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**Annual Report on research and technological development activities of the
European Union in 2008**

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1. EUROPEAN SUPPORT TO RESEARCH : ACTIVITIES AND RESULTS IN 2008

1.1. Major policy developments in ERA

ERA and the Lisbon strategy

Research lies at the heart of the Lisbon strategy for Growth and Jobs, which aims at transforming the European Union (EU) into the most competitive and dynamic knowledge-based economy in the world. Community research policy underpins European industrial competitiveness by strengthening the scientific and technological bases of the EU and its industry. It also supports the development of other Community policies, including education and innovation which together with research form the knowledge triangle. Research is particularly crucial for finding adequate responses to the global challenges the EU is facing, such as climate change, energy security and supply, demographic ageing, and sustainable development. Community research policy and funding play a key role in leveraging resources and in mobilising research efforts of appropriate scale and coherence to tackle these challenges and respond fully to citizens' needs and concerns.

The objectives of Community research policy are encapsulated in the concept of the European Research Area (ERA), of which the main strategic orientations are to achieve excellence, to raise research efficiency and effectiveness, to increase the openness and attractiveness of Europe and the free circulation of knowledge, and to benefit from international science and technology cooperation. Failing to invest more in research and jointly develop a world-class research system in Europe will cost future generations dearly and put our well-being at risk. Statistics on R&D investments¹, for example, reveal a persistent gap between the EU and the USA, as R&D investments in the EU are stagnating at 1.84% of Gross Domestic Product (GDP), well behind the 2.61% level in the USA. Despite the stagnation in R&D intensity, all Member States have managed to increase their absolute levels of R&D investment in real terms since 2000. Furthermore, 17 – including many new Member States – have increased their R&D intensities and the lead that the USA has over the EU in terms of innovation has gradually decreased over the last five years. This means that the structural transformation of the European economy towards more knowledge-intensive activities is steadily progressing and bearing fruits.

Responding to the crisis

Investing in R&D is particularly relevant in the context of the financial and economic crisis, as the current economic downturn may lead to delays or cuts in public or private R&D investments. The recession does, however, not call into question the main objectives and rationale for building the ERA. On the contrary, micro-economic reforms and countercyclical investments in knowledge, R&D and innovation are crucial to mitigate the effects of the crisis, to consolidate recovery, and to ensure that European companies maintain investments in R&D in order to be better equipped to take advantage of the next economic upswing. At the same time, policy makers should, however, ensure that private R&D investment is not crowded out and that the distortions of competition

¹ See http://ec.europa.eu/research/era/pdf/key-figures-report2008-2009_en.pdf

through public R&D expenditure are kept to the minimum. The need for further reforms oriented towards R&D and innovation was an essential part of the economic recovery package, adopted by the Commission in November 2008 and subsequently endorsed by the European Council in December 2008. In particular, to support and sustain industrial innovation, the Commission proposed the launch of three major partnerships between the public and private sectors in the automobile sector (the "European green cars initiative"), the construction sector (the "European energy-efficient buildings initiative"), and to increase the use of technology in manufacturing (the "Factories of the future initiative").²

Improved ERA governance

The realisation of an open, genuine and competitive ERA depends upon the Ljubljana Process for improved governance of research policy across the EU, launched by the Competitiveness Council on 30 May 2008.³

The first output of the Ljubljana Process is the ERA 2020 vision adopted by the Competitiveness Council on 2 December 2008.⁴ This vision, which is a key reference for identifying future actions, 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 competition, cooperation, and coordination.

At the centre of the ERA vision is the objective to attain a "fifth freedom", as endorsed by the European Council in March 2008.⁵ The fifth freedom envisages the free circulation of researchers, scientific knowledge and technology and aims at both the removal of obstacles and the creation of new incentives to stimulate such free circulation in Europe. It will thus help to liberate the full potential of the European research system by strengthening and complementing the knowledge dimension of the four Treaty freedoms of free movement of people, goods, services and capital. The implication is that those aspects of the different Community policies affecting research and knowledge have to be better exploited and brought in line with the overall objectives of R&D policy in Europe.

The five Community ERA initiatives

At a practical level, the Ljubljana Process provides a framework for matching high-level political commitment and overall steering of ERA with significant new policy developments via concrete joint actions and sustainable partnerships between the Member States, the Commission and relevant research actors. In particular, it frames the five specific ERA initiatives that were launched in 2008 following the debate and stakeholder consultation on the 2007 ERA Green paper⁶, i.e.:

² COM(2008) 800 "A European Economic Recovery Plan".

³ See doc. 10231/08 "Council conclusions on the launch of the Ljubljana process – towards full realisation of ERA of 2871th Competitiveness Council on 29-30 May 2008.

⁴ See doc. 16767/08 "Conclusions sur la définition d'une "Vision 2020 pour l'Espace européen de la recherche" of 2910th session of the Competitiveness Council on 2 December 2008.

⁵ See doc. 7652/1/08 Presidency conclusions of the Brussels European Council of 13-14 March 2008.

⁶ COM(2007) 161 "The European Research Area: New Perspectives".

- A European partnership for improved career aspects and mobility for researchers in Europe (including better recruitment, training, employment, working conditions and social security)⁷;
- The management of intellectual property in knowledge-transfer activities and a code of practice for universities and other public research organisations⁸;
- Joint programming between EU Member States of their public research programmes through the definition and development of common strategic research agendas⁹;
- A new legal framework to assist Member States in establishing and funding pan-European research infrastructures¹⁰;
- A strategic European framework for both the Community and Member States to foster and facilitate coherent international science and technology cooperation activities¹¹.

Only by joint effort and shared responsibility across regional, national and European levels will the five specific partnership initiatives be able to play their full role in increasing the extent to which research underpins European competitiveness and innovation. They will be implemented through dedicated configurations of the Scientific and Technical Research Committee of the EU (CREST)¹² and other specific groups of Member State representatives.

The European partnership for researchers aims at driving forward a number of targeted actions in key areas such as training and skills; open recruitment; employment and working conditions; and social security aspects. The Competitiveness Council of 26 September 2008 supported the proposed approach for strengthening coordination and cooperation at European level and endorsed the priority lines of actions. Portuguese Minister Gago and the Luxemburg Minister Biltgen were subsequently invited to come up with further ideas on how to implement the European Partnership for Researchers. The two ministers reported back on their work at the Competitiveness Council of 2 December. They will provide an update on progress made in the course of 2009. The first steps towards the implementation of the Partnership have since been launched, in particular through the preparation of a renewal of the mandate and composition of the Steering Group Human Resources and Mobility. Finally, the Commission presented a "Human resources Strategy for Researchers" at the end of 2008. This mechanism aims at supporting the implementation of the "European Charter for Researchers and the Code for their Recruitment" by individual research institutions, encouraging improvement of and better visibility for the most favourable working environment.

⁷ COM(2008) 317 "Better careers and more mobility: a European partnership for researchers".

⁸ Commission Recommendation C(2008) 1329 on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations.

⁹ COM(2008) 468 "Towards Joint Programming in research: Working together to tackle common challenges more effectively".

¹⁰ Commission Proposal for a Council regulation on the Community legal framework for a European Research Infrastructure (COM (2008) 467).

¹¹ COM (2008) 588 "A strategic European Framework for International Science and Technology Cooperation".

¹² For more details on the activities of CREST, see <http://www.consilium.europa.eu/crest>

The ERA initiative on knowledge-transfer concerns a Commission recommendation on the management of intellectual property in knowledge transfer activities and a Code of Practice for universities and other public research organisations. A CREST working group was established to support and monitor the implementation of the recommendation by the Member States and Associated Countries. In parallel, a Knowledge Transfer Forum was set up to promote the implementation of the Code of Practice and to foster the exchange of best practices among relevant stakeholders, such as universities, public research organisations, SMEs, technology transfer offices and research managers associations.

Scientific progress increasingly depends on appropriate research infrastructures. The Commission's proposal for a regulation on the legal framework for European research infrastructures aims to provide a tailor-made legal framework to facilitate Member States' joint establishment and operation of large-scale European research infrastructures such as deep sea floor observatories or bio-medical data bases. In December 2008, the European Strategic Forum for Research Infrastructures (ESFRI)¹³ presented an updated roadmap which now comprises 44 research infrastructures of Pan-European interest.

The new "Strategic European Framework for international S&T Cooperation" stresses the importance of developing the partnership between Member States and the Commission to strengthen coordination and create synergies in S&T cooperation with the rest of the world. Involving Europe's neighbours into the ERA, fostering strategic cooperation with key third countries and improving the framework conditions for cooperation will enhance the international dimension of the ERA. In this context, the existing 16 S&T cooperation agreements with third partner countries provide a continuing platform for improving and coordinating research cooperation. The Strategic European Framework was welcomed by the Competitiveness Council of 2 December⁴ who invited Member States to establish the "Strategic Forum for International Co-operation" so as to provide an appropriate institutional setting to develop the partnership approach.

The Communication on Joint Programming was adopted on 16 July. Following the momentum created at the Versailles Informal Competitiveness Council, an informal group of Member States gathered to develop a common initiative in the field of neuro-degenerative diseases, in particular Alzheimer ("Alzheimer initiative"). Conclusions on this initiative were adopted at the Competitiveness Council of 25-26 September¹⁴. In December, the Competitiveness Council¹⁵ endorsed the concept and the approach proposed by the Commission, and listed criteria for the selection of themes for Joint Programming, as well as framework conditions that would facilitate the implementation of Joint Programming. The Conclusions also called for the establishment of a High Level Group on Joint Programming (GPC), to select the themes. Further elaboration of the "Alzheimer initiative" was ensured under French leadership, leading to the endorsement by nine countries.

¹³ See <http://cordis.europa.eu/esfri/home.html>

¹⁴ See doc. 13668/08 "Council conclusions concerning a common commitment by the Member States to combat neurodegenerative diseases, particularly Alzheimer's" of 2891th session of the Competitiveness Council on 25 and 26 September 2008

¹⁵ See doc. 16775/08 "Council conclusions regarding joint programming of research in Europe in response to grand societal challenges" of 2910th session of the Competitiveness Council on 1 and 2 December 2008

Implementing FP7

In 2008, the Seventh Framework Programme for Research and Technological Development (FP7), the main instrument for European research policy, entered its second year. In addition to implementing FP7's Specific Programmes, important contributions were also made to other policy areas, notably the European Strategic Energy Technology Plan (SET-Plan)¹⁶.

Some 14000 proposals were received in response to 55 calls for proposals, with more than 72000 applicants. Approximately 2500 proposals were retained for funding, with a total requested Community contribution of some EUR 4.2 billion.

Two executive agencies were established under FP7. The European Research Council Executive Agency (ERCEA)^{17, 18} was created to implement the FP7 Specific Programme "Ideas". The Research Executive Agency (REA)¹⁹ was created by Commission Decision²⁰ at the end of 2007. 2008 saw concerted efforts to establish the detailed legal base, the physical infrastructure, and the required human resources, with a view to the agency acting autonomously by mid-2009. The REA will implement parts of the FP7 Specific Programmes "Cooperation" (themes on Space and Security), "Capacities" (Research for the benefit of Small and Medium Sized Enterprises) and "People" and provide general FP7 support services²¹ on proposal reception/evaluation, management of appointment letters with expert evaluators and legal and financial validation of Framework Programme participants.

In the course of 2008, the guidelines on the redress procedure were revised to take into account the experience since their adoption in 2007. The Rules for submission of proposals, and the related evaluation, selection and award procedures²² were also revised in relation to the ethical review procedures, the handling of security-sensitive RTD actions and the evaluation scoring. Moreover, the work programmes²³ for the FP7 Specific Programmes "Cooperation", "Ideas", "People", "Capacities" and "Euratom" were updated in 2008. The coordination of the inter-institutional relations with the Council, the European Parliament, the European Economic and Social Committee and the Committee of Regions, as well as CREST, was ensured.

Throughout 2008 several improvements in the support infrastructure of FP7 were introduced which have simplified internal procedures. This includes the first full year of operation of a central evaluation facility (Covent Garden) which hosted more than 8000 experts in 2008. Centralised secretarial support services improved the 'time to pay' for external evaluators.

In addition, the Unique Registration Facility was launched in May 2008. This enabled legal entities to register their legal status independently of any negotiation process and

¹⁶ COM(2007) 723 "A European strategic energy technology plan (SET plan) – Towards a low carbon future"

¹⁷ Commission Decision 2008/37/EC of 14 December 2007

¹⁸ See <http://erc.europa.eu>

¹⁹ See <http://ec.europa.eu/research/rea>

²⁰ Commission Decision 2008/46/EC of 14 December 2007

²¹ With the exception of the Ideas Specific Programme and Euratom

²² See ftp://ftp.cordis.europa.eu/pub/fp7/docs/fp7-evrules_en.pdf

²³ For FP7 work programmes, see http://cordis.europa.eu/fp7/find-doc_en.html#workprogrammes

provide a single, validated registry of data used by all of the research family of DGs. At the end of 2008 more than 9000 legal entities had been validated and these entities were able to use a participant identification code (PIC) when subsequently preparing a proposal or grant agreement. This will help speed up the negotiation process in 2009 and reduce the 'time to contract'.

The high level of usage of the Community Research and Development Information Service CORDIS (16,4 million visits)²⁴ as well as its high level of availability (97,8%) were confirmed throughout 2008. All FP7 calls for proposals were published on time. The 2008 user satisfaction survey showed a high level of satisfaction, in particular with CORDIS News, FP7 pages and the email notification services. The number of subscriptions to the *research*eu supplements*²⁵ has doubled during 2008, demonstrating the interest of users in this publication.

The central 'research enquiry service'²⁶ also continued to operate in support of FP7 fielding nearly 9000 questions and replying to 93% of them within 15 days of receipt.

The 7th Framework Programme introduced, in addition to the audit 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:

The *certificate on average personnel costs (CoMAv)*, 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.

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 complemented 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.

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. 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. 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

²⁴ <http://cordis.europa.eu>

²⁵ http://ec.europa.eu/research/research-eu/index_en.html

²⁶ <http://ec.europa.eu/research/index.cfm?pg=enquiries>

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.

According to the FP7 Rules for Participation, 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. 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. This conclusion is supported by 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' and also by earlier conclusions of the European University Association²⁷. The decision on the revised flat rate should be available in time for the 2010 FP7 work programmes.

Joint Technology Initiatives and Article 169

Existing instruments for cooperation within FP7 such as Article 169 initiatives and Joint Technology Initiatives (JTIs)²⁸ were further developed in 2008. In this context, the Commission adopted a proposal for an Article 169 European Metrology Joint Research Programme (EMRP)²⁹, and two of the Article 169 Initiatives proposed in 2007 – "Ambient Assisted Living" (AAL)³⁰ and for research performing SMEs and their partners (EUROSTARS)³¹ – were co-decided by Council and European Parliament in July 2008 after which their implementation phase started. Following the adoption of the Regulations setting up the first four JTIs³² in 2007, the Council adopted a fifth JTI Regulation on Fuel Cells and Hydrogen in 2008³³. All five JTIs started their operations in

²⁷ "EUA Statement on FP7 Rules of Participation proposals for support rates and costs models", 30 March 2006

²⁸ JTIs are public-private partnerships in industrial research at European level set up under Article 171 of the Treaty.

²⁹ COM(2008) 814 "Proposal for a decision of the European Parliament and of the Council on the participation by the Community in a European metrology research and development programme undertaken by several Member States"

³⁰ OJ L 201, 30.7.2008, p. 49.

³¹ OJ L 201, 30.7.2008, p. 58.

³² The first four JTIs are: Innovative Medicines (supporting the development of new knowledge, tools and methods for new medicines, Council Regulation 2008/73/EC, <http://imi.europa.eu>), Clean Sky (seeking to increase the competitiveness of the European aeronautics industry while reducing emissions and noise, Council Regulation 2008/71/EC, <http://www.cleansky.eu>), ARTEMIS (addressing embedded computing systems, Council Regulation 2008/74/EC, <http://www.artemis-ju.eu>) and ENIAC (targeting the very high level of miniaturisation required for the next generation of nanoelectronics components, Council Regulation 2008/72/EC, www.eniac.eu).

³³ Council Regulation 2008/521/EC of 30 May 2008, <http://ec.europa.eu/research/fch>

2008 (implementation of their research agenda, setting up their organisation and moving towards autonomy).

Statistical information on the 2008 activities of the JTIs set up in 2007 is included as Annexes to this Commission Staff Working Document. This constitutes the first reporting on progress achieved by these JTIs, as required by Art 11 (1) of the respective Council Regulations.

Coordination of national programmes and intergovernmental initiatives

The ERA-NET scheme was reinforced by the launch of the ERA-NET Learning Platform and the NETWATCH Information System³⁴. These initiatives provide for coherent implementation mechanisms and increased mutual learning, as well as information exchange within the wider ERA-NET community. Their goal is to boost the knowledge networking among the ERA-NET community by bringing players closer together. In addition, 11 ERA-NET and 4 ERA-NET Plus actions were selected from the 2008 coordinated call, meaning that a total number of 31 ERA-NET and 8 ERA-NET Plus actions have been launched since the start of FP7.

The renewed EUREKA strategy was discussed at three NPC/HLG meetings during Spring 2008 culminating in its adoption at the Ministerial Conference. At this meeting, Ministers also agreed on the accession of FYROM (Former Yugoslavian Republic of Macedonia) to EUREKA. Portugal took over as Chair in July, focusing on generating EUREKA projects and on developing a EUREKA international Strategy.

Following the final review of COST in FP6 (Monfret report), a special report on the legal status and governance of COST was made during 2008 identifying several possible models for the future governance of COST. Also a High Level Group has been set up to examine the relationship of COST with the European Science Foundation, which provides scientific and administrative support to COST under FP7. In line with the Monfret report a system of impact indicators should be defined and an impact study should be launched to identify the effects of COST. This work was started in 2008 and it will give important information for the FP7 interim evaluation of COST in 2010.

European Technology Platforms

In 2008, European Technology Platforms (ETPs)³⁵ spearheaded the Commission's aim to implement different forms of large-scale public-private partnerships: they have spun off Joint Technology Initiatives, contributed to industrial initiatives in the context of the SET Plan and helped to shape the public-private partnerships under the European Economic Recovery Plan². A number of ETPs moved beyond their research agendas by contributing to the Lead Markets Initiative³⁶, the production of standards and reviews of regulatory frameworks. An external evaluation³⁷ of the ETPs showed that although participants in

³⁴ See <http://netwatch.jrc.ec.europa.eu/nw/>

³⁵ For more information on European Technology Platforms, see <http://cordis.europa.eu/technology-platforms/>

³⁶ For more information on the Lead Markets Initiative, see <http://ec.europa.eu/enterprise/leadmarket/leadmarket.htm>

³⁷ For more information on the evaluation, see <ftp://ftp.cordis.europa.eu/pub/technology-platforms/docs/evaluation-etps.pdf>

the ETP process are satisfied, the success in jointly defining research priorities still needs to be matched with implementation and an improved interaction with national policy makers.

Cooperation with other policies

Structural Funds play an important role in supporting the regions in implementing the Lisbon strategy. The Community Strategic Guidelines for Cohesion Policy focus increasingly on the Lisbon priorities which include research. An analysis of all approved operational programmes³⁸ shows that almost 25% (EUR 86 billion) of the total EU Structural Funds 2007-2013 are foreseen for R&D and innovation³⁹.

1.2. FP7 : Indirect support actions

1.2.1. Cooperation

1.2.1.1. Health

The 7th Framework Programme (FP7) has a budget of EUR 6 billion for Theme 'Health' for the period 2007-2013 and aims to optimise the delivery of healthcare to European citizens. Research is focused on disease detection, and developing diagnosis, monitoring tools, and improved treatment techniques and methodologies. Policy driven research targets domains such as patient safety, health systems research, child health, long-term care and the human resources crisis in the health sector, while at international level areas include evidence into policy, reproductive health, child and maternal health and access to medicines. Research project funding constitutes the lion's share of this budget. Of 902 research proposals received following the second FP7 call, 172 were retained for funding in 2008. Among these, OPTISTEM is undertaking clinical trials on the use of stem cell therapies in patients with diseases such as muscular dystrophy or corneal degeneration. These first clinical trials in man have the potential to establish stem cell therapy as a clinical approach. The project PNEUMOPATH will investigate the antibiotic resistance determinants of pneumococci, an organism that causes pneumococcal infection, and will thus contribute to developing effective vaccines, diagnostic and treatment. The potential for successful commercialization of results is enhanced by the involvement of multiple industrial project partners.

Bilateral and regional dialogue with third countries for stimulating cooperation has been actively pursued and deepened. A coordinated call for proposals was launched by the Commission and Russia in the areas of human genomics and cardiology. Additional coordinated calls for proposals were also discussed between the Commission and South Africa, Egypt and China. An agreement was reached with the United States National Institutes of Health (NIH) to further open up the respective funding schemes for collaborative grants. The International Human Microbiome Consortium (IHMBC) was launched to foster cooperation between the major EC-funded MetaHIT project (on correlation between human intestinal microbiome and inflammatory bowel disease and obesity) and the NIH-funded the Human Microbiome Project. It is expected that the

³⁸ An Operational Programme (OP) presents the priorities of the Member State (and/or regions) benefiting from the funds

³⁹ For further information, see http://ec.europa.eu/regional_policy/atlas2007/index_en.htm

IHMBC will expand into a global initiative, including projects from up to 10 countries, with a budget of circa EUR 200 million within the next 5 years.

The European and Developing Countries Clinical Trials Partnership (EDCTP)⁴⁰ was established in 2003 under Article 169 of the Treaty to accelerate the fight against HIV/AIDS, malaria and tuberculosis in developing countries. In this context, the Commission participates in programmes undertaken by several Member States (MS), coordinating and jointly implementing their research activities. In 2008, the Commission approved the Progress Report of the EDCTP (2003-2008) that highlights its achievements of the last few years and presents an outlook for its future. Co-funding from MS has increased dramatically in the last years and was supplemented by additional funds from third parties (foundations, public-private partnerships and industries).

The Innovative Medicines Joint Undertaking (IMI JU) is a partnership between the EU and the European Federation of Pharmaceutical Industries and Associations (EFPIA). It aims at a significant improvement of the efficiency and effectiveness of the drug development process, ultimately leading to more effective and safer innovative medicines for the benefit of the patients. The IMI JU supports research projects pooling resources from various stakeholders (industry, academia, SMEs, regulatory authorities, healthcare providers, patients' organisations) around key research priorities. In 2008, all bodies of the IMI JU were established and the recruitment of the Executive Director and staff was initiated. Operations started in 2008 with the launch of the first call for proposals.

1.2.1.2. Food, agriculture and fisheries, and biotechnology

Research focus and funding in Theme 'Food, agriculture and fisheries, and biotechnology' in 2008 continued to address the complex policy challenges related to the further development and consolidation of the European Knowledge Based Bio-Economy (KBBE), in the context of demographic growth, environmental change, globalisation of the economy, food price inflation and security, dwindling fossil fuels, food and health, reform of the Common Agricultural Policy, maritime policy and increasing of the competitiveness of European bio-industry.

Intrinsic to this approach has been the parallel development of a European Research Area (ERA) in the bio-economy sector. This was further enhanced through dialogue, networking, and reinforced cooperation between Member States under the KBBE-NET, and the Standing Committee on Agricultural Research (SCAR) and through the launching of two new ERA-NETs (animal health; agriculture research in the Mediterranean) as well as interactions with the private sector through nine European Technology Platforms in the KBBE area. The Commission Communication "Towards a coherent strategy for a European Agricultural Research Agenda"⁴¹ was adopted in December 2008.

Strategic international dialogues and networking continued in 2008 to increase the competitiveness of the European Bio-economy as well as to address specific problems that developing countries face in areas such as nutrition, soil fertility and trade.

⁴⁰ See <http://www.edctp.org>

⁴¹ COM(2008)862 "Towards a coherent strategy for a European Agricultural Research Agenda"

In 2008, out of 449 proposals received for 2 calls, 60 proposals will be funded with a total Community contribution of EUR 214.7 million. All projects, of which some examples are highlighted below, contribute to the strategic goals of this Theme. The call KBBE-3 with a total budget of EUR 188.8 million was launched in September 2008, and included a coordinated call with India and a call for coordinated topics on Marine and Maritime Sciences across the Framework Programme. A joint call on Biorefineries with the Themes Energy, Environment and Nanosciences and Nanotechnologies was launched in November 2008.

Some examples of the 60 selected projects include the QUANTOMICS initiative which will fully exploit animal genome sequence information by developing a series of innovative bioinformatic, molecular genetics, and visualisation tools. The project will contribute to the competitiveness and sustainability of European livestock production including support for animal health and production policy. It will have wide applications for all farmed species and leave a legacy of resources for future research.

In the field of nutrition and health, the OBELIX project will have a major impact on human health and consumer protection by generating new knowledge on early life exposure to hormonal food contaminants and their potential role in obesity. The Network of Excellence in high-tech food processing HighTechEurope will stimulate cross-sector collaboration by bringing together European scientists and industries from the–high-tech (nano, bio and ICT) and traditional food processing sectors.

In the field of biotechnology research, the SMARTCELL project seeks to engineer plants and plant cells to lower the cost of production of bioactive compounds, useful as ingredients for novel anti-cancer and anti-inflammatory medicines or insecticides. Moreover, the project will develop tools, which can be broadly applied to other plant research and for production of flavourings or fragrances. In the IRENE project, which is co-financed by the Russian Ministry of Sciences, a novel strategy to expand the use of biocatalysts will be pursued. Researchers will set up computer-based methods for turning enzymes which are known for their robust stability and activity in some reactions, into versatile biocatalysts.

