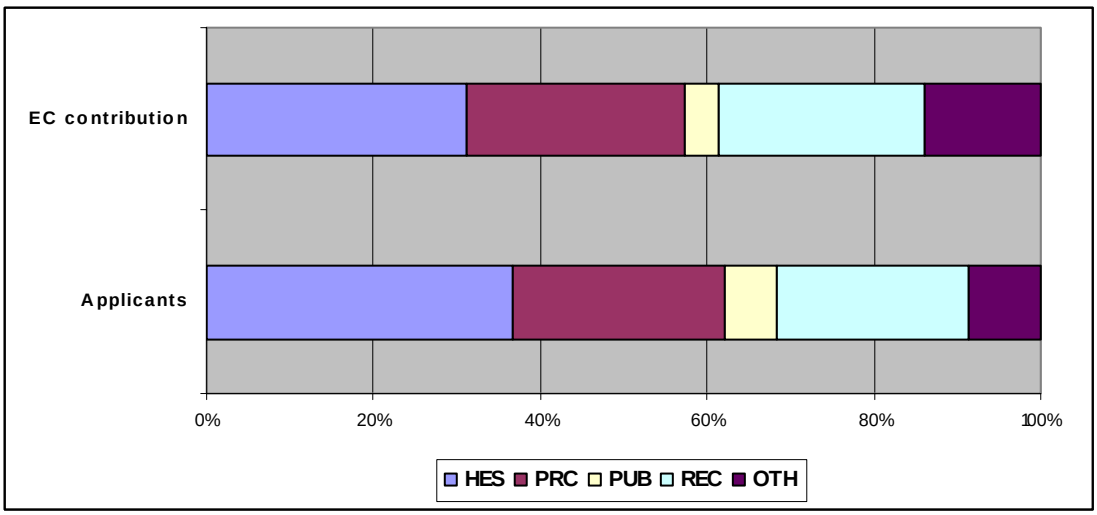
#### 2.3.3.1. Participation by type of activity

Data on the type of activity of FP7 participants follows a revised, compared to FP6, classification scheme which groups participating organisations in the following 5 categories:

- Higher or secondary education (HES)
- Private for profit (excluding education) (PRC)
- Public body (excluding research and education) (PUB)
- Research organisations (REC)
- Other (OTH)

Higher and secondary education institutes are the main beneficiaries of FP7, with approximately a third of applicants (12.738 or 36,8%) and requested EC funding (€ 3,1 billion or 31,3%) in retained proposals. The participation of the private sector in FP7 involves a quarter of all applicants (25,3%) and requested EC funding (26%).

Figure 6: Requested EC contribution and number of applicants in retained proposals by activity type.




#### 2.3.3.2. SME participation

The average non-adjusted share of SME participants in retained FP7 proposals under the Specific Programmes "Cooperation" and "Capacities" is 27,1% in terms of numbers of applicants and 22,6% in terms of requested Community contribution. The average adjusted participation shares in signed grant agreements under these two Specific Programmes are 13,8% for participants and 10,8% for Community contribution – significantly below the 15% target established in FP7. As highlighted by the 2nd Progress Report of the FP7 SME Inter-Service Task Force[12], a high percentage of all self-declared SMEs at the proposal submission

[12] European Commission (2008): 2nd Progress Report on SMEs in the 7th R&D Framework Programme. Brussels.

stage drop out of the SME category after the verification of their status at the negotiation stage, resulting in the downward adjustment of the figures. This should explain the significant discrepancy between the figures referring to retained proposals and grant agreements, the latter being more reliable.

### *2.3.4. Participation Patterns by Country*

#### 2.3.4.1. Participation of EU27 Member States

The following graphs present various aspects of the participation patterns of EU27 Member States: Figure 7 presents absolute numbers of successful applicants and their requested EC funding for the 27 EU Member States; figure 8 presents the requested EC contribution per successful applicant for each Member State; figure 9 presents the success rates of applicants for each Member State.

Figure 7: Number of applicants and requested EC contribution in € million by Member State in retained proposals.

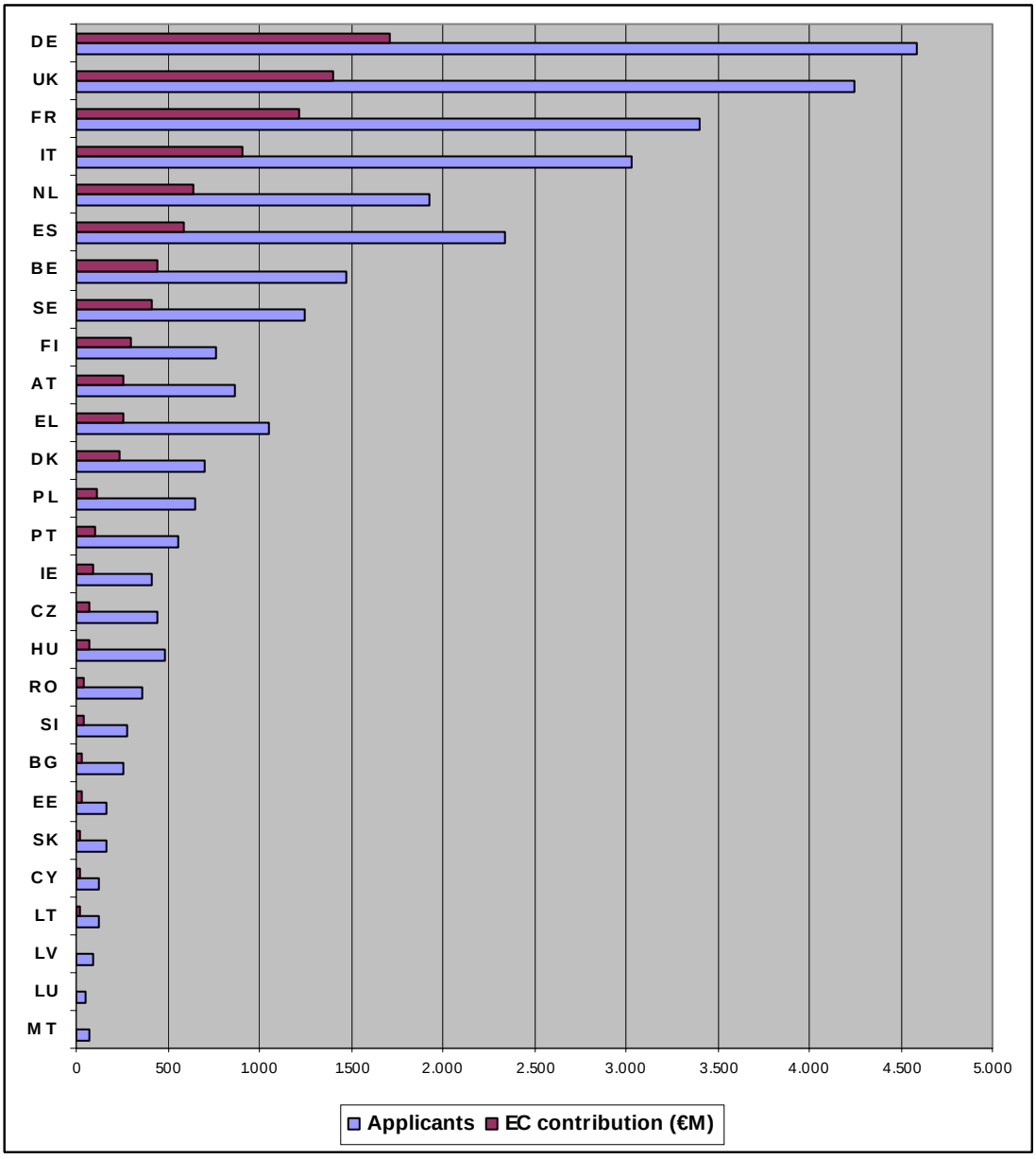


Figure 8: Requested EC contribution per applicant in € thousand by Member State in retained proposals.

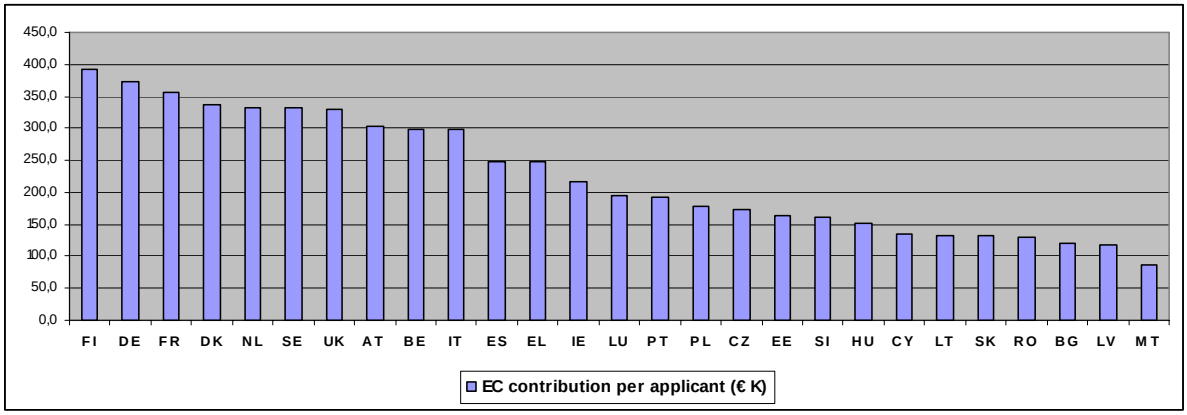
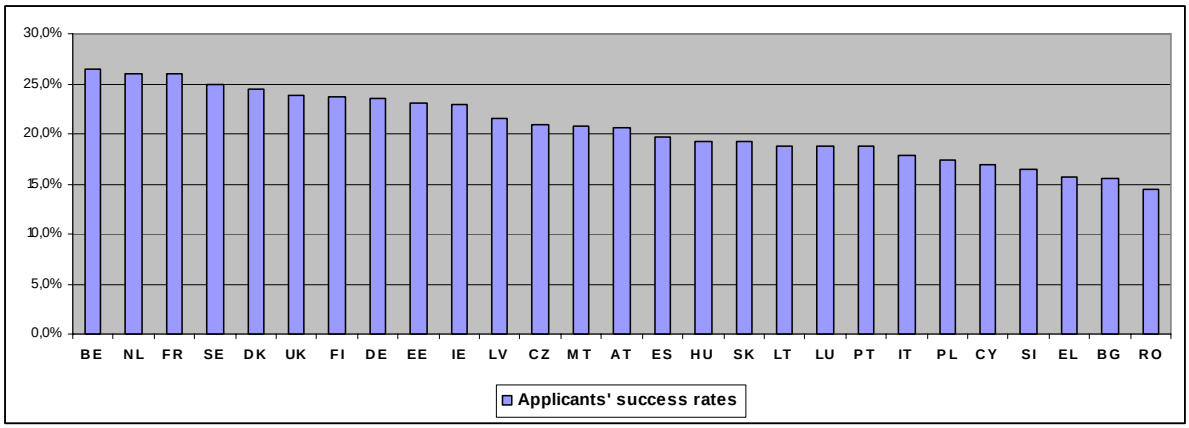



Figure 9: Success rates of applicants by Member State.




### 2.3.4.2. Participation of New Member States

New Member States participation represents 9,3% (3.210) of all applicants in retained FP7 proposals and 4,8% (€ 485,9 million) of total requested EC financial contribution. The success rates are 17,9% for applicants and 13,4% for EC contribution – both considerably lower than the EU27 average (21,8% and 21,5% respectively).

The subscription and performance of the 12 "new" EU Member States (hereafter "EU12") *vis-à-vis* the "older" EU Member States (hereafter "EU15") in the "Cooperation" and "Capacities" Specific Programmes during the first year of FP7 implementation presents a mixed picture (see also results of study based on 2007 data[13]). While EU12 participation in terms of numbers of submitted and retained proposals is lower than their share of the EU27 research workforce, the performance is significantly better when one compares their share of GERD to their share of EC contributions. More specifically:

- EU12 researchers represent 14% of the total EU27 population of researchers; the corresponding shares of EU12 applicants during the first years of implementation of the FP7 are now 9.3% in terms of retained proposals.

[13] European Commission (2008): Subscription and Performance in the FP7 "Cooperation" and "Capacities" Specific Programmes – EU12 vs. EU15. Brussels.

- The EU12 share of the EU27 2006 GERD is 2,8% while the aggregate requested EC contribution to EU12 applicants in retained proposals is now 4.8%.

These findings should however be put in the context of the current S&T socio-economic conditions in EU27. For example, in 2006 the R&D expenditure per researcher (GERD per number of researchers) in EU15 amounted to € 121.000 – four times that of the corresponding EU12 figure of € 31.000.

Measures already taken that will help to enhance participation rates of EU12 in the Framework Programme include efforts put in place by DG RTD in support of a strong NCP network, and the establishment of Technology Platforms at the national level that have proven to be successful in involving industry in R&D activities.

It was highlighted that EU12 is not a homogeneous group, which is why it may be more pertinent to refer to low- and high-performing Member States in FP7. The reasons for low performance are manifold and refer for example, to national research landscapes with specific problems, to the lack of a competitive research environment at national level, and to problems encountered by smaller countries that cannot be expected to be competitive in all thematic fields of the FP.

2.3.4.3. Participation of Candidate and Associated Countries

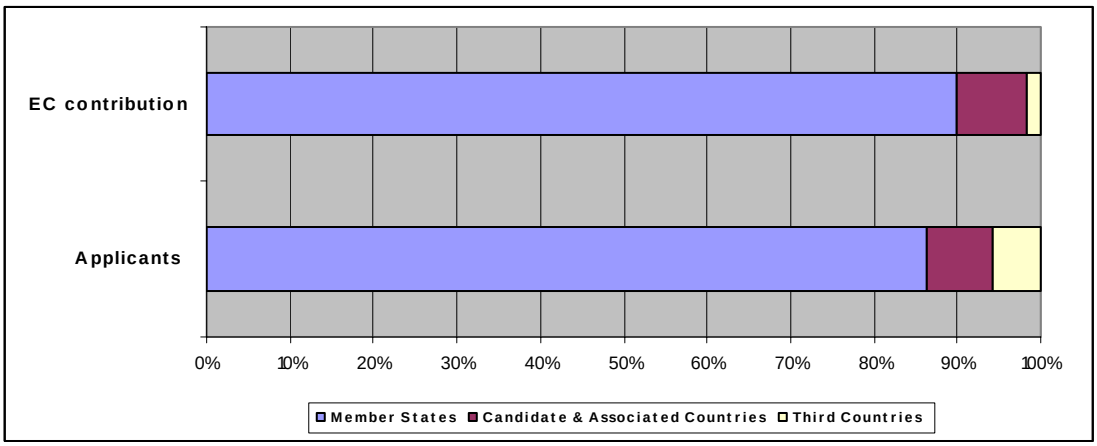
The classification of countries according to their relation with the EU (Member State, Candidate Country, Associated Country) is the same under FP7 as under FP6. However, the composition of these country groups has changed with the accession of Bulgaria and Romania in 2007, and with the association of Albania, Serbia, Montenegro, and Bosnia and Herzegovina in 2007 and 2008. These new memberships have only had a marginal effect on the aggregate characteristics of their respective groups.

Candidate and Associated Countries account for 8% of FP7 participation in terms of applicants and 8,4% of FP7 participation in terms of EU financial contribution. They have an average success rate of 20,8% for applicants and 18,6% for EC financial contribution – lower than the EU Member State average (21,8% and 21,5% respectively). In this group of countries, Switzerland has by far the largest share of participation and the highest success rates; the participation of Norway and Israel is also very significant.

2.3.4.4. Participation of Third Countries

FP7 participants from Third Countries represent a small part of the total number of successful applicants and receive an even smaller part of the total EC financial contribution – just 5,7% and 1,7% respectively. The average success rate of Third Countries in terms of participants is equal to the overall average (21,7%) but considerably lower in terms of EC financial contribution (16,1%).

Figure 10: EC financial contribution and number of applicants by group of countries in retained proposals for FP7 calls.




Third country applicants participating in eligible proposals come from as many as 143 countries, while those participating in retained proposals come from 97 countries. In this very diverse group, the biggest participant in terms of EC financial contribution is the Russian Federation followed by India, China, the USA, South Africa and Brazil, whereas in terms of numbers of successful applicants the USA is in the lead (with 348 participations), followed by the Russian Federation (235), India (131), China (128), Australia (85), Canada (82) and Brazil (81).

2.3.4.5. Time to Grant

Time to grant is defined as the time elapsed between the deadline for submission of proposals and the signature of the grant agreement. The time to grant statistics reported here for FP7 are based on grant agreements signed by the date of the last data extraction (25/02/2009) and only include calls for which at least 70% of the expected grant agreements have been signed. These grant agreements correspond to approximately two thirds (62%) of the total number of retained proposals under FP7 at the time of data extraction. The figures below are thus not final but only indicative of the current situation and subject to change.

Taking into account the limitations described above, the average time to grant overall is 318 days (median 303 days). The thematic area with the shortest time to grant is ICT (242 days) followed by the ERC (289 days) and Marie Curie Actions (297).

## 2.4. Gender Equality and FP7

In 1999, during early FP5, the Commission adopted a Communication in which it undertook the commitment to develop a coherent approach towards promoting women in research financed by the European Communities.[14] The Commission's stated aim was to achieve at least a 40% representation of women in Marie Curie scholarships, Advisory Groups, Assessment Panels and Monitoring Panels of FP5. This target was subsequently expanded to include all groups, panels, committees and projects involved in the Framework Programmes. The 40% target remained in place for FP6 and is currently also valid for FP7.

[14] European Commission (1999): Communication "Women and Science: Mobilising women to enrich European research", COM(1999)76. Brussels.

### *2.4.1. Patterns of Gender Participation in FP7*

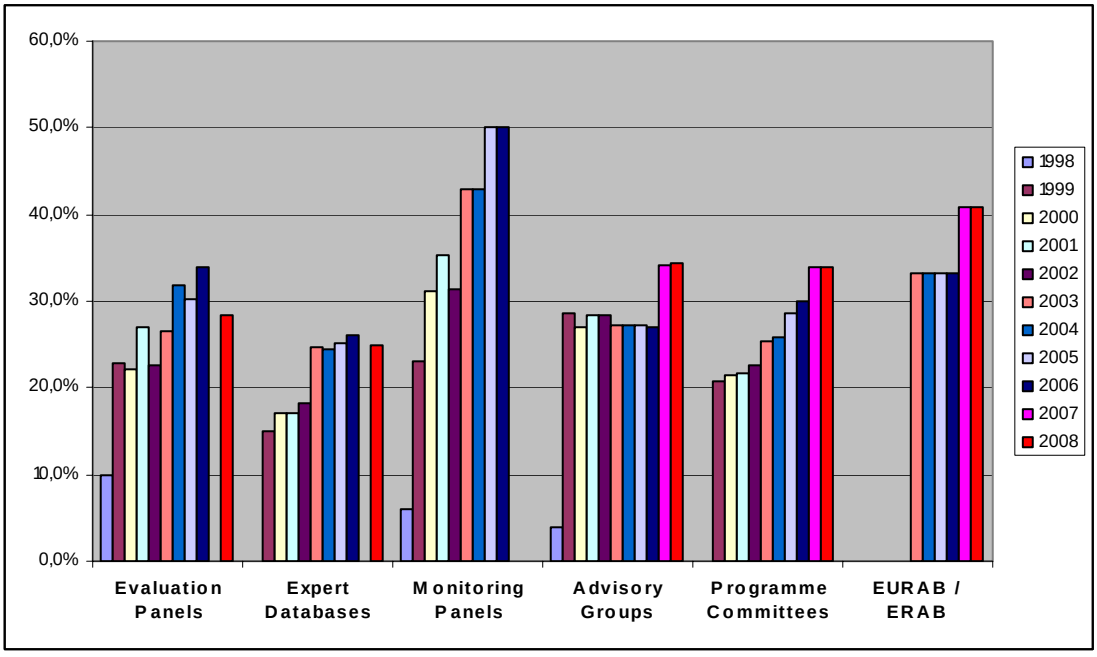
The CORDA database contains a considerable amount of data on individual participants in FP7 funded projects for which grant agreements have already been signed, including gender identity. Out of an estimated total of 53.687 project participants whose gender identity has been recorded in the database, a quarter (25,8% or 13.831) is female. In this population, women represent 29,1% (3.227) of project coordinators and 24,9% (10.604) of project participants, which implies that women have a relatively stronger presence as coordinators.