1.2.1.3. Information and communication technologies

FP7 ICT call 3 closed in March 2008 and resulted in 71 new research contracts with a total recommended funding of EUR 265 million being proposed for selection. Call 3 included two of the seven challenges identified for the ICT Theme, namely cognitive systems, interaction, robotics and digital libraries & content. It also included three new FET proactive initiatives and actions in international cooperation.

With the completion of call 3, all FP7 challenges have now been covered as foreseen in the 2007-2008 work programme. In most cases, the integration between the different objectives worked well and a coherent project portfolio emerged. The portfolio of projects provides a broad coverage of the objectives addressed, with a mix of industry, research centres and higher education.

The ICT work programme 2009-2010 was adopted by the Commission in November 2008. ICT call 4 was launched immediately following adoption. The new work programme continues to address the ICT research priorities identified for the first phase of FP7 with a stronger emphasis on high-risk ICT collaborative research. A particular focus is given to three major technology and socio-economic transformations; the *'Future*

Internet', 'Alternative paths to ICT components and systems' and 'ICT for sustainable development'.

Specific efforts were directed towards defining and implementing further a comprehensive international co-operation strategy. Particular examples are the areas of Future Internet, supercomputing, and some activities in Future and Emerging Technologies that are implementing tight research links with other regions of the world, notably the US and Japan. Under the 3rd ICT call, seven new international cooperation projects with ACP and Asian regions were launched.

EU research projects have continued to demonstrate their key role in feeding standardisation bodies. As an example, in the field of Software Radio, a dedicated standardisation Committee was opened under ETSI as a spin off of FP5-FP6 projects. Many other infrastructure fields (e.g. mobile and "next generation networks") have benefited from research conducted under the Framework Programme.

Throughout 2008, research activities contributed to the Commission's policy priorities in the information society domain. The ICT Advisory Group and the National ICT Directors Forum provided important input to policy definition. To support the development of the European Research Area (ERA), the establishment of a network of Living Labs was further developed and several events took place under the Slovenian and French Presidencies. Meetings were also organised with representatives from national funding agencies and leading scientists to stimulate the setting-up of ERA-NET actions, for example in the field of Quantum Information Processing and Communications (QIPC) under the FET Proactive scheme.

In the area of Future Internet, Commission services supported the preparation of the so-called Bled Declaration and the establishment of the "Future Internet Assembly". Three Communications⁴² addressing the ICT field provide a comprehensive strategy for ICT research and innovation in the EU. The strategy builds on successes and lessons learned from ICT activities in the Framework programme, from the JTIs in ICT, from AAL, and from support to infrastructures and future and emerging technologies. The Communications propose actions that combine both the supply and demand drive for innovation, public procurement of R&D as well as public-private partnerships to lead notably the development of the Future Internet. They also propose concrete actions to stop the fragmentation of the ICT research and innovation efforts across the EU, to better coordinate these efforts, pool resources when needed including for the investments in ICT related and ICT based research infrastructures.

Regarding the promotion of pre-commercial procurement, work has mainly consisted of follow-ups to the opinions of the other institutions, as well as of a continuation of awareness-raising and experience-sharing.

1.2.1.4. Nanosciences, nanotechnologies, materials and new production technologies

The promotion of industrially relevant and technologically challenging research at EU level will generate new knowledge with regard to new industrial concepts, new materials,

⁴² COM (2009) 116 "A strategy for ICT research and innovation in the EU : raising the game"; COM (2009) 184 "Moving the ICT frontiers – a strategy for research on future and emerging technologies in Europe"; COM (2009) 108 "ICT infrastructures for e-Science"

new products and processes, and new integrated solutions for industry, which will improve Europe's competitiveness and, at the same time, respect environmental sustainability and social responsibility.

According to its Nanotechnology Action Plan⁴³, the Commission continued implementing an integrated set of activities in different research programmes: infrastructures; people; industrial innovation; societal issues; safety and regulation; international cooperation, as well as coordination within the Commission and the European Union.

The focus of the 2008 call for proposals under FP7 was the development of unique strategic resources and assets that would provide sustainable capabilities, coupled with long-term competitive advantage. Out of 1429 submitted proposals, 126 were retained for funding. A total of 104 new grant agreements were signed in 2008 following negotiation from the 2007 call. These proposals represent a body of research effort towards a new European manufacturing model, with the potential to compete globally with the best available technologies and business strategies. In addition, joint calls for proposals were launched with the Themes 'Energy' and 'Environment'.

Among the proposals selected, Safe@Sea scored highest in the call for SME dedicated R&D and innovation. The project focuses on reducing the risk of injury and fatal accidents to fisherman across Europe through research on and development of advanced personal protective clothing and equipment. Fishing is one of the most dangerous professions with 24000 fatal accidents globally per year and 10% of fishermen suffering serious injuries per year. Safe@Sea endeavours to integrate expertise on protective materials and clothing, ICT solutions and ergonomic design. This should result in European leadership in the area of protective clothing and equipment manufacturing as well as the wide acceptance of fisherman to actually wear the protective clothing and recognition by the fishing community of the cost benefit of applying state of the art protective measures.

In the field of nanotechnologies, the Nano II large project focuses on the development of novel approaches for the use of micro and nano-fabricated cell chips to specify and expend regulatory immune cells for treating diverse inflammatory and autoimmune disorders in an organ and antigen-specific manner. The proposed cell chips will be used in the area of clinical diagnosis and therapy and are promising for the treatment of inflammatory and autoimmune disease, as well as for tolerance induction in organ transplantation.

Technical workshops in the fields of materials sciences and nanomaterials took place in India and in Egypt and identified topics of mutual interest to both countries and the EU. This resulted in a coordinated call for proposals with India. The selected project ATHENA addresses potential building blocks of future microelectronics and aims to understand the wide class of transition metal oxides. The envisioned applications from this are countless, such as in magnetic memories, spintronic devices, and optic sensors.

The European Union has agreed to continue its involvement in the Intelligent Manufacturing Systems (IMS) –entry into force of renewal agreement on 4 January 2008- which brings together the USA, Japan, Korea, Norway, Switzerland in order to

⁴³ COM(2005)243 "Nanosciences and nanotechnologies: An action plan for Europe 2005-2009"

boost industrial competitiveness, solve problems facing manufacturing worldwide and develop advanced manufacturing technologies and systems. In the context of the future EU chairmanship of the scheme in May 2010, an informal IMS Industrial Advisory Board (IAB) has been set up to assist the EU in bringing more focus on IMS and in identifying strategic initiatives of relevance to European industry.

At a more political level, the good and efficient networking established with industry (especially through the European Technology Platforms) and with the scientific community has allowed to provide quick input for the public-private partnerships (Factories of the Future and Energy Efficient Buildings) included in the European Economic Recovery Plan put forward by the Commission in November 2008.

1.2.1.5. Energy

Energy systems are confronted with major challenges at European and at global levels. Energy technologies are and will be crucial in the fight against the effects of climate change by reducing greenhouse gas emissions and in helping to secure the world's energy supply. These major challenges with which Europe is confronted have put energy at the top of the political agenda over the past years. Europe's potential to develop a new generation of decarbonised energy technologies is enormous. Research and innovation in energy technology are vital to achieving this potential and make sustainable energy widely available to European citizens.

In order to respond to these issues, the European Council and the European Parliament endorsed in 2008 the Commission Communication "A European Strategic Energy Technology Plan (SET-Plan) - Towards a low carbon future"¹⁶, a comprehensive plan to establish a new energy research agenda for Europe. The implementation of the SET-Plan will focus on innovation in cutting edge European low carbon technologies to achieve the 2020 targets⁴⁴ and the 2050 vision of the Energy Policy for Europe. To steer the implementation of the SET-Plan, the Commission established the European Community Steering Group for Strategic Energy Technologies in 2008 to pave the way for Joint Programming.

During the SET-Plan conference in Paris in October 2008, the European Energy Research Alliance (EERA) was created. The SET-Plan European Industrial Initiatives will define roadmaps for their respective technologies (wind, solar, nuclear, bioenergy, carbon capture and storage and grid) during 2009 which should form the basis for both private and public investment in low-carbon technologies. The EERA will ensure that the research agenda gives continuity and a strong innovative base for the initiatives.

Europe needs to reconsider the ways it satisfies its energy needs. In this context, hydrogen, as an energy carrier, and fuel cells as efficient energy converters, play an increasingly important role. However, a number of technical and non-technical barriers remain to be overcome before the widespread commercial deployment of these technologies is achieved. The Fuel Cells and Hydrogen (FCH) Joint Undertaking, a public-private partnership at European level was adopted as a Council Regulation on 30 May 2008 with the overall aim of accelerating deployment of these technologies. It will implement a target-oriented, integrated programme of research, technological

⁴⁴ Reduction of greenhouse gas emissions by 20%, ensuring a 20% share of renewable energy sources in the EU energy mix and diminishing of the EU global primary energy use by 20%

development and demonstration activities, focusing on the most promising applications in stationary and portable power generation and transport. In addition, technology validation and assessment will identify potential impacts of FCH technology on energy security and Green House Gas (GHG) emissions. The partnership will also undertake research to support development of new regulations and standards for products and hydrogen storage and supply, which are essential for every new technology to assure safety, reliability and interoperability will be developed. Commercial take-off should start between 2010 and 2020. The first FCH JTI call for proposals was published in October 2008 with a total indicative financial contribution of EUR 28.1 million. In 2008 the Commission facilitated the establishment of HyRAMP - a partnership of European regions committed to advancing hydrogen and fuel cell technologies with a view to aligning EU, national and regional RTD actions.

The development and demonstration of clean, efficient road vehicle technologies and alternative, renewable fuels continued in 2008. This included demonstration of hydrogen fuelled buses, cars and special purpose vehicles. In total around 100 vehicles will be demonstrated in three FP6 projects with a total investment of some EUR 105 million (Community contribution EUR 48 million). Notable achievements in 2008 include a cumulative total of more than 2.4 million km travelled by 44 hydrogen buses in public service, carrying some 8 million passengers. These projects are delivering important findings regarding safety, vehicle performance and durability, and hydrogen supply by on-site reforming and by pipeline and also regarding cartridge refueling for special purpose vehicles.

Demonstration of bio-fuels use in vehicles also continued through 2008, including an extensive programme comprising more than 10 000 vehicles and 140 fuelling stations in 10 towns - with the aim of proving extensive substitution of conventional fuels with bio-ethanol. Another project, started in 2008, is preparing the way for extensive use of second generation bio-fuels in advanced engines and hybrid drive-trains. The costs and impacts of introducing biogas on a large scale are also being assessed in a demonstration to prove reliability as well as aspects relating to biogas production, storage and use in vehicle fleets.

In 2008, four new calls for proposals were funded from the Energy budget with a total Community contribution of EUR 64.830 million. For the Energy call, the EU-Russia coordinated call, and the call for Future and Emerging Technologies (FET), 153 proposals were received, 137 of which were evaluated and 19 were selected for negotiation. For the Energy part of the 'Nanosciences, Nanotechnologies, Materials and New Production Technologies' joint call, 6 proposals were selected for funding.

THATEA, a project in the field of Future and Emerging Technologies, aims to advance the science and technology behind the thermoacoustic energy conversion processes. Thermoacoustics is a relatively new research field in physics comprising knowledge of acoustics, fluid dynamics, heat transfer, mechanical design and dynamic system behaviour. Thermoacoustic research can be considered as high-risk research. The rewards, however, could be high. Engines, refrigerators and air conditioners have been considered the greatest engineering achievements of the 20th century, but these machines also damage the environment by causing smog, emitting greenhouse gases or leaking compounds that damage the ozone layer. Thermoacoustic technology can help to reduce these effects, and sometimes eliminate them.

SOLAR-H2 brings together 12 world-leading European laboratories to carry out integrated, basic research aimed at achieving renewable hydrogen (H₂) production from environmentally safe resources. The project aims to produce hydrogen using solar light through natural processes with microalgae and artificial photosynthesis mimics. The vision is to develop novel routes for the production of a solar fuel, in this case H₂, from very abundant, effectively inexhaustible resources, solar energy and water. The project integrates two frontline research topics: photobiological H₂ production in living organisms such as microalgae, and artificial photosynthesis mimics in human-made systems. SOLAR-H2 was awarded following the ENERGY 2007 Call. It builds on the SOLAR-H Project which was funded in the context of the NEST (New and Emerging Technologies) Programme. Both can be considered as precursors of the tremendous gain of interest for these research areas.

1.2.1.6. Environment (including climate change)

In 2008 the European Union strengthened its international leadership in fighting climate change. In January, the Commission made a proposal for Climate Action and Renewable Energy which legally set the binding targets to be achieved by 2020. The results of EU research proved to be essential in assessing the feasibility of the proposal and its possible impacts.

Research projects selected in 2008 addressed in particular the adaptation to climate change. For example, the HighNoon project is investigating effective strategies to cope with changing water resources due to altering monsoon rainfall patterns and the retreat of Himalayan glaciers in northern India, which will have a strong impact on the availability of water resources. The ArcRisk project is studying the potential impact of climate change on pollution and the resulting health risks on the Arctic population. The COMBINE project is integrating assessment models and run scenarios to contribute to the EU post-2012 climate policy. The IMPLICC project is analysing the implications and risks associated with novel mitigation options.

In Europe, forests are a crucial element not only of landscapes but of human living conditions. They provide habitats for a multitude of animal and plant species and are essential for biodiversity. They are also an important resource for the regional economy (wood production, recreation and tourism) as well as part of the cultural and social heritage. The project MOTIVE evaluates the consequences of intensified competition for forest resources. It seeks to develop and evaluate strategies to adapt forest management to balance multiple objectives under changing climate and land use patterns.

Europe is also seeking to improve energy and resource efficiency and decrease negative environmental impacts. The project OPEN:EU identifies ways to transform the EU economy into one which respects environmental limits while being socially and financially sustainable.

Eco-innovation is an essential part of the solutions to attain a low carbon economy, as strongly highlighted in the European economic recovery plan. In 2008, emphasis was placed on industrial ecology and waste prevention approaches. By concentrating on new technological developments, waste prevention strategies and adapting existing tools, the ZeroWin project is identifying zero waste business strategies in automotive, construction, electronics and photovoltaic industries. The Commission also promotes market uptake of greener products. This requires verification schemes to validate the environmental

performance of the technologies used to produce them. The Coordination Action AdvanceETV is looking at how to propose an efficient verification scheme by learning from successful Environmental Technologies Verification systems in the rest of the world.

In 2008 a major exercise of reviewing the impacts of past EU-funded environmental research was undertaken. The study, carried out by independent experts, pointed out the importance of EU contribution to knowledge generation and the relevance of scientific outcomes, notably the contributions of results to the Intergovernmental Panel on Climate Change assessments; the promotion of methodological improvements, such as development of methods for environmental risk assessment of pharmaceuticals, now used internationally; and the analysis and support to the implementation of EU policies and regulations, as in the case of the Water Framework Directive. The study also indicated the need for further dissemination of research results. These conclusions are already contributing to the formulation of EU-funded research activities.

More than 400 proposals were submitted in response to the second Environment calls for proposals under FP7 and 64 were recommended for funding, with a total budget of around EUR 212 million.

1.2.1.7. Transport (including aeronautics)

The transportation of people and goods in a local, regional, national, European and international context are essential to Europe's prosperity and closely linked to economic growth. However, ways must be found to mitigate the negative impacts and consequences of increased mobility in relation to the environment, energy usage, safety and security and public health. The White Paper on Transport "European Transport Policy for 2010: Time to decide"⁴⁵ and its Mid-term review⁴⁶ clearly set out the objectives to be addressed at a pan-European level.

The greening of transport, modal shift and transport corridors decongestion, urban mobility, time efficiency, customer satisfaction, safety and security, cost efficiency and competitiveness are some of the areas addressed by the 127 proposals selected in 2008 for which FP7 will allocate about EUR 444 million. With a participation of 21%, much higher than the 15% target, SMEs show a strong interest in EU transport research. As an example, the recently selected OPENAIR project aims to deliver a step change in technology to reduce noise from aircraft operations perceived by airport neighbouring communities – a major challenge facing the aircraft manufacturing industry, society and the air transport industry. The BEEST project plans to achieve a breakthrough in competitiveness, environmental friendliness and safety of EU-built ships. Focusing on passenger ships, ferries and mega-yachts, the results will to a large extent be applicable also to other kinds of ships.

SESAR is a 3 phase programme (definition, development and deployment) aiming at modernising and harmonising air traffic management (ATM) in Europe. It represents a technological pillar to the Single European Sky⁴⁷ legislation and will help increase

⁴⁵ COM (2001)370 "European transport policy for 2010: Time to decide"

⁴⁶ COM (2006)314 "Keep Europe moving – Sustainable mobility for our continent – Mid-term review of the European Commission's Transport White Paper"

⁴⁷ See http://ec.europa.eu/transport/air/single_european_sky/single_european_sky_en.htm

performance of Air Traffic Management (ATM) (safety, capacity, cost efficiency, environmental benefits). The definition phase of the programme was closed in May 2008 with the release of the SESAR Master plan⁴⁸ (a commonly agreed roadmap containing the necessary functionalities to be achieved and the necessary timeline). The programme is currently in the development phase, which is managed by the SESAR Joint Undertaking (JU), an innovative public-private partnership involving the major ATM stakeholders, created under Article 171 of the Treaty and established by the Council regulation 219/2007⁴⁹ for period of 8 years up to 31 December 2016. The total cost of this phase is estimated to be EUR 2.1 billion, borne in equal parts by the Community, Eurocontrol and the ATM Industry. In December 2008 the SESAR JU was transformed⁵⁰ from a private company body into a Community body allowing obtaining substantial tax savings estimated at around EUR 300 million. The Work Programme of the SESAR Joint Undertaking was established in 2008⁵¹ and the final step of the pre-selection and negotiation process to select members of the SESAR JU was launched in December 2008. In 2008, EUR 50 million were committed for the Joint Undertaking from the FP 7 budget in addition to EUR 200 million contribution from Trans European Transport Networks (TEN-T) funds. The European Commission has fixed the co-financing of the running costs of the Joint Undertaking at a maximum of EUR 35 million.

The "Clean Sky" Joint Technology Initiative (JTI) was officially launched in February and started its activities in June once the Governing Board was in place. It will increase the competitiveness of the European aeronautics industry whilst reducing the impact of air transport emissions and noise on the environment. The "Clean Sky" JTI will deliver large-scale flight and ground demonstrators — an essential step for successful market introduction. The Commission will provide EUR 800 million in funding from FP7 to the JTI, and this amount will be matched in kind by industry. Clean Sky's current membership includes 86 organisations from 16 countries, 54 companies, 15 research centres and 17 universities. The main thrust of activities is to coordinate and align ATM-related research activities with those of the SESAR Joint Undertaking (Single European Sky - Air Traffic Management Research). As far as FP7 is concerned, EUR 50 million was transferred to the Joint Undertaking in 2008.

The development and validation phase of GALILEO is ongoing until 2010. A second experimental satellite has been launched in April 2008. In 2008, the Work Programme and the Strategic Framework were also set out, as well as the framework for cooperation between the Commission and the European Space Agency (ESA). EUR 95 million were dedicated to the completion of the development phase. On 1 July 2008, ESA published the call for tender launching the procurement of the Galileo full operational capability (FOC) in the name and on behalf of the Commission.

The R&D activities related to GALILEO applications, including the management of FP7 calls, have in 2008 been implemented by the GNSS Supervisory Authority (GSA)⁵². A

⁴⁸ The Master plan was endorsed by the Council on 30.03.2009 (Council Decision 2009/320/EC OJ L 95/41 of 9th of April 2009)

⁴⁹ Council Regulation (EC) 219/2007 OJ L 64/1 of 2nd March 2007

⁵⁰ Council Regulation (EC) 1361/2008 OJ L 352/12 of 31st of December 2008

⁵¹ The full information on the Work Programme can be found under the following link: http://www.sesariu.eu/public/standard_page/library_list.html

⁵² Established by Council Regulation 2004/EC/1321, as amended by Council Regulation 2006/EC/1942

first call was launched on 15th November 2007 with a budget of EUR 40 million. As a result, 23 projects were selected for funding. A second call was launched on 5th December 2008 with a budget of EUR 29 million for collaborative projects and EUR 11 million for tenders. Some of the projects financed under the Sixth Framework Programme (FP6) were finalised during 2008. In 2009 it is expected to conclude all the activities related to the FP6 projects in the GALILEO application field.

Urban transport accounts for some 40% of CO₂ emissions and 70% of other road transport pollutants. Fulfillment of mainstream energy, environment, transport and social policies therefore requires city level actions. In 2008 the Commission launched the CIVITAS Plus Programme⁵³ with 5 collaborative projects and 2 support actions which will receive grants totalling EUR 80 million. The five projects will implement some 244 mobility measures in 25 cities. These include clean vehicles, promotion of public transport, intelligent transport systems, urban freight logistics, cycling and walking. The two support actions will evaluate transferability of these measures to other cities and disseminate results throughout Europe. The CIVITAS Forum network which acts as a policy sounding board now comprises some 140 city members. CIVITAS is funded jointly from the energy and transport specific programmes.

As a follow-up to the Commission's Green Paper "Towards a future Maritime Policy for the Union"⁵⁴, the Commission adopted on 3 September 2008 a Communication on a Maritime Research Strategy⁵⁵. This new strategy is based on two main lines of action: enhancing the integration between research, infrastructure, industry and policy makers; and proposing forms of governance gathering all stakeholders. The strategy will benefit not only European society as a whole, but also science and technology providers, enhancing synergies, dissemination of available knowledge as well as identifying scientific gaps.

The Green Cars Initiative, part of the European Economic Recovery Plan, is a public private partnership, involving research on a broad range of technologies and smart energy infrastructures essential to achieve a breakthrough in the use of renewable and non-polluting energy source, safety and traffic fluidity. The estimated financial envelope of the initiative is EUR 1 billion.

International cooperation has also been reinforced by a significant increase of proposals from Russia and China. European Union and Russian officials met several times, in view to preparing a coordinated call on cooperative aeronautics research for 2009/2010. In parallel, several project proposals selected in 2008 focus specifically on international aspects, such as urban traffic information systems, road safety, and mobility management for large events, such as the 2010 FIFA World Cup, which will be hosted by South Africa.

⁵³ See <http://www.civitas-initiative.org/>

⁵⁴ COM (2006)275 "Towards a future Maritime Policy for the Union : A European vision for the oceans and seas"

⁵⁵ COM (2008)534 "A European strategy for Marine and Maritime Research: A coherent European Research Area framework in support of a sustainable use of oceans and seas"

1.2.1.8. Socio-economic sciences and the humanities

Research in the Theme 'Socio-economic Sciences and Humanities' (SSH) is aiming at a better understanding of the major socio-economic challenges such as employment, competitiveness, social cohesion, education, sustainability, migration and integration that Europe is facing today.

Following the first call for proposals, 29 projects were selected in 2008 covering globalisation, firms and the financial system, post-carbon society, rural regions and regional innovation, multilateralism in international relations, democratic ownership and participation and foresight on science and technology.

Among the projects selected, SOCIAL POLIS (Social platform on cities and social cohesion) involves significant stakeholders from the scientific, civil society and governance sectors to establish key scientific and policy issues for the research agenda on cities and social cohesion in Europe.

The project PEGGED (the future of global economic governance) tackles the current globalisation and financial crisis. In a more complex and multi-polar world interwoven with bilateral agreements and rising financial activities, global economic governance is at a crucial crossroads. As it is unclear how cooperation will be organised in the future, Europe must play a major role in the reform and reinforcement of global governance mechanisms. PEGGED covers four research domains: macro-economic adjustment and global governance, markets for finance and investment, trade in goods and services, migration and mobility of labour.

As to the project EUROPOLIS (A deliberative polity-making project), it will explore the forms of democratic deficit that directly affect EU citizens: would Europeans feel like they had more influence on the decision-making process in the EU if they were invited to voice their opinions to their fellow citizens? A deliberative poll connected to the European Parliament elections will try to test how a more deliberative democracy could work.

During 2008 an important foresight exercise on the "World in 2025" was conducted in close cooperation with the Bureau of European Policy Advisors. The final report is expected in early 2009 and should inspire future European policies under the globalisation phenomena. The programme also launched several initiatives in order to strengthen its policy of international cooperation. Two workshops were organised in Mexico with the Latin American countries and in India in order to find areas of mutual interest for cooperation in 2009 and 2010.

In the area of humanities, the fourth annual HERA (Humanities in the European Research Area) conference "European Diversities - European Identities" co-organised by the European Science Foundation and the Commission took place in October 2008 in Strasbourg. This conference addressed the importance of humanities research in helping to deliver social policy. It brought together over 150 scholars and policy makers to discuss the role that collaborative research can play in facing some of Europe's challenges. It also reflected the questions of identity that the field of humanities is now facing. The HERA conference showed that the transnational, interdisciplinary approaches change the type of questions that humanities researchers can ask. Given the powerful technology and enormous amounts of data now available to modern researchers, these

approaches are likely to become the model for the humanities as it moves into the 21st century.

1.2.1.9. Space

The objective of Space research is to support the European Space Policy focusing on applications such as GMES (Global Monitoring for Environment and Security), with benefits for citizens, but also other space foundation areas for the competitiveness of the European space industry. This will contribute to fulfil the overall objectives of the European Space Policy, complementing efforts of Member States and of other key players, including the European Space Agency (ESA).

In 2008, the second call for proposals was published, and the call received 138 proposals, of which 88 proposals passed all the evaluation thresholds. Of these, 24 projects have been short-listed for negotiations during 2009. The selected projects are covering in a balanced way all main topics of the call aiming to achieve the policy objectives:

- Space-based applications at the service of the European Society, with GMES (Global Monitoring for Environment and Security) being central to this activity;
- Providing R&D support to the foundations of space exploration and space technology through synergies with initiatives of ESA or other European, national or regional entities.