More than a fifth (21,5%) of individuals characterised as "contact person for scientific aspects" in signed grant agreements are women. Female participation makes up more than a third (35,4%) of participants in signed grant agreements in the category "fellow", under the Specific Programme "People" (Marie Curie Actions). This is the category with the highest female participation, and it confirms the excellent track record of Marie Curie Actions in achieving balanced gender distribution ratios. Female participation makes up a fifth (20,7%) of participants in the category "principal investigator", which corresponds to ERC grant agreements (Specific Programme "Ideas").

### *2.4.2. Gender Repartition in FP7 Advisory Groups, Programme Committees and the European Research Area Board (ERAB)*

Figure 11 presents the distribution of women in groups, panels and committees from FP4 to FP7. It should be noted that very limited data is available for FP4 and that the information available for FP7 is also limited at this stage.

Figure 11: Share of women in groups, panels and committees (FP4, FP5, FP6, FP7)




For FP7, 15 Advisory Groups[15] were set up in summer 2006. A sixteenth Advisory Group (for Security) was created in November 2007.

[15] Health; Food agriculture and biotechnology; ICT; Nanosciences, nanotechnologies, materials and new production technologies; Energy + Euratom; Environment; Transport; Socio-economic sciences and

For 2007, the percentage of women in the 13 Advisory Groups managed by DG RTD was 36,6%, while the percentage of women in all FP7 Advisory Groups was 34,1%. These percentages were still under the general target of 40%, but they have been clearly improved from FP6. Following a reduction of the number of Advisory Groups and a membership renewal in most groups in 2008, the percentage of women in the 11 Advisory Groups managed by DG RTD is now 38,5%. These numbers are still slightly below the 40% target, but they have been further improved from 2007 to 2008. The percentage of women in all FP7 Advisory Groups is 34,4%, i.e. almost unchanged compared to 2007.

The overall percentage of female members of FP7 Programme Committees in the first two years of FP7 is 34 %[16].

Throughout its existence, the percentage of female members of the European Advisory Board EURAB, the high level advisory board established for FP6, was 33%. The European Research Area Board ERAB, the new consultative body responsible for advising the EU on the realisation of the ERA, has 40,9 % of female members.

At the time of the writing of this report, the percentage of female members of the ERC Scientific Council is 26%.

### *2.4.3. Gender Dimension of Research in FP7*

The FP7 Decision states that "The integration of the gender dimension and gender equality will be addressed in all areas of research". The two previous sections refer to female participation in various bodies and in proposals submitted to FP7. The gender dimension of research is rather treated in the Work Programmes. The introduction of the Cooperation Work Programmes state that:

> *"The pursuit of scientific knowledge and its technical application towards society requires the talent, perspectives and insight that can only be assured by increasing diversity in the research workforce. Therefore, all projects are encouraged to have a balanced participation of women and men in their research activities and to raise awareness on combating gender prejudices and stereotypes. When human beings are involved as users, gender differences may exist. These will be addressed as an integral part of the research to ensure the highest level of scientific quality. In addition, specific actions to promote gender equality in research can be financed as part of the proposal […]."*

In addition, the topics where gender may be a relevant are signalled as such in the various Work Programmes. Finally, applicants have the possibility if they so wish to address gender issues (both in research and in terms of female participation) in their proposals. This is then taken up at negotiation. Data on how gender issues are tackled at project level are currently being collected.

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humanities; Space; People; Research for SMEs; Regions of knowledge; Research potential; Science in society; Activities of international cooperation.

[16] This figure should be understood as representing the overall trend only, given the continuous process of updating the lists and considering that during nominations, the gender of the representatives is not always mentioned.

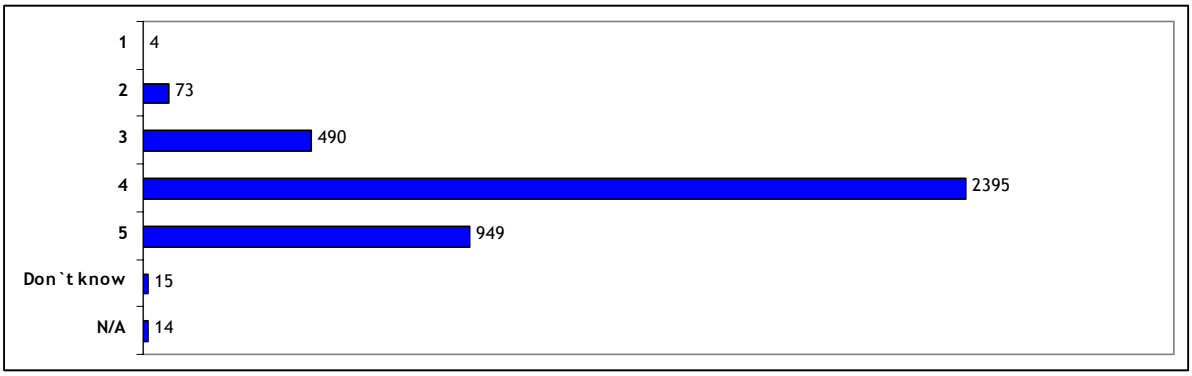
## 2.5. Quality Assessment of Proposal Evaluation

In order to receive the independent experts' opinion on the quality of the proposal evaluation process and procedures, two separate anonymous on-line surveys of all experts who participated in the evaluation of proposals during the first and second year of FP7 were carried out in 2007 and 2008. The purpose of the surveys is to receive the experts' opinions on the quality of the evaluation process and procedures applied.

In total 7122 experts were invited to participate in the two surveys. The results are based on 3963 responses, representing an overall response rate of 56%.

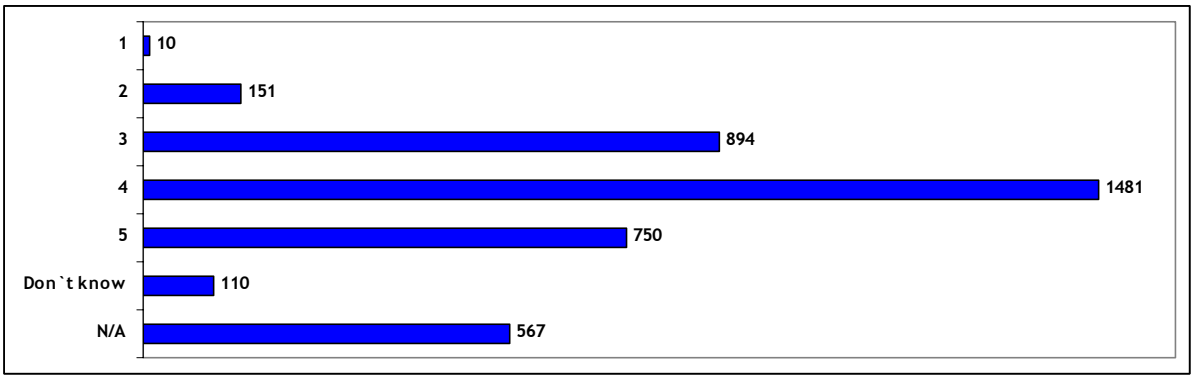
The data collected give a positive picture of the quality of the evaluation process. Across the calls, 96,8 % of the respondents found the quality of the evaluation overall *satisfactory* to *excellent*.

Figure 12: Responses to the question "How do you rate the quality of the evaluation overall?" on a scale from 1 (= very poor) to 5 (= excellent)




Of the evaluators that had previously evaluated research proposals for national or international research funding schemes, 96,7% found the EU evaluation process similar or better in quality.

Figure 13: Responses to the question "If you have evaluated research proposals before for national or international research funding schemes, how do you rate the overall quality of the EU process in comparison?" on a scale from 1 (= much worse) to 5 (= much better)




In all aspects covered by the surveys, evaluators were generally very satisfied with the way in which the evaluations were conducted, with respect to impartiality, confidentiality and fairness. In particular, the level of efficiency of the evaluation task has been rated good/satisfactory/excellent (96,5%).

There are nevertheless a number of results pointing towards issues for attention, amongst them the remote evaluation, the available time, and impact evaluation criterion that is still found the most difficult one to apply.

An overwhelming majority of the experts (95%) rates the overall organisation of the evaluation *satisfactory* to *excellent*. Most of the evaluators (95%) found the registration efficient and welcoming and rated it from *satisfactory* to *excellent*. Nevertheless a number of comments and recommendations have been made with respect to IT related aspects of the evaluation and other supporting infrastructure.

### 2.6. Redress Procedure

The FP7 Rules for Participation stipulate that the Commission shall provide a redress procedure for applicants. The intention of the legislator was to formalise the *ad hoc* approaches for dealing with complaints that existed in previous programmes.

In line with these requirements, a redress procedure has been set up that aims to be both efficient and consistent with the principles of transparency and equal treatment that underpins all Commission evaluations.

Following the work of the "submission to ranking" working group, redress guidelines were drafted, setting out the more operational aspects of the new procedure. In particular:

- The redress committee meets in various configurations according to the different calls for proposals. Directorates nominate officials for "jury service".

- The configurations work independently, and deliver their advice to the responsible directors. They may take account of possible comments from the director, and from the redress office (see below).

- A "redress office" (RO), located in unit RTD/A1, is responsible for registering and tracking redress requests, supporting the committee configurations, and ensuring that policy is coherent and consistent over time, based on case histories.

These guidelines have since been endorsed by the Legal Service, and some of the most salient guidelines have been incorporated into the evaluation rules[17].

For FP7 calls launched in 2007 and 2008 (except ERC, see below), the results of the redress procedure can be summarised as follows:

- 50 requests for redress were wholly or partly upheld, but did not lead to a re-evaluation, because the proposal failed anyway for other reasons or because the identified problem was minor and not crucial to the experts' evaluation.

- There were in total 11 cases so far leading to a re-evaluation (0,04 % of proposals received).

[17] European Commission (2008): Rules for submission of proposals, and the related evaluation, selection and award procedures (*Version 3, 21 August 2008*), COM(2008)4617. Brussels.

It has to be noted however, that the redress procedure for several of the 2008 calls is not concluded yet.

Problems leading to a re-evaluation were, for example, related to the eligibility of proposals (scope, number of participants), or to serious factual errors, or to insufficient specialist expertise on the part of the experts.

In 2007, the ERC put in place redress procedures, following the model established for FP7, but with a separate "Ideas" configuration of the redress committee. The ERC now has its own formal procedure, including its own redress committee and guidelines. Information on 2007 and 2008 cases can be found in Section 3.3.

## 2.7. Ethics Reviews

The Commission has included in FP7 procedures a thorough Ethics Review process for all proposals that raise ethical questions and are likely to receive Community funding. The Ethics Review process safeguards the protection of fundamental rights and the respect of ethical principles. It guarantees that no funding is allocated to research that does not comply with the relevant EU legislation and the ethical considerations specified in the Framework Programme. The Ethics Review process is described in some detail in Annex A (Ethical Review Procedures) of the "Rules for submission of proposals, and the related evaluation, selection and award procedures" (*Version 3, 21 August 2008, COM (2008)4617)*. Furthermore a new process of Ethics Audit has been initiated in order to guarantee that Community funded research is carried out according to the above mentioned principles.

The Ethics Review Sector of DG RTD is in charge of organising an ethics review of those proposals that have successfully passed the scientific evaluation step and have been found to involve sensitive ethical issues that have not been adequately addressed. The organisation of the Ethics Review involves the appointment of the members of the Ethics Review Panels and the procedural coordination of the entire evaluation process.

Research proposals involving interventions on human beings (surgical interventions etc.), non-human primates, or human embryos/embryonic stem cells are automatically referred for ethical review at EC level.

In 2007, Ethics Screening had been introduced in order to facilitate the selection of projects that required Ethics Review at the EC level. In 2008, the Ethics Screening has been generalised to all programmes including the ERC. The screening is the responsibility of the programmes that receive the applications. Screening is mostly conducted by ethics experts. A database collecting information on FP7 ethics reviews is being established.

In 2007 and 2008, 539 ethical reviews were organised by the Ethics Review Sector. The project proposals that were reviewed involved a wide variety of issues and belong to different research programmes. In total, 174 experts participated in the Ethics Review process. *Health* is the theme with the highest number of ethics reviews.

No project was stopped as a result of the ethical review, but 126 proposals that were found by the expert panels to have insufficient safeguards in place were requested to modify their project according to contractually binding requirements.

All projects subjected to an ethical review are also fully examined by the relevant Programme Committee under its Regulatory Framework.

# 3. FP7 IMPLEMENTATION – SPECIAL FOCUS

This chapter presents the achievements for a number of FP7 key activities in more detail. Considering the broad spectrum of FP7 and the wealth of material available, only a selection can be presented here.

Any reporting of the implementation of a major research programme would be incomplete without a closer look at the results obtained and the impacts achieved. The system of FP7 monitoring indicators (see chapter 1) therefore includes a number of key indicators related to the output of projects and programmes. It should be noted however, that FP7 started only in 2007, which implies that this report cannot provide this type of information at this stage.

## 3.1. Reinforcing the European Dimension

### *3.1.1. Implementing the ERA Vision*

Only by joint effort and shared responsibility across regional, national and European levels can research policy play its full role in underpinning European competitiveness and in attaining the objectives of the Community's Growth and Jobs strategy. The Ljubljana Process, launched in May 2008, provides a framework for building a new research policy partnership between the Member States, the Commission and relevant research actors. The process envisages a framework for imparting: political direction to overall ERA policy development; ownership and commitment of Member States to specific ERA initiatives such as those launched in 2008; and efficient and effective means for their implementation. At the overarching level, the key reference for the Ljubljana Process and for identifying specific actions is the long-term ERA 2020 vision adopted by the Competitiveness Council in December 2008. This vision projects a fully-fledged ERA by 2020 in which attractive conditions for doing research and investing in R&D intensive sectors in Europe are ensured through optimised scientific competition, cooperation, and coordination. Community-funded research activities have to be increasingly selected and assessed according to the extent to which they contribute to the realisation of this long-term vision for ERA. At the centre of the ERA vision is the objective to attain a "Fifth Freedom", as endorsed by the European Council in March 2008. The fifth freedom envisages the free circulation of researchers, knowledge and technology and aims at both the removal of obstacles and the creation of new incentives to stimulate such free circulation of knowledge in Europe. The implication is that those aspects of the different Community policies that in one way or another affect research and knowledge have to be better exploited and brought in line with the overall objectives and principles of R&D policy in Europe. Establishing the "fifth freedom" and achieving a "single market for research" as a priority to respond to the changes introduced by globalisation and the need to transform the European Union into a truly modern and competitive society is still one of the major challenges. R&D policy and in particular actions undertaken to realise the ERA vision and the free circulation of knowledge are also essential components of the structural reforms under the EU's Strategy for Growth and Jobs.

### *3.1.2. FP7 as Driver for ERA*

The scientific and technological objectives of FP7 have been explicitly designed to take into account the research needs of all Community policies. This acknowledges the importance of a robust evidence base in policy-making in all fields and, more broadly, the contribution of

knowledge production and dissemination to economic growth and social, cultural and environmental well-being.

The overriding aim of FP7 "to contribute to the Union becoming the world's leading research area" applies as much to mainstream funding for thematic areas and activities under the Specific Programmes of FP7 as it does to all policy development work under FP7 be it of a general (e.g. coherent development of research policies, international co-operation) or specific nature (e.g. in thematic areas). For example, the *Socio-economic Sciences and Humanities* Programme contributes considerably to the conceptualization of the ERA and related policies through the following research activities:

- Foresight activity related to the ERA priorities, grand challenges and global issues;
- Economics of research and innovation (knowledge generation, entrepreneurship, impacts of globalisation and delocalisation);
- Impact assessment of research policy (ex-ante evaluation of research and other EU policies);
- Making available large-scale data sets and quantitative tools and models to researchers across Europe;
- Support to evidence based ERA related policy-making[18].

Evidence shows that, in the absence of Community funding, transnational cooperation between research actors and Member States remains sub-optimal and develops at a lower scale and slower speed than would otherwise be the case. Substantial financial support through FP7 thus furthers the development of ERA via its leverage effects on public and private R&D investment, which in turn facilitates structural reforms across Europe towards a knowledge-intensive economy. In this context, the 3% R&D investment goal, more than a purely quantitative target, is an important benchmark for the Member States with significant mobilising effects for rethinking national R&D policies and programmes. Similarly, efforts under FP7 to give renewed impetus to ERA following the 2007 Green Paper[19] consultation promise to have a far-reaching impact via the institution of a new partnership approach to EU research policy development and implementation. More specifically, partnership initiatives are being developed in five non-sector specific areas:

- A European partnership for improved career aspects and mobility for researchers in Europe (including better recruitment, training, employment, working conditions and social security);[20]
- A Recommendation for the management of intellectual property in knowledge-transfer activities and a code of practice for universities and other public research organisations;[21]

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18 The ERAWATCH web-based services contribute to this objective (i.e. ERAWATCH Research Inventory and ERAWATCH Intelligence service) by providing evidence-based policy intelligence and analyses on national and regional research policies actors, organisations and programmes. ERAWATCH is a joint undertaking between DG RTD and the JRC. http://cordis.europa.eu/erawatch/

19 European Commission (2007): Green Paper on "The European Research Area: New Perspectives", COM(2007)161. Brussels.

20 European Commission (2008): Communication "Better careers and more mobility: a European partnership for researchers", COM(2008)317. Brussels.

- Joint programming between EU Member States of their public research programmes through the definition and development of common strategic research agendas;[22]

- A new legal framework to assist Member States to establish and fund pan-European research infrastructures;[23]

- A strategic European framework for both the Community and Member States to foster and facilitate coherent international science and technology cooperation activities.[24]

Though the centre of gravity for action to implement these initiatives is in the Member States, the importance of all FP7 actions relevant to these initiatives increases as does the need for them to be implemented as efficiently (in terms of management cost and flexibility) and effectively (in terms of impact and structuring and leveraging effects) as possible.

3.1.2.1. Mobility of Researchers

The Marie Curie Actions for training, mobility and career development of the Framework Programme have since the conception of ERA been increasingly instrumental in supporting the Community's mobility strategy and career policy concerning researchers. To support the further development and consolidation of the European Research Area (ERA), this Specific Programme's overall strategic objective is to make Europe more attractive for researchers. It aims to strengthen, quantitatively and qualitatively, the human potential in research and technology in Europe, by stimulating people to take up the profession of a researcher, encouraging European researchers to stay in Europe, and attracting to Europe the best researchers from the entire world. It is implemented through a coherent set of actions, particularly taking into account the European added value in terms of their structuring effect on the European Research Area.

The *People* Specific Programme is of fundamental significance for the development of a better grounded, multi- and inter-disciplinary European research career. Through its actions it supports over 4,000 post-docs annually directly; while career and employment benefits through the *Charter and Code*[25] improve the lot of countless researchers at all levels. The commitment for at least 25% of funding to go to International Cooperation means that Marie Curie researchers travel to the best research centres globally to improve their skills, while European centres can invite the best global researchers into Europe to share their skills. For just 9% of the FP7 budget, with its unique leverage, it supports about one third of all FP7 participants. With that the *People* Specific Programme fully supports the objectives of the researchers' related ERA-initiatives as proposed by the Commission in 2008[26], which seek to

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21 European Commission (2008): Commission Recommendation on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations, C(2008)1329. Brussels.

22 European Commission (2008): Communication "Towards Joint Programming in research: Working together to tackle common challenges more effectively", COM(2008)468. Brussels

23 European Commission (2008): Commission Proposal for a Council Regulation on the Community legal framework for a European Research Infrastructure (ERI), COM(2008)467. Brussels.

24 European Commission (2008): Communication "A strategic European Framework for International Science and Technology Cooperation", COM(2008)588. Brussels.

25 European Commission (2005): Commission Recommendation on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers, C(2005)576. Brussels.

26 European Commission (2008): Communication "Better careers and more mobility: a European partnership for researchers", COM(2008)317. Brussels. / European Commission (2008):

make Europe decisively more attractive for researchers and to establish a balanced "brain circulation" within the EU as well as with Third Countries.

The grants offered by the European Research Council (ERC, Ideas Programme) are open to applicants of any nationality and hence an important instrument to attract excellent researchers to Europe. Recruitment of non-European nationals and the repatriation of European nationals have been modest to date but are expected to increase significantly as the ERC becomes better known globally.

Apart from the Marie Curie Actions a number of policy support initiatives have been launched or reinforced in support of the implementation of the European researchers' partnership, through for instance provisions for the EURAXESS – Researchers in motion activities, for data-collection on mobility and career patterns and for the monitoring and evaluation of the partnership.

In the Marie Curie Actions alone, progress towards the fifth freedom has been significant through the increased accessibility to entry Visas in some MS. Some 6,000 postgraduates have benefited from mobility through these actions in the first two years, and this number is set to double by the end of 2010.

#### 3.1.2.2. European Universities

Another important dimension of the further development of ERA concerns the support for the development of excellent research institutions in Europe. As a primary source of knowledge generation and provider of applied knowledge, European universities play a key role in the deepening of ERA. They invest in high-quality frontier research and demonstrate substantial capacity to address new major societal challenges. These new challenges also force universities to modernise their management structure and research agendas as to become more autonomous research bodies able to define long term research strategies, based on greater openness and accountability to society's needs, increased integration and strengthening of trans-disciplinary research capacities between universities and other public research institutions in key competitive scientific and technological areas, and the establishment of strategic links with industry. But, as pointed out by the Commission[27] and endorsed by the Member States[28], universities have still to accomplish their modernisation agenda, facing some challenges to be able to fully exploit their potential to contribute to the Lisbon Agenda.

Though the Member States are at the forefront of this modernisation process of European universities, FP7 plays a catalytic role and enables overall coherence across ERA. EU-level activities aim at the promotion of financial sustainability of university-based research, assessment of university-based research performance, and monitoring of the overall modernisation process. DG RTD, in addition to DG EAC initiatives, actively contributed under FP7 to promote the modernisation of universities. DG RTD activities on universities are planned as a rolling agenda (2007-2013), where the first phase during the period (2007-2009) consisted in the launching of Expert Groups (EG), studies and take-up activities to identify and implement the possible measures to strengthen universities. From 2010 and onwards, the

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Communication "A strategic European Framework for International Science and Technology Cooperation", COM(2008)588. Brussels.

[27] European Commission (2006): Communication "Delivering on the Modernisation Agenda for Universities: Education, Research, Innovation", COM(2006)208. Brussels.

[28] European Council (2007): Council Resolution on modernising universities for Europe's competitiveness in a global economy" COMPET 426(2007). Brussels.

second phase of the rolling agenda will focus on the implementation of the action lines of the modernisation agenda at university level in areas such as research quality, funding and assessment of university-based research, human resources management, partnership with the business sector and knowledge sharing.

#### 3.1.2.3. Open Method of Coordination (OMC)

Contributing to the development of ERA as an overarching Community policy, the Open Method of Coordination (OMC) aims at increasing the coherence of national research policies in an intergovernmental way. The OMC is supervised by the Scientific and Technical Research Committee (CREST) and focuses on Member States learning from each other, exchanging experience, and identifying good practice, with the support of the Commission under the Coherent Development of Research Capacities programme. As CREST is increasingly focusing the OMC on ERA related topics, it carries out a yearly mutual learning exercise based on the Lisbon National Reform Programmes of the Member States, focusing on progress towards the 3% R&D investment target and the role of national policies in building ERA. The OMC-NET scheme is a specific FP7 action supporting the OMC and aims at facilitating the coordination of research policies across Europe, supporting mutual learning and evidence based policy making and coordination amongst more limited groups of Member States and regions.

In addition to cross-cutting policy themes, it is also important to pursue a sector-specific approach to developing ERA by taking account of sector-specific parameters and constraints and the variable diversity of the European research landscape across different sectors. Under FP7, an increasing number of sector-specific assessments of progress made towards the realisation of ERA permit a better identification and design of actions aimed at rectifying deficiencies. In fact, such assessments are necessary prerequisites for establishing optimum policy rationales or intervention logics for research support in specific areas and for the focus and structure of associated programmes.

#### 3.1.2.4. The ERA-NET scheme

The objective of the ERA-NET scheme is to enhance coordination of national or regional research programmes in the Member States and Associated States. This is done either via the networking of research programmes, or their mutual opening. By improving the coordination of such research programmes across Europe, the scheme contributes to the structuring of the European Research Area. The scheme also enables national systems to exchange good practices in programme management and take on tasks collectively that they would not have been able to tackle independently. From the onset of FP7, the scheme became decentralised, although it is still implemented as a coordinated call. Furthermore the ERA-NET Plus actions have been introduced as a new element to the ERA-NET scheme. They allow – in a limited number of cases – to provide additional EU financial support to facilitate joint transnational calls for proposals between national and/or regional programmes. They provide an incentive to the programmes pooling their resources to reach a higher level of integration by stipulating agreed standards for proposal evaluation and selection.

Under FP7 a total number of 31 ERA-NET actions and eight ERA-NET Plus actions have been selected, further 11 ERA-NETs and one ERA-NET Plus are expected in response to the 2009 calls. Together with the 70 ERA-NET actions launched under FP6, these actions gather more than 500 national and regional programme owners (typically ministries) and programme managers (such as research agencies and research councils). Most ERA-NETs have management boards where these key actors of the European Research Area are daily

interacting to develop joint actions and take decisions in partnerships orienting their national programmes and structuring the ERA. To further support the development of this community of ERA actors and the implementation of the ERA-NET scheme, two dedicated initiatives have been launched by the Commission: the ERA-NET Learning Platform and the NETWATCH system. The NETWATCH system is operated through a collaborative undertaking between DG RTD and the JRC.

The ERA-NET Learning Platform will provide a framework geared towards common guidelines for procedures and practices across all joint calls and programmes launched by ERA-NETs. The ultimate aim would be two-fold: to (1) reduce "transaction costs" for the participation in cross border programme cooperation and integration, and (2) to increase efficiency and stability of call implementation of multiple ERA-NETs towards a user friendly system, namely for the researcher participating in transnational research cooperation, ensuring a submission and selection of highest quality proposals.

NETWATCH will create a central information platform on European transnational Research and Technological Development (RTD) programme cooperation. It will provide RTD policy makers with a strategic intelligence tool to monitor the effectiveness of RTD policy measures in programme cooperation and their contribution to reaching the goals of the Ljubljana Process.

#### 3.1.2.5. Joint Programming

Joint Programming is a new approach to public research, which was proposed by the Commission in the 2008 Communication *Towards Joint Programming in Research*[29]. It is a structured and strategic process whereby Member States agree on a voluntary and à la carte basis common visions and Strategic Research Agendas (SRA) in a partnership approach to addressing major societal challenges.

Joint Programming is not about asking for more money from Member States or for more power at EU level. It is not a new instrument for Community research and therefore does not start with Community funding. However, when and if Member States agree to commit to developing Strategic Research Agendas together and to defining common objectives, the Commission, as a member of a High Level Group identifying such initiatives in Joint Programming, will participate in selecting with Member States the best instruments to address the identified major societal challenges.

FP7 contributed to the debate on Joint Programming by driving national authorities into situations forcing their points of view to consider the benefits of duly planned and coordinated joint research investments. In particular, the ERA-NET scheme, by fostering cooperation actions which altogether launched more than 150 Joint Calls between programmes managed by Member States, thus mobilising more than 800 M€ of national and regional research funding, showed that there was much potential for joint activities.

The ERA-NET scheme also illustrated how it was possible for Member States to have a Joint Programming approach in determining topics for joint calls. This might even involve some Community funding as practised in the first ERA-NET Plus actions launched under FP7.

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[29] European Commission (2008): Communication "Towards Joint Programming in Research", COM(2008)468. Brussels.

FP7 also demonstrated the benefits of and methodology to be used for designing and implementing large cooperation at programme level such as the SET plan and Art.169 initiatives.

An important element for Joint Programming are *framework conditions* that should be satisfied prior to embarking on joint actions and initiatives. Here too, FP7 is supporting the development of such framework conditions through the ERA-NET scheme, which fostered the development, for each Joint Call, of its own ad hoc framework conditions. The ERA Learn support action and the ERA-NET learning platform, set-up by the Commission, should allow the identification and communication of the most appropriate ones.

A multi-factorial analysis of the impact from the ERA-NET scheme so far and the diffusion of the information gathered on cooperation and collaboration between national and regional programmes through the ERA-NETWATCH tool should further promote examples of adequate Framework Conditions.

Finally, support and coordination actions in various themes will be paramount for developing framework conditions such as a coherent approach to foresight, peer review, IPR protection, etc.

#### 3.1.2.6. Article 169 Initiatives

Two Article 169 initiatives for joint implementation of national programmes involving EC participation have been adopted by the European Parliament and the Council in 2008, namely *Ambient Assisted Living (AAL)* and *EUROSTARS*. The Ambient Assisted Living (AAL) Joint Programme currently involves 20 Member States and 3 Associated Countries with financial support from the European Community. It covers market-oriented R&D on ICT-based solutions for ageing well with a time to market of 2-3 years, with a particular focus on involving SMEs and developing the significant business potential. EUROSTARS is a joint research programme for research-performing SMEs and their partners. It is expected to stimulate SMEs to lead international market-oriented collaborative research and innovation projects by easing access to support and funding. Thirty-one countries currently participate in the EUROSTARS Programme through the EUREKA network. Work concerning both initiatives currently focuses on the General Agreement and the Annual Financing Agreement between the Commission and the Dedicated Implementation Structures (DIS) that receive delegation for managing the EC budget earmarked for the initiative in an indirect centralised way. The first calls for proposals have been already closed with an immediate high participation level.

Two more Article 169 initiatives are expected to be decided later in the course of FP7. The Commission proposal for EMRP, in the field of metrology has been adopted in December 2008; inter-institutional discussions are ongoing with a view to a Decision of the European Parliament and the Council in the first half of 2009. The development of the BONUS initiative, which focuses on research in the Baltic Sea area, is continuing, being of importance to support the implementation of the marine strategy directive being the environmental pillar of the European Maritime Policy.

#### 3.1.2.7. Research Infrastructures

One essential area of science that has a global dimension and lends itself particularly well to international cooperation is the development and use of research infrastructures. In Europe, the European Strategy Forum on Research Infrastructures (ESFRI) has taken the first steps in

this direction by establishing a Roadmap for new Research Infrastructures of pan-European interest, which have the potential to become global. FP7 activities (through different Preparatory Phase projects) help to develop a more structured approach to support international level discussions and to jointly develop global research infrastructure projects that require international cooperation in order to be realised (e.g. LIFEWATCH on biodiversity, the Integrated Carbon Observation System and the Square Kilometre Global Radio Astronomy Array). Another example is the GÉANT infrastructure, encompassing now 36 countries. GÉANT's total communication capability is now well beyond 1000 Gb/s, and it connects over 30 million researchers in 34 European countries and links to a number of other world regions.

The Commission launched a specific initiative in 2008 for a regulation at European level favouring the setting-up of new pan-European research infrastructures[30]. Considering that the research infrastructures needed in Europe to stay at the leading edge of knowledge creation are becoming increasingly complex and expensive, often placing those beyond the reach of a single nation, joint actions between Member States are necessary. Until now there was a clear absence of an adequate legal framework, which has been a major difficulty for Member States to join forces. The proposed regulation helps the new entities to be created to have a legal personality recognised in all Member States, provides flexibility for Member States to decide the main rules in the statutes, and proposes simplification-related provisions such as the one on exemption of infrastructures from VAT and excise duties.

To address the need to increase investment in research, in particular research infrastructures, and to combine in the most efficient way all available public and private resources (Member States, industry, European Investment Bank (EIB), Structural Funds, FP7, CIP etc.) and also to enable, inter alia, the timely construction of needed new research infrastructures, the Commission prepared during 2008 *A practical guide to EU funding opportunities for research, development and innovation: Synergies in funding between the 7th Framework Programme for Research, Competitiveness & Innovation programme and Structural Funds*[31].

### 3.2. Supporting Sustainable Development and Responding to Societal and Interdisciplinary Needs and Challenges

As the EU faces new major societal challenges such as energy, climate change, sustainability, health, and ageing population, it is crucial that research funding and policy development under FP7 responds fully to society's needs. R&D has to be more explicitly and systematically driven by these "grand challenges" for which a determined, European-scale effort is essential to bring about decisive progress.

The upcoming EU budget review provides an opportunity to stress the added value of Community support in the field of R&D and its crucial importance for attaining the EU's objectives on growth and jobs. The crucial role of R&D also explains the need for continued improvement of the FP's delivery mode in terms of quality and effectiveness of research outcomes, implementation, and management.

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30 European Commission (2008): Commission Proposal for a Council Regulation on the Community legal framework for a European Research Infrastructure (ERI), COM(2008)467. Brussels.

31 European Commission (2008): Competitive European Regions through Research and Innovation. Practical Guide to EU funding Opportunities for Research and Innovation. Brussels.

In order to illustrate the various activities as well as the types of achievements and some first impacts generated through FP7, a number of key topics are briefly presented here. This selection is meant to be illustrative only, it is not intended to be representative of the large number of FP7 activities, content-wise and policy-wise, which have been launched successfully and have already contributed to achieving the objectives of FP7.

### *3.2.1. Facing the Challenges of the Knowledge Triangle*

More coherence is needed between different policy tools related to the knowledge triangle of research, innovation and education. This implies the need for an optimal coordination and more consistency both between national and Community funding and between the different Community funding instruments and their objectives.

With a budget of € 50 billion for the period 2007-13, FP7 is one of the three main sources of EU funding for research and innovation; the others being the Structural Funds (SF) and the Competitiveness and Innovation Framework Programme (CIP). For the period 2007-13, the Structural Fund have allocated an amount of € 86 billion in support of innovation in a broad sense – including RTDI[32], entrepreneurship, innovative ICT and support for related human resource development – while the allocation just for core RTDI amounts to € 50 billion; equal to FP7. For the same period the funding available under the CIP is € 3.6 billion.

When operating separately, each of these funds makes an important contribution to economic development and the improvement of EU competitiveness. However, significant opportunities also exist to exploit the potential for synergies through their complementary use. The importance of such synergies has been increasingly recognised. As a result, the Commission adopted, in August 2007, a Communication on "Competitive European Regions through Research and Innovation"[33]. The Communication took stock of the current situation in the domain of EU funding for research and innovation and called on Member States and regions to make more effective use of EU research, innovation and cohesion policies and instruments.

The Communication also committed the Commission to produce a guide to accessing funding for research and innovation under the three instruments. This is now available as the "Practical Guide to EU funding for research and innovation"[34] which provides a concise description of the three funding sources, explains how they can in practice be combined and provides policy makers with advice on setting up mechanisms at the national and regional levels to foster co-ordinated access to the different instruments.

The Regions of Knowledge and Research Potential specific regional actions under FP7 can make a contribution to the promotion of synergies. Actions under Regions of Knowledge promote the development of regional research driven clusters involving the triple helix of businesses, research entities and the public authorities. Requesting from the participating regions the design of a Joint Action Plan in R&D in order to support their regional economic growth, this programme is catalytic tool in order to use efficiently available sources of funding at EU, national and regional levels. Actions under Research Potential help develop the capacity of research entities in the Convergence regions and complement the support available under cohesion policy.

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32 RTDI - Research, Technological Development and Innovation

33 European Commission (2007): Communication "Competitive European Regions through Research and Innovation", COM(2007)474. Brussels.

34 European Commission (2008): Competitive European Regions through Research and Innovation. Practical Guide to EU funding Opportunities for Research and Innovation. Brussels.

There is an estimated number of well over 20 million SMEs in Europe. They are employing around 75 million people (in some key industries accounting for as much as 80% of all jobs), thus being responsible for the creation of one in every two jobs. In some regions, SMEs are practically the only private-sector employer. This underlines their social and their economic importance, recognised in the FP7. However, less than 10% of all European SME's are leading technology users and less than 3% are technology pioneers, and SME's are often minority partners in the relatively large FP7 projects. As indicated in the 2nd Progress Report on SMEs in FP7[35], SMEs are attracted to participate in FP7 in higher numbers than in any of the previous Framework Programmes. They also receive a higher level of funding for their participation compared to FP6. Nevertheless, reaching SME's with no R&D capacity remains a priority for a wide based realisation of the competitiveness targets and represents a particular challenge. Further incentive for SME participation should therefore focus on creating the right boundary conditions for SMEs and their research partners to make SME participation in FP7 more attractive. It may be necessary to create a single SME dedicated programme encompassing all types of SME with a major focus on innovative and research capacity building.

The new partnership with Member States on the Researchers Careers promises real and lasting benefits for the Research profession, and the mobility of knowledge throughout Europe and the world. A major challenge is to create a high quality workforce of a sufficiently strategic size that can undertake multi-disciplinary research at the head of the value added chain. The Marie Curie Actions train researchers in wider skills that help prepare the researcher for a mobile, inter-sector career while honing their research skills by either going to the best centres globally, or bringing the best researchers into Europe to share their knowhow.

The European Research Council (ERC) offers the opportunity to young researchers to make the transition to an independent research career. Established researchers have the opportunity to benefit not only from the prestige attached to being awarded an ERC grant but also from the prestige in achieving the ERC's quality threshold even if they fail to secure funding.

FP7 activities are complemented by the European Institute of Innovation and Technology (EIT) that has been launched last year. The mission of the EIT is to explore excellence in entrepreneurship education, research and business for world class innovation. The EIT aims at boosting innovation in Europe by pooling together excellent resources, allowing innovative businesses, research organisations and higher education institutions to interact with each other in new ways and to exploit fully their creative potential for finding new solutions to major societal challenges. This is done by the creation of highly integrated, excellence-driven partnerships, known as Knowledge and Innovation Communities (KICs). KICs bring together the three elements of the knowledge triangle and are composed of businesses, entrepreneurs, universities, research institutes and technology centres that will produce new innovation models and inspire others to emulate them. The EIT is still in the process of being set up. The first KICs are expected to become operational in 2010 and make explicit the role of research and innovation to address new challenges.

[35] European Commission (2008): 2nd Progress Report on SMEs in the 7th R&D Framework Programme. Brussels.

### *3.2.2. FP7 Supporting Sustainable Development*

Besides aiming to strengthen the scientific and technological bases of Community industry, FP7 seeks as well to support sustainable development. It is explicitly recognised that the overarching aim of the Cooperation Specific Programme, by far the largest Specific Programme of FP7, is to contribute to sustainable development.