The actions proposed for funding cover all the topics of the call as follows:

- 10 proposal in the area of GMES (downstream services, monitoring of climate change, integration SatCom/SatNav with GMES)
- 3 proposals in the area of International Cooperation – *GMES for Africa*
- 3 proposals in the “Strengthening of Space Foundations” area - *Space Exploration*
- 5 proposals in the “Strengthening of Space Foundations” area - *Space Technologies*
- 1 Coordination and Support Action in the topic “Support to New Member States and FP7 Associated Countries”
- 2 Coordination and Support Actions in the European Space Policy topic.

The high oversubscription rate demonstrates the high interest of the Theme 'Space' : the total cumulative requested Community contribution of EUR 252.4 million corresponds to about five times the available budget. Almost all Members states are involved in the retained projects⁵⁶. The participation of SMEs is high as they represent 25% (of requested Community contribution) of the participants in retained projects.

The European Space Agency is managing the GMES Space Component (GSC) development, and during 2008 a Delegation Agreement for the FP7 contribution to the first Segment of this programme has been signed between the EC and ESA. Further negotiations for an extension of this agreement by a Segment 2 have been conducted, in preparation of the amendment after the approval of the Programme at ESA Ministerial at the end of Nov 2008. This brings the overall contribution of the Commission from FP7 to

⁵⁶ Except Bulgaria, Slovenia, Slovakia, Malta and Luxembourg.

the GSC Programme, which is designed to develop operational GMES Sentinel satellites, to EUR 624 million (corresponding to about 30% of the total cost).

1.2.1.10. Security

The Theme 'Security' is a new theme in FP7, and 2008 was the second year of operation of this programme.

The objective of the Security theme is: to develop the technologies and knowledge for building capabilities needed to ensure the security of citizens from threats such as acts of terrorism and (organised) crime, natural disasters and industrial accidents while respecting fundamental human rights including privacy; to ensure optimal and concerted use of available and evolving technologies to the benefit of civil European security; to stimulate the cooperation of providers and users for civil security solutions; to improve the competitiveness of the European security industry and to deliver mission-oriented results to reduce security gaps.

The Security theme addresses four security missions of high political relevance which relate to specific security threats:

- Security of citizens,
- Security of infrastructures and utilities,
- Intelligent surveillance and border security, and
- Restoring security and safety in case of crisis.

It contributes to building up the necessary capabilities of the persons and organisations responsible for safeguarding security in these mission areas by funding the research that will deliver the required technologies and knowledge to build up these capabilities.

However, the use of security related technologies must always be embedded in political action. To support this and also to improve the effectiveness and efficiency of the technology related research, three domains of cross-cutting interest are included as well:

- Security systems integration, interconnectivity and interoperability,
- Security and society, and
- Security research coordination and structuring.

The Security theme aims at meeting its main objectives – improved security for the citizens, and enhanced competitiveness for industry - as substantiated in the topics of its 'demonstration projects' which will be the 'flagships' of the Security theme. Successful demonstration of the appropriateness and performance of novel solutions is a key factor for the take-up of the output of the research work and its implementation by security policies and measures.

Following the first call (FP7-SEC-2007-1) and the coordinated call (FP7-ICT-SEC-2007-1) with the Theme 'ICT' 39 projects are on-going and 18 are expected to start in 2009.

The second main call (FP7-SEC-2009-1) was published in September 2008 with a deadline on 4 December. 196 proposals were received and evaluations were done over December 2008, January and February 2009 with the help of more than 135 external experts. 27 are recommended for funding. The oversubscription, about 6 times, is still high.

All the projects selected following these three calls provide a good coverage of the four mission areas and an adequate balance between large integration projects and research oriented capability projects. The geographical balance of the consortium is satisfactory. A quarter of all the participants are SMEs.

1.2.1.11. Risk-sharing finance facility (EIB)

More investment in research, development and innovation⁵⁷ was identified as a key priority action in the Lisbon Strategy to create a more competitive European economy based on knowledge and innovation. The Commission has, in cooperation with the European Investment Bank (EIB), developed the Risk-Sharing Finance Facility (RSFF), a new financial instrument to support European research and innovation in addition to the grants allocated in the FP7.

Within the RSFF, FP7 and the EIB will each provide up to EUR 1 billion over 2007-2013 allowing a maximum of EUR 10 billion in loans and guarantees for investments in research, development and innovation. These contributions partially cover the credit risks associated with research-intensive companies and thus improve access to debt financing. Joint Technology Initiatives (JTI), research infrastructures or large European collaborative projects⁵⁸ as well as projects implemented by companies of any size, universities and research institutes could benefit from the RSFF as it is tailored to individual needs.

In 2008 decisions on signing 16 RSFF lending operations have been taken by the EIB. These involve projects in the field of renewable energy technologies, engineering and automotive research and development, ICT and life sciences. Two of these operations are loans to intermediaries to provide risk-sharing financing to smaller borrowers.

All projects benefiting from the RSFF are located in the Member States (Austria, Bulgaria, Denmark, France, Germany, Hungary, Italy, Luxembourg, the Netherlands, Spain, Sweden and the United Kingdom), except two, which are located in Associated Countries (Israel and Turkey). A variety of financial instruments have been used: corporate loans, project finance and risk-sharing bank facilities, the latter primarily for projects carried out by medium-sized and smaller companies.

The Spanish company Solucar has been awarded EUR 50 million from the RSFF to further develop a large scale application of Concentrating Solar Power (CSP) technology to generate electricity without emitting a single puff of greenhouse gas. The Solucar Solar Thermal Power project is closely aligned with EU energy policy to promote the use of indigenous renewable energy and thus contributes to both national and EU efforts to combat climate change.

⁵⁷ The 2002 Barcelona European Council set the goal of raising overall research investment in the EU to approach 3% of GDP by 2010.

⁵⁸ Such as FP7 and EUREKA projects.

Up until now, mainly large and mid-caps⁵⁹ or dedicated companies established in order to implement a particular demonstration project have benefited from the RSFF. The SMEs⁶⁰ have not so far directly profited from the RSFF. However, the first project implemented by an SME in Slovenia has been approved by the European Investment Bank's Board of Directors and should be signed in early 2009. Special effort is being made, notably by the EIB partner banks, to reach potential SME clients.

1.2.2. Ideas

The FP7 "Ideas" Specific Programme aims to: 'reinforce excellence, dynamism and creativity in European research and improve the attractiveness of Europe for the best researchers from both European and third countries, as well as for industrial research investment, by providing a Europe-wide competitive funding structure, in addition to and not replacing national funding, for "frontier research" executed by individual teams.⁶¹

The programme is implemented by the European Research Council (ERC), consisting of a Scientific Council and a dedicated implementation structure (DIS)⁶². The Scientific Council is an independent body representing Europe's scientific community made up of 22 scientists, engineers and scholars of the highest repute. The Scientific Council establishes the ERC's overall scientific strategy and decides on the type of research to be funded and guarantees the quality of the ERC's activities from the scientific perspective.

The role of the DIS is currently performed by a dedicated service of the Commission (Directorate S of DG RTD). In the future, this role will be filled by the ERC Executive Agency. Following its establishment in late 2007, substantial progress was made in 2008 in setting up its institutional framework with a view to becoming administratively autonomous in mid-2009.

The "Ideas" Specific Programme is implemented as two competitive funding schemes: Starting Grants which support researchers at the early stage of their careers to enable them to become independent research leaders and Advanced Grants which support outstanding and established research leaders.

The first call for Starting Grants was published in 2007 and negotiating and contracting moved at a steady pace and were concluded in 2008. The first call for Advanced Grants was published in 2008, backed with an indicative budget of EUR 517 million. A total of 2167 proposals were submitted (997 in the physical sciences, 766 in the life sciences and 404 in social sciences and humanities). With this budget 275 proposals were selected: 114 in physical sciences, 84 in the life sciences, 48 in social sciences and humanities and 29 were considered under the new inter-disciplinary category. The process is overseen by a total of 25 panels led by Panel Chairs who give it visibility and credibility.

⁵⁹ Middle Capitalization Company: companies exceeding the limits that define SME in terms of number of employees and/or capitalization.

⁶⁰ According to the Commission's definition, these are companies with up to 250 employees and a turnover up to EUR 50 million or a balance sheet total up to EUR 43 million.

⁶¹ Annex I of Council Decision 2006/972/EC of 19 December 2006 concerning the specific programme: "Ideas" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013) (OJ L 400, 30.12.2006, p. 243).

⁶² Article 1 Commission Decision 2007/134/EC of 2 February 2007 establishing the European Research Council (OJ L 57, 24.2.2007, p. 14).

The work programme 2009 included adjustments to take into account lessons learnt from these first calls as well as the increase in the ERC's funding resources. The large number of applications received for the 2007 Starting Grant put considerable strain on the ERC's resources and reduced the overall success rate to 3% for no other reason than the high number of applications submitted. For this reason, the "eligibility window" was narrowed and benchmarks to assess applicants' scientific track record and a restriction on re-submission of proposals were introduced.

The implementation of the programme was accompanied by a sustained communication effort to raise the profile of the programme as well as disseminate the results of the research it supported. The awarding of grants and the enthusiasm of grantees generated substantial media interest. The ERC participated in a number of science fairs, conventions and conferences with an international reach as well as smaller information meetings in the participating countries. Scientific Council meetings have been organised in a number of European cities, events which bring the ERC close to scientists working in countries participating in the programme.

Further adjustments are foreseen to ERC processes in 2009 not only to enhance efficiency but also to address shortcomings noted in the general profile of applicants. A landmark review of structures and mechanisms, for which the terms of reference and methodology have been adopted⁶³, is expected to be carried out in 2009.

1.2.3. *People*

The "People" Specific Programme comprises the 'Marie Curie Actions' which aim to strengthen the human potential in research and technology and create an open, efficient and attractive European labour market for researchers. In 2008, 10 calls closed, corresponding to a total budget of EUR 617 million.

The second Initial Training Networks (ITN) call in 2008, aiming to improve young researchers' career perspectives in the public and private sectors, selected 92 networks, funding approximately 50000 fellow/months, out of the 886 proposals evaluated. These include challenging training programmes in areas such as surgical solutions for spinal disease and trauma, and opportunities for socially vulnerable youth in Europe.

COFUND⁶⁴ provides financial support to new or existing regional, national or international programmes in order to increase the possibilities for European-wide mobility of experienced researchers. Of 45 programmes replying to the first call for proposals, 24 have been funded and are now in the process of launching calls for proposals. This action will ultimately lead to the selection of around 1600 fellowships, with an average duration of 19 months. Cofunded projects include programmes such as an EMBO fellowship programme for researchers in molecular biology or multidisciplinary fellowship programmes including at regional level.

Other actions for life long training and career development are Intra-European Fellowships (IEF), which offer individual fellowships for experienced researchers in

⁶³ COM (2008) 526 "Communication on the Methodology and Terms of Reference to be used for the Review to be carried out by independent experts concerning the European Research Council Structures and Mechanisms"

⁶⁴ Marie Curie Co-funding of Regional, National and International Programmes

Europe, and Reintegration Grants, supporting the (re)integration of researchers after a period of mobility. In total 1757 IEF proposals were received in 2008 and 463 retained for funding. Out of 543 Reintegration Grant proposals, 320 were funded, 185 being returns from outside Europe (mainly from the USA).

The second Industry Academia Pathways and Partnerships (IAPP) call focused on building long-term cooperation between academia and industry, including SMEs. 141 proposals were evaluated and 49 projects will be funded in a wide range of scientific fields such as the optimization of industrial devices; using marine algae biomass for bio fuels; and novel genetic and phenotypic markers of Parkinson's disease. The IAPP call attracted 235 industrial applicants, of which 75% were SMEs.

International Mobility is promoted by the Marie Curie World fellowships, composed of International Outgoing Fellowships (446 proposals submitted in 2008, of which 110 fellowships retained for funding), International Incoming Fellowships (670 proposals submitted, of which 140 retained for funding) and the International Staff exchange scheme (IRSES), a new FP7 action created to support research partnerships through staff exchanges between European research organisations and organisations based in countries that have a scientific and technology agreement with the EU or who are part of the EU's Neighbourhood Policy. 73 proposals were submitted, of which 59, involving 151 third country and 189 EC/Associated country research organisations, were retained for funding. Those include projects such as Healthy Food For Life aiming at developing a unique health and food collaborative platform to study health benefits of the Mediterranean diet with 27 involved research organisations in 5 EU member states and 3 third countries.

Promoting S&T careers (including for women) and bringing down legal, institutional and cultural barriers to intersectorial, interdisciplinary, transnational and international mobility of researchers are crucial to advance scientific knowledge and technological progress, to enhance the quality of life and to reinforce European competitiveness. In this context, several policy initiatives have been undertaken by the Commission, including: the Communications "A mobility strategy for the ERA"⁶⁵ (2001) and "Researchers in the ERA: one profession, multiple carriers"⁶⁶ (2003) endorsed by the Council, the "European Charter for Researchers and Code of Conduct for the Recruitment of Researchers"⁶⁷ (2005), the Green Paper "The ERA : New Perspectives"⁶⁸ (2007).

In addition, the new gateway "EURAXESS – Researchers in Motion"⁶⁹ was launched in 2008 to improve the effectiveness and visibility of activities supporting researchers' mobility and career prospects. It is composed of four main sections: EURAXESS-Jobs (replacing the old recruitment tool European Researcher's Mobility Portal); the EURAXESS Services network (replacing the former ERA-MORE Network); EURAXESS Rights (to promote the implementation of the European Charter for Researchers and Code of Conduct for the Recruitment of researchers), and EURAXESS Links (formerly the network for European researchers abroad). Progress has also been

⁶⁵ COM (2001)331 "A mobility strategy for the European Research Area"

⁶⁶ COM (2003)436 "Researchers in the European Research Area : One profession, multiple careers"

⁶⁷ Commission Recommendation of 11 March 2005

⁶⁸ COM (2007)161

⁶⁹ <http://ec.europa.eu/euraxess>

made in the implementation of the "Researcher's Directive"⁷⁰ aimed at facilitating the entry and stay of third country researchers into the EU. So far, 23 countries out of 25 Member States concerned have officially finalised the transposition of the directive and the process is going on in the two remaining Member States. The European Charter for Researchers and the Code of Conduct for their recruitment – a voluntary instrument which defines the entitlements and obligations of researchers – has been signed by nearly a thousand institutions from 28 countries.

1.2.4. Capacities

1.2.4.1. Research infrastructures

Top-class scientific and technological development would not be possible without major instruments, installations and facilities. They are essential for both top-class research activities in basic and applied research, and for attracting young people to science. The existence of recognised world-level infrastructures allows Europe to remain strongly present in the international 'research market'. Construction and operating costs are high. No Member State on its own has the resources required to create the new large-scale infrastructures that are required to compete with the US and Japan in particular. The Commission provides support for the development of a European approach and for the operation and enhancement of existing infrastructures, including e-Infrastructures, through the research infrastructures activity with a budget of approximately EUR 1.7 billion.

While in 2007 the FP7 research infrastructure activity provided catalytic support and leverage for the so called "preparatory phase" of new research infrastructures identified by the ESFRI (European Strategic Forum for Research Infrastructures) roadmap, the support in 2008 concentrated on existing research infrastructures through funding of "Integrating Activities". Thirty-eight projects that plan to optimise the resources and the use of existing research infrastructures at European level were recommended for funding and are currently under negotiation or being currently implemented.

Among these, the EVA (European Virus Archive) project aims at developing a virus reference library in Europe which is readily accessible. The thousands of viruses that have been isolated and partly characterised worldwide during the past 70 years or more indeed provide unique and extremely valuable medical and educational resources to understand the basis of virus diseases, and to develop modern state of the art strategies for disease control. The 9 European partners of EVA, from 6 different countries, are recognised as centres of excellence in virology with important collections of viruses. The project will coordinate these collections so that they can be authenticated, amplified under quality-controlled conditions, stored long-term, and disseminated worldwide to laboratories engaged in fundamental and/or applied research as well as to industry. The network INCREASE is another example consisting of 6 infrastructures (large-scale field sites) which allow experimental manipulation of climate (such as night-time warming and extended summer drought) through the creation of comprehensive databases, dynamic ecosystem models and effective scientific collaboration on climate issues. In particular, INCREASE focuses on the improvement of technology and methodology for studies of climate change effects on European shrublands.

⁷⁰ Council Directive 2005/71/EC of 12 October 2005 on a specific procedure for admitting third-country nationals for the purposes of scientific research

The 2008 activities on e-Infrastructures focused on the further development and evolution of the high-capacity and high-performance communication network GÉANT and on the deployment of scientific data infrastructure. As a result of the RI call-4 the GÉANT3 project and six projects within the data infrastructure were recommended for funding and are now in the contract conclusion phase. GÉANT is the advanced pan-European backbone network connecting National Research and Education Networks (NRENs) across Europe offering unrivalled geographical coverage, high bandwidth and innovative hybrid networking technology. GÉANT3 (the 3rd phase of GÉANT) will encompass 36 countries including the NREN organisations from all member states and will focus on advanced service provisioning. The selected data infrastructure projects covering a broad range of disciplines from Biosciences via Physics, Information technologies to Environmental and Earth science address the challenge which poses the management of increasing amounts of scientific data on different scientific communities.

The conference on 'Research Infrastructures and their structuring effect on the European Research Area' (ERA), held in Brdo, Slovenia, in March 2008, confirmed the important role of research infrastructures (including e-infrastructures) in contributing to sustainable regional development, economic growth and attracting a new generation of scientists and engineers.

The fifth European Conference on Research Infrastructures, which took place in Versailles in December 2008, focused on the role of Research Infrastructures to address economic challenges linked to the Lisbon objectives and major societal problems, such as environmental or health concerns. On this occasion, the 2008 update of the ESFRI Roadmap was officially released. The conference also highlighted the main issues to be addressed to realise the ESFRI roadmap projects, confirmed as a priority for Europe.

In 2008 in the context of e-Infrastructures a number of events were organized addressing specific e-Infrastructures topics. As a first example, the "Global Leader Event" that was organised by GÉANT2 in March in Bled, Slovenia, gathered almost 150 members of the global research networking community who took stock of the current status and achievements of GÉANT2 and further discussed on next challenges like on regional networks and links that enable true global collaboration and on current and future uses of pan-European Networking.

In May the TERENA Networking Conference 2008 that was organised by TERENA (the Trans-European Research and Education Networking Association) and hosted by BELNET (the Belgian national research and education network), focused on presenting, discussing and learning about the latest developments in networking technology for the research and education community and its use by the community.

Two important events addressing e-Infrastructure policy aspects were organized by the e-IRG (e-Infrastructure Reflection Group) policy committee. In March in Zürich an open workshop discussed on opportunities that arise in enabling an easy and cost-effective shared use of distributed electronic resources across Europe based on the deployment of sustainable e-infrastructures. In a next e-IRG workshop in October in Paris, the needs of the ESFRI-roadmap projects with respect to e-Infrastructures were discussed and follow up actions were proposed.

1.2.4.2. Research for the benefit of SMEs

Small and medium-sized enterprises (SMEs) play a crucial role in European competitiveness and job creation, not only because they represent the overwhelming majority of enterprises in Europe, but also because they are a source of dynamism and change in new markets, particularly those at the leading edge of technology. Although a heterogeneous community, they are all confronted with increased competition resulting from the European internal market and the need to constantly innovate and accommodate advances of technology. The scheme for SMEs specific measures supports SMEs to outsource research and demonstration tasks to RTD performers; the funding rate for SMEs was increased from 50% to 75% in FP7.

Two large FP7 Calls for Proposals were closed under the Research for the Benefit of SMEs Programme. Under the Research for SMEs call, 663 proposals were evaluated, of which 98 (14.8%) were retained for funding. The call for Research for SME Associations yielded 383 proposals; evaluation will be conducted in 2009. An analysis of the proposals submitted under the Research for SMEs call confirms that the programme is appropriately tailored to the needs of SMEs. The high quality of projects submitted and the large number of participating SMEs (66.5% of all participants in main-listed proposals) should make a profound economic impact.

Many SME participants are represented by industrial organisations, clearly intending to apply project results to their own core businesses. A good example of how SMEs and research organisations can successfully collaborate is given by the BCA-GRAPE project that aims to develop a new bio-fungicide against a specific disease of grapevine. SMEs aim to increase crops while reducing the occurrence of diseases not effectively targeted by available products. The new non-chemical solution has the potential to increase the efficacy of controlling the disease by 10% respect to the present situation and thus to contribute to saving about EUR 30 million per year on yield losses. The resulting reduction in chemical inputs by about 5300 tons per year will represent indirect impacts on the quality of life, health and working conditions of growers (about 1.5 million people full time in EU25), food safety, health of consumers and the environment.

The Council and the Parliament decided to support the Eurostars Joint Programme based on Article 169 of the Treaty by up to EUR 100 million. The programme is jointly undertaken by EUREKA countries, supporting transnational projects initiated and led by R&D performing SMEs. Eurostars is expected to contribute to building the European Research Area by integrating the participating national programmes into a joint programme at European level.

Two major policy support initiatives were launched with the aim of developing research policy measures better suited for European SMEs. An evaluation process was launched to assess the impacts on and the benefits for SMEs from participation in transnational research Cooperation under the SME specific measures (Co-operative and Collective Research) of the Fifth and Sixth Framework Programmes. The resulting study will examine how SMEs make use of research results and how the take-up of new technology influences their competitiveness. The results of the evaluation are to be publicized in the third quarter of 2009.

The Co-ordination and Support Action call was launched with the aim to obtain studies on regional, national and European SME research and technology-based innovation

support programmes and actions, providing insight into effective methods and practices of assisting and coaching SMEs from the birth of the project idea to the exploitation of research results.

1.2.4.3. Regions of knowledge

The Regions of Knowledge activity aims at strengthening the capacities of EU regions for research and development in order to support the Lisbon objective of turning Europe into the most competitive knowledge-based society.

In the context of this activity, research-based strategies for regional economic development are defined by bringing together all regional stakeholders (public authorities, research centres, universities, business) into regional research-driven clusters and promoting their cooperation throughout Europe.

In order to implement those newly defined research strategies, action plans mobilise regional, national and European funding sources and address the potential synergies between European policies, especially the Research Framework Programme, the Competitiveness and Innovation Programme and the Structural Funds.

Two calls for proposals were published in 2008 targeting the transnational cooperation of existing clusters and the emergence of new ones. 16 projects are currently under negotiation for a total budget of EUR 10.6 million, covering 42 regions from 17 Member States. These projects mostly address energy and biotechnology and, to a lesser extent, the ICT sector and nano-materials.

Among the proposals selected, INRES is based on the idea of bringing together regional research-driven clusters in three European insular regions: the Canary Islands (Spain), Crete (Greece) and Samsø (Denmark) to address energy concerns and define a common strategy for the development of renewable energy technologies mainly derived from wind, the sun or biomass. This will reduce the islands' dependency on an external energy supply and, at the same time, reduce their energy costs.

The main objective of SynBIOsis is to develop and maximise synergies for unique research infrastructures in the field of bioinformatics, nano-biology, computational biology and biomedicine in Central Europe. Two partner regions, South Moravia (Czech Republic) and Friuli-Venezia-Giulia (Italy) intend to join forces in the design of a newly planned research infrastructure in Moravia primarily financed by the Structural Funds. The Italian partner region will use the experience of its existing research infrastructure (AREA Science Park with the Free Electron Laser), which forms part of the ESFRI Road Map, to help increase the economic relevance of research infrastructures by introducing effective collaboration with the business sector. The project also aims at exchanging experience with other Central European regions and extending the network to geographically proximate regions in order to seek complementarities.

1.2.4.4. Research potential

The Research Potential initiative is a new action dedicated to the realisation of the full research potential of the enlarged Union by unlocking and developing existing or

emerging research potential in the European Union's convergence regions⁷¹ and outermost regions⁷². 20 of the 27 Member States and 6 Associated Countries are eligible. The convergence regions' research actors are often said to be excluded from the European Research Area and 'lose' out on the competitive approach of FP7, due to the brain drain, the lack of infrastructures and an appropriate access to finance. The action aims to strengthen the research capacities by establishing excellent scientific entities in these regions, thus allowing their researchers to successfully participate in European and international research activities and tackle the variety of challenges they encounter.

In 2008, a total of 505 proposals were submitted in response to two calls for proposals, 41 were selected for funding with a Community contribution of EUR 31 million. The selected proposals will permit the emergence of top class research centres in the EU's Convergence Regions and in Associated Countries to FP7 and will also boost the economic development of the Convergence Regions where, up until now, mature low technology industries have had difficulty in adopting new technological processes.

Among the research proposals selected, the project RUN SEA SCIENCE investigates the integrity of the marine environment in Western Indian Ocean (WIO) states, among which Reunion Island is the only outermost region from continental Europe. The project focuses on the local critical mass and skill of researchers in sea sciences, on increasing the visibility of the teams at regional and international levels, including the EU, and on the bridging of gaps in technology by setting up a pole of excellence in marine science at Reunion Island. The measures implemented during the project will have several positive impacts on the economic aspects of fisheries and aquaculture, as well as on the social management of human practices in coastal areas, notably in marine protected areas, as the decrease of biodiversity and fish stocks in oceans and coastal areas is mainly caused by human pressure on habitats and marine resources.

The project WETLANET aims to enhance the research potential of the Central Laboratory of General Ecology (CLGE) in Bulgaria by strengthening the local laboratory network for studying wetlands' ecosystems. The specific goals include the exchange of know-how, the improvement of human potential, the upgrading of research laboratories, and further training possibilities of the research staff in an international scientific environment. The main expected outcome will be the better integration of the CLGE into the European Research Area, enforcing wetland science within the region and the dissemination of achievements in this important scientific domain within the international community.

1.2.4.5. Science in society

Science in Society focuses on building an effective and democratic knowledge-based society, by ensuring the integration of scientific and technological developments into European society.

With regard to ethics in European and international research, the FP7 activities are carried out under a strict ethical framework. Therefore, the Commission constantly

⁷¹ Convergence regions are listed in the C(2006) 3475 and are defined as those regions having a per capita gross domestic product (GDP) of less than 75% of the average GDP of the EU-25.

⁷² Outermost regions are defined according to article 299§2 of the EC Treaty: Guadeloupe, French Guiana, Martinique and Réunion, the Canaries, and the Azores and Madeira.

conducts ethics reviews of proposals, raising ethical issues. By the end of 2008, 477 ethical reviews had taken place under FP7. In addition, the process of ethics screening was introduced to guarantee an appropriate treatment of all proposals, raising ethical questions.

In February 2008, the Commission released a Recommendation⁷³ to the Member States to adopt a Code of Conduct to govern research in the field of nanosciences and nanotechnologies (N&N)⁷⁴. The Recommendation is in line with the objective to promote integrated safe and responsible N&N as a part of the 2005 Nanotechnologies Action Plan. In May 2008, the Commission had organised a first international conference on the code of conduct and its content was well received by national and international stakeholders. This will have far-reaching implications beyond EU borders.

An expert group on the "global governance of science" had been established in 2008 as was foreseen in the Science in Society Work programme. Legal scholars, sociologists, philosophers and political scientists from Europe, the USA, China and South-Africa contributed to a report which seeks to advance a vision of global governance for the common good that invokes European principles of good governance and fundamental rights. The report addresses specific issues concerning global aspects of the European Research Area such as scientific misconduct, converging and or diverging ethical standards for research.

Activities on the open access, publishing and dissemination of scientific information⁷⁵, were distinctly amplified in 2008 within the scientific community and beyond. In this context, the most significant pilot project on open access in FP7 was launched⁷⁶. Its success was reinforced by SINAPSE⁷⁷, a web communication platform, which aims to use expertise in the EU governance (networking of advisory bodies) in a more efficient way, to support the expert groups, ad-hoc/public consultations or e-debates, and to create e-communities. In 2008, 1689 members and 259 organisations registered in SINAPSE, reaching a total of 4988 and 1150 respectively since the start in 2005.

The 20th anniversary of the European Union Contest for Young Scientists took place in September in Copenhagen, Denmark. The contest involved 32 EU and Associated States, representatives from the European Schools, as well as contestants from Brazil, Canada, China, Mexico, New Zealand, Nigeria and the United States. The three first prizes went to the projects from Poland (mathematics), Slovakia (engineering) and the UK (earth sciences). For the first time the Commission awarded a Prize for International Cooperation, which went to a project in the area of medical sciences from New Zealand.

In the context of strengthening and developing human potential activities 2008 has been a year of consolidation.

Two projects, DIVERSITY and WHIST, were selected for funding to formulate measures for changing the "mind-set" of the research community with regard to gender diversity in recruitment and career development policies in research organisations - in

⁷³ C (2008) 424

⁷⁴ Following a consultation on the Code of Conduct in July 2007

⁷⁵ Initiated already in 2007

⁷⁶ http://ec.europa.eu/research/science-society/open_access/

⁷⁷ <http://europa.eu/sinapse>

particular in terms of increasing the participation of women at the highest levels of research.

The "Women in Research Decision-Making" expert group published its final report "Mapping the maze: getting women to the top in research" in 2008. Among its findings was that the commitment of research decision-makers is needed, and that transparent and fair evaluation and promotion procedures alone are not sufficient to improve gender balance in research decision-making. A change of culture in research institutions is also required.

With the support of Member States representatives the report "Benchmarking of policy measures for gender equality in science" gives an overview of current policies throughout Europe, and provides an original statistical analysis linking policy with number of female scientists. The statistical analyses show that the presence of certain equality measures is linked with the rates of participation of women in science.

Two calls for proposals in the area of supporting science education were published in March (EUR 4.8 million) and September (EUR 7.5 million). One large project is under negotiation and others are being evaluated. These calls target inquiry based science education techniques and follow closely the recommendations of the expert report "Science Education Now: a Renewed Pedagogy for the Future of Europe". The high level of interest in terms of proposals submitted to these calls demonstrates that not only is the subject matter recognised as being crucial to the development of human resources in Europe but that there is broad scope for collaborative European actions.

In line with the 2006 Communication "Delivering on the Modernisation Agenda for Universities: Education, Research, Innovation" on the challenges for European university-based research⁷⁸, several initiatives have been taken in 2008, such as the delivery of the expert group report on the impact of external project-based research funding on the financial management of universities. It provides an overview of external project-based funding, stresses the role of external funding in the modernisation process of universities, and proposes adequate action lines to be taken at European and national level.

1.2.4.6. Activities of international cooperation

FP7 places a new emphasis on international research cooperation, which is increasingly seen as being at the centre of Community policies. In order to become more competitive and play a leading role at world level, Europe needs a strong and coherent international science and technology policy. To this end, the 'Strategic European Framework for International S&T Cooperation'⁷⁹ adopted in 2008 will increasingly help to make European research actions for international cooperation more coherent and efficient and help to respond to the aspirations of potential partners in neighbouring countries and worldwide.

⁷⁸ COM(2006)208 "Delivering on the modernisation agenda for universities: Education, Research, Innovation"

⁷⁹ COM (2008)588 "A strategic European framework for international science and technology cooperation"

The "Strategic European Framework" stresses the importance of developing the partnership between Member States and the Commission to strengthen coordination and create synergies in S&T cooperation with the rest of the world. Council Conclusions were adopted on 2 December endorsing the concept and making provisions for the establishment of a dedicated configuration of CREST to be known as the Strategic Forum for International S&T Cooperation. The Forum has been mandated "To facilitate the further development, implementation and monitoring of the international dimension of ERA by the sharing of information and consultation between the partners (Member States and the Commission) with a view to identifying common priorities which could lead to coordinated or joint initiatives, and coordinating activities and positions vis-à-vis third countries and within international fora."

In 2008, six INCO-NET projects were launched in the framework of bi-regional coordination of scientific and technology (S&T) cooperation, with an overall budget of EUR 17.5 million covering the following regions: Western Balkan Countries (WBC), Eastern Europe and Central Asia (EECA), Mediterranean Partner Countries (MPC), South East Asia, Latin America and Sub-Saharan Africa. The concept of the WBC-INCO.NET project is to promote a strategic partnership with an intense programme of coordination and networking activities in the field of RTD between the European Union, Associated Countries and Western Balkan Countries. The project intends to identify RTD priorities which could eventually be taken-up in forthcoming FP7 calls and to enhance the participation of researchers from the WBC in European projects of mutual interest and benefit.

Bi-lateral coordination for the enhancement and development of S&T partnerships with targeted countries that have signed or are in the process of signing an S&T agreement with the Community (BILAT) can best be illustrated by two of the 11 successful projects that were signed in 2008 with a total budget of EUR 6.4 million. The project BILAT-RUS focuses on support of sustainable implementation of the Common Space on Research, Education and Culture between the EU and Russia, whereas the project BILAT-UKR will strengthen the S&T cooperation between the EU and the Ukraine.

ERA-NET and ERA-NET PLUS projects enhance coordination of national policies and programmes of Member States and Associated States in international S&T cooperation with third countries' participation. Among the 5 proposals selected, New INDIGO aims at analysing existing bilateral activities and programmes between Member States and India and enhancing networking to ultimately provide a framework for joint activities between European countries and India.

1.2.4.7. Risk-sharing finance facility (EIB)

See 1.2.1.11.

1.2.4.8. Coherent development of research policies

Achieving the aspiration of the Lisbon Strategy to transform the EU into a knowledge-based society requires more and better investment in R&D. Ensuring progress towards the objective of investing 3% GDP in R&D and achieving an open and competitive European Research Area (ERA) are two mutually reinforcing objectives which are vital in this respect. Both of these aspirations can only be attained when policy-makers at all levels (regional, national, European) are committed to developing their policies in coherence with each other towards a common set of objectives.

This activity Coherent development of research policies aims to stimulate the coherent development of research policies by supporting policy-making based on reliable evidence and by facilitating the coordination of research policies across Europe.

The Open Method of Coordination (OMC) provides Member States with an opportunity to learn from each other, exchange experience and identify good practice. The OMC in the field of research policy is supervised by the Scientific and Technical Research Committee (CREST) through a system of yearly cycles. Each cycle focuses on a limited number of policy issues. In 2008, working groups were established to work on the following topics: universities, industry-led competence centres, internationalisation of R&D and policy mix peer reviews. All groups finalised their work in early 2009.

Throughout 2008, an expert group performed an independent assessment of the impact generated by the OMC at national level. The main conclusions of the expert group were that the OMC has created an entirely new approach to Community and Member State research policy-making and that it has had a positive impact in terms of policy learning at national level⁸⁰. The expert group recommended focusing future OMC work on a "coordination through learning" approach.

To complement the multilateral OMC process the OMC-NET call scheme was developed. The objective of this scheme is to support mutual learning and policy coordination activities carried out by more limited groups of Member States and/or their regions on policy issues of their specific interest. As a result of a call launched in September 2007, seven projects were selected for funding.

Further editions of the Science, Technology and Competitiveness Key Figures report⁸¹ and the Industrial R&D Investment Scoreboard⁸² were published. The Key Figures report provides the most recent data on Europe's position in R&D. The Industrial R&D Investment Scoreboard analyses private R&D investment and the strategies of 2000 companies around the world. Publications such as these help to raise the awareness of the challenges European R&D faces and of the possible policy responses.

By the end of 2008, a number of activities were launched to take stock of progress made since the launch of the Lisbon Strategy and of the 3% objective and to prepare for the post-2010 period. Apart from a study on sectoral R&D intensity evolutions, this involved the creation of three expert groups on the following topics: the role of Community instruments in building a knowledge-based society; the 3% objective (i.e. progress made and post-2010 scenarios); and indicators to measure progress towards ERA.

Another expert group report was published on "Strengthening research institutions with a focus on university-based research"⁸³. It presents specific recommendations on the modernisation of universities, including aspects such as university funding and autonomy, governance, accountability and performance, collaboration, partnerships and human resources, and ways to improve the overall research quality in universities.

⁸⁰ The report of the expert group is available at http://ec.europa.eu/invest-in-research/pdf/download_en/eur_23874_texte_web.pdf

⁸¹ See http://ec.europa.eu/research/era/pdf/key-figures-report2008-2009_en.pdf

⁸² See http://iri.jrc.ec.europa.eu/research/scoreboard_2008.htm

⁸³ The expert group report is available at http://ec.europa.eu/euraxess/pdf/dgs150_era_greenpaper_eg3_en_080403.pdf

1.3. FP7: Direct actions by the Joint Research Centre

The mission of the Joint Research Centre is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of European Union policies. As a service of the European Commission, the Joint Research Centre functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

A panel of 14 international experts led by Sir David King has completed an in-depth review of work carried out by the Joint Research Centre from 2002 to 2006 under the Sixth Framework Programme for Research and Technology Development (FP6)⁸⁴. Success factors were identified as: delivering continued service to the European Commission without compromising scientific vitality or integrity; responding to customer needs; integration of the seven research Institute's competencies and facilities around thematic priorities; increased networking activities across Europe and internationally; enhanced researcher training; and assisting Candidate Countries in the last steps of the EU accession process. The report singles out as special achievements the JRC's role in assisting new Member States in the uptake of EU legislation, delivering well-respected international services in several areas of competence, and in enhancing the training of European researchers.

Activity 1 directly financed research FP7 EC

In the area of Health and consumer protection, the JRC published a study entitled "Scientific and technical contribution to the development of an overall health strategy in the area of GMOs (genetically modified organisms)".

The year 2008 represented a milestone in the history of the European Chemicals Bureau (ECB) marking its fifteenth year of activity evaluating dangerous chemicals, and at the same time, the accomplishment of its tasks and handover of the activities to the newly created European Chemicals Agency (ECHA).

Within the scope of the recent financial crisis and in order to reinforce the stability of the financial system, the JRC contributed to the revision of EU rules on Deposit Guarantee Schemes which are a key element of the financial safety net ensuring that, if a bank fails, depositors will be able to recover at least a part of their money. This increases confidence in the banking sector and avoids bank runs leading to severe economic consequences.

The functioning of Deposit Guarantee Schemes is regulated in the EU by the Directive 94/19/EC. A revision of this Directive has been going on for the last few years and the JRC supported this process by providing a number of technical studies.

In 2008, the JRC released a new reference material certified for the mass concentration of 12 serum proteins. Measurements of serum are used for the diagnosis of many conditions including infection, liver or kidney disorders, iron deficiency, malnutrition and the monitoring of autoimmune diseases. Consequently, they are amongst the most important measurements done in clinical chemistry. The International Federation of Clinical

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Report

available

at

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

Chemistry (IFCC), which actively supports standardisation in clinical chemistry, collaborated with the JRC on the development of this material.

On Nanotechnology the European Commission's communication on regulatory aspects of nanomaterials (COM (2008) 366) reported that the scientific basis needed to fully understand all properties and risks of nanomaterials is insufficient. It concluded that rapid improvement of scientific knowledge, such as data on toxic effects and specific characteristics of nanomaterials, was required. To better understand the correlations between structural and functional properties of nanoparticles, one needs to accurately measure their physicochemical characteristics. The key measurement is expected to be the analysis of the particle size. The JRC is also investigating the potential toxicological effects of nanoparticles, focusing on their physico-chemical characteristics and biological activity. The activity has been developed in collaboration with scientific partners and international organisations.

The JRC published a report in 2008, entitled, "Adoption and performance of the first GM crop introduced in EU agriculture: Bt maize in Spain", presenting the results of a field survey of commercial maize farmers in Spain - the largest EU producer of GM maize. This study looks for the first time into the agronomic and economic performance of a GM crop in Europe (Bt maize) during three growing seasons (2002-4). Researchers also looked into the profile of farmers who adopted Bt maize versus those who did not.

Contributions to the environment and climate change dealt with the shared Environmental Information System (SEIS) (COM (2008)46) which modernise and simplify the collection, exchange, and use of environmental information. It builds on three pillars:

- INSPIRE (Infrastructure for Spatial Information in Europe Directive (2007/2/EC));
- GEOSS (Global Earth-Observation System of Systems, an international initiative to link earth observing systems;
- GMES (Global Monitoring for Environment and Security) (COM(2008)748) which aims to develop a European independent capacity for monitoring the Earth's environment and security threats, and contribute new services to SEIS (Shared Environmental Information System).

The JRC ensures the technical coherence of SEIS, INSPIRE, GMES and GEOSS and provides contents through two data centres:

The European Forest Data Centre (EFDAC) which is the focal point for data and information on forests in Europe, and the European Soil Data Centre (ESDAC) which is the thematic centre for soil-related data in Europe and has been established according to a decision taken by the European Commission's Environment DG, the JRC, the European Statistical Office (EUROSTAT) and the European Environment Agency.

A key contribution to the European and international discussion on the consequences of climate change has been provided by the JRC reference report, "Impacts of Europe's changing climate". The report, jointly prepared with the European Environment Agency and the World Health Organization, analyses a wide range of fields and highlights that vulnerability to climate change varies widely across regions and sectors in Europe.

In the area of sustainable energy the JRC was the co-ordinator and operator of the Information System of the European Strategic Energy Technology Plan (SETIS) -open access information and knowledge management system designed to provide regular and reliable information and data for effective strategic planning. The JRC contributed to the second Strategic European Energy Review which focused on energy security and solidarity.

The report "Biofuels in the European context: facts and uncertainties" was published in March 2008 as a contribution to the Commission's "Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (COM(2008)19)"- The document integrated the work of several JRC Institutes and added some of the latest information available on indirect effects of biofuels production in developing countries. It provided significant input to the development of policy.

Response to crises in 2008

In 2008, the JRC continued its efforts to enhance the capacity of the European Commission to anticipate, prepare and respond to crises. In co-operation with the European Union Satellite Centre (EUSC), a civilian damage assessment of transport infrastructure as well as residential and non-residential structures in the core conflict area of the Georgian Territory was carried out.

In 2008, the European Commission and Member States worked closely together to prepare for the then coming forest fire season, building on the lessons learnt from the tragic experiences of 2007. Five Member States and the European Commission's disaster Monitoring and information Centre (IIC) were involved in a large-scale simulation exercise in Sardinia that ran from 16 to 29 April 2008.

Activity 2 directly financed research FP7 EURATOM

The JRC's objectives in the Euratom programme are to provide relevant scientific and technical data in the fields of reactor and fuel cycle safety including waste management, nuclear security and basic sciences. In particular, in the 2008, the following achievements were reached.

Nuclear Safety: JRC research on nuclear safety has contributed to improving the safety of nuclear power plants in the new Member States. Moreover, the JRC has launched, in the interest of European national safety authorities, the 'Nuclear Safety Clearing House', aiming at delivering analyses and feed-back recommendations on operational events in nuclear plants. The JRC paved the way to the accession of Euratom to the "Generation IV International Forum" which aims to develop the fourth generation of nuclear reactors by 2030 with improved safety, cost, non-proliferation and waste management features. In this way, the JRC opened the opportunity to contribute to this initiative for all Member States who wish do so, thus contributing to ensuring that European nuclear know-how and skills will retain their leadership.

Nuclear Security: the JRC contributed to enhance the nuclear security in the EU through its scientific support to the Euratom inspectorates including training and technological improvements provided to the European reprocessing plants in Sellafield (Great Britain) and La Hague (France). The JRC has successfully traced the origin of several finds of illicit nuclear materials (Germany, Slovakia, The Netherlands) and thus provided essential

support to the competent authorities in Member States as well as the International Atomic Energy Agency (IAEA) in their investigations.

Basic sciences: The JRC research programme in fundamental sciences has led to advances in the medical field (cancer therapy), and in the understanding the physics of actinides, and has been a key player in the European education and training networks of scientists.

1.4. Research and training actions under the EURATOM Treaty

Fusion energy

The objective of fusion research in the 7th Euratom Framework Programme is to develop the knowledge base for, and to realise ITER as the major step towards, the creation of prototype reactors for power stations that are safe, sustainable, environmentally responsible, and economically viable. ITER aims to demonstrate the scientific and technological feasibility of fusion energy to reach this goal. It will produce, for extended periods, significantly more power from fusion reactions than is needed to sustain the plasma, with steady-state operation as an ultimate goal. In addition, the ITER device will demonstrate the performance and integration of fusion technologies, and test components for a future reactor. The construction of ITER is accompanied by a strong and focussed European programme to prepare for the exploitation of ITER and to develop the technologies and knowledge base that will be needed during its operation and beyond.

During 2008, Europe was the major contributor to the advancement of the ITER project, providing more than half of the professional staff and progressing in the preparation of the ITER site in Cadarache, France, where the site levelling has been completed. A significant achievement in 2008 was the completion of the ITER design review, which confirmed the general validity of the ITER design, although pointing out the need of introducing a number of additional features recognised by all Parties as necessary for completeness and for reducing the technical risks to the project mission. Reassessment of the design resulted also in the update, by two separate panels of independent experts, of the estimates of the resources needed by the ITER International Organization (IO) and by the European Joint Undertaking 'Fusion for Energy' (F4E) respectively. The reports of the panels indicate that the estimated costs for ITER will be significantly higher than initially planned, in particular for the European in-kind contribution to be provided through F4E. Several recommendations put forward to improve the management within the ITER IO and the interaction between the ITER IO and the Domestic Agencies are now being taken into account. The aim of these recommendations is to integrate technical requirements with considerations of practicality and cost containment. Although significant variations in cost and schedule appear unavoidable, further effort is ongoing to achieve a consensus among the ITER Parties on a Project Baseline (scope, cost, and schedule) at the November 2009 ITER Council meeting.

F4E achieved full autonomy in all its functions early in the year and continued to build up the body of highly qualified staff which it needs. The first Calls for Tender for services and ITER procurement contracts were launched. Progress in the projects under the Broader Approach Agreement with Japan included the completion and adoption of the Integrated Design for the JT-60SA tokamak in Japan. The construction of JT-60SA can now begin.

A panel of independent high-level experts appointed by the Commission carried out a review motivated by the need to support the rapid and efficient development of fusion as

an energy source and to maintain in the programme the facilities needed to fulfil its medium and long term objectives. The report of the panel outlined a vision of the R&D required and reviewed the significant facilities (existing, under construction and proposed) needed to support this R&D. The panel underlined the quality of the research community, the coherence of the programme and the essential role played by the European fusion laboratories. It recommended a roadmap for facilities, prioritised according to their importance for ITER and DEMO.

Integration of the fusion programme under the coordination of EFDA (the European Fusion Development Agreement) was further strengthened in 2008 through additional Euratom financial support for priority training and research actions, including the procurement of a High Performance Computer (HPC) for Fusion Applications as a joint research infrastructure in support of ITER and DEMO. EFDA also coordinated the scientific exploitation of the JET facility, which is aimed at consolidating the ITER design, defining auxiliary systems and optimising future ITER operations. Preparations for a shutdown of the facility which will begin in 2009 to install further ITER-relevant components made substantial progress.

Fission & Radiation Protection

FP7 continues to provide support for R&D in EU Member States in a range of important areas, from fission energy technology to nuclear safety, radioactive waste management and radiation protection. EU energy policy, in particular the Strategic Energy Technology (SET) Plan, provides an emerging and crucial additional focus for this research effort, though the Euratom programme still maintains its important input in areas such as nuclear safety and radiation protection.

Approximately EUR 51 million of FP7 funding was made available in 2008 for support to research in the broad area of nuclear fission and radiation protection. In response to the call for proposals published in late 2007, DG-RTD services received a total of 42 proposals, 4 of which failed to meet one or more of the eligibility criteria and of the remaining 38 evaluated by the independent experts, 9 were considered to be below threshold. Eighteen proposals were ranked for immediate grant negotiations. In total, the 38 evaluated proposals were requesting more than EUR 78 million of FP7 funding.

The principal concern of the Euratom programme is to ensure that the support in fission and radiation protection remains as effective and relevant as possible by maximising the coordination with national and industrial research programmes in Europe. The Sustainable Nuclear Energy Technology Platform (SNE-TP)⁸⁵, the embryonic "Implementing Geological Disposal Technology Platform" (IGD-TP)⁸⁶, and MELODI⁸⁷ are all producing Strategic Research Agendas (SRAs) enabling the Euratom effort to maintain this focus. Through such initiatives a true European Research Area (ERA) is being established in the nuclear sector.

Covering the field of nuclear systems and safety, SNE-TP presented its SRA at the platform's first General Assembly on 26 November 2008. This will promote R&D cooperation in fields such as continued safe operation of current reactors and the

⁸⁵ <http://www.snetp.eu>

⁸⁶ <http://www.igdt.eu>

⁸⁷ "Multidisciplinary European Low-Dose Initiative" (MELODI), <http://www.hleg.de>

development of the next (4th) generation of nuclear reactor technology. The latter includes both fast neutron reactors and high-temperature reactors for the cogeneration of electricity and process heat for industrial applications (e.g. hydrogen production). Today, SNE-TP has more than 60 members from 19 countries and represents all key European R&D players in this field. Future Euratom FP7 calls for proposals will incorporate key actions in line with SRA priorities.

In October 2008, the 7th Euradwaste conference⁸⁸ was held in Luxembourg. This major international event, organised by DG-RTD, was a showcase for current Euratom research on geological disposal of radioactive waste as well as techniques such as "partitioning and transmutation" to reduce waste volumes or radiotoxicity. The conference also saw key discussions on establishing IGD-TP, with considerable progress being made in defining the common vision for R&D in the area of geological disposal. This technology platform will be formally launched during 2009, with the aim to coordinate implementation-oriented R&D in support for the deployment of the first geological repositories in Europe by 2020-25.

The other important ERA initiative, MELODI, was formally established by the High-Level and Expert Group (HLEG) on low-dose risk towards the end of 2008. MELODI will ensure a strategic approach to low-dose research within Europe, including joint-programming type activities covering topics such as radiobiology and effects on the genome, DNA damage, radio-sensitivity, etc. In support of this initiative, a major Network of Excellence is foreseen in the 2009 Euratom call, published in late 2008.

The Euratom programme is promoting international cooperation where there is clear mutual interest and benefit. In 2008, a further meeting of the joint Euratom / ROSATOM working group on fission R&D cooperation identified specific topics for insertion in the 2009 Euratom FP7 call for proposals. In October, a meeting took place in China to endorse a similar approach with Chinese R&D stakeholders. A Euratom-China fission R&D seminar took place in early 2009 in order to identify topics for the 2010 Euratom call. Regarding multilateral cooperation, Euratom maintains its commitment to the Generation-IV International Forum (GIF) and key projects launched following the 2008 call will contribute to this global initiative.

1.5. Completion of previous Framework Programmes and other activities

In July 2008, the expert group for the ex-post evaluation of FP6 met for the first time to proceed with their findings on the achievements, design and implementation of previous framework programme for research and technological development. In addition to this general evaluation, detailed assessments are still being carried on the economic, social and environmental impacts of the research activities, funded under the Specific Programmes of FP6.

In the field of health, the FP6 Integrated project VIZIER (Comparative Structural Genomics of Viral Enzymes Involved in Replication)⁸⁹ initiated the collaboration of 23 leading European laboratories to determine the 3D-structures of virus proteins needed for virus replication, in order to develop new drugs against viruses such as Avian Flu, SARS,

⁸⁸ Euradwaste'08 – proceedings available at http://cordis.europa.eu/fp7/euratom-fission/euradwaste2008_en.html

⁸⁹ EUR 12.9 million, started 1 Nov. 2004, 4 -year project

Chikungunya, Dengue, West Nile, Ebola, Measles, and Hepatitis. Through close partnerships with major players from the pharmaceutical industry such as Novartis and Sanofi-Aventis, 300 viruses were examined. VIZIER successfully launched an antiviral drug to combat the Chikungunya virus⁹⁰ and conducted a research project on the Dengue virus⁹¹.