The renewed EU Sustainable Development Strategy (SDS)[36] recognises the need to strengthen research and technological development in helping to translate the key challenges and objectives of the strategy into concrete action, and to promote a forward-looking and integrated approach to sustainability.

It is only through research that Europe will be able to cope simultaneously with sustainability and competitiveness. Also, the ERA vision 2020 calls for the European Research Area to be "firmly rooted in society and responsive to its needs and ambitions in pursuit of sustainable development". The challenge ahead is to build on the strong sustainability potential of FP7 and to engage Member States in a collective exercise in order to transform this vision into a concrete reality. This should ensure that research throughout the European Union, and in its international cooperation, is fully harnessed to providing sustainable solutions, such as clean production, sustainable agriculture and fisheries, low-carbon energy and transport, sustainable cities, integrated coastal zone management, maritime spatial planning, etc. and to increasing our knowledge of the challenges in the field of environment, including climate change, and our ability to cope with them.

FP7 is tailored to allow EU research to live up to the pervasive and multifaceted expectations for R&D in the SDS, and hence well equipped to promote sustainable development.

FP7 is fully contributing to the 7 key challenges of the renewed Sustainable Development Strategy. Across the ten Themes of the Cooperation Specific Programme, 59% percent of the topics in the three first waves of work programmes (2007, 2008 and 2009) aim to contribute to one or more sustainability objectives. For the first two years (2007 and 2008), this has resulted in a share of 44% of the total budget being allocated to SD-related research. The main contributors are the themes *Environment, including climate change*, *Energy* and *Food, Agriculture and Biotechnology*. But the other Themes are also contributing by funding significant levels of SD-relevant research.

Wherever necessary, joint calls are organised to allow joining efforts from several Themes. This has been the case, for example, for *Biorefineries*, for *Water Technologies*, for *Climate Change and Conflicts*, for *ICT*, to name only a few examples (see also below). The JTIs launched represent also key elements of the renewed SDS (see section 3.4).

Several examples, from a number of FP7 Themes or cross-cutting Activities and to be understood as snapshots of a much broader spectrum, are presented below.

#### 3.2.2.1. Environment

Environmental issues represent one of the major challenges of today's world. All human activities have an impact on the environment and consequently most societal issues are directly or indirectly linked to the environment. With the mainstreaming of environmental issues in FP7, this is valid for all FP activities. In the past two years, environmental

[36] http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0658en01.pdf

consequences of human action have become increasingly important on the political agenda at Member States, European Union and World level. Furthermore, the financial crisis puts more pressure to find new systemic solutions to turn the challenges into economic opportunities. Economically and socially feasible measures that do not neglect their environmental impacts need to be identified and put in motion. Research is crucial to understand eco-systems behaviours, identify impacts of human action and inaction, and find and implement solutions.

Activities under the FP7 Environment Theme have strongly contributed to addressing these challenges:

- Strong contribution to EU policies, e.g. to the. Climate Action and Renewable Energy Package, the Floods Directive, the Droughts and Water Scarcity Communication, the Communication and Action Plan on Disaster Prevention and Early Warning, the Environmental and Health Action Plan, the Environmental Technologies Action Plan, the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan.

- The 2008 Commission Communication on A European Strategy for Marine and Maritime Research highlights the importance of integration between established marine and maritime research disciplines in order to reinforce excellence in science and to boost our knowledge of the oceans and our ability to manage sea-related activities in a sustainable way. This new strategy, which is a key pillar within the European Maritime Policy, was welcomed by the Competitiveness Council of 2 Dec 2008 where it was recognised as a significant progress towards the development of the ERA. Already in the 2009 Work Programme, a collection of 11 marine and maritime topics have been open under the common umbrella of "Sustainable use of seas and oceans", thus representing a first step towards a more integrated approach to marine and maritime research under FP7. The Commission announced the launching in 2009-2010 of cross-thematic joint calls in the field of marine and maritime sciences across several themes of FP7, addressing major research topics requiring a cross-thematic approach such as climate change and oceans, impact of human activities on coastal and marine ecosystems, marine biodiversity and biotechnology, continental margins and deep sea, exploitation of marine renewable energy resources. Guiding principles are the cross-sectoral approach, multi-disciplinarity and integration between disciplines, as well as the emphasis on ambitious projects.

- Strong support to international initiatives, i.e. the International Panel on Climate Change, the Global Earth Observation System of Systems (GEOSS), the Biological Diversity convention.

- Promotion of environmental consideration in the pluridisciplinary and cross-thematic research through joint calls with other FP7 Cooperation Themes, i.e. biorefineries.

- Enhanced stakeholder participation and thereby possible uptake of innovative solutions in society, e.g. through the implementation of the new *Research for the benefit of specific groups – CSO (Civil Society Organisations*) funding scheme, for which the Environment Theme is pioneer.

Among the many achievements and success stories are:

- Multi-scale analysis of biological diversity and development of economic activities from ecosystem services.

- Promotion of European excellence in key domains to foster the implementation of Global Earth Observation System of Systems (GEOSS).

- Support to the development of environmental technologies in the areas of water treatment and water and soil rehabilitation and protection, with clear economic, environmental and social potentials impacts.

- Enhanced links with the UN International Panel on Climate Change to foster EU contribution to future Assessment Reports, including strong advocacy for timely publication of results of FP7 projects.

- Launch of the Sustainable Development Network in the Commission to maintain the attention in the Framework Programme on the objectives of this strategy.

- Launch of new ERANETs in the field of Environmental research, including the Environment and Health area.

#### 3.2.2.2. Energy

The availability of clean, dependable and affordable energy is one of the major challenges in Europe and at the core of public interest. The Strategic Energy Technology (SET) Plan[37] is an integral part of the European energy policy. In line with the objectives of the energy package, the SET-Plan sets out a series of 'key technology challenges' for the next 10 years, both to meet short-term targets (2020 time horizon) and to prepare the ground for meeting the even tougher longer-term challenges (2050 time horizon).

The SET plan aims at accelerating the development and wide-scale application of low-carbon energy technologies for the achievement of the EU's set energy and climate goals for 2020, and at positioning the European industry in a leading position worldwide while contributing to the transition to a low-carbon economy by 2050.

This will be done through an integrated approach from the birth of the idea to its commercialisation, seeking to address simultaneously the three pillars of the Community energy policy: security of supply, sustainability and competitiveness.

The implementation of the SET Plan will evolve around four dimensions:

- Strategic planning: Steering Group of Member States *(to drive the process)*, European Energy Technology Information System (SETIS) *(mapping of energy research activities in Europe)*, 2009 Technology Summit *(to bring together and engage all stakeholders in the entire innovation system, from industry to customers).*

- Effective implementation: European Industrial Initiatives (EEI) *(Industry led programmes)*, European Energy Research Alliance (EERA) *(Research led programmes)*, Networks of the future *(to optimise and harmonise the development of low carbon integrated energy systems across the EU and its neighbouring countries)*.

- International cooperation: Cooperation with Third Countries will be an integrated part of the SET Plan activities to be addressed in the overall Strategic European Framework for

[37] European Commission (2007): Communication "A European strategic energy technology plan (SET-plan)", COM(2007)723. Brussels.

International S&T Cooperation (mapping of cooperation activities between EU and Third Countries, analysis of scope, coherence and complementarity of various activities, identification of common priorities and proposals for implementation, impact assessment).

- Identification of resources via a Communication on financing low carbon technologies in summer 2009: The Communication will address resource needs and sources, examining all potential avenues to leverage private investment, including private equity and venture capital, enhance coordination between funding sources and raise additional funds.

The emphasis will be notably put on the establishment of the European Energy Research Alliance which should define and implement future joint programmes for basic research and also on the implementation of six new European Industrial Initiatives which should define industry-led programmes (wind, solar, CCS (carbon capture and storage), grids, bio energy and fission).

The European Industrial Initiatives together with the Alliance are the most visible, concrete part of the SET-Plan. The Initiatives and the Alliance are the places to work with the Industry and the Research Community to accelerate the development of strategic low carbon technologies. Since the adoption of the SET Plan in November 2007 important progresses have been achieved:

- The European Industrial Initiatives are progressing at a different pace due to the organisation, the structure of the sectors and the degree of ambition and commitment of the industries. Wind, solar, and CCS are today the most advanced. The grid initiative is the less advanced. Progress across the 6 initiatives is variable but three initiatives at least should be launched by end 2009 (from CCS, solar and wind).

- The Alliance is running very well trough interactions between Institutes and discussion on setting up the Alliance at working and decision level. The EERA plans to launch 3 Joint Programmes in 2009 and 3 more in 2010 and will organise 3-8 workshops to prepare and define the JPs. These programmes will pioneer the joint programming approach through which the EERA members will join forces. The accent should be put now on the governance structure and the financing issue.

- The FP7 Energy Work Programme 2009 was the first one to take into account the priorities and technologies identified in the SET-Plan. In particular a large effort was dedicated to second generation bio fuels.

The current legal and financial instruments should permit to realise the objectives:

- If the SET-Plan has an ambition that is beyond the scope of FP7-Energy in the short term, the FP7 Energy Work Programme is the main instrument we have at our disposal in the short term to support its implementation of the SET-Plan.

- Possible additional financing sources at community level could be the revenues from 300 million allowances of the Emission Trading Scheme and the recovery plan which could be used to finance initially the CCS, wind initiatives and other renewable initiatives.

- Regarding the possible structure of the EIIs, many options are possible but a light and flexible form is favoured over a JTI like one to enable faster progress. There is often the misperception that the Commission envisages a Joint Technology Initiative, under Art 171, as the sole implementation mechanism for each of these initiatives.

- For the Alliance, the implementation of Joint programmes could take a number of forms, from use of the ERA-net+ to instrument to a legislative proposal on the basis of article 168 (Supplementary programmes) of the EC treaty.

Future Work Programmes need to reinforce the focus on the key challenges of the SET-Plan, in particular anticipating the objectives of the embryonic European Industrial Initiatives and the potential joint programmes of the European Energy Research Alliance. The 2010 Work Programme will foresee a support action to the EERA infrastructure. A strong support to the SET plan has to be conciliated with the wider priorities of the Specific Programme, striking an appropriate balance and ensuring the effective implementation of the activities decided by Council and Parliament. This question of keeping the right balance is a major issue when implementing the yearly Work Programmes.

It is more and more obvious that Energy research depends on the successful cooperation of different traditional fields of Research in order to produce breakthrough innovative results. In the domain of hydrogen and fuel cells, for example, this has led to the setting up of the Joint Technology Initiative on fuel cells and hydrogen, co-funded from four themes (Energy, Transport, NMP and Environment) and from industry, leading to an initiative having the necessary focus and critical mass to create the conditions for the growth of a strong and competitive European industry (see also chapter 3.4).

Other approaches for cross cutting research have been taken in recent calls (2008 and 2009) in other areas, with joint calls gathering several directorates or DGs around topics such as materials for energy applications, biorefineries or ICT for smart grids. The excellent answer to the joint call with materials has shown the interest of the research community for this type of calls. The current interest in the joint call on biorefineries further supports this approach of large, integrative projects.

Biorefineries - facilities that combine biomass conversion processes and equipment to generate fuels, power and new materials from biomass - are at the core of several initiatives serving Competitiveness, Energy and Environment policies, notably the Climate Action and Renewable Energy package. The Biorefinery Joint Call[38], a widely integrated approach involving four research themes under FP7 can be considered as a pilot experiment for future multidisciplinary approaches and represents a true achievement.

The complexity of the topics tackled and the necessity to obtain the necessary critical mass and visibility required the different scientific communities and disciplines concerned (environment, materials, biotechnology, energy) to work together exploiting all possible synergies. The response from the research and industrial community was very good with sixty three proposals.

The assessment of the true sustainability of the future solution proposed, building on the life cycle assessment work done by the Environment Directorate in DG RTD and the Institute for Environment and Sustainability of the JRC in Ispra, represents one of the special features of this call. In particular the problem related to the identification of the sustainability indicators for second generation biofuels and all biomass-related products will represent a central research element in all funded projects and will put the EU at the forefront in leading the development and production of bio-based products (materials and energy) in an environmentally, economic, and socially acceptable way.

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[38] OJ 2008/C 226/06

It is therefore expected that the projects which will emerge will be coherent and integrate all the aspects of Biorefineries including the demonstration dimension, leading to concrete advances in that domain.

#### 3.2.2.3. Food, Agriculture and Fisheries, Biotechnology

The primary aim of the *Food, Agriculture and Fisheries, and Biotechnology* Theme is to build a 'European Knowledge Based Bio-Economy' (KKBE). The most important instruments used are ERA-NETs and European Technology Platforms (ETPs): Two ERA-Nets have been established so far, and two others are under negotiation, while there are 8 officially recognised ETPs and one emerging initiative. A specific project encourages ETPs to collaborate, to explore possible synergies and to further improve relations with national research funding organisations and ERA-NETs.

The development of a bio-economy ERA is further enhanced through a reinforced cooperation between Member States under the *Knowledge Based Bio-economy Network (KBBE-NET),* and in the *Standing Committee on Agricultural Research (SCAR):* SCAR has set up 10 ERA-NET-like collaborative working groups (CWGs), some of which have led to new ERA-NETs. This is complemented by KBBE-NET activities on biorefineries and marine-biotechnology. A CWG on Synthetic Biology is also being established under the KBBE-NET. An *Expert group on Food and Health* will provide advice for long-term strategic approaches to address societal challenges, to increase cross-border research programmes, to achieve a critical mass in research on food and health and to identify gaps in research, technological tools and infrastructures.

The *Food, Agriculture and Fisheries, and Biotechnology* Theme supports a wide range of Community policies and strategies, including the Energy SET plan and the Integrated Maritime Policy. This also includes support to policy reform, for example projects in areas such as trade analysis to prepare for WTO and bilateral trade negotiations, market analysis and rural development in the context of the CAP reform as well as projects regarding sustainable food chains and novel approaches to governance in the context of the CFP reform. A number of projects are also addressing the future of European farming, the challenges linked to climate change and the advantages of new technologies in robotics and information technologies.

International cooperation in this theme has successfully reached out to a wide range of Third Countries world-wide, via the general opening of all topics to Third Countries, but also through dedicated international initiatives, coordinated calls with Third Countries (with Russia and with India), and the twinning with projects funded by programmes in Third Countries (with Canada). The large response by Third Countries in proposals selected for funding (12%) as well as the high success rate of applicants from Third Countries (20%) are very promising.

#### 3.2.2.4. Health

The FP7 Health Theme has strongly contributed to EU policies in the field of *Health & Public Health*, e.g. through the chapter on *Optimizing the delivery of health care to European citizens*, which is fully in line with the principles of the new EU Health Strategy *Together for*

*Health: A Strategic Approach for the EU 2008-2013*[39]. Building on current work, this Strategy aims to provide an overarching strategic framework spanning core issues in health as well as health in all policies and global health issues.

Further achievements and highlights are:

- The Council Regulation establishing the *Innovative Medicines Initiative Undertaking (IMI)* was published in the Official Journal in February 2008. Via this Initiative, and in partnership with the European Federation of Pharmaceutical Industries and Associations (EFPIA), the Community will significantly improve the efficiency and effectiveness of the drug development process in Europe with the long-term aim that the pharmaceutical sector produces more effective and safer innovative medicines.

- The *European and Developing Countries Clinical Trials Partnership (EDCTP)*, the first application of Art. 169, whereby the Community can participate in research programmes undertaken by several Member States, concentrates efforts on fighting global health threats: HIV/AIDS, malaria and tuberculosis. In October 2008 the Commission adopted the Communication on the Progress Report on the EDCTP Programme (Sept. 2003 - May 2008). The feasibility of renewing this Programme beyond 2010 is currently explored.

- *Fighting Alzheimer's disease and other dementias* is one of the areas currently being considered for a pilot Joint Programming initiative. The December 2008 Competitiveness Council confirmed the necessity of launching a pilot joint programming initiative on combating neurodegenerative diseases.

- *Cooperation with the US National Institutes of Health (NIH):* The 3rd FP7 call for proposals in the Health Theme included a statement welcoming the participation of partners based in the USA, explicitly waiving any restrictive clause, in response to the announced NIH openness towards European researchers. A joint letter by the then-NIH Director Elias Zerhouni and Commissioner Potocnik advertised this agreement in *Science* on 14 Nov. 2008.

- *International programmes in Genomics and Systems Biology*: A striking feature of the field of genomics & systems biology is a trend towards global collaboration in the planning and execution of large-scale programmes that lie beyond the capability of any single player. Building on large FP6 EU projects in genomics that coordinated their research agendas enabled the EU to become a leading partner in large world-wide efforts such as the *International Mouse Mutant Collaborative Project* co-funded by the EC, NIH and Genome Canada, one of the largest life sciences research endeavour after the human genome project, the *International Cancer Genomics Consortium*, launched in May 2008 or the *International Human Microbiome Consortium* (IHMBC), launched Oct. 2008. These efforts have definitely placed the Commission as a world partner on the map.

3.2.2.5. Partnership with Society

The structure of the Socio-economic Sciences and Humanities (SSH) Programme corresponds to the most important EU challenges: Lisbon strategy and knowledge economy, sustainable

[39] European Commission (2007): White Paper "Together for Health: A Strategic Approach for the EU 2008-2013", COM(2007)630. Brussels. http://ec.europa.eu/health/ph_overview/Documents/strategy_wp_en.pdf

development and cohesion, major societal trends (like demography, migration, family, education, working conditions), globalisation and Europe in the World, citizenship and cultural dimension. The knowledge generated for each of these challenges from the SSH research activity is directly made available to the Directorates-General responsible for the policies. Vice versa, the policy needs are taken into account in the research agenda. As a result of the development of an activity on evidence based policy-making, a series of interactions with policy DGs have been put in place, and important contributions to support policy are designed as the result, such as:

- Collaboration with BEPA on foresight (World in 2025) and support to the preparation of the "Lisbon+" (beyond 2010) strategy and budgetary reform (financial perspectives)

- Providing data bases (e.g. EU KLEMS) and results from analysis on economic issues (Lisbon and competitiveness) and social issues as background information for policy making;

- Support to the Renewed Social Agenda, through research actions related to demography, migration, life conditions, inequalities;

- Exploitation of research results to address the financial and economic crisis as well as global economic governance and Sustainable Development issues: post-carbon society, urban cohesion;

- Launching projects on the changing interactions and interdependencies between world regions and their implications for Europe, and the related issue of addressing emerging threats and risks in a world context and their connection to human rights, freedoms and well-being and contributing to the formulation of External Relations policies ranging from trade to development cooperation, human rights and democratisation policies, and CFSP (e.g. research on the impact on climate change on water and its implications for security).

- Launching research on how citizens and EU institutions and policies relate to each other and the challenges for EU governance of fostering 'unity and diversity', how to achieve active participation by citizens as well as effective and democratic governance, and Europe’s diversities and commonalities in terms of culture, institutions, law, history, languages and values, relevant for Commission initiatives such as Plan D, citizenship policies in the areas of justice, liberty and security as well as in relation to education and culture.

Furthermore, Societal Platforms have been set up, following the experience of technology platforms, to establish research agendas on difficult and complex issues relating to important societal debates. The platforms bring together experts and civil society stakeholders in appropriately structured dialogue.

The Science in Society (SiS) Programme contributes directly to structuring the relationship between research and policies in general (for example through scientific advice) as well as to education and gender equality policies in particular. The main initiatives taken the first years of FP7 are:

- Launching research on the governance of fisheries, and notably on the most useful forms of scientific advice for marine environmental management (SAFMAMS) and on participation of stakeholders (GAP1). Insights from existing research projects and management processes were communicated to scientists and decision makers.

- Launching research on wide-ranging socio-cultural-economic aspects of alternative agri-food production and in the environmental aspects of farming, relevant to the Common Agricultural Policy.