The field of food was marked by the successful completion of two projects. HELENA was launched to provide an overview of fitness and physical activity patterns of 3000 adolescents from 13 to 17 years old in Europe and to enhance their nutritional and lifestyle habits. Using a common methodology across 10 EU countries, the project enabled policy makers to develop effective recommendations for the future. Taking into account a broad range of ethical, social and economical factors, the SAFE FOODS project developed a new Risk Analysis Model for foods produced by different breeding approaches and production practises. Due to its transparency and newly developed methods, this model will have significant implications for better risk identification, management and assessment, easily applicable by various stakeholders such as risk assessors, regulatory bodies, food producers and consumer organisations.

In the field of socio-economic sciences and the humanities, the project CHALLENGE succeeded in defining and facilitating responsible judgements on new security policies and practices, to minimise the restrictions on liberties and, thus, to foster democratic accountability.

In the field of industrial technologies, the KMM Network of Excellence (NoE) aimed at mobilisation and concentration of the fragmented scientific potential in the field of intermetallics, metal-ceramic composites and functionally graded materials (abbreviated as KMM) to create a durable and efficient structure capable of developing leading-edge research while spreading the accumulated knowledge outside the Network and enhancing the technological skills of the related industries. KMM-NoE focused on understanding, designing and developing new materials with superior properties⁹². Target applications of KMM are in aerospace and automotive transport, energy and machinery industries, electronics and biomedical industry.

The FP6 Audit Strategy contributes to the reasonable assurance of the relevant Directors-General that the research budget under their responsibility is spent in compliance with the regulatory framework.

The implementation of the FP6 Audit Strategy has meant a significant cultural change, through a reinforced focus on audit and control matters. The Audit Strategy has strengthened the audit and control pillar of the research process cycle and it has also led to a large increase of staff with auditing, accounting and control skills.

In this first period of the implementation of the FP6 Audit Strategy the focus has been on a substantial increase in the number of audits, the improvement of the consistency of approach and more homogeneous audit policies (including reporting and documenting),

⁹⁰ In collaboration with Sanofi-Aventis and UVE from the Université de la Méditerranée, Marseille

⁹¹ In collaboration with the CNRS, Marseille

⁹² Such as lower density, high strength and hardness, excellent performance in high-temperature regimes, enhanced fracture toughness and fatigue lifetime, superior resistance to wear, corrosion and oxidation.

the calculation of a reliable error rate, presentations to the potential auditees and the introduction of the extrapolation procedure.

The number of audits closed to date – i.e. at the mid-term stage of the implementation of the Audit Strategy - is impressive: more than 1000 FP6 audits have been closed covering 2130 participations. The audited amount of Community contributions in a FP has previously never been as high (close to EUR 800 million).

Reliable, statistically representative results, in terms of error rates, are available in order to assess the regularity and legality of the underlying transactions under FP6. The cumulative error rate at the end of 2008, stood at 2.9%. The audit information will also be useful for future efforts of simplification.

1.6. Research programme of the Research Fund for Coal and Steel

On 29 April 2008, the Council adopted a decision on the revised multiannual technical guidelines governing the research programme of the RFCS⁹³, whilst further improving complementarity with the Seventh Research Framework Programme (FP7) and taking account of the recent EU enlargement steps. These new guidelines introduced a number of simplified administrative and operational procedures and increased the financial support from 40 to 50% for pilot and demonstration projects. The research programme of the Research Fund for Coal and Steel (RFCS), that is separate and complementary to FP7, covers all aspects of coal and steel, from production processes to application. This programme has an annual budget of approximately EUR 55 million for research in these two areas, financed by the interest on the assets of the now expired European Coal and Steel Community Treaty. In 2008, of a total of 21 and 97 proposals received respectively, 9 new coal and 44 new steel-related projects were financed by EU support for a total amount of EUR 50.72 million.

One of the priorities of the EU is to reduce carbon emissions. Therefore, the Commission supports research on coal-based power generation with the aim of releasing significantly less CO₂ into the atmosphere. One possible means to achieve nearly zero CO₂ emission coal power plants is the chemical looping technology, combining very low efficiency penalties and low CO₂ capture costs. The ECLAIR project, which started in 2008 and carries out theoretical and experimental work to provide the basis for design and optimisation of the technology which paves the way for power producers to build coal power plants with nearly zero CO₂ emissions.

In the area of steel research, major efforts are dedicated to the development of high-strength steels (HSS). In the automotive industry, for instance, HSS allow car weights to be reduced through thinner sheet which ultimately results in reductions in fuel consumption and CO₂ emissions. In this context, the project EAF-PROMS delivered promising results on suitable technologies for the production of ultra-performing steel grades in electric arc furnaces (EAF), disposing of extremely improved properties for light-weight constructions.

With a view to improving safety conditions for workers in European coal mines, the RFCS funding the EMTECH project, which started in 2008, and which focuses on

⁹³ Council Decision 2008/376/EC of 29 April 2008

developing emergency support systems and technologies that ensure the survival and rescue of mine workers in the event of severe mine incidents.

The IAMTECH project, finally, provided results for increasing the productivity of modern European high-performance coal mines through advanced information and communication technologies. The results of this project were published in 2008 and helped to improve maintenance operations in coal mines. The participation of a partner from Poland, the biggest hard coal producing country in the European Union, ensures the transferability of the results throughout the new Member States. It is worth mentioning that the results obtained led to technology which won the 2008 Innovation Prize, awarded by one of the participating partner's company.

2. DEVELOPMENTS IN MEMBER STATES AND APPLICATION OF THE OPEN METHOD OF COORDINATION

2.1. The Open Method of Coordination in support of reaching the 3 % objective

In the field of R&D, the Open Method of Coordination (OMC) was set-up following the adoption of the Barcelona 3% objective and the subsequent 3% action plan, where the OMC was identified as an important tool to help raise the EU's R&D intensity to approach 3 % GDP by 2010. The Scientific and Technical Research Committee of the EU (CREST) was asked in 2003 to act as the operational interface to define and oversee the implementation of OMC. Following the positive results of the first three OMC cycles (2003-2007), CREST launched a fourth OMC cycle in December 2007. The following topics were discussed: universities, industry-led competence centres, internationalisation of R&D, and policy mix peer reviews⁹⁴

– Universities

The CREST working group on "Approaches to improve the excellence of research in universities" carried out its work between February 2008 and March 2009 and produced a final report that was adopted by CREST in early April 2009. The report includes nine main recommendations grouped into three areas: strategic orientation of policies to promote research excellence, instruments to improve research excellence and further developments to strengthen mutual learning. The report also contains relevant findings on important issues such as a typology of strategies used by Member States, a comparison of existing instruments, an analysis of factors affecting research quality or funding allocation methods. A list of good practices has also been included.

– Industry-Led competence centres

The CREST working group on Industry-Led Competence Centres carried out its work between February and September 2008. A survey of Member States' activities in the area was carried out and supplemented by information from an ongoing ERA-NET project (COMPERA). The final report, which was presented to CREST in December 2008, presents Member States' approaches to the key

⁹⁴ The different reports are available at http://ec.europa.eu/invest-in-research/coordination/coordination01_en.htm

aspects of establishing and the functioning of industry-led competence centres, including good practices related to governance, metrics and performance indicators, financing and sustainability, training and mobility of researchers as well as recommendations for further work in this area.

– Internationalisation of R&D

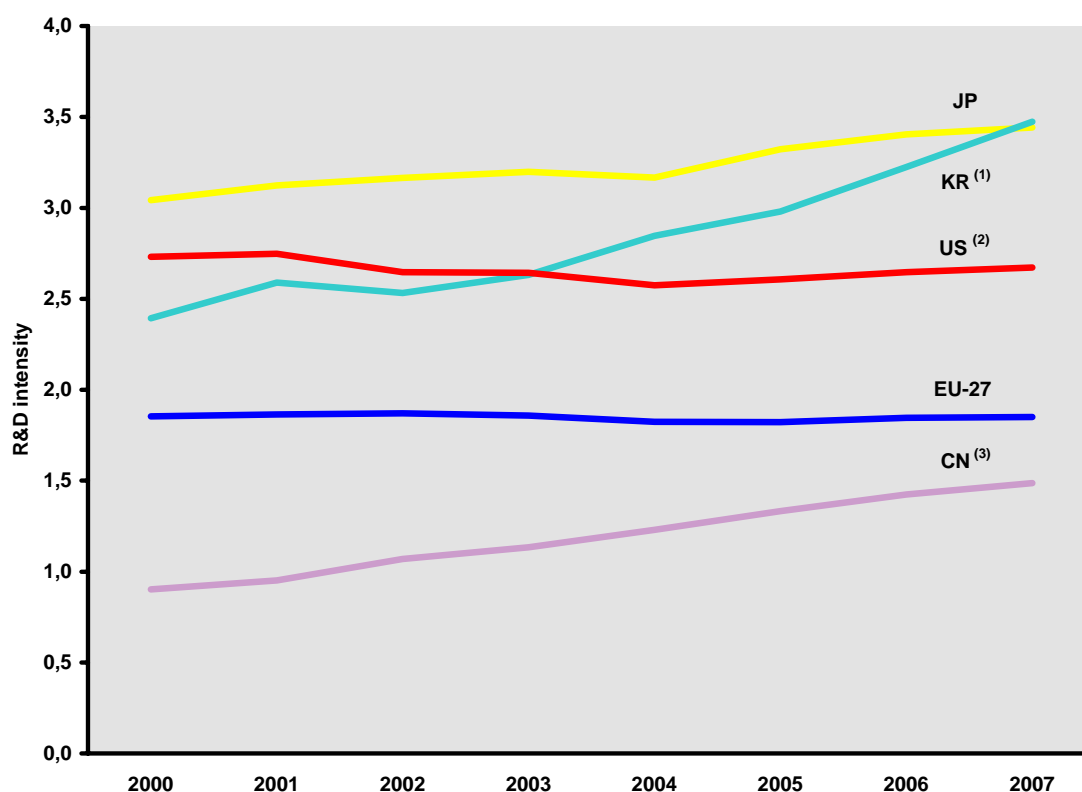
In 2008, the CREST working group on "Internationalisation of R&D" was in its second cycle. A key element of the work of the group was to identify good cooperation practice and to systematically develop options for cooperation with Brazil, India, and Russia. A comparative analysis of Member States' and Associated Countries' cooperation with these countries was drawn up and additional empirical information about cooperation patterns and bilateral agreements was gathered. Mutual learning exercises were also pursued on topics such as the possible association of Russia to FP7 or the synergies between activities at national and Community level. The group's report was adopted by CREST in April 2009.

– Policy mix peer reviews

The policy mixes of Bulgaria and Austria were reviewed in 2008. The peer review in Bulgaria took place on 2-4 June 2008 in Sofia, and a feedback mission was organised on 10 November 2008. The results from the peer review are being used in the drafting of the new Bulgarian R&D strategy. The peer review in Austria took place on 19-23 May 2008 in Vienna and Graz. The review team gave its assessment at the feedback mission in Alpbach on 19-21 August 2008 at a dedicated evening of the final event of the Austrian Research Dialogue. The recommendations of the peer review team together with the outcome of the Austrian Research Dialogue and the results of the system evaluation will form the basis for developing a new strategic vision.

2.2. Trends in public and private research investment⁹⁵

2.2.1. Progress towards the 3 % objective



Source: DG Research

Data: Eurostat, OECD

Notes: (1) KR: (i) There is a break in series between 2007 and the previous years.

(ii) R&D in the social sciences and humanities is not included.

(2) US: GERD does not include most or all capital expenditure.

(3) CN: Hong Kong is not included.

Figure 1 : Evolution in R&D intensity 2000-2007

It can be seen from Figure 1 that the EU R&D intensity did not change significantly over the period 2000-2007, whereas the US R&D intensity declined slightly, but from a higher level. However, the increase in R&D expenditure in real terms was substantial and higher in EU-27 than in the US (19.6% compared to 14.8%), and the stagnation in EU R&D intensity is explained by a corresponding increase in EU GDP. In comparison, Japan has outperformed both EU-27 and the US, increasing R&D expenditure by 21.9% in real terms and R&D intensity by 11.5% in the same period. Starting at a level of 2.4% in 2000, the R&D intensity of South Korea had reached 3.23% in 2006, almost the same level as Japan. The R&D intensity of China has grown by more than 50% since 2000, driven by the business enterprise sector, which financed R&D at a level of almost 1% of

⁹⁵ R&D is funded from four sources : national business enterprise (private sector), national government, other national sources and abroad.

GDP in 2006 (the same level as EU-27). Therefore, in 2006 EU-27 R&D intensity was only higher than that of China because of higher public funding of R&D.

The stability of R&D intensity at the overall EU level hides a much more diverse development at the level of Member States. In particular, R&D intensity has increased in 17 Member States over the period 2000-2007:

Three of the new Member States (Estonia, Cyprus and Latvia, representing about 0.4% of EU-27 GDP in 2007) have managed to increase their R&D intensities by more than 50%, but from a relatively low level.

Nine Member States (Lithuania, Spain, Austria, Hungary, Romania, Ireland, Czech Republic, Slovenia and Portugal, representing about 16.5% of EU-27 GDP) have had R&D intensity increases of between 10% and 50%. With the exception of Austria, the growth for all of these Member States is from a relatively low level of R&D intensity.

Five Member States (Denmark, Italy, Malta, Germany and Finland), representing about 36% of EU-27 GDP, have increased their R&D intensities by up to 10%.

On the other hand, ten Member States (representing about 47.1% of EU-27 GDP) have seen their R&D intensities decrease over the period 2000-2007 (Belgium, Bulgaria, Greece, France, Luxembourg, the Netherlands Poland, Slovakia, Sweden, United Kingdom).

In sum, R&D expenditure has grown in real terms in all EU Member States over 2000-2007, but with the exception of Austria, substantial increases in R&D intensity have almost exclusively taken place in countries with lower R&D intensities. Therefore, EU-27 progress towards higher levels of R&D intensity has mainly been the result of countries with low R&D intensities catching up in the period 2000-2007.

Since 2005, except for Bulgaria, each Member State has set a national R&D intensity target. The national targets may differ from the overall 3% target for the EU, depending on the particular situation of each Member State regarding R&D expenditure.

The grey part of the bars in Figure 2 show for each Member State the difference between its R&D intensity for the latest available year⁹⁶ and its R&D intensity in 2000. For instance, R&D intensity in Austria was 0.74 percentage points higher in 2008 (at 2.65%, shown in brackets on the graph) than in 2000 (at 1.91%).

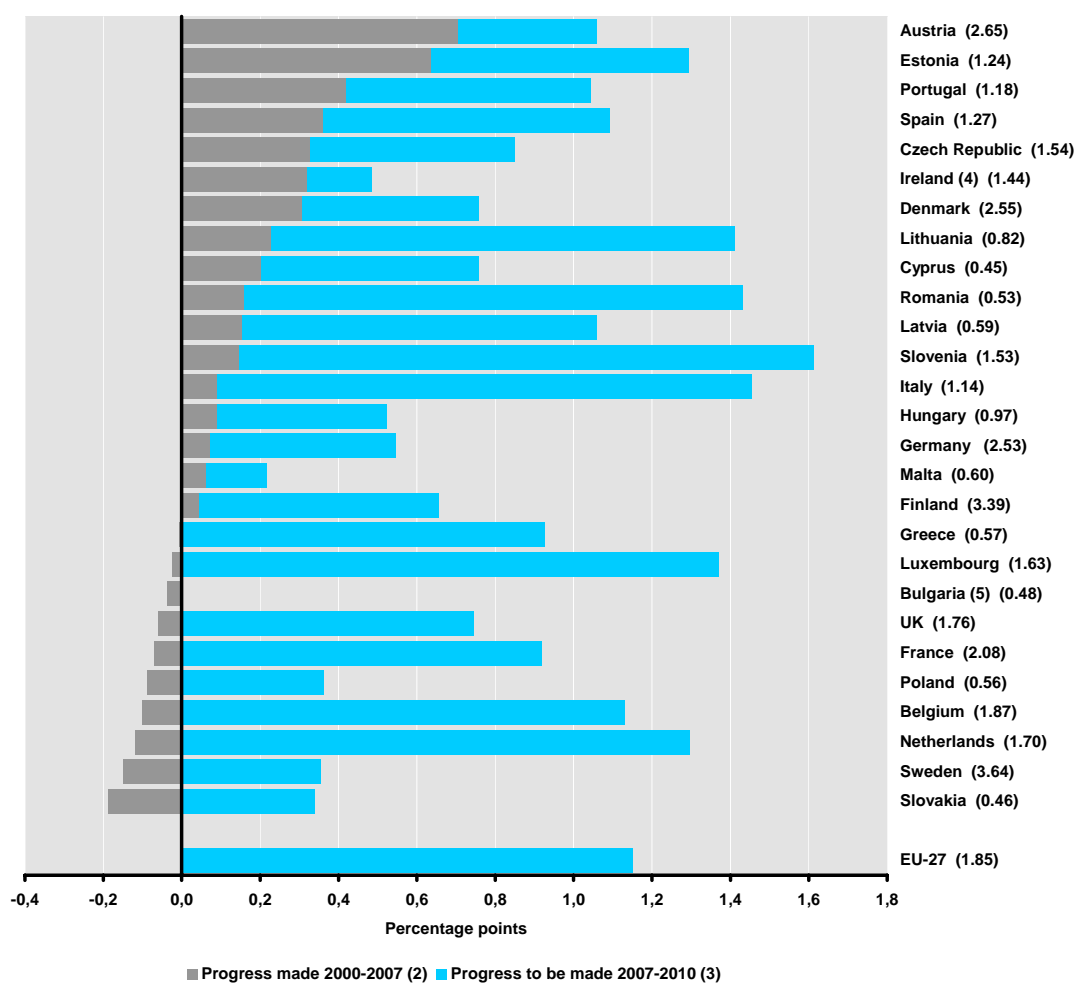
The blue bars show for each Member State the distance separating its latest⁹⁷ R&D intensity value and its R&D intensity target for 2010. Austria's R&D intensity target for 2010 of 3% is 0.35 percentage points higher than its 2007 R&D intensity of 2.65%. In other words, in the period 2000-2007, Austria has progressed about two thirds of the distance towards its 2010 target. Austria has, of all Member States, achieved the most substantial progress.

In ten Member States R&D intensity was higher in 2000 than in 2007 or the latest available year. These Member States are therefore further away from their national R&D intensity than in 2000. In most Member States the progress made towards national R&D intensity targets is only a small part of the progress that is required to meet their national

⁹⁶ This is 2006, 2007 or 2008, see note to table 2.

⁹⁷ Idem.

investment objective, and for many Member States it will be a challenge to reach the targets they have set for themselves.



Source : DG Research

Data: Eurostat, Member States

Notes: (1) IT, PL, UK: 2006; EE, IE, AT, FI: 2008.

(2) IT, PL, UK: 2000-2006; EE, IE, AT, FI: 2000-2008; EL: 2001-2007; FR, HU, MT: 2004-2007; SE: 2005-2007.

(3) IT, PL: 2006-2010; UK: 2006-2014; FR: 2007-2012; EL: 2007-2015; EE, IE, AT: 2008-2010; FI: 2008-2011.

(4) IE: The R&D intensity target for 2010 was estimated by DG Research.

(5) BG has not set an R&D intensity target.

Figure 2 : R&D intensity - progress towards the 2010 targets (in percentage points); in brackets : R&D intensity, 2007 (1)

2.2.2. Trends in public funding

R&D financed by the government as a percentage of GDP in EU-27 was equal to 0.63% in 2005, against 0.64% in 2000. This figure does not include Community funds and foregone revenue from tax incentives. Adding Community funds and foregone tax revenue would bring the government funding of R&D closer to the level of the US (0.76% in 2006).

The stability of public funding at the overall EU level hides a more positive dynamic picture at Member State level. Figure 3 shows the respective contributions of funding by

each national government⁹⁸ and funding by the business enterprise sector to the development of R&D intensity. Fourteen Member States have increased direct government support for R&D (R&D financed by government as a percentage of GDP) over the period 2000-2007⁹⁹. The intensity of government direct support for R&D has increased not only in those countries where it was low, but also in some of the Member States where it was already quite high. A slight decrease was observed in Germany and France and a limited increase in the United Kingdom and Italy. The fact that these four Member States account for a large share of the total government budget for R&D in EU-27 explains the stability observed at EU level.

It should be noted that in recent years a number of Member States have introduced or reinforced indirect public support for R&D, in particular for business R&D through tax incentives¹⁰⁰, as a complement to direct support and notably with a view to raising private-sector investments in R&D. This increased indirect support for R&D by government is another indication of the commitment to achieving higher R&D intensities. The foregone tax revenue of such measures is not accounted for as public expenditure and is not included in the data in Figure 3.

2.2.3. *Trends in private funding*

At EU level, the business sector finances about 55% of R&D expenditure. With the addition of the share of business sector funding from abroad¹⁰¹, the business sector probably finances more than 60% of R&D expenditure in EU-27. However, the exact share of business sector funding from abroad is not known.

In EU-27, R&D financed by business enterprise was 1% of GDP in 2005, compared to 1.05 % GDP in 2000. This intensity of R&D funding by business enterprises in the EU in 2005 represented 38%, 41% and 59% of the corresponding values for Japan, South Korea and the US respectively. Even if business R&D funding from the 'abroad' source of funds were added to R&D financed by business enterprise, the conclusion would not change significantly: the difference in total R&D intensity between the EU and the US, Japan and South Korea is almost exclusively due to the difference in the level of private funding of R&D. In this respect, it is noted that R&D financed by business enterprise as a percentage of GDP increased substantially in Japan and South Korea between 2000 and 2006. It decreased in the US by 12% over the same period, but from a much higher level than the EU.

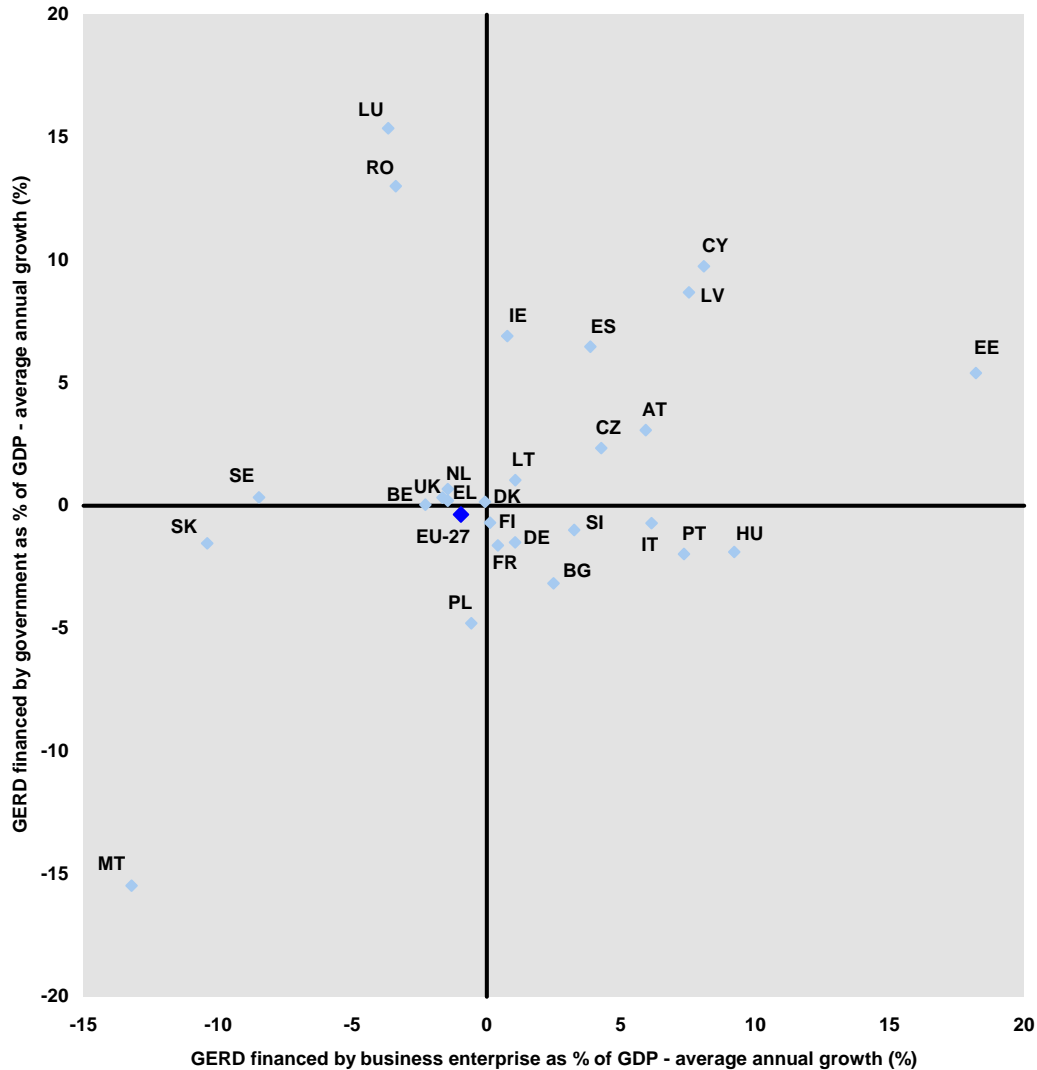
In 2006, business expenditure on R&D (BERD) amounted to EUR 136 billion in EU-27, compared to EUR 193 billion in the US and EUR 91 billion in Japan. In the seven-year period 2000-2006, total BERD in EU-27 amounted to EUR 852 billion in current prices,

⁹⁸ GERD financed by government only includes direct support for R&D by government. Indirect government support for business R&D through tax incentives is not considered a government source of funds. Therefore, any increase of a government's indirect support for R&D over the period 2000-2006 is not represented in Figure 3.

⁹⁹ See the actual period covered for each Member State, depending on data availability, in the footnote to Figure 3.

¹⁰⁰ This shift towards indirect public support of R&D is documented in Key Figures 2007, pp 73-75.

¹⁰¹ R&D financed by 'abroad' amounted to 0.16% of GDP for the EU in 2005, including public and private foreign sources. Funding from the abroad-private source of funds, although not known precisely, is therefore equal to or less than 0.16% of GDP. This compares to 1% of GDP for the (domestic) business enterprise source of funds.



Source: DG Research

Data: Eurostat

Note: (1) NL: 2000-2003; BE, LU, PT, EU-27: 2000-2005; BG, DE, IE, ES, CY, PL, UK: 2000-2006; AT: 2000-2008; SE: 2001-2003; DK, EL: 2001-2005; FR: 2004-2006; HU: 2004-2007; IT: 2005-2006; MT: 2006-2007

Figure 3 : GERD financed by business enterprise and by government as % of GDP - average annual growth 2000-2007 (1)

compared to EUR 1366 and EUR 675 billion in the US and Japan respectively. As a result, the business sector in the US invested a total of EUR 514 billion more in R&D than was invested by the business sector in EU-27 in the period 2000-2006¹⁰².

The intensity of business enterprise support for R&D increased significantly almost exclusively in those ERA countries where this intensity was quite low, with the exceptions of Austria. Therefore in the ERA, any increase in business enterprise funding of R&D has basically been linked to the catching-up process of Member States starting from a low level.

¹⁰²

Source: Eurostat, OECD

2.2.4. *To sum up*

Funding of R&D at EU level has increased significantly in real terms, but it has been stable as a percentage of GDP. However, this stability at the overall EU level hides a more dynamic picture at the level of the Member States, where a majority of Member States have managed to increase both their private and public funding of R&D. Nevertheless, this has not been sufficient to increase overall EU R&D funding, since most of the countries having increased are in a catching-up process and do not have a very high weight in terms of share of GDP and in terms of share of R&D investment in the EU.

2.3. **Trends in research policies**

2.3.1. *Improving the policy mix for R&D*

Member States have continued to work throughout 2008 on optimising the mix of policy measures they put in place to stimulate public and private R&D. National policies have since the launch of the Lisbon Strategy in 2000 evolved towards greater consistency and complexity and are increasingly developed with a view of maximising the contribution of research to solving the economic and societal challenges Europe is faced with in the years to come.

Many Member States have over the past years developed multi-annual strategies for stimulating R&D and innovation activity, in many cases including also multi-annual budget plans. Some Member States have in 2008 put in place a multi-annual strategy or are still developing one. The French minister for research recently announced the government's willingness to develop a new national strategy for research and innovation policy on the basis of a large stakeholder consultation. The government of the Czech Republic approved a reform of the system of research, development and innovation, including a significant reduction in the number of funding bodies, supporting the excellence of public R&D and ensuring its use, promoting increased human resources for R&D and a stronger focus on internationalisation of R&D activities. In Bulgaria, a strategy for R&D and innovation is still under discussion. Norway has also announced the publication of a new White Paper on research.

In other Member States reviews of existing strategies have been carried out with a view to further optimising the policy mix. The Austrian government launched a 'Research dialogue' to discuss the upcoming challenges and define a renewed strategy for Austrian research policy with its stakeholders. Both the Flemish and the Walloon region in Belgium have, in preparing for upcoming elections and the next policy cycle, recently concluded reviews of their policy mixes.

There is a consistent trend to broaden strategies to make them cut across the competences of different ministries. Most often clear links are established between research policy and innovation policy, but other policy domains are also taken into account, such as industrial policy, education policy or fiscal policy. In 2008, the UK supplemented its 'Science and Innovation Investment Framework 2004-2014' with the 'Innovation Nation White Paper', which focuses strongly on a demand driven approach to stimulating innovation activity. In the Netherlands, a long term and comprehensive 'Agenda for durable productivity growth' was published, laying down the ambitions and objectives for 2030. In Finland, a new national innovation strategy was launched, aiming at creating a broad-based and multi-faceted innovation policy and strengthening its implementation.

Changes in the institutional settings used for R&D policy development are continuing to be introduced. This concerns mainly mergers or re-organisations between ministries dealing with research, education, employment, trade and industry. For example, in 2008 Belgium's Walloon region created a Directorate-General for Economy, Employment and Research, which deals with a variety of policies related to competitiveness. The Czech Republic is currently discussing a rationalisation of its funding bodies. In Malta, the portfolio for science, research, innovation and technology policy was shifted from the Office of the Prime Minister to the Ministry for Resources and Rural Affairs. In Spain, a new ministry for science and innovation was created, responsible for nearly all of public R&D and innovation related policies.

2.3.2. *Responding to the crisis*

As a response to the financial and economic crisis, Member States have put in place economic recovery packages. The Commission has adopted in November 2008 a European Economic Recovery Plan¹⁰³, in which it notably called upon Member States to continue to increase their public investments in R&D, in line with their national intensity targets. Member States were also reminded of the importance of continuing with the structural policy reform needed to make Europe take advantage of the next upturn.

In their recovery packages, many Member States have attached great importance to R&D and innovation. For example, the Irish government has in December 2008 published a new policy framework document on "Building Ireland's Smart Economy: A Framework for Sustainable Economic Renewal". The document sets out the government's vision for the next phase of Ireland's economic development and seeks to address the problems of restoring stability both to the public finances and to Ireland's competitiveness. Key elements of the framework document include investing in research and development, encouraging multinational companies to locate more R&D capacity in Ireland and ensuring the commercialisation and retention of ideas that flow from this investment.

With public and private budgets tightening, investments in R&D are threatened. In a few of the hardest hit countries, and notably in Latvia and Romania, public budgets are expected to be cut significantly. In contrast, many Member States have in their recovery packages adhered to their public investment targets. Finland, for instance, has restated its objective of increasing R&D intensity up to 4% GDP. Sweden has also announced significantly increased public budgets for R&D. The Slovenian government has indicated that despite the crisis, the allocation of public funds for R&D will be increased by approximately 0.1 to 0.3% GDP annually. Germany has decided to focus additional funding on SMEs and the development of hybrid and other clean car technologies.

As direct relief to the private sector, many Member States are opting to strengthen existing R&D tax incentives. In France, the modalities of the 'Crédit d'impôt recherche' have been temporarily modified to increase the generosity of the scheme. Portugal has decided to increase the rate of its tax credit. Both Belgium and the Netherlands have decided to strengthen their existing fiscal incentives schemes. In Ireland, enhancements to the R&D tax credit have been announced as this instrument is viewed as a key incentive to attract multinational R&D investment.

¹⁰³ COM(2008) 800

2.3.3. Fostering structural change through the development of high-tech sectors

The objective to develop high-tech sectors and support high-tech SMEs took a growing importance in 2008. It is to be noted in this context that the Commission launched in the context of its recovery plan three public-private partnerships on green cars, energy-efficient buildings and factories of the future. The Commission also recommended to the Member States to cut by 75% the fees for patent applications and maintenance.

Almost all Member States focus on developing high-tech sectors in their economy, even though the approach they take towards this challenge varies considerably. In many Member States, scientific domains or industrial sectors have been identified which are deemed of strategic importance to the country's economy and where support is to be concentrated. A recent example is the adoption by the Luxemburg government of eight future priorities for public research.

Concentrating public support on priority areas can follow a variety of routes. A traditional approach consists of setting up thematic research programmes in which companies and public research institutes typically cooperate. Quite a few Member States have over the past years channelled their dedicated funding through clustering initiatives. France is continuing this approach by launching the second phase of the competitiveness cluster policy for a further three years period (2009-2011) with a total budget of EUR 1,5 billion. Creating dedicated thematic research institutes and providing specific support to New Technology Based Firms (NTBF) are other options that have been chosen by Member States over the past years. In this respect, the new Irish policy document mentioned above states that up to EUR 500 million will be generated over the period 2009–2013 to create a venture fund, known as 'Innovation Fund – Ireland' to support early stage R&D-intensive SMEs.

A novel approach that is gaining ground in some Member States is one whereby the concentration of resources is not based on delineation of research domains or industrial sectors, but on the basis of societal challenges. In the UK, the Technology Strategy Board has recently announced the launch of additional Innovation Platforms on issues such as low carbon vehicles, assisted living or low impact buildings. The Netherlands has in 2008 launched societal innovation agendas on themes such as energy, health and water.

Although the issue of structural change towards a larger high tech content in the economy is important, the tendency is sometimes to put all efforts on the development of high-tech sectors to the detriment of innovation in traditional low technology sectors which make up the bulk of the economy in most Member States. Due account should be taken of these traditional sectors where growth potential is hampered by low levels of innovation. It is important to note in this respect that the innovation voucher schemes, piloted by the Netherlands some years ago, are continuing to spread across Europe. The scheme aims at bringing SMEs in contact with knowledge institutes by issuing vouchers of relatively small nominal value (typically a few thousand euro) to pay for an innovation solution to a problem faced by the SME. The main purpose of an innovation voucher scheme is to bring a maximum number of SMEs into contact for the first time with a knowledge institute. Slovakia and the UK are among the Member States which have introduced the scheme in 2008.

2.3.4. Increasing the quality of the public research base

Increasing the quality and efficiency of the public research base is broadly recognised by Member States as an essential factor in attracting private investments in R&D. It is therefore not surprising that this continues to be a key aspect of R&D policy reform in many Member States. It should be noted, however, that there are significant differences in the stage of development amongst the Member States and in particular between old and new Member States. In many of the Eastern European countries, the public research base still largely consists of independent research institutes (Academy of Sciences), for which reforms have started, although in some cases drastic reforms of institutional set-up and funding streams are still required. For the old Member States, the challenge is rather connected to coping with the increasing globalisation of R&D and the need to ensure that public research performed in their respective countries is capable of competing on a world scale.

In the Czech Republic, the Ministry of Education, Youth and Sports published the first draft of a White Book which outlines the main directions of reforming the Czech universities. The White Book aims at strengthening R&D performed at universities by differentiating between teaching and research universities, concentrating resources on a limited number of research centres, strengthening the third mission of universities and professionalising management. The Finnish public research system is undergoing restructuring through the establishment of new higher education institutes, mainly as a result of mergers. In France, the public research institutes CNRS and INSERM were restructured into thematic institutes and a 'Plan Campus' was launched to create university excellence clusters of international level. The Polish government adopted new acts on the Polish Academy of Sciences and on Research Institutes and in Portugal a Law on the Higher Education System was adopted. In Greece and Malta, a restructuring and modernisation of the public research system was announced.

2.3.5. The ERA dimension in national policies

The coordination of national programmes has been an important element of the European Research Area initiative since its launch in 2000. In 2008, instruments offered by the Framework Programme are still the main tools used for ensuring cooperation and coordination between Member States and their researchers, both at the programme and project level. Many Member States have put in place specific measures to stimulate the participation of their researchers in the Framework Programme. A recent example is the setting up of a specific structure by the Portuguese government to encourage the participation of Portuguese organisations in FP7.

As many national governments continue to be hesitant to let public money flow over national borders, progress in opening up national research programmes remains limited. There are, however, a number of examples where some Member States are reinforcing their cooperation. The Nordic countries have, for instance, announced that they will invest jointly in six research programmes to achieve a global leading position in environmental technology and climate change. France and Germany have also developed cooperative projects on fields such as: materials, aeronautics, space, oceanography, medical research, transportation, and vegetal genomics, microelectronics and laser techniques. In this context, common research projects have been launched or researchers are being exchanged between research labs. A research unit of the French National

Institute for Health Medical Research (INRA) has also been created within the German Cancer Research Centre in Heidelberg.

Another interesting example of transnational cooperation is the creation of a joint nanotechnology institute between Portugal and Spain. The INL (International Iberian Nanotechnology Laboratory) will be the first fully international research organization in Europe in the field of nanoscience and nanotechnology. The new laboratory is being established by Portugal and Spain, but in the future it will be open to the membership of other countries of Europe and other regions of the world.

Many Member States, and typically the old Member States, have in recent years started to develop schemes to attract top researchers from abroad, as an additional way to strengthen their national systems. In July 2008, the Dutch Cabinet presented its new blueprint for a modern migration policy, with one of the objectives being to remove barriers for knowledge migrants. In France, efforts have been made in the past couple of years in order to attract foreign researchers. The most important scheme corresponds to fellowships granted by the National Agency for Research for foreign researchers, through a programme called "Chairs of Excellence". Portugal has recently launched an instrument called the Invited Chairs programme. This programme aims to attract international high level researchers in order stimulate the internationalization of Portuguese Universities. In Malta, the Immigration Act was amended to introduce new regulations on the admittance of third country nationals for scientific research purposes. In this respect, it is also worth noting that a study will be launched in 2010 to assess the implementation of Council Directive 2005/71/EC¹⁰⁴ and of Recommendation 2005/761/EC¹⁰⁵ of the European Parliament and the Council, both elements of the 'Scientific Visa Package'.

All Member States are actively following and participating in the activities of the European Strategy Forum for Research Infrastructures and are in some cases complementing them with work on developing national roadmaps or by reserving national funding for participation in ESFRI projects. In Greece, the General Secretariat for Research and Technology has launched a feasibility study to decide on which projects it will participate in. The Czech government has approved a national roadmap for large research infrastructure support up to 2015 and foresees to use significant financial resources from the Structural Funds. In Ireland, national planning for the provision of research infrastructures is undertaken with direct reference to the ESFRI roadmap and Ireland will make decisions regarding its formal membership status of the different pan-European infrastructure projects (including but not limited to the list above) as and when they move towards the actual construction/implementation phase. In the Netherlands, an expert commission was established to advise the government on Dutch participation in ESFRI projects.

¹⁰⁴ Council Directive 2005/71/EC of 12 October 2005 on a specific procedure for admitting third-country nationals for the purposes of scientific research

¹⁰⁵ Recommendation of the European Parliament and of the Council of 28 September 2005 to facilitate the issue by the Member States of uniform short-stay visas for researchers from third countries travelling within the Community for the purpose of carrying out scientific research

The Science, Technology and Competitiveness Key Figures Report¹⁰⁶, published at the beginning of 2009, noted encouraging progress in establishing the European Research Area, although further progress is needed for Europe to realise its ambitions.

3. INTERNATIONAL COOPERATION AGREEMENTS

Integrating Europe's neighbours into the ERA, fostering strategic cooperation with key third countries and improving the framework conditions for cooperation will enhance the international dimension of the ERA. In this context, the existing 16 S&T cooperation agreements with third partner countries provide a continuing platform for improving and coordinating research cooperation.

Developments in 2008 include notably the conclusion of the already provisionally applicable S&T cooperation agreement with Egypt, the signature of an S&T cooperation agreement with New Zealand and the authorisation to launch negotiations of an S&T cooperation agreement with Jordan (EC). Furthermore, the already provisionally applicable association agreements with Switzerland (EC and Euratom) and Israel (EC) were concluded and entered into force.

In the context of the Euratom Treaty, there are agreements with the following emerging countries: Russia, Ukraine, Kazakhstan, Uzbekistan and Argentina. Agreements with China, India and Brazil are under negotiation.

The conclusion of association instruments facilitates the integration process of European partners as well as candidate and potential candidate countries into the ERA. In 2008, FP7 EC association instruments were signed with Bosnia-Herzegovina and Montenegro. Researchers from 39 states are now enjoying the same rights and obligations in their participation in FP7 research projects.

4. CONSULTATION AND MONITORING PROCEDURES

4.1. Scientific and Technical Research Committee (CREST)

In 2008 CREST held six meetings. The Commission regularly kept CREST informed of new policy initiatives and the presidencies informed CREST of the work in the Council.

One meeting took place at Directors-General level, which was devoted to the implementation of the ERA initiatives and the development of a vision and governance for the ERA ('Ljubljana process').

The Commission informed CREST on a regular basis of the ERA initiatives, including specific presentations of the Commission proposal for a Council regulation on the Community legal framework for European Research Infrastructures, the Communication 'Towards Joint Programming in Research' and the Communication on a Strategic European Framework for International Science and Technology Cooperation.

¹⁰⁶ The document is available at http://ec.europa.eu/research/era/pdf/key-figures-report2008-2009_en.pdf

Within the context of the Open Method of Co-ordination, CREST discussed and adopted recommendations of the working groups on industry-led competence centres, R&D in services and policy mix peer reviews for Austria and Bulgaria. The Committee also discussed the main recommendations of the working group on internationalisation of R&D. Furthermore, CREST undertook a mutual learning exercise on the basis of the National Reform Programmes and the 2008 Progress reports.

CREST decided to invite Albania, the Former Yugoslav Republic of Macedonia (FYROM), Montenegro and Serbia as observers to the Committee.

Presentations and exchanges of views also covered the following topics:

- Realising the fifth freedom;
- Family-friendly scientific careers;
- Follow-up of the Implementation of Council Conclusions on the Commission Communication "Scientific Information in the Digital Age: Access, Dissemination and Preservation";
- Science and research policies in Slovenia and in France.

4.2. Programme committees

The Programme Committees for the FP7 Specific Programmes 'Cooperation', 'Ideas', 'People' and 'Capacities' held 82 meetings in 2008. They were asked for 195 opinions by the Commission, both on the work programmes that allow publication of calls for proposals and on the selection of proposals. All the opinions given were favourable.

The Consultative Committee for the FP7 Specific Programme under the Euratom Treaty met 7 times and gave 61 favourable opinions/recommendations.

The Standing Committee on Agricultural Research (SCAR) met twice during 2008.

A new committee, the "Coal and Steel Committee", was created in 2008 by the Council Decision of 29 April 2008 on the adoption of the Research Programme of the Research Fund for Coal and Steel and on the multiannual technical guidelines for this programme. It did not meet in 2008.

As in the past, the collaboration between the Commission and the Committees was very good and it entailed many positive and constructive exchanges.

4.3. Advisory groups

In continuity with the method followed during FP6, Advisory Groups were created by the Commission, with the mandate to provide consistent and consolidated advice on the scientific and technical content of the annual Work Programmes under FP7. Advisory Groups' advice is meant to complement other sources of external advice received by the Commission, including from stakeholder consultations and, where relevant, from European Technology Platforms.

The separate Advisory Groups for 'Regions of knowledge' and 'Research Potential' created at the beginning of FP7 have now been merged into one new Advisory Group for

'Regional aspects of FP7'. The 'Science in society' Advisory Group has been replaced by focused workshops.

As a result, the different themes or parts of the FP7 Specific Programmes are currently covered by fourteen Advisory Groups: Health; Food, agriculture and biotechnologies; Information and communication technologies; Nanosciences, nanotechnologies, materials and new production technologies; non nuclear Energy and Euratom; Environment (including climate change); Transport (including aeronautics); Socio economic sciences and Humanities; Space; Security; People; Research for SMEs; Regional aspects of FP7; Activities of international co-operation.

In autumn 2008, the memberships and mandates of most of the Advisory Groups have been reviewed.

Selection of the members of Advisory Groups follows the Commission guidelines¹⁰⁷, and is done on the basis of excellence, independence and pluralism. Efforts are also being made to ensure an appropriate balance and diversity in membership of the groups, concerning notably gender, geography, and types of organisations. The mandates of the groups are based on those used in FP6, but have been broadened in order to reflect the wider scope of FP7.

The emphasis on transparency has continued. The memberships, mandates and written advice of Advisory Groups are publicly available on the Commission Website at the following address: http://ec.europa.eu/research/fp7/advisory_en.html.

4.4. European Research Area Board (ERAB)

The European Research Area Board (ERAB) was legally established by Commission decision on 7 December 2007¹⁰⁸. In order to ensure the transparency of the procedure to nominate ERAB members, an independent Identification Committee (ICD) was established, which reported to the Commission in spring 2008. The nomination process was completed in April 2008, when 22 high-level members were appointed in a personal capacity by Commissioner Potocnik, for terms of office lasting four years and with the possibility of one renewal. At its first plenary meeting in June 2008, the members of ERAB elected a Bureau consisting of the Chair, Prof. John Wood, two Vice-Chairs and three 'Bureau partners', to act as a steering committee for ERAB.

As its name implies, ERAB's work focuses on the realisation of the European Research Area. According to the Commission Decision of 7 December 2007, ERAB's tasks are:

- (a) to advise the Commission on the realisation of a European Research Area;
- (b) to deliver opinions on the realisation of a European Research Area at the request of the Commission or on the Board's own initiative;
- (c) to provide the Commission with an annual report on the current state of the European Research Area.

¹⁰⁷ COM (2002) 713 "Communication on the collection and use of expertise by the Commission: principles and guidelines"

¹⁰⁸ Commission Decision 2008/111/EC, Euratom of 7 December 2007

ERAB aims to deliver by June 2009 its first Annual Report, in the form of a long-term Strategic View (2030) on the ERA. Preparation of this Strategic View began in 2008 with discussion focused on five key issues (in separate working groups): Modern Universities and Research Organisations; Favourable conditions for Europe/innovation; Science's responses to major societal challenges; the Fifth Freedom; and international cooperation. 'Excellence' is treated as a transversal issue.

ERAB held three plenary meetings and three Bureau meetings in 2008.

4.5. Monitoring and evaluation

The main monitoring and evaluation activities in 2008 included the completion of the first Monitoring Report under the seventh Framework Programmes and the ex post evaluation of the 6th Framework Programmes, according to the commitments made at the launch of FP7 to update and develop Community research evaluation activities.

The FP7 Monitoring Report is based largely on a set of indicators which were identified through discussions between Commission services. The aim is to provide a comprehensive picture of implementation and performance, highlighting in particular the issues of interest to programme management, and provide a base of information which can be developed year-on-year to support future FP evaluation exercises. The Monitoring Report also contains information on progress with the novelties introduced under FP7, such as the European Research Council (ERC), Risk Sharing Finance Facility (RSFF) and Joint Technology Initiatives (JTI). The Monitoring Report is available at http://ec.europa.eu/research/reports/2009/pdf/first_fp7_monitoring_en.pdf

The ex post evaluation of FP6 was carried out by a group of 13 independent experts and supported by an extensive collection of evaluation evidence including studies on particular FP6 thematic research areas; studies of horizontal issues such as networking and publications performance; impact studies of the FP by the Member States; analyses of key issues by evaluation experts; self-assessments by Commission services; and a survey of the National Contact Points. The report is available at http://ec.europa.eu/research/reports/2009/pdf/fp6_evaluation_final_report_en.pdf.

In an exercise related to the work on evaluation, a four member group of independent experts produced a review on 'The Future of Networks of Excellence'. The report is available at http://ec.europa.eu/research/reports/2008/pdf/expert-group-on-the-future-of-noes_final-report.pdf.

Amongst other activities during the year was the re-launch of the European RTD Evaluation Network, run by the Commission and including members from Member States and Associated States, to exchange information and build good practice on research evaluation in Europe.

5. STATISTICAL TABLES ON THE IMPLEMENTATION OF THE 7TH FRAMEWORK PROGRAMME

5.1. Explanatory notes

The presented data refer to i) proposals submitted in response to FP7 calls for proposals the processing of which ended during 2008, ii) FP7 proposals retained for funding

following proposal evaluation and selection and iii) FP7 grant agreements signed during 2008.

In reading the provided tables please note the following:

The tables are based on data from 55 FP7 concluded calls for proposals, i.e. calls for proposals the processing of which ended in 2008 and for which evaluation and selection outcomes are available. The list of the FP7 calls for proposals is presented in table 1.

In the group 'Candidate and Associated Countries', Croatia and Turkey are both candidate and associated countries. FYROM (Former Yugoslav Republic of Macedonia) became a candidate country in December 2005 as did Albania and Montenegro in the course of 2008. All three countries appear under the heading "candidate countries" in the 2008 statistical tables of the annual report. Iceland, Liechtenstein and Norway are associated countries in the framework of the European Economic Area, whereas Switzerland and Israel are associated countries in the framework of an association agreement.

Table 1 presents the full history of proposals received in response to both single- and two-stage calls together with the corresponding success rates. Please note that Table 1 includes continuously open calls, which may contain both single stage and two stage proposals (i.e. FP7-ICT-2007-C). Tables 1a and 1b, report on single-stage calls and only on the second stage of two-stage calls. Tables 2a and 2b report on retained proposals only.

In proposals for Marie Curie Actions in support for training and career development of researchers, data on project cost and requested EC financial contribution is not collected and therefore not reported. The reported financial data refer only to 63 proposals for Coordination and Support Actions (CSA) submitted in response to the following calls for proposals: FP7-PEOPLE-NIGHT-2008, FP7-PEOPLE-2007-2-3-COFUND, FP7-PEOPLE-IRSES-2008, FP7-PEOPLE-ERG-2008, FP7-PEOPLE-IRG-2008, FP7-PEOPLE-IEF-2008, FP7-PEOPLE-IIF-2008, FP7-PEOPLE-IOF-2008.

Applicants in the scope of PEOPLE as well as IDEAS refer to hosting organisations/institutions.

The "Higher Education" and "Non Profit Research Organisations" types of activities (see table 3b) are not mutually exclusive categories since a higher education establishment may also be a non-profit research organisation and vice versa.

The combinations of legal status categories presented in tables 3b and 3e are all mutually exclusive.

The figures related to EC financial contributions refer to commitments and not payments.