- FP7 projects are fostering more inclusive governance leading to actions and advocacy from citizens and civil society organisations through producing a better understanding of the notion of "sustainable energy production and consumption", crossing perspectives from research, industry, civil society and policy makers, and involving citizens.

- FP7 has advanced ideas about cooperative research processes that have been taken up by the "Intelligent Energy – Europe" Operational Programme of the CIP 2007-2013, the Strategic Energy Technology Plan (COM(2007) 723 final) and the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan (COM(2008) 397 final).

- The Science education initiative (follow-up of Rocard report) has been developed in close co-operation with DG EAC and is intended to complement national efforts to improve science education. The close collaboration between the two DG's and the education and the research policy is demonstrated by the use of a DG EAC led "Open Method of Coordination" group for the purpose of better defining the content of calls under the Science in Society programme.

- Several actions of the Commission's policy on gender equality (see Roadmap on equality between women and men - COM 2006 final) are implemented through the Science in Society programme. They have led to the publication of the report "Mapping the maze. Getting more women to the top in research" and "Benchmarking policy measures for gender equality in science".

Furthermore, the Science in Society Programme has supported two actions on better inclusion and collaboration with industry as regards diversity of the Science and Engineering workforce and the interest of young people in science and engineering professions. The Science in Society Programme supports industries in their efforts to better understand the conditions to increase the proportion of women in their science and engineering work force. This is done through a cost sharing scheme whereby the Science in Society programme provides funds to social science researchers (human resources management, behavioural science, organisation science) carrying out in-depth analyses in the participating companies. The industry partners in return contribute to their costs in meetings and best practice exchange and also make their employees available for the surveys. As a follow-up to the Rocard Report[40] and an initiative by the European Roundtable of Industrialists the Science in Society programme foresees funding for coordination and exchange of best practice as regards industry involvement in school science.

Further fields of interest are partnerships between Civil Society Organisations (CSOs), which are organised around issues of public concern, and Research Organisations (ROs). CSOs show a growing interest in getting involved in research policy, be it at the level of rendering research findings meaningful, contributing to research agenda setting or even participating in research projects. A new scheme was set up in FP7 to provide a better frame for partnerships

[40] European Commission (2007): Science Education Now: A Renewed Pedagogy for the Future of Europe. Luxembourg.

between CSOs and research organisations (ROs). This scheme has been used so far in sustainable development, social sciences and humanities.

Co-operative Research Processes (CRPs) involve different types of actors and foster mutual learning. Co-operative Research Processes, involving notably CSOs besides researchers, policy makers, and mediators could be the embryo of a specific European way to "define and implement research priorities, engaging citizens and respecting common ethical norms".

The Special Clause for Open Access represents a new feature designed to foster the distribution of knowledge. In August 2008, the European Commission launched an open access pilot in FP7. Under this pilot, grant recipients in seven areas (energy, environment, health, parts of information and communication technologies, research infrastructures, science in society, and social sciences and humanities) will be required to (1) deposit peer reviewed research articles or final manuscripts resulting from their FP7 projects into an online repository, and to (2) make their best efforts to ensure open access to these articles.

The pilot covers approximately 20% of the FP7 budget. A key objective is to ensure fast and reliable access to EU-funded research results, in order to drive innovation, advance scientific discovery and support a strong knowledge-based economy.

#### 3.2.2.6. Fostering responsible Nanotechnologies

As excellent research is becoming more and more complex and interdisciplinary and therefore more expensive, it requires a growing critical mass. Hence the European Union, with a total of € 3.5 billion over the duration of FP7, has more than doubled the budget for R&D for the NMP theme (Nanosciences, Nanotechnologies, Materials & New Production Technologies) compared to FP6. Scientific and technical development will benefit more and more from the convergence of new technologies, such as nanotechnology, ICT, etc., to develop novel approaches leading to advanced applications in many fields (health, environment, etc.). This has already lead – and will lead – to the implementation of coordinated calls between NMP and other priorities as well as joint calls with other countries. Bringing together public and private organisations across Europe to perform collaborative R&D is key for the interdisciplinary approach often needed for N&N (nanotechnologies and nanosciences) as well as for optimising resources.

The potential economic impacts of nanosciences and nanotechnologies research have been highlighted by many analysts. At the same time, the emergence and innovative character of nanotechnology increases the society’s concern regarding nanoparticles hazards, e.g. on public health, safety, environmental and consumer protection, as well as civil liberties. The responsible management of nanosciences and nanotechnologies has become an essential requirement in the last decade. FP7 tackles this challenge through funding for the "Fostering Responsible Nanotechnologies" theme. In addition, the Commission adopted in 2008 a Code of Conduct for Responsible Nanosciences and Nanotechnologies Research. This Code of Conduct will apply in the first instance to research supported by the European Commission and as a matter of fact has been already translated into the FP7 ethical review.

#### 3.2.2.7. Security

The evolving nature of Security issues in a rapidly changing world implies many challenges.

Under FP7, EUR 1.4 billion have been dedicated for Security Research. Making Europe more secure for its citizens while increasing its industrial competitiveness, is the goal of European

Security Research. Europe has never been so peacefully consolidated, so prosperous and secure, yet at the same time so vulnerable against threats like terrorism, organised crime and natural disasters. By cooperating and coordinating efforts on a continent-wide scale, by stimulating the cooperation of providers and users for civil security solutions, the EU can better understand and respond to risks in a constantly changing world.

Today, the evolving nature of security issues in a rapidly changing world implies many new challenges. In order to protect our fundamental rights and freedom, technological preparedness and response of society to potential or actual threats are essential.

Moreover, the relationship between defence technologies on the one hand, and security technologies on the other, is particularly noticeable in the field of R&D, with technologies that show potential developments in both areas (Dual Use). At both research and industrial development levels, synergies are possible and desirable.

FP7 Security Research activities (currently already more then 45 projects) are multidisciplinary and mission oriented. It ranges from technology and methodology development to systems integration. In addition, societal aspects are also addressed.

Overall psychological dimension and preparedness is also of highest importance at all stages, including prevention, crisis and after crisis management. This remains a major challenge for our societies, and it is therefore very promising to see that FP7 security R&D efforts in this field are increasing substantially.

3.2.2.8. Information and Communication Technologies R&D and Innovation

Information and Communication Technologies (ICT) are at the core of the knowledge society. Community activities continue to strengthen Europe's scientific and technology base. They help drive and stimulate product, service and process innovation as well as creativity through ICT use. ICT R&D and innovation create benefits for Europe's citizens, businesses, industry and governments, and reduce the digital divide and social exclusion.

The Commission has recently released a Communication to propose a Strategy for ICT Research, Development and Innovation[41] in the EU with a view to establishing Europe's industrial and technological leadership in ICT, making Europe more attractive to investments in ICT R&D&I and to the best ICT skills, and ensuring that Europe's economy and society benefit fully from ICT developments.

All together, around 550 ICT projects have been launched since the start of FP7 covering 7 major technological or societal challenges in addition to Future and Emerging Technologies (FET) scheme (see below). In most cases, this resulted in a coherent project portfolio made up by a mix of large structuring integrated projects and smaller more focussed and agile projects exploring new research avenues. In all cases the portfolio involves a participant mix of industry, including SMEs, research centres and higher education organisations.

Activities funded under ICT in FP7 are focused on the contributions which ICT can make to key societal or technological challenges. Some illustrative examples are given below:

[41] European Commission (2009): Communication "A Strategy for ICT R&D and Innovation in Europe: Raising the Game", COM(2009)116. Brussels.

- ICT for Energy-Efficiency*:* To protect the environment and maintain its prosperity and competitiveness on global markets, Europe has to focus on energy efficiency in the most energy-intensive sectors. This requires research in information and communication technologies for advanced transport management and control, intelligent power grids or more energy-efficient buildings. 39 projects have been launched since the start of FP7 to develop and test much needed solutions.

- ICT for Health*:* Another successful example for cross-disciplinary research is the *Virtual Physiological Human Initiative (VPH).* This global initiative focuses on computer-based modelling and data processing of biomedical data for clinical applications in the areas of surgical training, planning and intervention; prediction or early diagnosis of disease; assessment of the efficacy and safety of specific drugs. Within ICT in FP7, a portfolio of 15 projects, totalling a funding of €72 million contributes to the VHP Initiative.

- ICT for Ageing Well: In response to the societal challenge of demographic change towards a rapidly ageing population, a large scale initiative on ICT for Ageing Well has been launched in FP7. New ICT solutions can allow elderly people to be socially included and to live longer independently at home rather than in institutions by providing integrated support services providing for example safety, daily living support, mobility and care specifically adapted to the needs of elderly people and their carers. This can strongly increase quality of life and lead to substantial reductions of the rising costs, in addition to creating new markets for relevant products and services. So far more than 30 projects with more than 50 million Euro funding have been launched, and this is complemented by the Ambient Assisted Living Joint Programme with involvement of 23 European Countries and 150 Million Euro funding from FP7. In addition there are currently 10 large pilot projects on ICT for Ageing Well launched under the Competitiveness and Innovation Programme with involvement of 35 regions across Europe.

- Future Internet*:* The internet is today a crucial element of our economy, and the Future Internet will play an even more vital role in every conceivable business process. The structural limitations of today's Internet in terms of scalability, mobility, security and trust are increasingly being recognised world-wide, and research is necessary and underway to invent the "Future Internet". It is therefore important that actions are taken today to make the future Internet fit for new and increased expectations among users, businesses, citizens and governments. In order to foster the European RTD capabilities in this domain, more than 90 projects have been launched so far as part of FP7. More than 450 M€ are dedicated to this theme in the new ICT Work Programme.

In addition to funding research projects centred around clearly identified technology or societal challenges, the ICT Theme also supports frontier research: The Future and Emerging Technologies (FET) scheme acts as a pathfinder for new avenues of research, with the agility to react to new ideas and opportunities as they arise from within science or society. FET research builds new bridges between science and technology and provides a basis for future research agendas. The FP7 FET portfolio is now made of about 75 new projects.

ICT also play a central role in the Research Infrastructures part of the Capacities Programme: Support is provided to ICT-based research infrastructures (eInfrastructure). This builds on the success of the GÉANT research network and the research-Grids infrastructure supported in FP6 and in the first phase of FP7 and will provide higher performance computing, data handling and networking facilities for European researchers in all science and technology fields.

As stated in the above mentioned Commission Communication, maintaining Europe's competitiveness requires bridging the gap between research and innovation. In this respect, it is vital to coordinate activities under the FP with actions supported by the Competitiveness and Innovation Programme (CIP). The *ICT Policy Support Programme (PSP)* supports activities to accelerate innovation and implementation of ICT-based services and systems through the wider uptake and best use of ICT and the exploitation of digital content by citizens, governments, and businesses in such thematic areas as ICT for health, ageing and inclusion, eGovernment as well as Digital Libraries. Following the first call for proposals of the ICT PSP (WP2007), 22 projects were contracted and a second call is now opened.

An example for an activity funded under the Digital Libraries initiative is Europeana, Europe's multimedia and multilingual online library, museum and archive. The service was launched on 20 November 2008 in Brussels. Europeana opens up new ways of exploring Europe's heritage by giving free and fast access to Europe's greatest collections and masterpieces in a single virtual environment through a web portal available in 21 EU languages. Access is provided to more than three million books, maps, sound recordings, photographs, archival documents, paintings and films from cultural institutions of the EU's 27 Member States. Europeana is co-funded by the eContentplus programme.

#### 3.2.2.9. Joint Research Centre (JRC)

Since the beginning of FP7, the Joint Research Centre (JRC) has oriented its Work Programme towards a more direct interaction with policy needs of the Commission Services. In this context, the JRC supports a broad range of policies through techno-economic analyses, the development and validation of test methods, standards and reference materials (regulatory support), harmonisation of methods and measurements, experimental and modelling work.

Through its cooperation with a wide range of organisations and authorities in EU Member States, the JRC is contributing to the European Research Area. For the remainder of FP7, the JRC will continue such contribution through its participation in scientific networks and in indirect actions and through the provision of access to its large facilities.

A recent Ex-post Evaluation of the JRC's activities in FP6, conducted by an international panel led by Sir David King[42], has concluded that "The JRC has undergone a major transformation over the last 10 years, consolidating its position as an indispensable source of knowledge and expertise in support of the political agenda of the EU".

The JRC has continued on this track in FP7, providing important support to EU policy priorities. For example, on climate change the JRC has provided material and studies supporting the Commission's position in the upcoming discussion on the post-Kyoto initiatives. The JRC has provided analyses on the co-benefits of the "two degree" climate policy. Its reference work on emissions of air pollutants was continued**,** and the impact of air pollution policies on climate change and health was evaluated.

In the area of energy the JRC is supporting the SET-Plan establishment and development in particular by providing technology and capacity mapping. The scope of the capacity map is to provide an overview of the energy research capacities in the EU Member States through an inventory of companies involved in energy research, public and private spending on energy

[42] http://ec.europa.eu/dgs/jrc/downloads/2008_expost_fp6_evaluation_final_report_en.pdf

research, institutions involved in energy research, pull instruments used for market deployment of innovative technologies.

In March 2008 the JRC document *Biofuels in the European Context: Facts and Uncertainties* represented a significant input to the development of the Renewable Energy Directive. The report outlined the possible magnitude of carbon emissions in Developing Countries, indirectly caused by land use changes possibly induced by the EU Biofuels Policy; it also pointed at uncertainties and open questions.

The JRC has been working closely with Commission Services and Member States in the Common Implementation Strategy of the Water Framework Directive (WFD). Major achievements were obtained in intercalibration: Intercalibration is the process at the heart of the Directive setting the criteria for the Good Ecological Status to be achieved by Member States for all their surface waters by 2015. It compared ecological water quality assessment systems among countries sharing similar types of surface water bodies.

On International Cooperation, the JRC is developing thematic information systems and decision-making tools for European Commission Services and African stakeholders such as the EU Water Initiative Content Information System, monthly bulletins on food security in the Horn of Africa, the Assessment of African Protected Areas, the Soil Atlas of Africa, the Global Atlas of Desertification, etc. JRC has also installed in Central Africa an observatory on rainforests, combining satellite information and field observations on deforestation, logging and biodiversity. Under the AU-EU Strategic Partnership, JRC is coordinating the action plan for GMES Africa, (Priority 8 on Science, Information Society and Space) and is also contributing to the Chapter on Peace and Security. Capacities-building activities are also conducted in Africa, by short-term training sessions, on-project actions or secondment of JRC staff to the African Union Commission.

On security policy, the JRC has been providing scientific and technical support on monitoring illegal mining activities by means of satellite remote sensing (the Kimberley process). In the context of a tri-lateral Memorandum of Understanding between the European Commission, the World Bank and the United Nations the JRC has carried out comprehensive civilian damage assessments of buildings and transport infrastructures in the core conflict and disaster areas of recently damaged territories (e.g. Lebanon, and conflict in Georgia. Another successful example of early warning systems developed by the JRC is the Continental Early Warning System (CEWS) in cooperation with the African Union’s Peace and Security Directorate to facilitate the anticipation and prevention of conflicts in Africa.

Other important achievements were in the field of food safety, where the JRC is the main provider of certified reference materials in support to EU regulations on the labelling of GM products in food and feed. The JRC hosts the European Coexistence Bureau jointly with DG AGRI, in charge of producing guidelines for best agricultural practices in the coexistence of GM crops with conventional crops.

In relation to the EURATOM Work programme, the JRC activities on nuclear safety include the extension of the TRANSURANUS code for modelling nuclear fuels to those of Russian Pressurized Water Reactors; the launch of the "European Clearing House" to exchange, in the interest of European national safety authorities, best practice on nuclear power plants operational events. Substantial scientific progress was achieved in the field of advanced spent fuel reprocessing and of the separation of highly radiotoxic elements, and in nuclear security (forensic analysis of several finds of illicit trafficking). The JRC continued its successful

coordination of the EURATOM participation in GIF (Generation IV International Forum) and pursued its related scientific activities.

Finally, the Joint Research Centre is currently developing its long-term vision and strategy in order to enable it to make the step-change in its policy support suggested by the King report. This is definitely a challenge for the future, as the JRC needs to meet constantly growing expectations of its customers. This will require regular upgrading of key infrastructures.

#### 3.2.2.10. Space

The objectives of the FP7 Space theme relate directly to the EU sustainable development strategy (SDS), with the major part of the programme being devoted to applications such as global monitoring for environment and security (GMES) with benefits for citizens. GMES and monitoring of climate change issues are integral parts of the space work programme which aims to bring data and information providers together to help improve the quality, accuracy and timeliness of environmental information available to decision makers. By combining data from satellites and earth-based in-situ monitoring facilities, it will be easier to assess environmental impacts and also provide forecasting services as well as mapping support for emergency management.

In the framework of the European Development Strategy, space applications such as Earth observation or satellite communications have been recognized as a central tool to support Africa in its sustainable economic and social development. Knowledge relating to the main agricultural crops (for countries both inside and outside the EU) is indispensable to adopt appropriate policies concerning sustainable development planning and food security.

The initial period of FP7 has seen a major part of the space research activities devoted to sustainable development by supporting GMES related service development as well as contributing significantly to the funding of the GMES space infrastructure necessary to provide space based observational data.

### 3.3. A Boost for Frontier Research: The European Research Council

The creation of the European Research Council (ERC) as a flagship of the EU's Seventh Framework Programme was a landmark event for science policy in Europe.

The European Research Council (ERC) is the first trans-European funding body set up to support investigator-driven frontier research in Europe. The ERC was formally launched in February 2007[43] with the main aim to stimulate scientific excellence by supporting and encouraging the very best scientists, scholars and engineers to perform research beyond the established frontiers of knowledge and the boundaries of disciplines. The European Research Council (ERC) has been given the mandate to deliver competitive research funding at the frontier of knowledge, and at EU level, thus adding value to and complementing national research funding schemes. This presents new and exciting opportunities for frontier research in Europe. Researcher's nationality is not an eligibility criterion as the programme also aims to retain and attract to Europe the best researchers.

[43] Commission Decision No 134/2007/EC of 2 February 2007 establishing the European Research Council (OJ L 57, p.14). Brussels.

The ERC consists of an independent Scientific Council (ScC) composed of scientists, engineers and scholars of the highest repute, representing the European research community in all its breadth and depth, supported by a Dedicated Implementation Structure (DIS). The Dedicated Implementation Structure has been legally established as an Executive Agency (European Research Council Executive Agency – ERCEA) and will be fully operational by 2009. Until then, a dedicated service of the European Commission has the task of building up the operational capacities and management of the ERC funding activities.

The ERC concept that a body like the independent Scientific Council (ScC) would establish a scientific strategy for frontier research for Europe and that it would be effectively implemented was an innovative and high risk approach within FP7. However, the first two years have demonstrated that with the necessary vision, scientific leadership, commitment and effort the concept of a new trans-European entity for funding frontier research could become a reality. The ERC has successfully set up structures and mechanisms and implemented investigator-driven grant schemes in all fields of research based on the sole criterion of excellence.

The Scientific Council has designed the ERC grant schemes to promote research excellence in all fields of knowledge and scholarship and to secure the corresponding human capital, by both retaining in Europe and progressively recruiting from overseas some of the top research talent of both the current and the next generation.

Two "core" schemes have been developed by the ERC within the FP7. Both operate without predefined thematic priorities; individual research investigators have the opportunity to propose "bottom-up" research projects including high risk, interdisciplinary projects, that are evaluated on the sole criterion of excellence.

- *ERC Starting Grants*: Supporting the transition to an independent career for excellent researchers, whatever their nationality, located in or moving to the Member States and associated countries, who are at the stage of starting or consolidating their own independent research team or, depending on the field, establishing their independent research programme.