A collaborative link is assumed to exist between each pair of participants in each contract. The number of collaborative links created by a project is calculated in the following way

When there are n participants from a given country in a project, the number of collaborative links between participants from the given country formed as a result of the project is assumed to be $n*(n-1)/2$.

When there are m participants from one country and p from another country in a project, the number of collaborative links created between the two countries as a result of the project is assumed to be $m*p$.

The total number of collaborative links is then calculated by summing across all projects. Fusion contracts are omitted in the statistics due to the unavailability of data

5.2. List of tables in the statistical annex

Table 1: List of FP7 concluded calls for proposals in 2008.

Table 1a: FP7 Eligible proposals in 2008: Participation by Priority Area & Funding Scheme.

Table 1b: FP7 Eligible proposals in 2008: Participation by Priority Area & Country.

Table 2a: FP7 Proposals retained for funding that were submitted in 2008: Participation by Priority Area & Funding Scheme

Table 2b: FP7 Proposals retained for funding that were submitted in 2008: Participation by Priority Area and Country

Table 3a: FP7 Grant Agreements signed in 2008: Participation & Contribution by Priority Area and Funding Scheme

Table 3b: FP7 Grant Agreements signed in 2008: Participation & Contribution by Priority Area and Holders' type of activity/Legal Status.

Table 3c: FP7 Grant Agreements signed in 2008: Participation & Contribution by Priority Area and Country

Table 3d: FP7 grant agreements signed in 2008: Participation & Contribution by Funding Scheme and Country

Table 3e: FP7 grant Agreements signed in 2008: Participation & Contribution by Holders' Country of origin and Legal status.

Table 3f: FP7 grant Agreements signed in 2008: Participation & Contribution by Holders' Country of origin and Type of activity.

Table 4: Collaborative links grant holders within signed grant agreements in 2008.

ANNEX I: PROGRESS ACHIEVED BY THE INNOVATIVE MEDICINES INITIATIVE (IMI) JTI¹⁰⁹

This Annex provides reporting on progress achieved by the IMI JTI in 2008, as foreseen in Article 11 (1) of Council Regulation 2008/73/EC of 20 December 2007.

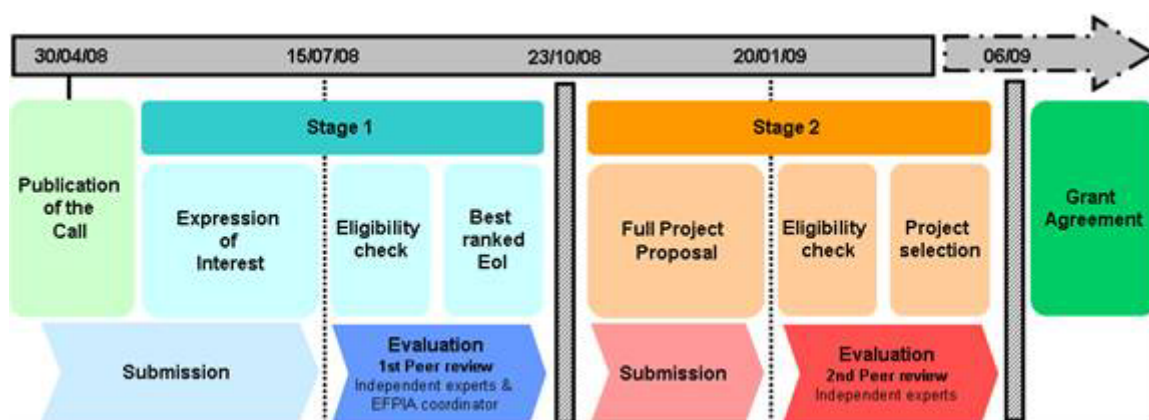
I.1. IMI JTI first call overview

I.1.1. Timetable

The Innovative Medicines Initiative is a unique Public-Private Partnership (PPP) between the pharmaceutical industry represented by the European Federation of Pharmaceutical Industries and Associations (EFPIA) and the European Communities represented by the Commission.

The first IMI call was published on 30 April 2008. The first stage of the call invited Expression of Interest of Applicant Consortia (e.g. collaborations between academia, SMEs, patient organisations, non EFPIA industry, etc.) to be submitted in response to call topics included in the call. The deadline for Expression of Interest submission was 15 July 2008.

At the second stage, the best ranked Expression of Interest submitted in each topic of the call has been invited to form joint consortia with pre-established EFPIA consortia already associated with the topic and to submit full project proposals. The deadline for full project proposal submission was 20 January 2009.



The 2nd peer review ended at the beginning of March. Two full project proposals did not reach consensus and will be re-assessed in May 2009.

Graph 1: Timetable of the first call

¹⁰⁹ For further information, see <http://imi.europa.eu>

1.1.2. Topics

18 topics were opened in the first call, covering three of the four pillars of the IMI Research Agenda.

Pillar I: Improving the Predictivity of Safety Evaluation

Topic 1: Improve Predictivity of Immunogenicity

Topic 2: Non-genotoxic carcinogenesis

Topic 3: Expert systems for in silico toxicity prediction

Topic 4: Improved predictivity of non-clinical safety evaluation

Topic 5: Qualification of translational safety biomarkers

Topic 6: Strengthening the monitoring of the benefit/risk of medicines

Pillar II: Improving the Predictivity of Efficacy Evaluation

Topic 7: Islet cell research

Topic 8: Surrogate markers for vascular endpoints

Topic 9: Pain research

Topic 10: New tools for the development of novel therapies in psychiatric disorders

Topic 11: Neurodegenerative disorders

Topic 12: Understanding severe asthma

Topic 13: COPD patient recorded outcomes

Pillar IV: Improving the Predictivity of Efficacy Evaluation

Topic 14: European Medicines Research Training Network

Topic 15: Safety sciences for medicines training programme

Topic 16: Pharmaceutical medicine training programme

Topic 17: Integrated medicines development training programme

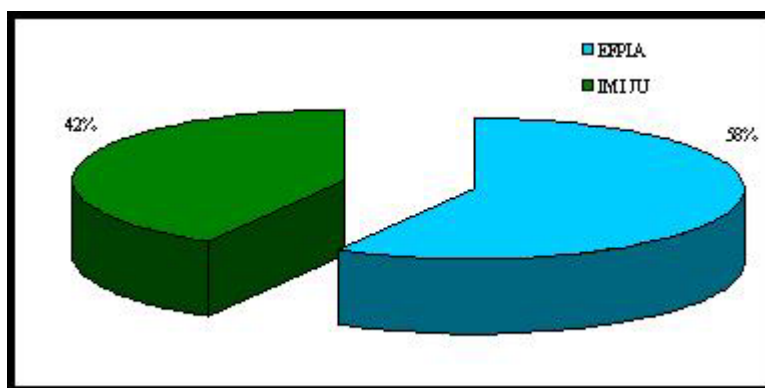
Topic 18: Pharmacovigilance training programme

Activities in the Pillar III 'Closing the gap in Knowledge Management' were not included in the first call and therefore will have correspondingly higher priority for 2009.

1.1.3. Budget

1.1.3.1. Overall budget

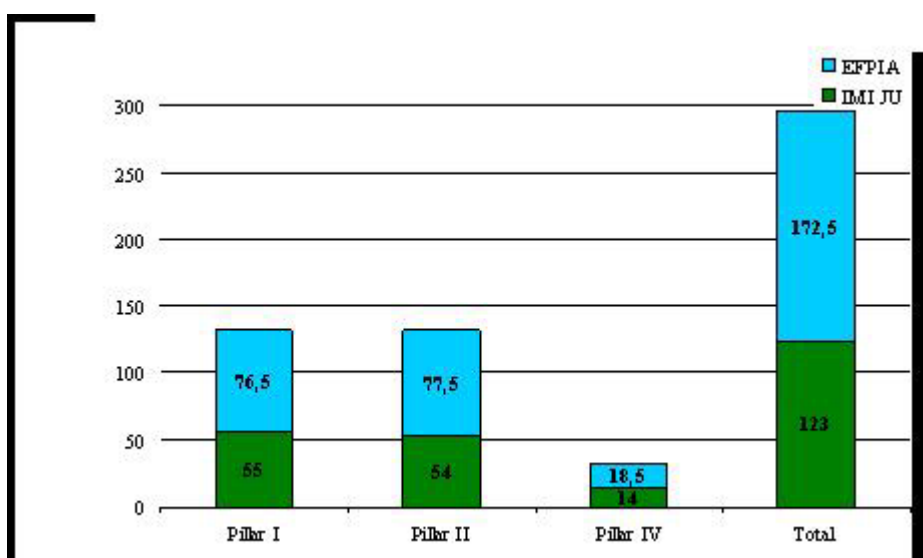
The total budget available for the first call reaches EUR 295.5 million. It includes a financial contribution from the EC to the IMI JU of a maximum of EUR 123 million and 'in kind' contributions estimated to EUR 172.5 million by the research based companies that are EFPIA members ('in kind' meaning non monetary contributions such as personnel, equipment, consumables, etc.).



Graph 2: Share of the overall budget for the first call

I.1.3.2. Budget per pillar and topic

Contribution from IMI JU and EFPIA members in Pillar I and Pillar II is equal in total and reaches € 131.5 million. The budget available in Pillar IV reaches EUR 32.5 million.



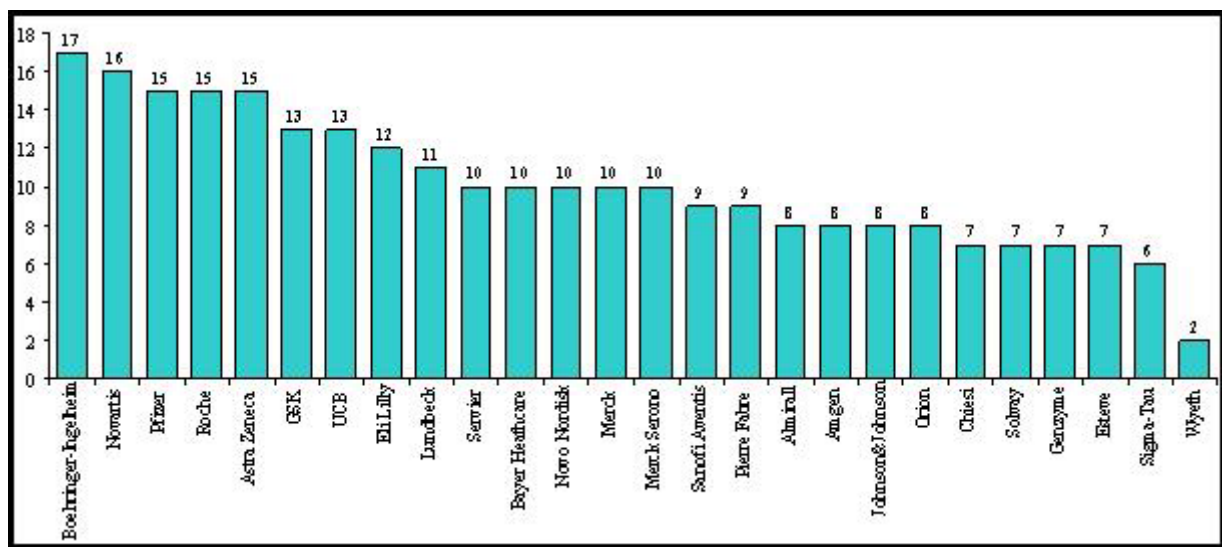
Graph 3: IMI JU and EFPIA contribution in the first call (in M€)

The indicative budget breakdown for each topic as published in the call is summarized in the following table.

Pillar	Topic	IMI JU	EFPIA	Minimum total project costs
I	1	9	13	22
	2	9	12.5	21.5
	3	4	5	9
	4	7	10	17
	5	15	21	36

	6	11	15	26
	Total	55	76.5	131.5
II	7	7	10	17
	8	14	20	34
	9	5	7.5	12.5
	10	7	10	17
	11	5	7.5	12.5
	12	9	12.5	21.5
	13	7	10	17
	Total	54	77.5	131.5
IV	14	4	5	9
	15	2	3	5
	16	3	4	7
	17	2	3	5
	18	3	3.5	6.5
	Total	14	18.5	32.5
Grand total	123	172.5	295.5	

I.1.3.3. Indicative EFPIA participation in the call



Graph 4: EFPIA members' indicative participation in the first call

The graph presents the indicative number of participation per EFPIA company in the first call. 26 EFPIA companies are involved in this first call.

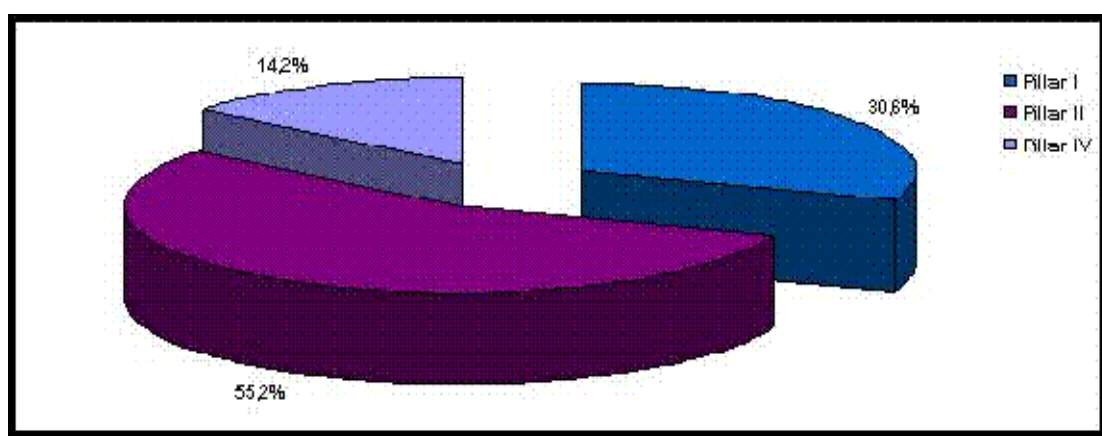
I.2. First stage of the call: Expression of Interest (EoI)

I.2.1. Typology of applicants¹¹⁰

I.2.1.1. Overview

In total, 138 Expression of Interest (EoI) have been submitted to the IMI JU for the 18 topics whereof three were deemed ineligible (i.e. not submitted before the deadline or for lacking necessary documents as stated by the call). The three ineligible Expression of Interest have been submitted in topic 2, 10 and 11.

More than half of EoI have been submitted in Pillar II. Nearly 1/3 of all EoI have been submitted in Pillar I and 14.2% have been submitted in Pillar IV.



Graph 5: EoI submitted per Pillar

The overall participation of the different types of organisations in the Expressions of Interest is displayed below.

	Academia	SMEs	Patient Organisations	Agencies / Regulatory	Industry/ Associations ¹¹¹	Total
Applicants	1.000	220	44	23	7	1.294
%	77.3%	17%	3.4%	1.8%	0.5%	100%

Close to 1300 applicants participated in the submitted Expressions of Interests. 77.3% of these participants came from academia, 17% from SMEs, 3.4% from patient advocacy groups, 1.8% from regulatory organisations, 0.5% came from other industry associations or companies (non EFPIA) which were larger than SMEs.

¹¹⁰ Applicant status is not checked at this stage and corresponds to applicants' self-declaration.

¹¹¹ Industry/Associations that are non EFPIA and larger than SMEs

I.2.1.2. Applicants per Pillar

Pillar I: Topic 1 to 6

	Academia	SMEs	Patient Organisations	Agencies / Regulatory	Industry/ Associations	Total
Applicants	269	98	5	18	0	390
%	69%	25%	1.3%	4.6%	0%	100%

41 eligible Expressions of Interest have been submitted in the six topics of Pillar I gathering 390 organisations. With 25% of SMEs, this Pillar is the one where SMEs are the most represented. Academia constitutes by far the largest group with 69% of applicants. Non EFPIA industry and associations are also well represented in this Pillar with 4.6% of all applicants while Patient organisations reach 1.3% of all organisations.

Pillar II: Topic 7 to 13

	Academia	SMEs	Patient Organisations	Agencies / Regulatory	Industry/ Associations	Total
Applicants	592	102	32	2	3	731
%	81%	14%	4.4%	0.3%	0.4%	100%

Pillar II is the most competitive Pillar with 75 eligible Expressions of Interest submitted for the first stage. In total 731 organisations have participated to this Pillar. Academia is the most important group with 81% of all organisations. It is followed by SMEs (14%) and Patient Organisations (4.4%). Together, Agencies / Regulatory and Industry / Associations account for 0.5% of all applicants.

Pillar IV: Topic 14 to 18

	Academia	SMEs	Patient Organisations	Agencies / Regulatory	Industry/ Associations	Total
Applicants	139	20	7	3	4	173
%	80.3%	11.6%	4%	1.7%	2%	100%

19 Expressions of Interest have been submitted in Pillar IV accounting for 173 applicants. In this Pillar like in Pillar II, Academia represents 80%. It is followed by SMEs (11.6%) and Patient Organisations (4%). The smallest groups are Industry / Associations (2%) and Agencies / Regulatory (1.7%).

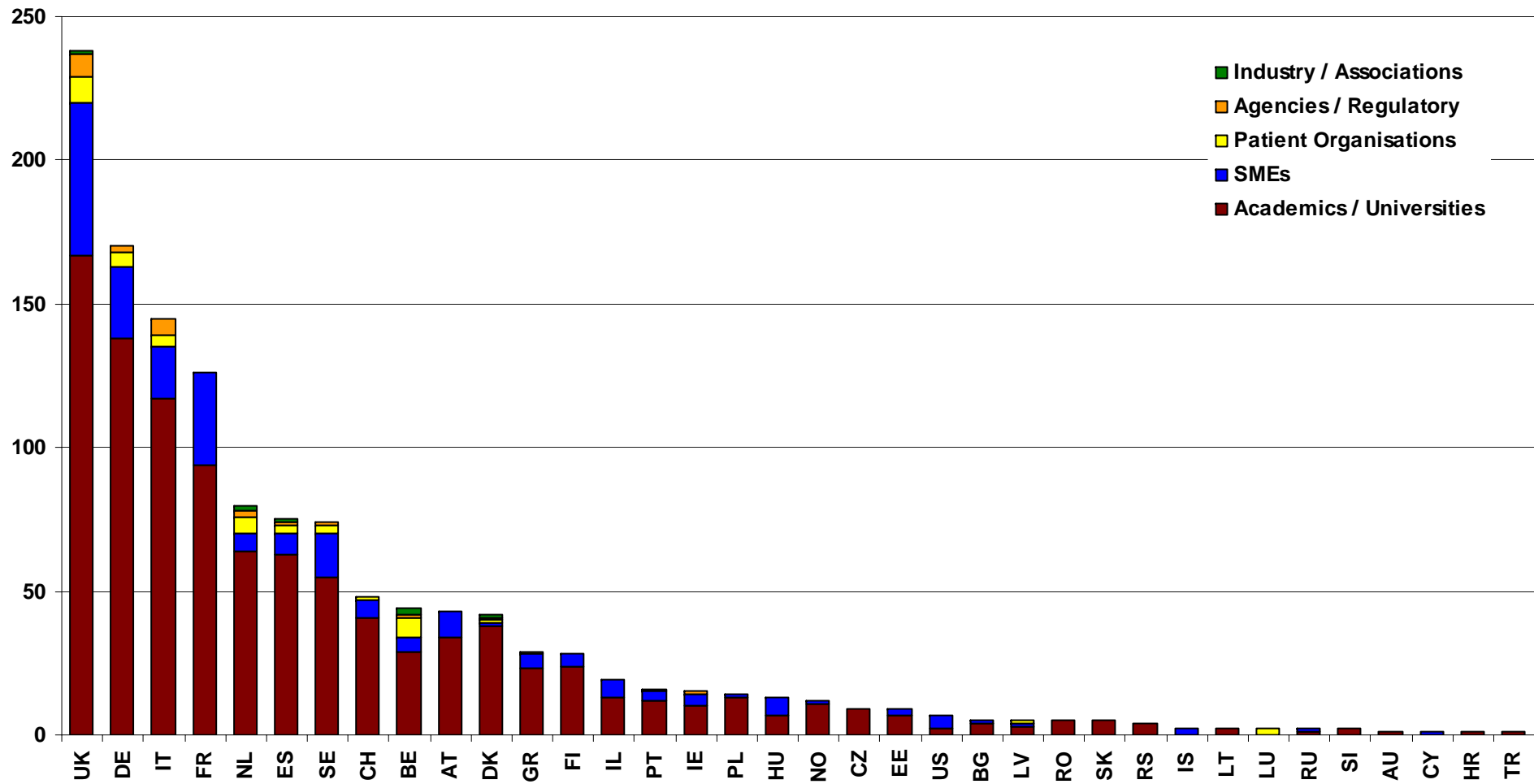
I.2.2. Country participation

Organisations from 36 countries have applied in the first call. Three different groups can be distinguished:

A first group of 4 countries: United Kingdom, Germany, Italy and France account for 52.5% of all applicants in the first stage. Academia is by far the most involved type of organisations as they represent 70% to 80% of applicants in each of these countries. SMEs are also well represented as they account for 12.4% to 25% of applicants. Together, SMEs in these four countries account for more than 53% of all applying SMEs.

A second group of 14 countries: These countries account for 40.6% of all applicants. The Netherlands, Spain and Sweden are the most important countries in this group. Two associated countries, Israel and Switzerland, are also well represented in this group as two members States from 2004 enlargement (Poland and Hungary). In total this second group accounts for 41.6 % of Academia applications and 33% of SMEs.

A third group of 18 countries: Each of these countries account for less than 1% of all applicants. 9 countries have one or two applicants in total. The United States Australia and Russia are part of this group. In total, these 20 countries account for 7% of all applications.



Graph 6: Country participation in the first stage – EoI

Country	Academia	SMEs	Patient Org.	Agencies / Regulatory	Ind./ Assoc.	Total	%
UK	167	53	9	8	1	238	18,4%
DE	138	25	5	2		170	13,1%
IT	117	18	4	6		145	11,2%
FR	94	32				126	9,7%
NL	64	6	6	2	2	80	6,2%
ES	63	7	3	1	1	75	5,8%
SE	55	15	3	1		74	5,7%
CH	41	6	1			48	3,7%
BE	29	5	7	1	2	44	3,4%
AT	34	9				43	3,3%
DK	38	1	1	1	1	42	3,2%
GR	23	5	1			29	2,2%
FI	24	4				28	2,2%
IL	13	6				19	1,5%
PT	12	3	1			16	1,2%
IE	10	4		1		15	1,2%
PL	13	1				14	1,1%
HU	7	6				13	1,0%
NO	11	1				12	0,9%
CZ	9					9	0,7%
EE	7	2				9	0,7%
US	2	5				7	0,5%
BG	4	1				5	0,4%
LV	3	1	1			5	0,4%
RO	5					5	0,4%
SK	5					5	0,4%

RS	4					4	0,3%
IS		2				2	0,2%
LT	2					2	0,2%
LU			2			2	0,2%
RU	1	1				2	0,2%
SI	2					2	0,2%
AU	1					1	0,1%
CY		1				1	0,1%
HR	1					1	0,1%
TR	1					1	0,1%
Total	1.000	220	44	23	7	1.294	100%

I.2.3. Evaluation results

I.2.3.1. Evaluation procedure

The eligible Expressions of interests were evaluated by peer review committees composed of at least 5 independent experts next to the co-ordinator and the deputy co-ordinator of the 'EFPIA consortium' associated to the topic evaluated by the panel. The evaluations were conducted via individual remote evaluation followed by consensus meetings in Brussels. A total of 150 experts participated in the evaluations of the Expressions of Interests.

The Expressions of Interest were evaluated against the following four criteria:

- Scientific and/or technological excellence: total score 20, threshold 14
- Partnership case (i.e. quality and experience of the individual partners): total score 10, threshold 7
- Quality of the applicant consortium as a whole: total score 5
- Quality and soundness of the work plan, including the budget: total score 5

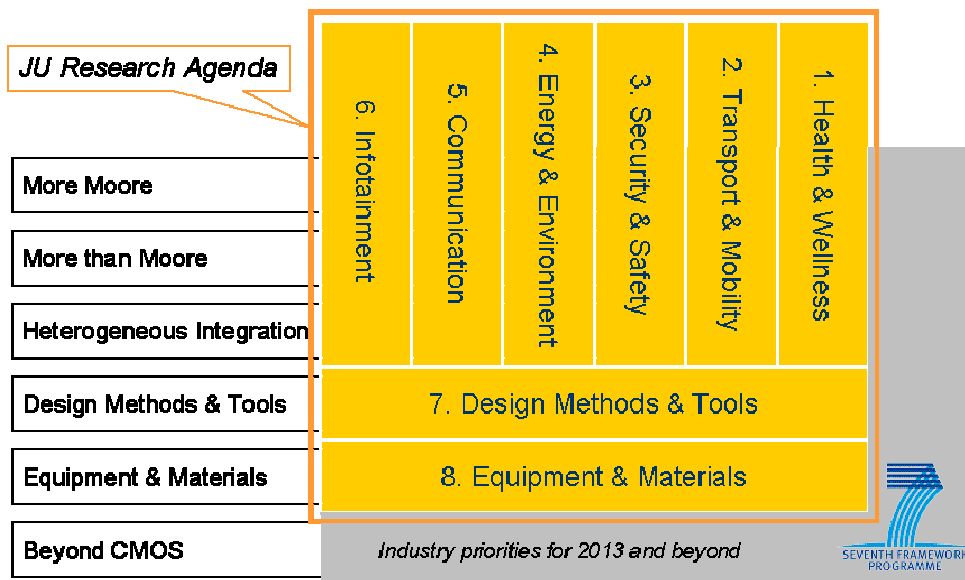
I.2.3.2. Success rate

56 of the Expressions of Interest (41.8 %) were favourably evaluated, i.e. ranked above the defined threshold. Ranked lists with the highest scoring Expressions of Interests were established for each topic. The remaining non ranked Expressions of Interests were rejected following the decision of the Governing Board.