- *ERC Advanced Grants*: Supporting excellent, innovative investigator-initiated research projects across the Member States and associated countries, directed by leading advanced investigators of whatever age, who have already established themselves as being independent research leaders in their own right.

These schemes have been well received by the research community and already over 500 frontier-research projects resulting from the first calls of the ERC Starting Grant and ERC Advanced Grant schemes have started in prestigious research institutions in Europe.

### *3.3.1. The ERC Peer Review Evaluation Process*

Setting up the ERC peer review system was a major priority for the Scientific Council during 2007. It established Panels covering all scientific domains - Social Sciences and Humanities (SH), Life Sciences (LS) and Physical and Engineering Sciences (PE) covering a broad range of topics, to ensure that proper consideration would be given to high quality, interdisciplinary proposals. Twenty panels were set up for the first ERC Starting Grants call in 2007 covering all scientific domains. In 2008, no major changes were made to the ERC peer review system, the only adjustments made dealing with the handling of inter-disciplinary proposals. Based on

the experience gained from the Starting Grants call, the number of panels was increased to 25 for the first ERC call for Advanced Grants.

The ERC put in place redress procedures, following the model established for FP7. In 2007, the "Ideas" configuration of the redress committee considered 245 redress requests relating to the 9167 proposals submitted following the stage 1 peer review evaluation; this number represents approximately 3% of the total number of applications. The redress committee concluded that 15 of these cases (6% of complaints; 0.16% of proposals received) required a re-evaluation, resulting in 1 proposal being passed to stage 2. Following the stage 2 evaluation procedures, 27 cases were received and have been processed, but none were retained.

In 2008, the "Ideas" configuration of the redress committee considered 172 redress requests relating to the 2166 proposals submitted following eligibility check (cases on eligibility status: 48) and peer review step 1 or step 2 evaluation (cases on evaluation: 124); this number represents approximately 7.9% of the total number of applications. The redress committee concluded that 14 of these cases (11% of complaints; 0.6% of proposals received) required an evaluation (5 eligibility cases) or a re-evaluation (9 evaluation cases). These 14 cases are under process.

### *3.3.2. Performance of the Calls*

The first Starting Grant call was published in December 2006 with a deadline in April 2007. The budget announced for the call was approximately €290 million. A total of 9167 proposals were received of which 8794 were peer reviewed. At the end of the first stage, 559 successful applicants (6%) were invited to submit a more detailed proposal for the second stage evaluation by the deadline of 17 September. The outcome of the evaluation process was a list ranking the proposals according to the conclusions of the panels. With applications averaging ~€1 million, 299 (54%) applicants were funded.

The first call for Advanced Grants was published in November 2007 with deadlines for the following February (Physical Sciences and Engineering), March (Social Sciences and Humanities) and April (Life Sciences). The budget announced for the call was approximately €490 million. A total of 2.167 proposals were received. At the end of the first stage 275 successful applicants (12,7%) were on the top list.

The ERC funds all research areas and scientific disciplines. However, for operational purposes, each call budget is pre-allocated as follows:

- Physical Sciences and Engineering: 39%
- Life Sciences including Medicine: 34%
- Social Sciences and Humanities: 14%

The remaining 13% were pre-allocated to proposals of an interdisciplinary nature.

Of the successful applicants, 2,2% are not currently living in Europe. Regarding host institutions, the majority of them (88%) are located in the EU with the remaining 12% situated in an Associated Country. 72% of the principal investigators will undertake their projects in higher education establishments, 22% in public research centres, 4% in private (non profit) research centres/foundations and the reminder in private/commercial research centres and international research centres.

The average age of the successful applicants is just above 51 years**.** Gender distribution differs largely between the various domains, with a considerably higher number of women selected in the area of Social Sciences and Humanities (18%), as opposed to the domains Life Sciences (16%) and Physical Sciences Engineering (6%).

### *3.3.3. Observing Sound Ethical Principles of FP Research*

Of the 299 projects selected for funding under the 2007 Starting Grants call, 95 were screened by an external ethics panel of which 40 were subjected to a full ethical review. One project involves the use of human embryonic stem cells and has been submitted for opinion of the "Ideas" Programme Committee for regulatory approval (October 2008).

For the 2008 Advanced Grants call 128 proposals were flagged for ethical screening. The screening revealed 55 proposals needing full ethical review, 2 of which proposed to make use of human embryonic stem cells. Copies of national approvals were requested in 62 cases where a full ethical review was not required. The full ethical review was held during November 2008. In two cases, a new ethical review was requested. This was performed in January 2009, and the two proposals were approved on condition that the applicants present further documentation.

There are many challenges still ahead for the ERC. In 2009, the budget for the Ideas Programme will surpass 1 Billion Euro and both the ERC Starting Grant and ERC Advanced Grant schemes will operate. The recruitment to the ERC Executive Agency (ERCEA) during early 2009 will ensure that the ERC has the capacities and competences to implement these two schemes simultaneously. The target is to complete all the required administrative and management measures to achieve the operational autonomy of the ERCEA by June 2009.

The ERC has already had a significant impact in stimulating Europe's capabilities in frontier research and the enthusiastic response from the scientific community has justified the need for such an entity in Europe's portfolio of research programmes.

## 3.4. Partnership with Industry

### *3.4.1. European Technology Platforms*

European Technology Platforms (ETPs)[44] demonstrate the Commission's commitment to strongly engage industry in developing the direction of research and have gained particular momentum in 2008. All 36 ETPs have produced Strategic Research Agendas, which encourage a better coordination of R&D efforts and articulate the views of industry, academia, civil society and other stakeholders on the needs and challenges in key technology areas at European level. These Strategic Research Agendas inspired the design of the main priorities of FP7 and continue to contribute to the development of the annual work-programmes of FP7. ETPs also influence priority-setting in national research programmes and stimulate the mobilisation of research actors at national level via the formation of national platforms. In addition, ETPs have spearheaded the Commission's aim to implement different forms of large-scale public-private partnerships: five ETPs have spun off Joint Technology Initiatives, with more in the pipeline, and others have contributed to industrial initiatives such as the SET Plan. A number of ETPs have moved beyond research agendas by contributing to

[44] More information on the European Technology Platforms can be found on http://cordis.europa.eu/technology-platforms/

the design of the Lead Markets Initiative, the production of standards, reviews of regulatory frameworks, and the strengthening of international research cooperation. Many are also active in research policy debates, including those on the future of ERA.

### *3.4.2. Joint Technology Initiatives*

JTIs are a pioneering approach to develop public-private partnerships set up at European level in order to leverage more R&D investments from Member States, Associated Countries and industry, to boost European competitiveness and to reduce fragmentation of EU R&D. Strong reasons for setting up JTIs are the rapid pace of technological change, the rising costs of research, the increasing complexity and interdependence of technologies, and the potential economies of scale to be gained by cooperation across Europe.

JTIs arise primarily from the work of European Technology Platforms. In a small number of cases, European Technology Platforms have achieved such an ambitious scale and scope that they will require the mobilisation of high public and private investments as well as substantial research resources to implement important elements of their Strategic Research Agendas. JTIs represent an effective means of meeting the needs of this small number of European Technology Platforms.

In practical terms, a JTI is a legally established body (a *Joint Undertaking*), set up on the basis of Article 171 of the EC Treaty. Strategic Research Agendas have been developed for the areas addressed by JTIs through intense collaboration between industry, including SMEs, the research community, civil society organisations and other stakeholders. These agendas provide clear and sound bases for the work programmes of the JTIs, which show a significant leverage effect. JTI members are jointly responsible for monitoring progress, guiding the evolution of the initiatives and adapting the work programmes in response to changing needs. In this respect, each JTI produces an annual activity report and reports to the Council and European Parliament. In addition, the Commission will undertake midterm and final evaluations of each JTI. JTIs have a dedicated budget and staff. The Joint Undertaking provides a framework for the public and private players to work and take decisions together. It organises calls for proposals, oversees selection procedures and puts in place contractual arrangements for projects set up to implement the JTI research agenda. It allows funds from different sources to be jointly managed and is responsible for communication and dissemination activities. Each Joint Undertaking includes one or more decision-making bodies, an Executive Director and staff, as well as internal or external advisory bodies.

In line with the FP7 Cooperation Specific Programme, the Commission presented proposals for Council Regulations for the following first four JTIs in mid-2007.

- *Innovative Medicines (IMI)* aims to provide new methodologies and tools for accelerating the development of safer and more effective medicines for patients, by focusing of research is on developing and validating new techniques and methods.

- *Embedded Computing Systems (ARTEMIS)* aims to help European industry consolidate and reinforce its world leadership in building computing systems into various kinds of electronic equipment or machines.

- *Clean Sky* in the field of aeronautics envisages that innovative, greener technologies will be demonstrated and validated; new technologies are being developed, test flight will be conducted; the result of successful prototypes can be exploited by aeronautics companies.

- *ENIAC* seeks to develop key technologies for nanoelectronics, and key components and devices across different application areas in order to strengthen European competitiveness and sustainability, and to facilitate the emergence of new markets and societal applications in sectors such as health, transport and energy.

These Regulations were formally adopted on 20 December 2007 and published in the Official Journal on 04 February 2008[45].

A fifth Regulation was adopted on 30 May 2008 and published in the OJ on 12 June 2008[46]:

- *Fuel Cells & Hydrogen (FCH)* with the overall objective of speeding up the development of hydrogen supply and fuel cell technologies,

The JTIs have either launched and already closed their first calls for proposals in 2008 – based on the principles of excellence and competition - or entered into the first agreements with named beneficiaries.

Work within the Commission is continuing on a number of practical issues such as recruitment of the JTIs staff, identification of a long-term housing solution, implementation of an accounting system. JTIs are expected to reach financial autonomy in 2009. While it is too early to already assess their impacts, some tentative first lessons can already be drawn considering that JTIs are already proving a valuable pilot experience in setting up public-private partnerships in research at European level.

Irrespective of technological advances which can be expected, what really matters for the success of the initiatives is the proper functioning of the partnerships, with industry playing its role to the full side by side with the Commission to achieve maximum industrial value from every Euro invested. JTIs are expected to play an important role in shaping Europe's research landscape, by stimulating research investment, building critical mass by uniting fragmented efforts and accelerating the process of converting the results of Europe's research into marketable goods and services for the benefit of European citizens.

It should be noted that building on the success of ENIAC and ARTEMIS, preparatory work towards a large-scale European public-private partnership on the Future Internet has also started.

### *3.4.3. Marie Curie Industry-Academia Pathways and Partnerships*

Marie Curie Industry-Academia Pathways and Partnerships (IAPP) are transfer of knowledge networks designed to support commercial and non-commercial research organisations in working together on topics that are relevant to industry at that time. IAPPs aim at opening and fostering dynamic pathways between public research organisations and private commercial enterprises, in particular SMEs, including traditional manufacturing industries, based on longer term co-operation programmes with a high potential for increasing knowledge-sharing and mutual understanding of the different cultural settings and skill requirements of both sectors. Partners include universities and companies of all shapes and sizes. Focussing on joint research projects, IAPPs aim to boost skills exchange between the commercial and non-commercial sectors.

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45 OJ L30, 04.02.2008, p.1-20, p.21-37, p.38-51, p.52-68.

46 OJ L153, 12.06.2008, p.1-20

Noting the importance of proximity in knowledge transfer, the action allows some 30% of local technology transfer while the remainder must be embedded in an industrially relevant network across Europe, and optionally also including Third Countries industry. The long term aim is to create industry - academia networks in specific areas of technology which are defined through need, not politically driven priority setting.

### *3.4.4. Recovery Package*

There is a risk that the current economic downturn will cause a slow down of measures and investments to push for a knowledge-based society. As stepping up R&D efforts remains crucial to boost Europe's competitiveness and sustainable economic growth, targeted and timely countercyclical investments in R&D are central both for overcoming the crisis and for laying the longer-term foundations for sustainable economic growth and employment. This need for further reforms and investments oriented to research and innovation is an essential part of the recovery package endorsed by the EU Summit in December 2008. It aims at directing action to investments in the right skills for tomorrow's needs, in energy efficiency, in clean technologies in the construction and automobile sector, and in infrastructure and inter-connection. The Commission is preparing three new public-private partnerships to boost research efforts in the industrial sectors most seriously affected by the economic downturn: automotive, construction and manufacturing. The research activities will be complemented in a coherent and integrated manner by demand side measures - such as public procurement, standardisation activities - including linking it to existing lead market initiatives.

## 3.5. A new Approach to International Cooperation

International scientific and technological cooperation has been part of the EU RTD policies, since the launch of FP1 in 1983. Initially, this cooperation targeted developing countries and included research themes related to sustainable development issues and key challenges, such as health, food safety, agriculture, natural resources, water, environment protection, etc. In the beginning of the 1990s, similar scientific and technological cooperation activities were established with Central and Eastern European Countries and emerging economies, all of these brought together in 1994, by the INCO Programme, a dedicated programme for international cooperation under FP4 (1994-1998) and FP5 (1998-2002). The ERA Communication adopted in January 2000 identified the need to enhance the international dimension of research within and beyond Europe, and more systematic efforts to open the ERA to the world started to be implemented in FP6 giving Third Country researchers the possibility to participate into two ways, namely through a dedicated FP6 INCO programme[47] and through the innovative general opening of thematic areas to all Third Countries.

FP7 triggered important changes in international research cooperation: A more proactive approach in the relationship with our foreign partners, a more systematic coordination of the international components of the Framework Programme, and renewed efforts to ensure

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[47] Under FP6, the INCO Programme was organised around groups of countries, addressing the following thematic areas and with the following allocated budget:
(a) *Developing countries* – health and public health; rational use of natural resources; food security – € 152,7 million;
(b) *Mediterranean partner countries* – environment, including water renewable energies and cultural heritage; health – € 64,9 million;
(c) *Western Balkan countries* – environment; health – € 19,8 million;
(d) *The Russian Federation and NIS* – environmental protection - adjusting the system for industrial production; communication and health protection – € 85,2 million.

coherence and complementarity with the external policies and programmes of the EU. This new approach has changed drastically the content of the international cooperation activities of the Capacities Programme, moving away from thematically and geographically focussed calls for research projects (now integrated within FP7 thematic programmes) to coordination and competence building activities involving more policy oriented participants e.g. INCO-NET, ACCESS4EU and BILAT projects.

Association of Third Countries to the Framework Programme has reached an unprecedented scope, with 12 - mainly European - countries[48] presently associated, including all of the Western Balkan states. This makes FP7 a true pan-European programme and strongly underpins the objective of building a wider ERA.

Science & Technology (S&T) Cooperation Agreements establish a legal framework to promote S&T cooperation activities between the Communities and Third Countries. Since 1998, the European Community has concluded S&T agreements with 17 countries[49] (soon 20), including almost all the industrialised and emerging countries and a significant number of developing ones; another 15 agreements (soon 18) exist under EURATOM. The implementation of these agreements has become considerably more concrete and substantial, largely thanks to the possibility to translate common priorities and commitments, as identified by the Joint Committees, into targeted calls notably through a series of coordinated calls with Russia, China, India and Brazil.

The S&T Agreements are being used during FP7 to strengthen international collaboration with Third Countries on commonly set priorities and through specific mechanisms such as targeted and co-funded activities such as *Specific International Coordination Actions* (SICAs) and Coordinated Calls. A variety of schemes including SICAs, but also "twinning" of projects at programme level, (SICAs), and "targeted opening" calls, aiming at supporting joint research activities on areas of common interest and benefit, have also been used in the Cooperation Programme to reinforce the participation of Third Countries in the various thematic areas thus increasing the international dimension of their actions.

The Research International Cooperation (RIC) coordination group – involving all the Commission services supporting research - proved to be an indispensible tool to help ensure the consistency of international cooperation activities throughout the Framework Programme. Through the RIC, and through systematic work of monitoring and analysis of the international components of the work programmes, the DG could strengthen its international outreach and better comply with its international commitments.

The new design of FP7 offers strengthened opportunities to reinforce international cooperation. This opportunity has been exploited by the themes, (e.g. by the energy, the ICT and the Socio-economic Sciences and Humanities themes, to name only a few), and many successful initiatives have been launched. For example, regional and bilateral agreements are implemented by SSH according to societal challenges relevant both for the EU and the specific regions. More than ever, international cooperation is the key to address major technological (e.g. Next Gen Internet, higher energy efficiency, networks security) and major societal challenges (e.g. sustainable healthcare, ageing, transport, global warming). International research cooperation on ICT offers a potential to increase European

[48] Albania, Croatia, Former Yugoslav Republic of Macedonia, Montenegro, Serbia, Bosnia and Herzegovina, Turkey, Iceland, Liechtenstein, Norway, Israel, and Switzerland.

[49] Argentina, Australia, Brazil, Canada, Chile, China, Egypt, India, Mexico, Morocco, New Zealand, Republic of Korea, The Russian Federation, South Africa, Tunisia, Ukraine, USA.

competitiveness both internally and on global markets. EU co-operation is of particular importance with both high-income countries and emerging economies in areas where there is clear reciprocity in knowledge sharing and where financial risks associated with the introduction of research results to the market are high.

Even areas, where competitiveness is a key-issue and the competitiveness of the European transport industry has to be improved and not to be endangered, benefitted from the new opportunities, the *transport* theme, with collaboration with China (SICA), a coordinated call with Russia and bi-lateral agreements with India and South Africa being an example.

The Marie Curie International Research Staff Exchange Scheme (IRSES) is a new action aiming at solely at improving international cooperation with key partnership countries. It offers opportunities for a dynamic series of short term exchanges of not only scientific staff, but also staff that support research at strategic and operational levels. The IRSES Action has been successfully launched. Already in the first call in 2008, some 179 institutions from 75% of all eligible Third Countries applied.

It should not be overlooked that, in strategic terms, the Marie Curie Actions are the most international initiatives in FP7. Almost all countries globally can participate in almost any research or training activity. In some cases, the FP7 pays for the costs of short term fellowships for Third Country researchers, their strategic and management staff and technical teams to create lasting networks of cooperation. There is an ongoing commitment which is confirmed annually to focus not less than 25% of all funds in International Cooperation projects.

Future International Cooperation activities will reinforce the external dimension of the European Research Area (ERA) and in particular contribute to the implementation of the Strategic European Framework for International S&T Cooperation[50]. This Communication sets out a series of orientations for action to make the ERA more open to the world, namely (1) integrating Europe's neighbours into the ERA; (2) fostering co-operation with key Third Countries through geographic and thematic targeting; (3) improving the framework conditions for international S&T cooperation (including on global research infrastructures; mobility of researchers and global networking; opening up of research programmes and on intellectual property issues). These actions will be developed through the implementation of a sustainable partnership between Member States and the EC as provided for by the conclusions of the Council of 2 December 2008[51].

A Strategic Forum for International Cooperation will be established in 2009 at the request of the Council, and this will develop the partnership between Member States and the EC in the context of the further realisation of the ERA. One of the aims of the Strategic Forum is to develop common priorities for international cooperation which should lead to joint activities and positions vis-à-vis Third Countries and within international fora.

Association Agreements led to a more intensive cooperation with the closest partners of the EU. In addition to the 12 countries currently to the FP, Moldova and Russia have formally requested to be associated. Furthermore, the association to the FP will be opened for ENP Countries including the Mediterranean Dialogue Countries. This process of widening the geographical scope of the ERA will significantly contribute to the EU's policy goals towards

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50 European Commission (2008): Communication "A strategic European Framework for International Science and Technology Cooperation", COM(2008)588. Brussels.

51 Conclusions of the 2891st Competitiveness Council, 2nd December 2008

these countries, in particular building sustainable economic prosperity. In this context FP7 INCO-Net has an important role to play through provision of support to regional platforms for S&T policy dialogue and priority setting at bi-regional level bringing together Member States and European Neighbourhood Partnership (ENP) countries in this process.

The funding mechanisms implemented under FP7 (SICAs, etc.) will continue to be the mainstay of international S&T Cooperation actions, but will progressively be influenced by the new Strategic European Framework. The Framework provides for greater coherence between policies with respect to international co-operation and will impact on the articulation of policies (already beginning to be demonstrated with the implementation of the Joint Africa-EU Strategic Partnership and the opportunities for association to the Framework Programme of European Neighbourhood Partnership (ENP) countries). Russia is already an important research partner for the EU and this EU-Russia S&T cooperation could be further enhanced. Nevertheless the development of this research ties needs to be seen in the wider context of EU-Russia relations. The Framework Programme could develop in the Capacities Programme specific competence building actions targeting the ENP countries that are complementary with the ENPI (European Neighbourhood and Partnership Instrument) activities.

In 2005, the EU undertook to ensure that all community policies assist Developing Countries achieve the Millennium Development Goals[52]. In December 2007, a new EU Africa Strategic Partnership was agreed, which included science as a priority and provides a long-term vision for the benefit of the people of Africa and Europe. It has as an objective to bridge the scientific divide, to strengthen African S&T capacities and enhance the role of S&T as key enablers for poverty reduction, growth and socio-economic development.

This Partnership is the foundation of the new approach to S&T co-operation with Africa and offers an opportunity to build up a new synergy between the EU Science, Technology, Innovation and Development policies and instruments.

The Framework Programme should contribute to the implementation of the Partnership in close cooperation with the Development Programmes of the EC, which should help increase the research capacities of the African countries and the joint initiatives of the EU Member States. Nineteen "lighthouse projects" were recently approved out of which six are considered as "early deliverables" and will be implemented at short term. Their main aim is to enhance African R&D activities in some selected key sectors such as water and food security at river basin scale and to promote scientific excellence through grants offered to African researchers.

### 3.6. Optimising Finance Opportunities: The Risk Sharing Financial Facility

The Risk Sharing Financial Facility (RSFF) represents the result of a joint vision and common effort of the European Commission and the European Investment Bank to develop new financial instruments for the knowledge economy. The RSFF is a risk-bearing instrument by which the EIB covers, through capital allocations and provisions, the risks it bears when lending directly or when guaranteeing loans made by intermediaries. Up to € 1 billion will be

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[52] European Commission 2005): Communication on "Policy Coherence for Development - Accelerating progress towards attaining the Millennium Development Goals", COM(2005)134. Brussels.
General Affairs and External Relations Council (GAERC) Conclusions on the Millennium Development Goals (Doc. 9266/05).
Joint Statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the European Commission on European Union Development Policy: "The European Consensus" (OJ 2006/C 46/01).

made available from each institution for RSFF over 2007-2013, allowing the fund to make available financing in the order of € 10 billion for investments in research, development and innovation. RSFF is managed by the European Investment Bank (EIB).

The RSFF targets European research-intensive entities including SMEs and research infrastructures, irrespective of size and ownership, which contribute to the objectives of FP7. The financing may be provided either to entities active in the field of research and innovation or to individual research-related projects, often at a demonstration stage.

Smaller companies and projects involved in research, development and innovation may benefit via the intermediation of financial institutions with which the EIB has established, or will enter into, risk-sharing agreements.

The RSFF Co-operation Agreement between the European Community and the European Investment Bank was signed on 5 June 2007 and entered into force on signing.

Over 30 seminars, workshops and meetings, and 17 conferences were organised with the stakeholders of FP7 and with potential RSFF borrowers in 2007.

A network of RSFF liaison officers has been established that is regularly updated on RSFF progress. RSFF team continues to present RSFF to colleagues from DG RTD and other DGs of the research family, either in the form of dedicated presentations or within the framework of FP7 training sessions.

Since its launch in June 2007, the EIB Board has approved 30 RSFF operations. The volume of signed loans has reached the EUR 2 billion mark at the beginning of 2009. The main beneficiaries of RSFF loans have, so far, been mid-cap and larger companies as well as dedicated companies implementing one particular demonstration project. The geographical coverage of the RSFF includes already loan operations in 14 European countries and will be further extended during the year 2009.

The RSFF has also provided loan finance to companies in different sectors, particularly in Energy, ICT, Life Sciences and Engineering/industry including automotive companies with important environmental benefits in the context of their RDI investments. Over 10% of the current RSFF portfolio of the EIB is devoted to risk-sharing loan arrangements with financial intermediaries in order to make RSFF finance available to SMEs in need of smaller loan amounts.

The RSFF can also support the implementation of Research Infrastructure projects, notably those of European interest which have been included in the ESFRI list. For one important ESFRI project, the EIB has already received the EC's approval to provide an RSFF loan of up to EUR 100 million if requested by the project promoters.

## 4. BETTER MANAGEMENT THROUGH SIMPLIFICATION

After the first years of the FP7, the proposers and the Commission services find themselves in a different and better environment of everyday administrative reality in relation to the previous FPs. They can avail themselves of many new concrete tools of various kinds that simplify the procedure of the disbursement of the Community funding and they can see new structures in place that will take up major parts of the actual FP implementation.

And yet, at the same time as these improvements set in, it becomes more apparent that things can not get much better as long as there is no change in the legislative environment.

### 4.1. Concrete Achievements

Achievements in terms of rationalising and simplifying programme management are making research money go further than it has done before.

The reinforced research evaluation facility established in 2006 is capable of hosting more than 500 evaluators on site with further remote and video-conferencing facilities. It has already evaluated tens of thousands of proposals received through a new Electronic Proposal Submission Service (EPSS) and managed hundreds of calls.

The time and effort needed to deal with financial and administrative requirements has been reduced through simplification of FP7 and through externalisation and specialisation in management tasks. The funding models have been rationalised and the EU co-funding rate has been increased from 50 % of total project cost to 75% for public research organisations and SMEs. The introduction of a guarantee fund has made ex-ante controls of financial capacity of participants obsolete, helping SMEs and smaller organisations to participate. Forms and procedures have been rationalized, guidance has been clarified, reporting requirements have been reduced by 25% and practical measures such as the Unique Registration Facility are reducing time to contract.

The simplification achieved in the 7$^{th}$ Framework Programme will in itself lead to fewer errors in financial reporting over the next few years. In fact as it is already the case for FP6, a 12 fold increase in ex-post audits of existing contracts in the last 2 years has increased the assurance that errors in legality and regularity are identified and corrected. Where there are systematic errors the correction will be extrapolated to other contracts. Depending on the effectiveness of the extrapolation stage, it remains feasible to bring down the level of error over the life of the programme below the current level of approximately 2.5%.

Accomplishments that have been brought about so far are described in more detail below. Many of them have been indicated and sketched already back in 2005 in the Commission Staff Working Document "Simplification in the 7$^{th}$ Framework Programme" (SEC(2005) 431), which was presented together with the Commission's proposals for FP7. In particular, important progress was made with regard to the following objectives:

- Consistent, high quality communication through the ameliorations on project reporting and on streamlining and harmonisation of documentation.

- Rationalisation of the requests for information addressed to participants through the possibility of the unique registration of legal entities, the improvements on grant agreement negotiation and on project reporting. Moreover, the Participant Portal that is currently

under development will further reinforce the systematic use of electronic tools for all interactions with participants related to proposal and grant management, providing a unique user interface.

- Guaranteeing the protection of the Community's financial interest without imposing an undue burden on participants by reducing a-priori controls to the bare minimum through the certification of costs and fewer ex-ante capacity checks.

- Full operational autonomy entrusted to consortia through the novelties on project reporting.

- Initial steps towards flat-rate financing within a simplified framework of forms taken by Community financial contributions through the introduction of the use of a lump sum approach for subsistence and accommodation costs. However, some DGs have opted for not applying such schemes to grant beneficiaries.

Other goals, like removing the need for complex cost reporting models, clarifying definition of eligible costs and simplifying support rates per type of activity were reached with the adoption of the FP7 Rules for Participation and dissemination, whereas further progress on streamlining the selection process was held back due to lack of legislative decision, despite the Commission's proposals.

#### *4.1.1. A Series of Important Steps Forward*

Accomplishments (already attained or well after their starting phase) include the following:

**(1) Fewer audit certificates - Certification of costs:**

The number of audit certificates (certificates on financial statements) is substantially reduced in FP7 compared to FP6: only beneficiaries receiving more than € 375 000 will have to provide a certificate; (in FP6, every beneficiary had to submit at least one audit certificate at the end of the project no matter what the amount involved). A simulation based on the population of FP6 contracts shows that only 18% of the participations receive EC contributions above € 375 000. Assuming a similar distribution of funding in FP7, this would mean that for 82% of FP7 participations no certificates would be necessary – a reduction of the number of certificates by a factor of ten compared to FP6.

**(2) Fewer ex-ante financial capacity checks and protective measures:**

The introduction of the guarantee fund in FP7 allowed the abolition of ex-ante financial viability checks for the majority of participants. These checks are now only necessary for coordinators and participants requesting more than € 500 000 EC contribution. In FP6, only 11% of the participations received more than € 500 000 EC contribution. Assuming a similar distribution of funding in FP7, this would mean that nine out of ten participants in FP7 would be exempt from any ex-ante financial capacity check.

In addition, bank guarantees, blocked accounts, reduced pre-financing or other measures of financial protection are no longer requested by the Commission.

Both the increase of the threshold and the abandonment of protective measures simplify participation in particular for SMEs and start-ups.

**(3) Unique registration of participating legal entities:**

Repeated requests for the same documents on the existence and legal status of participants were a major cause of complaints in previous framework programmes. Since the start of FP7, the principle of unique registration is introduced. A central validation team operates since mid-2007. Legal documents have to be provided only once and validation by the central team holds for all future participations in FP7. The second phase of this project was the introduction of the Unique Registration Facility (URF), a Web-based system where the participants themselves can access and change their legal data online. This system, common to all research DGs, is in operation since the beginning of May 2008. More than 11000 entities are already registered. The unique identifier (Participant Identification Code – PIC) given to each legal entity will provide for several improvements in the future FP7 grant and programme management:

- It avoids repeated introduction of the same data in different systems and provides easy traceability of participations through the complete project lifetime and in all IT systems. It improves thus the quality and coherence of statistics and reporting.

- It allows an easy propagation of changes to the legal entity data to all systems and parties concerned in all grants in which an organisation participates.

- It provides for a more coherent implementation and extrapolation of audit results.

- It gives each organisation the possibility of easy monitoring of their participations in FP7 (via the Legal Entity Appointed Representative – LEAR, who will have online access to the list of participation of his organisation).

**(4) Quicker grant agreement negotiation:**

A new Web-based electronic system for negotiation, used by all research DGs, was introduced by the end of 2007. The system allows online interaction between participants and Commission project officers. Since May 2008 it is linked to the unique registration facility, providing for seamless data exchange on legal entities.

**(5) Easier project reporting:**

Several elements of simplification are being introduced in the processes and rules for intermediate and final scientific and financial reporting in FP7 projects:

- The reporting guidelines and the structure of reports were considerably streamlined.

- We strive for an extension of average reporting and payment periods from 12 months (in FP6) to 18 months. This could reduce the overall number of reports and payment transactions by 17% (estimation based on simulations of the FP6 portfolio), thus reducing the workload both for the participants and the Commission services.

- The amount of data collected in reports is considerably reduced. Detailed questionnaires on wider societal implications will no longer be required with each intermediate report but only once (in the final report).

- A Web-based electronic system for collecting financial reports ("forms C") is online since December 2008. The system is linked to the unique registration facility and to the grant management system and presents pre-filled forms with automatic checks and calculations

for coordinators, simplifying thus financial reporting and reducing error rates. A similar system is in preparation for the scientific reporting that will simplify interactions between participants and the Commission and will provide better possibilities for the dissemination of project results.

**(6) Faster conclusion of amendments:**

Amendments to ongoing contracts/grant agreements represent a considerable administrative workload both for participants and the Commission. The FP7 amendment guidelines were therefore prepared with the aim of identifying all possibilities for simplifying rules and procedures. The main result is that in FP7 the coordinator can not only request amendments on behalf of the other beneficiaries (as in FP6) but can also accept them on behalf of them. Also, some changes (such as changes in the address or legal name of the beneficiary) in on-going grants will not require a formal amendment in each of the grant agreements where the beneficiary participates but just the sending of one information letter to the legal entity. Important simplifications in the amendment processes will be enabled by the unique registration facility. Changes to the status of a legal entity are now automatically propagated to all grants concerned in all Directorates General of the Commission involved in the implementation of FP7 ("the research DGs") and to the respective participant, coordinators and project officers.

**(7) Streamlining and harmonisation of documentation:**

Documentation and guidance notes on the various aspects of FP7 implementation are clearer and simpler and adapted jointly by the research DGs, preceded by consultation of external stakeholders, as e.g. via comments received directly from beneficiaries in the inquiry service (helpdesk), via the network of legal and financial national contact points and the sounding board of smaller research actors.

**(8) Use of a lump sum approach for accommodation and subsistence costs:**

As one step towards extended use of lump sums and flat rates in FP7 funding, a Commission decision is under preparation, providing the option for participants to use a lump sum for charging travel and subsistence costs for missions in projects. This option should be introduced with the 2010 work programmes.

**(9) Audit certificates:**

The certification policy for the FP7 Grant Agreements was designed with the aim to correct the deficiencies in the imputation of costs noticed under the previous research Framework Programmes. Experience with past Framework Programmes has indeed evidenced that the main sources of errors in the costs claimed by beneficiaries relate to the personnel costs and indirect costs, often calculated according to a methodology which does not conform to the grant agreement provisions. The objective of the FP7 certification on the methodology is to promote the use of correct methodologies by beneficiaries when calculating personnel costs and indirect costs, in particular in those cases when average personnel costs are claimed. In addition to providing better assurance for the sound financial management this new approach enables simplification by reassuring certified beneficiaries that the methodology they use will not be contested in case of an audit if the methodology has been correctly applied, thus limiting the risk of being subject to recovery orders. This approach stems from the strengthened importance attached to accountability in the frame of EU research expenditure and the objective to prevent errors in cost claims submitted by FP7 beneficiaries (reduction of

the error rate). Hence the applicable rules for FP7 and those of FP6 differ considerably as regards average personnel costing methods. It should be kept in mind that the new approach implies a number of challenges as detailed in section (10).

The 7th Framework Programme introduced, in addition to the certificates on the financial statements which have to be submitted after the costs are being incurred and claimed, two new types of ex-ante certificates on the methodology:

- The *certificate on average personnel costs (CoMAv)* which is *mandatory* for any beneficiary intending to charge personnel costs based on average personnel cost calculations.

- The certificate on the methodology for personnel and indirect costs (CoM), optional for any beneficiary of multiple grants fulfilling the eligibility criteria set by the Commission.

While the CoMAv is required for any beneficiary opting for declaring average personnel costs, the CoM is based on a voluntary choice. In 2007, the Commission established eligibility criteria in order to limit the application of the CoM to those recurrent beneficiaries for whom the cost-benefit relation of this certificate would be favourable, judged on the number of 'historic' FP6 contract participations. Those criteria were completed at the end of November 2008 with thresholds related to FP7 grant agreement participations, in order to allow those recurrent FP7 beneficiaries, who were not eligible under the FP6-based eligibility criteria, such as certain beneficiaries from the new Member States, to become eligible.

These certificates are based on "agreed upon procedures" established on the basis of international audit and accounting standards, in close co-ordination with the competent European professional audit body[53].

It must be pointed out that while an accepted certification on the methodology does by no means bind the Commission to never again put into question costs claimed under FP7 grants, nor the beneficiary's underlying methodology, it is aimed to give the beneficiaries and the Commission services reasonable assurance that the methodology used for claiming personnel and indirect costs fulfils certain minimum requirements of the FP7 grant, thereby avoiding that potential errors in the methodology impact in a later stage on payment's of FP7 funds which would require financial adjustments or recovery orders.

Moreover, the certification on the methodology enables an important degree of simplification in the FP7 grant management process: beneficiaries receiving approval from the Commission on their certified methodology for both personnel and indirect costs will not have to submit certificates on financial statements for interim payments. In addition, the final certificate on financial statements will be prepared by the auditors by verifying (for personnel and indirect costs) the compliance with the declared methodology, thus adding simplification to the audit work performed. This should also contribute to the reduction of the cost of the certification process as a whole and in particular for beneficiaries participating in several grants agreements. The ideal target for the provision of this kind of certification is typically beneficiaries of multiple grants which have an established methodology for calculating their rates. As the certification of the methodology is intended to be valid throughout the whole FP7, it is clear that they will benefit from this exercise.

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[53] FEE – Fédération des Experts Comptables Européens

## (10) Two challenges: Average personnel costs and review of transitional flat-rate of 60% for indirect costs

**Average personnel costs:**

The Commission has the political commitment to deliver in FP7 concrete measures towards simplification of reporting and costing requirements for beneficiaries. One major simplification intended by the FP7 rules for participation was the explicit acceptance of the use of average personnel costs as a commonly used accounting practice. Indeed the FP7 Rules for participation and dissemination provide that average personnel costs may be used if they are consistent with the management principles and accounting practices of the participant and *do not differ significantly from actual costs*. The FP7 grant agreement further details that beneficiaries may opt to declare average personnel costs if based on a certified methodology approved by the Commission and consistent with the management principles and usual accounting practices of the beneficiary. Average personnel costs charged by a beneficiary having provided a certificate on the methodology are deemed not to significantly differ from actual personnel costs.

Neither the meaning of "significant deviation" nor the indicators and criteria to be used to assess the average personnel costs methodologies are specified in the FP7 legal texts. It is therefore up to the Commission to establish the criteria under which average personnel cost methodologies can be approved.

Striving to balance the demands of simplification and ensuring the legality and regularity of expenditure, the Commission services are occupied with assessing several possibilities for the acceptability criteria of the average personnel rates methodologies in full knowledge of the fact that the decision on the implementation rules of these costs will directly impact the Commission's time-to-pay track record under FP7.

**Review of transitional flat-rate of 60% for indirect costs**

According to article 32.5[54] of the EC FP7 Rules for Participation and dissemination, the Commission is responsible for the review of the current 60 % transitional flat rate and must establish a new rate applicable for grants awarded under calls closing after 31 December 2009. The same article states that the new flat rate should be an approximation of the real indirect costs concerned but not lower than 40 %.

The revision of the transitional flat rate is aimed to promote the shift of transitional flat rate beneficiaries (typically those who were using the additional cost model in previous FPs) towards actual cost methodologies, with a view to encourage the modernisation and foster sustainability of the financial management of European public research entities. Even though

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54 *"Non-profit public bodies, secondary and higher education establishments, research organisations and SMEs which are unable to identify with certainty their real indirect costs for the action concerned, when participating in funding schemes which include research and technological development and demonstration activities, as referred to in Article 33, may opt for a flat rate equal to 60 % of the total direct eligible costs for grants awarded under calls for proposals closing before 1 January 2010.*

*With a view to facilitating a transition to full application of the general principle established in paragraph 2, the Commission shall establish, for grants awarded under calls closing after 31 December 2009, an appropriate level of flat rate which should be an approximation of the real indirect costs concerned but not lower than 40 %. This will be based on an evaluation of participation by non-profit public bodies, secondary and higher education establishments, research organisations and SMEs which are unable to identify with certainty their real indirect costs for the action concerned."*

the perception of this revision and its potential impact at the level of the stakeholders differs widely from one Member State/Associated Country to another, the final outcome of such revision is evidently a major concern for those beneficiaries currently participating in FP7 under the transitional flat rate regime.

Information was collected on this issue through the network of Legal and Financial National Contact Points (NCPs). Despite the fact that many of the concerned beneficiaries, in certain cases supported by national initiatives, have launched initiatives for the modernisation of their accounting systems, few have at this stage effectively shifted to actual costs methodologies and only a limited number consider themselves in a position to do so by 2010. Moreover the report of the expert group on *'Diversified funding streams for university-based research: impact of external project-based research funding on financial management in Universities'* currently still in draft, leads to similar conclusions: Whilst there is a will at the level of European universities to move towards actual costs in a context of management modernisation, most entities will not be ready for such change by 2010. Therefore, although a reduction of the transitional flat rate would be recommended in order to "encourage" beneficiaries to advance in the path of accounting modernisation, the expert group show concerns about the level of preparation of the universities to such change. This opinion is also in line with the conclusions of the European University Association[55] which pleaded for the 60 % transitional rate to be maintained for the entirety of FP7.

Finally, in parallel to these external consultations, an analysis of data resulting from audits performed by the Commission was carried out, aimed to determine the average rate of indirect costs for those beneficiaries declaring actual costs. The results of this analysis concluded that, on average, the actual indirect costs of the beneficiaries audited (over FP6) was equivalent to 66,65 % of the direct cost minus subcontracting. Although the number of cases sampled for this analysis was limited and the profile of these beneficiaries does not necessarily match those who are eligible for the transitional flat rate, the results of this exercise suggest that the 60 % flat rate is indeed in line with empirical data.

On the basis of the above elements the Commission decision on the new FP7 transitional flat rate will be made by the end of 2009.

### *4.1.2. Executive Agencies: New Structures Entrusted with the FP Implementation*

Quite different in terms of magnitude of scope from the achievements described above, two Executive Agencies have been set up by the Commission in late 2007 (the first ever to be engaged in an FP implementation): The Research Executive Agency (REA) and the European Research Council Executive Agency (ERCEA), presented in section 3.3 above.

By outsourcing the implementation of parts of the Framework Programme to these agencies, a more effective and efficient management is being pursued by clearly differentiating between the Commission's responsibilities for policy development and monitoring and the agencies' responsibilities to implement the FP under the policy guidance of the Commission. It is expected that economies will result from this outsourcing and it will enable the Commission to respond better to the challenges of managing increasing budgets with constant resources. The Commission's evaluation of both REA and ERCEA after the first three years of operation, including an assessment of economies yielded, will provide a valuable input for

[55] "EUA Statement on FP7 Rules of Participation proposals for support rates and costs models", 30 March 2006.

decisions on the design and management of its future research policy with due consideration being given to the budgetary constraints on the Commission's administrative budget.

Although the first two and a half years of FP7 have seen extensive efforts by the Commission services to establish outsourcing as a means for implementing the FP and progress in establishing the two research executive agencies has been more rapid than in previous cases, the creation of an agency during the implementation of FP7 has not proved ideal due to transition problems. Outsourcing would be more effectively implemented if the administrative processes involved were concluded before the operational processes are planned to take place. In short, if further outsourcing is foreseen for future FPs, then ideally such outsourcing should be in place before the new FP begins, with the outsourcing structures foreseen being approved at the same time as the FP is approved.

The Executive Agencies are facing a major challenge with respect to their forthcoming autonomy (i.e. effective assumption of responsibility) in mid-2009 for the management of the programmes falling under their mandate. They will have to demonstrate that they can provide for an efficient management of the project life cycle for the various grants managed under their control while delivering on the anticipated benefits in terms of cost savings to the Community budget. An important dimension of this challenge relates to the setting up of an effective collaboration between the Commission (as supervisory body) and the Executive Agencies to make these outsourcing arrangements effective tools for FP7 implementation under the political steer of the Commission.

#### 4.1.2.1. The Research Executive Agency (REA)

The REA was set up by Commission Decision 2008/46/EC on 14 December 2007 with a view to taking over the implementation of parts of the FP7 Specific Programmes "Cooperation" (themes on Space and Security), "Capacities" (theme Research for the benefit of specific groups - Small and Medium sized Enterprises) and "People".

It will also provide general FP7 support services on proposal reception/evaluation, management of contracts with expert proposal evaluators and legal and financial validation of participants.

The mix of activities to be managed by the REA, ranging from high volume - low complexity - small value grants for Marie Curie individual fellowships to complex multi-partner grants for projects for Space & Security, makes this experiment a very valuable tool for the Commission to test the feasibility for outsourcing on a larger scale.

The major challenge of the REA with respect to its forthcoming autonomy (see above) is underpinned by the fact that during the transition period Commission staff with responsibility for the management of these programmes/services are faced with decreasing staff levels (as services are phased out) and have to set up collaboration arrangements with REA staff to maintain continuity of service and to arrange for on-the-job training of REA staff and an orderly handover.

The REA will have an important role in managing a single face towards the research community in respect of proposal reception, evaluation and expert handling. It will work closely together with the Commission's research DGs in implementing a single IT platform (the participant portal) to serve FP7 participants, thereby overcoming previously existing variants implemented by the different Commission services. This ambitious target will be implemented through a modular approach where beneficiaries will benefit from a gradually

improving service. Senior staff and the first 200 of the planned 550 staff have been recruited in 2008.

#### 4.1.2.2. The European Research Council Executive Agency

The European Research Council Executive Agency (ERCEA) was set up by Commission Decision 2008/37/EC of 14 December 2007 to manage the "Ideas" Specific Programme of the FP7 as part of the ERC[56]. A point of significance is that the governance of the ERC involves a Scientific Council bringing together representatives of the scientific community (see also section 3.3). The ERCEA's staff was increased in 2008 through recruitment, anticipating the increase in the budget of the "Ideas" Specific Programme. By the end of 2008 75 of the planned 389 members of staff were recruited.

Like REA, the ERCEA will be responsible for a number of activities which are either directly related or ancillary to the implementation of its programme. Because of the ERC's mandate and the Scientific Council's unique role in the governance of the ERC, the ERCEA will also have to perform additional tasks like supporting the Scientific Council and implementing the ERC's communication strategy.

### 4.2. Challenges: The Need to Reach an Agreement on the Balance between Trust and Risk in Research Funding

Framework Programmes have been supporting collaborative research in Europe for around a quarter of a century with significant impacts on the competitiveness of European industry, on the knowledge and skills of Europe's research teams and on partnership building across Europe. However, the simplification of their disbursement procedures remains a challenge.

While it is true that further simplification could be brought about by streamlining some administrative processes between Commission departments, a paradigm change is needed in the regulatory environment to make a true and lasting breakthrough. There is an apparent and pressing need to agree, inside and outside the Commission, with all important actors (Court of Auditors, the European Parliament, the Council), where the balance will have to lie between risk exposure fought against with extensive auditing on one side and trust and freedom allowing a number of errors on the other[57].

A Commission Communication on simplification is planned for 2010, which would be the occasion for reflecting on these issues and for taking account of the ongoing dialogue with the Legislative Authority and the Court of Auditors in respect of the concept of the tolerable risk of error[58].

The change of the legal framework is a *sine qua non* for further simplification. Significant changes to the legal framework would be in line with comments from the Court of Auditors which has recommended in its "Annual report on the 2007 EU budget" that project

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56 Commission Decision No 2008/37/EC of 14 December 2007 setting up the European Research Council Executive Agency for the management of the specific Community programme 'Ideas' in the field of frontier research in application of Council Regulation (EC) No 58/2003 (OJ L 9, p.15).

57 The reflections of the High Level Group of Independent Stakeholders on Administrative Burdens, chaired by Edmund Stoiber, could offer one of the platforms where agreement could be based (see: http://ec.europa.eu/enterprise/regulation/better_regulation/high_level_group_is_en_version.htm).

58 Following Communication (COM(2008)866 of 16.12.2008, "Towards a common understanding of the concept of tolerable risk of error"

management takes on "further simplification and clarification of the rules for the calculation and reporting of costs by beneficiaries, where possible introducing a results-based, rather than input-based, financing system" and would be in line with the Court's opinion 1/2006 on the FP7 proposal where it expresses its view that "Rules for Participation should reflect the assumption that researchers participating in the European RTD framework programmes can be trusted to put public money to its best use, provided this remains within the limits established by the legal base to ensure effective and adequate control by the Commission".

On this subject, the European Research Advisory Board (ERAB) opined on February 19, 2009 (see also Annex):

> "To improve efficiency, increase speed and reduce transaction costs, trust is a crucial element. However, the current institutional system seems caught in itself, paralysed by the political necessity to avoid mistakes rather than managing risks. Economically speaking, the associated transaction costs have grown completely out of proportion, with marginal costs of controls, checks & balances exceeding their marginal benefits."
>
> "Use should therefore be made of forthcoming opportunities to revise this Financial Regulation and create a partial exemption for research and innovation, to account for a certain degree of risk that is inherent to these activities. […][T]he European Parliament and the Council [should] enable a risk-tolerant and trust-based approach in research funding, as well as real public-private research partnerships."

If they are to bear fruits for the benefit of the participants in EU research, any such changes must be made before the next Framework Programme starts.

## ANNEX 1:
## GLOSSARY

| | | |
|---|---|---|
| AAL | – | Ambient Assisted Living (Art. 169 Initiative) |
| ARTEMIS | – | Embedded Computing Systems Joint Technology Initiative |
| BSGM/MC | – | Research for the benefit of Specific Groups and Marie Curie Actions |
| CEWS | – | Continental Early Warning System |
| CFSP | – | Common Foreign and Security Policy |
| CIP | – | Competitiveness and Innovation Framework Programme |
| Clean Sky | – | Aeronautics and Air Transport Joint Technology Initiative |
| CoM | – | Certificate on the methodology for personnel and indirect costs |
| CoMAv | – | Certificate on average personnel costs |
| CP/CP-CSA | – | Combination of Collaborative Project & Coordination and Support Action |
| CREST | – | Scientific and Technical Research Committee |
| CRPs | – | Co-operative Research Processes |
| CSA | – | Coordination and Support Action |
| CSO | – | Civil Society Organisation |
| CWGs | – | Collaborative Working Groups |
| DIS | – | Dedicated Implementation Structures |
| EDCPT | – | European and Developing Countries Clinical Trials Partnership |
| EEI | – | European Industrial Initiatives |
| EERA | – | European Energy Research Alliance |
| EG | – | -Expert Group |
| EIT | – | European Institute of Innovation and Technology |
| EIB | – | European Investment Bank |
| EMRP | – | European Meteorology Research Programme |
| ENIAC | – | Nanoeletronics Technologies 2020 Joint Technology Initiative |
| ENP | – | European Neighbourhood Partnership |

EPSS – Electronic Proposal Submission System

ERA – European Research Area

ERAWATCH – Research Inventory

ERAB – European Research Area Board

ERC – European Research Council

ERCEA – European Research Council Executive Agency

ESFRI – European Strategy Forum on Research Infrastructures

ESR – Evaluation Summary Report

ETP – European Technology Platform

EURAB – European Advisory Board

FCH – Hydrogen and Fuel Cells Joint Technology Initiative

FET – Future and Emerging Technologies

FP6 – Sixth Framework Programme

FP7 – Seventh Framework Programme

GEOSS – Global Earth Observation System of Systems

GIF – Generation IV International Forum

HES – Higher or Secondary Education Organisation

IAPP – Marie Curie Industry-Academia Pathways and Partnerships

ICT – Innovation & Communication Technology

IHMBC – International Human Microbiome Consortium

IMI – Innovative Initiative Medicines Joint Technology Initiative

IRSES – Marie Curie International Research Staff Exchange Scheme

JAC – Joint-Assessment Committee

JRC – Joint Research Centre

KKBB – European Knowledge Based Bio-Economy

KBBE-NET – Knowledge Based Bio-Economy Network

JTI – Joint Technology Initiative

| | | |
|---|---|---|
| KIC | – | Knowledge and Innovation Community |
| LEAR | – | Legal Entity Appointed Representative |
| N&N | – | Nanotechnologies and Nanosciences |
| NCP | – | National Contact Point |
| NIH | – | National Institutes of Health (US) |
| NoE | – | Network of Excellence |
| OMC | – | Open Method of Coordination |
| OTH | – | Other |
| PRC | – | Private for Profit Organisation (excluding Education) |
| PSP | – | ICT Technologies Policy Support Programme |
| PUB | – | Public Body (excluding Research and Education) |
| RDI | – | Research Development Innovation |
| REA | – | Research Executive Agency |
| REC | – | Research Organisation |
| RIC | – | Research International Cooperation |
| RO | – | -Redress Office |
| ROs | – | Research Organisations |
| RSFF | – | Risk Sharing Financial Facilities |
| SAFMAMS | – | Scientific Advice for Marine Environmental Management |
| SCAR | – | Standing Committee on Agricultural Research |
| ScC | – | Independent Scientific Council |
| SDS | – | Sustainable Development Strategy |
| SET | – | Strategy Energy Technology |
| SETIS | – | European Energy Technology Information System |
| SF | – | Structural Funds |
| SICAs | – | Specific International Coordination Actions |
| SiS | – | Science in Society |

| | | |
|---|---|---|
| SRA | – | Strategic Research Agenda |
| SSH | – | Socio-economic Sciences and Humanities |
| URF | – | Unique Registration Facility |
| VPH | – | Virtual Psychological Human Initiative |
| WFD | – | Water Framework Directive |
| WGCM | – | Working Group on Certification of Methodology |

# ANNEX 2:
# ERAB VIEWS ON THE CONTRIBUTION OF FP7 INSTRUMENTS TO THE ESTABLISHMENT OF A GENUINE EUROPEAN RESEARCH AREA

## EUROPEAN RESEARCH AREA BOARD

**ERAB views on the contribution of FP7 instruments to the establishment of a genuine European Research Area**

19 February 2009

### 1. Introduction

Since the launch of the first Framework Programme (FP) 25(!) years ago, tens of thousands of transnational projects in successive FPs have prepared a solid foundation for the European Research Area (ERA). Any researcher can safely call any public or private colleague in Europe to set up collaboration: as the FP rules of the game are clear, these researchers can talk science and technology right away, without having to worry about the conditions and modalities of collaboration. In addition, matchmaking mechanisms are in place to facilitate partnering. The resulting collaboration fabric is a unique asset for Europe.

### 2. Contribution of FP7 instruments to the establishment of the ERA

The European Research Area Board (ERAB) wishes to highlight some FP7 instruments that are particularly contributing to the establishment of a genuine ERA:

FP7 Cooperation Programme

- Collaborative research continues to foster transnational partnerships.
- The 34 European Technology Platforms (ETPs) have produced widely recognized pan-European Strategic Research Agendas (SRAs). In addition to contributing to the definition of the themes and Workprogrammes in the Cooperation Programme, some of the SRAs explicitly serve as references for the direction of national and regional research programs.
- The ERA-NET scheme supports coordination of national research programmes.
- To further integrate research activities under national programmes into real European research programmes, various approaches exist to enable co-funding of research projects by both Community and national funds in variable geometries:
    - the ERA-NET Plus scheme, with Community funding topping-up joint transnational funding;
    - actions under Article 169 of the Treaty, in particular Ambient Assisted Living (AAL) and Eurostars, with the Community financially participating in national programmes implemented jointly;
    - actions under Article 171 of the Treaty, in particular ARTEMIS and ENIAC, the two Joint Technology Initiatives in the ICT domain that combine resources from the Community, 20+ national programmes and the private sector in public-private partnerships.

Each of these actions is effectively creating a true ERA in its specific domain.

FP7 Ideas Programme

- By providing a bottom-up Europe-wide competitive funding structure, the European Research Council (ERC) is stimulating the very best individual teams to excel at a higher level than in national competitions.

FP7 People Programme

- The very popular Marie Curie actions effectively stimulate the transnational mobility of researchers as a tangible embodiment of the ERA.

FP7 Capacities Programme

- The "Research Infrastructures" activities optimize the use and development of existing research infrastructures and help create new research infrastructures of pan-European interest, with the ESFRI Roadmap (European Strategy Forum on Research Infrastructures) increasingly guiding national investments.
- The "Regions of Knowledge" activities foster transnational cooperation among regional knowledge clusters. Furthermore, they help regions to identify their comparative advantages, discover ways of specialize and invest accordingly in their research capacities, thereby increasing the overall efficiency of the ERA.
- Activities under "Research potential of Convergence regions" help unlocking the research potential in the EU´s "convergence regions" and facilitate their researchers to fully engage in the ERA.

**3. Research Infrastructures**

It was widely recognised under FP6 that Europe was falling behind its competitors in the field of major European Research Infrastructures. The ESFRI Roadmap published in 2006 articulated the needs of the research community and was universally accepted by Member States and the Commission. The new instrument to fund the preparatory phase of these infrastructures is very welcome. However, given the need to obtain intergovernmental agreements on both European and Global Research Infrastructures with respect to governance and funding, the final commitment to taking such projects forward is very slow and could be aided by a truly European model for governance, financing, etc. Furthermore, there is a brokerage role to be undertaken by a European Agency.

While the funding of transnational access to existing Research Infrastructures is welcome, the provision is limited and is insufficient to raise the aspirations of many young researchers from newer Member States. There has also been uncertainty about the continued funding of I3 consortia which has not helped European integration.

**4. Towards a risk-tolerant and trust-based approach in research funding**

Thanks to a fair degree of continuity with respect to FP6, FP7 had a smooth start, without any major problems. However, in spite of all efforts to achieve simplification, no real breakthrough could be achieved in cutting red tape. Also the multitude of instruments adds to the complexity.

The new Treaty – once ratified – will for the first time provide a legal basis for the European Research Area. Nevertheless, in view of the difficulties experienced in

genuinely simplifying FP7, in setting up the aforementioned variable-geometry co-funding mechanisms and in establishing the JTIs as real public-private partnerships within the current institutional constraints and legal complexity of the European Union, ERAB wonders whether the EU has the right instruments at its disposal to create a true European Research Area.

To improve efficiency, increase speed and reduce transaction costs, trust is a crucial element. However, the current institutional system seems caught in itself, paralysed by the political necessity to avoid mistakes rather than managing risks. Economically speaking, the associated transaction costs have grown completely out of proportion, with marginal costs of controls, checks & balances exceeding their marginal benefits. These transaction costs will only increase by adding yet another layer and outsourcing management activities of the Commission in FP7 to other entities (ERC, Executive Agencies, Joint Undertakings, etc.), if these entities basically remain subject to the same regulations as the Commission services itself.

Whereas in principle there are strong arguments for having much more research activities at the European level, the red tape that currently seems inherent to the European approach turns off too many researchers, keeps national governments from fully engaging in EU-level initiatives and makes the private sector reluctant to become involved in public-private partnerships if implemented as Community bodies.

For establishing a genuine ERA and making Europe a better place for research in the future, this is an issue deserving serious attention. Key constraints in this respect are the Financial Regulation applicable to the general budget of the European Communities and its Implementing Rules. For example, the personal financial liability for Staff officers induces a zero-risk, zero-trust attitude. Furthermore, the Financial Regulation seems less suited for dealing with public-private partnerships.

Use should therefore be made of forthcoming opportunities to revise this Financial Regulation and create a partial exemption for research and innovation, to account for a certain degree of risk that is inherent to these activities. In its Communication on the ex-post evaluation of the IST Thematic Priority in FP6 of September 4, 2008, the Commission advocated a risk-tolerant and trust-based implementation of the rules on research funding. Furthermore, in its European Economic Recovery Plan of November 26, 2008, the Commission announced a clarification of the legal framework for public-private partnerships for research investments. ERAB is of the opinion that these proposals would be important steps towards an effective and efficient ERA and calls upon the European Parliament and the Council to enable a risk-tolerant and trust-based approach in research funding, as well as real public-private research partnerships.

February 19, 2009