48.7% of all EoI have passed the threshold in Pillar I, 39.1% in Pillar II and 36.8% in Pillar IV. However, only the best EoI in each topic have been invited to apply for the second stage to form Full Project Consortia with pre-defined EFPIA consortia.

Then, the average success rate at the first stage is 13.3%. The most selective Pillar is Pillar 2 – Efficacy Evaluation - with 9.4% of all EoI selected for the second stage. It is followed by Pillar 1 - Safety Evaluation (14.6%) and Pillar 4 – Education and Training (26.3%).

Pillar number	Pillar short name	Topic Number	First stage - EoI				
			Eligible EoI	Above threshold		Selected EoI	
I	Safety Evaluation	1 to 6	41	20	48.7%	6	14.6%
II	Efficacy Evaluation	7 to 13	74	29	39.1%	7	9.4%
IV	Education and Training	14 to 18	19	7	36.8%	5	26.3%
Total	-	-	134	56	41.8%	18	13.3%



Graph 2: Mapping the JU RA on the SRA technology domains

SP2 - Nanoelectronics for Transport & Mobility

Both short term and long term research activities in the field of Nanoelectronics enabling the roadmaps defined by the Technology Platform for Automotive ERTRAC and in line with the SRA of the eRTD working Group of the eSafety Forum.

Industrially driven projects for Nanoelectronics Research for Transport and Mobility addressing the areas of:

Components and miniaturized (sub)systems for Assisted driving.

Technology, components and miniaturized (sub)systems for advanced engine control systems and exhaust and combustion control.

Power and high voltage electronics and smart miniaturized systems for hybrid and electrical cars.

Development of fail safe and fault tolerant electronic systems.

SP3 - Nanoelectronics for Security & Safety

Short and long term activities enabling new safety and security systems that need to be reliable, secure, safe, fault tolerant, easy to use and capable of safeguarding the privacy of end users.

Industrially driven projects for Nanoelectronics Research for Security and Safety addressing the areas of:

Trusted devices and smart secure portable objects.

All-in-one imaging sensors.

SP4 - Nanoelectronics for Energy & Environment

Both short and mid term activities providing innovative technologies as the basis for new energy efficient products and intelligent power management to enable increased competence in these emerging lead markets in line with the 'sustainability' objective.

Industrially driven projects for Nanoelectronics Research for Energy and Environment addressing the areas of:

Intelligent drive control.

Efficient power supplies and power management solutions .

SP7 - Design Methods & Tools for Nanoelectronics

Short and mid term activities enabling the efficient design of advanced components, Systems on chip, Systems in a Package and compact miniaturized electronic (sub)systems.

Industrially driven projects for Design Methods and Tools for Nanoelectronics addressing the areas of:

Device, circuit, and system variability and reliability.

Hardware/software model driven hi-level synthesis/flow/reuse/design.

SP8 - Equipment & Materials for Nanoelectronics

Both short term and mid term research activities enabling that the European semiconductor component and (sub) systems industry remain competitive without sacrificing the sustainability of the industry.

Industrially driven projects for equipment and materials addressing the areas of:

Advanced line operation.

Lithography process for beyond 32nm manufacturing.

R&D for assembling technology for system-in-package.

II.1.3. Budget

II.1.3.1. Overall budget

The total budget available for the first call reached EUR 180 million. It included a financial contribution from the EC to the ENIAC JU of EUR 32 million, a contribution from ENIAC Member States of EUR 58 million (see table 1) and 'in kind' contributions from R&D actors of minimum EUR 90 million ('in kind' meaning non monetary contributions such as personnel, equipment, consumables, etc.).

ENIAC Member State	Contribution to ENIAC Call 1 (EUR million)
Austria	4
Belgium	1.5
Czech Republic	1.5
Estonia	0
France	8
Germany	15
Greece	0.5
Hungary	1.32
Ireland	1
Italy	10
Netherlands	10
Norway	1.5
Poland	1
Portugal	0.5
Spain	1
Sweden	1
United Kingdom	0

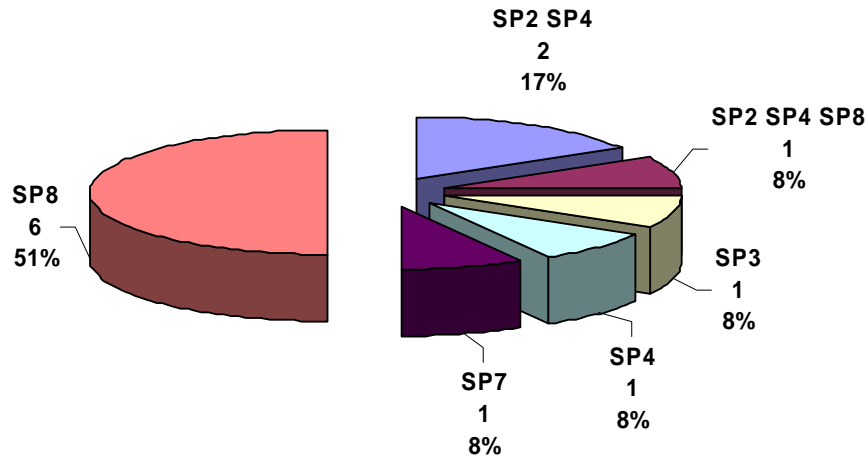
Table 1: Contribution from ENIAC Member States to ENIAC call 1.

II.2. Analysis of ENIAC Call 1

II.2.1. Typology of applicants

A total of 12 proposals were received, requesting a total national grant of EUR 122.4 million and a total JU grant of EUR 71.1 million. None of the received proposals were excluded from evaluation because of ineligibility reasons (ineligible submission, ineligible consortium, incomplete proposal or being out of scope of the call).

All sub-programmes opened in the call were addressed by at least one proposal and several proposals addressed more than one subprogram.



Graph 3: Proposals submitted per sub-programme

The overall participation of the different types of organisations in the proposals is displayed in the table and diagram below.

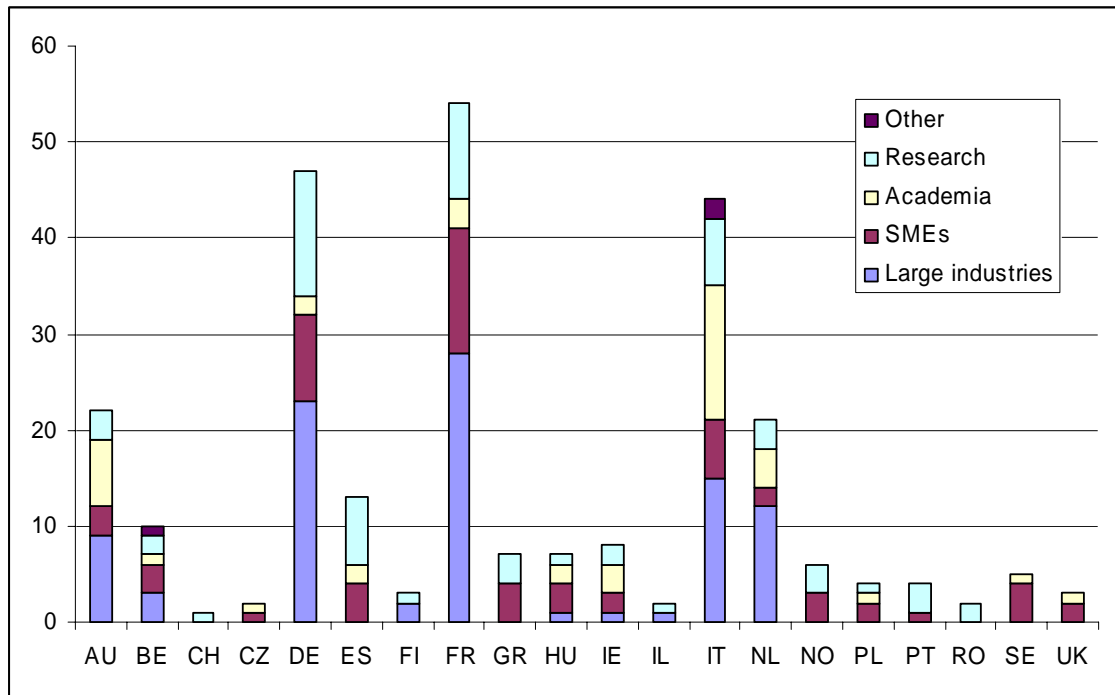
	Academia	SMEs	Large industries	Research	Other	Total
Applicants	42	62	95	63	3	265
%	15.8%	23.4%	35.9%	23.8%	1.1%	100%

Table 2: Typology of applicants of submitted proposals.

265 participations out of 20 countries participated in the submitted proposals including most major European actors in the semiconductor field. 35.9% of these participants came from large industries, 23.8% from research centres, 23.4% from SMEs, 15.8% from academia, and 1.1% came from other type of organisation.

II.2.2. Country participation

Organisations from 20 countries have applied in the first call.



Graph 4: Country participation in submitted proposals

Country	Large industries	SMEs	Academia	Research	Other	TOTAL	%
AU	9	3	7	3	0	22	8,3
BE	3	3	1	2	1	10	3,8
CH	0	0	0	1	0	1	0,4
CZ	0	1	1	0	0	2	0,8
DE	23	9	2	13	0	47	17,7
ES	0	4	2	7	0	13	4,9
FI	2	0	0	1	0	3	1,1
FR	28	13	3	10	0	54	20,4
GR	0	4	0	3	0	7	2,6
HU	1	3	2	1	0	7	2,6
IE	1	2	3	2	0	8	3,0
IL	1	0	0	1	0	2	0,8
IT	15	6	14	7	2	44	16,6
NL	12	2	4	3	0	21	7,9
NO	0	3	0	3	0	6	2,3

PL	0	2	1	1	0	4	1,5
PT	0	1	0	3	0	4	1,5
RO	0	0	0	2	0	2	0,8
SE	0	4	1	0	0	5	1,9
UK	0	2	1	0	0	3	1,1
TOTAL	95	62	42	63	3	265	100,0

Table 3: Applicant per type and country in submitted proposals.

II.2.3. Evaluation results

II.2.3.1. Evaluation procedure

Following evaluation by external experts, 9 proposals (75%) achieved scores on all criteria above thresholds. The total national grant requested by all the "above threshold" proposals in this call is EUR110.9 million. The total ENIAC JU grant requested by all the "above threshold" proposals in this call is EUR 65.2 million. The total national funding pre-allocated to this call is EUR57.8 million whereas the total ENIAC JU pre-allocated funding is EUR 32 million.

The proposals were evaluated against the following five criteria:

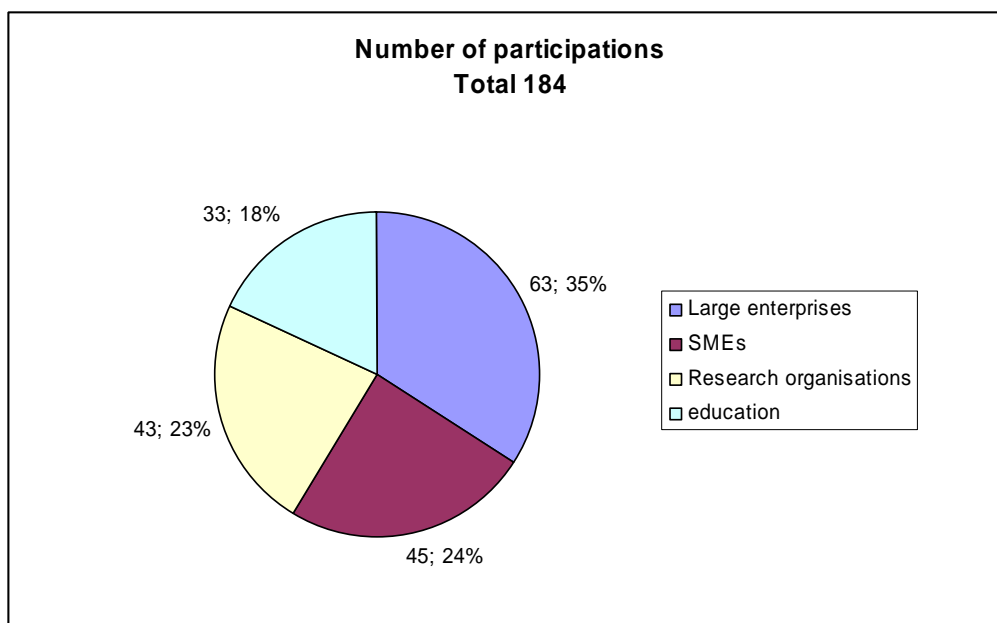
- Relevance and contributions to the content and objectives of the Call.: total score 10, threshold 6
- R&D innovation and technical excellence: total score 10, threshold 6
- S&T approach and work plan: total score 10, threshold 6
- Market innovation and impact: total score 10, threshold 6
- Quality of consortium and management: total score 10, threshold 0

TOTAL SCORE 50, Threshold 35

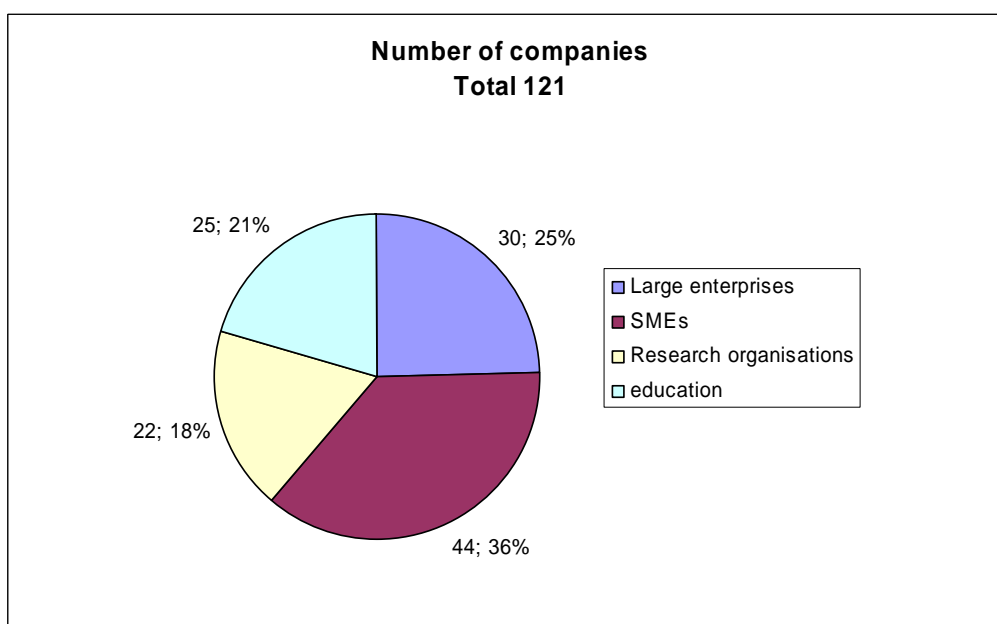
II.2.3.2. Evaluation results

9 proposals were selected and retained for negotiation by the ENIAC Public Authorities Board (PAB). The 3 proposals in the "below threshold" list were rejected as their scores were below threshold in one or more evaluation criteria or below the minimum total score required..

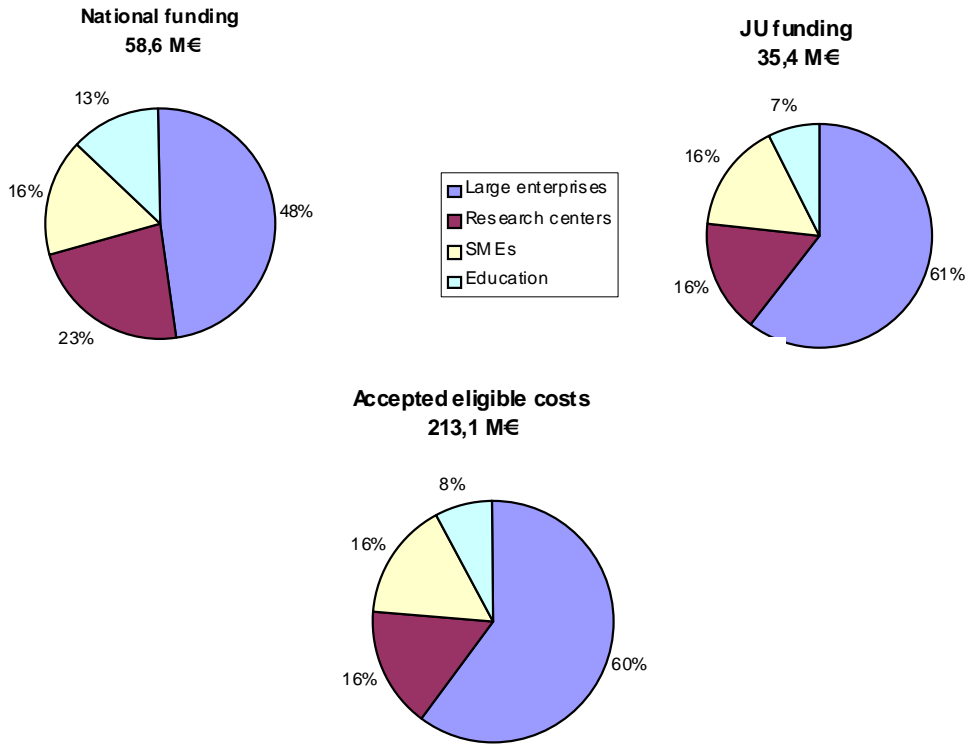
II.2.3.3. Statistics of selected proposals



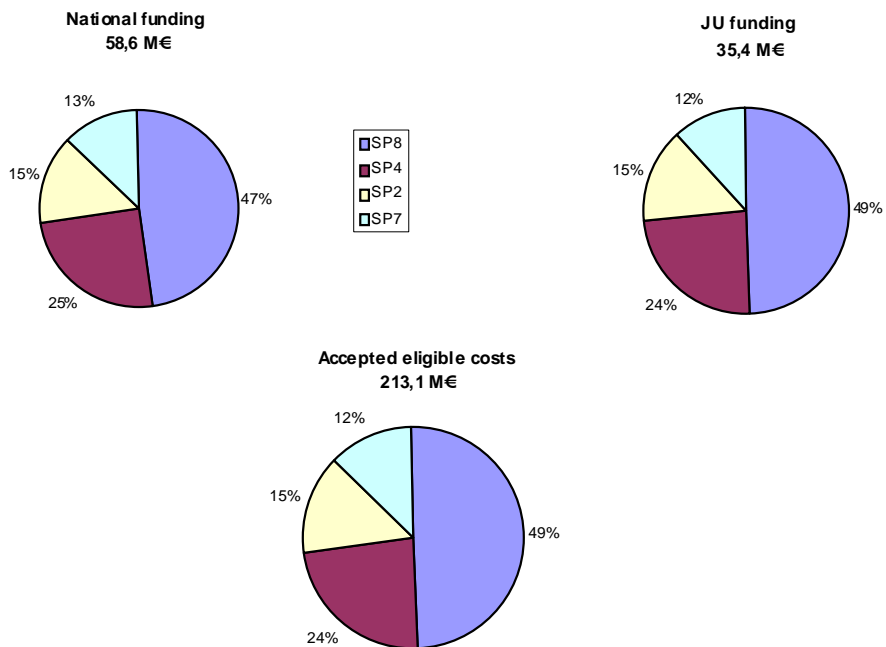
Graph 5: Number of participations in selected proposals



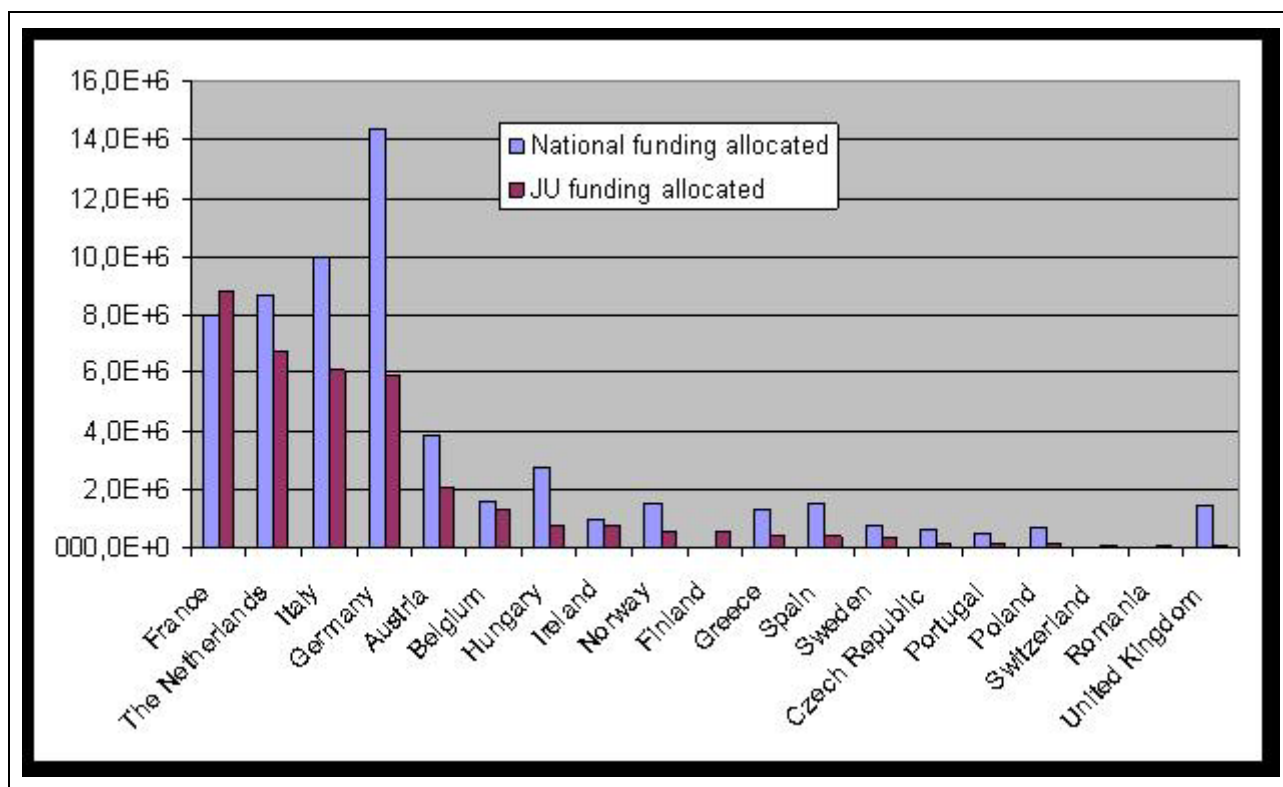
Graph 6: Number of different companies in selected proposals



Graph 7: Budget per type of participant in selected proposals



Graph 8: Budget per activity type in selected proposals



Graph 9: Public funding per country in selected proposals

ANNEX III : PROGRESS ACHIEVED BY THE ARTEMIS JTI¹¹³

This Annex provides reporting on progress achieved by the ARTEMIS JTI in 2008, as foreseen in Article 11 (1) of Council Regulation 2008/74/EC of 20 December 2007.

III.1. Introduction

The following report presents statistics from the first ARTEMIS call, published on 8 May 2008.

III.2. Response to the call

A total of 27 proposals were received for this call, requesting a total cost of EUR 323 million, a total national grant of EUR 115 million and a total JU grant of EUR 54 million. None of the received proposals were excluded from evaluation because of ineligibility reasons (ineligible submission, ineligible consortium, incomplete proposal or being out of scope of the Call).

The breakdown between the 8 Sub-Programmes is as follows:

Sub Programme 1: 9 proposals received

Sub Programme 2: 2 proposals received

Sub Programme 3: 5 proposals received

Sub Programme 4: 3 proposals received

Sub Programme 5: 4 proposals received

Sub Programme 6: 2 proposals received

Sub Programme 7: 1 proposals received

Sub Programme 8: 1 proposals received

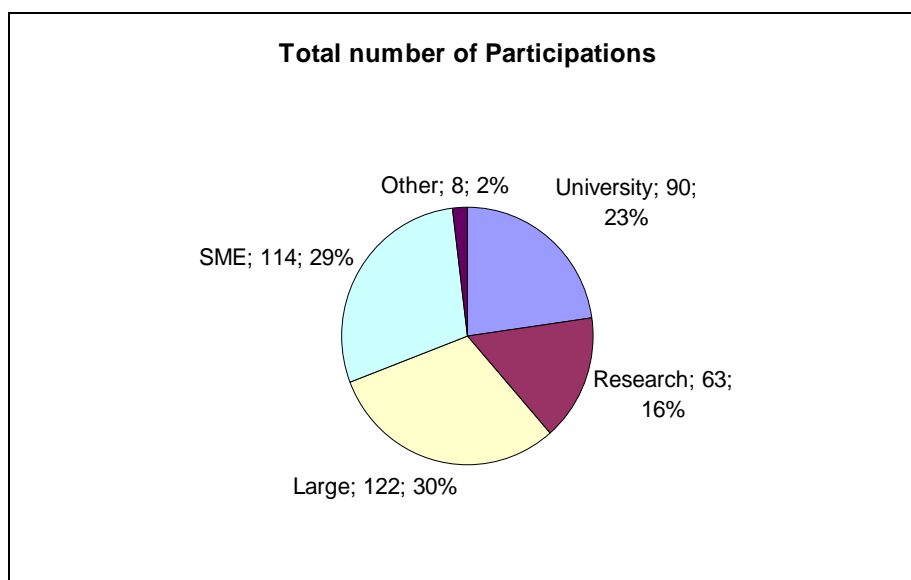
¹¹³ For further information, see <https://www.artemis-ju.eu/>

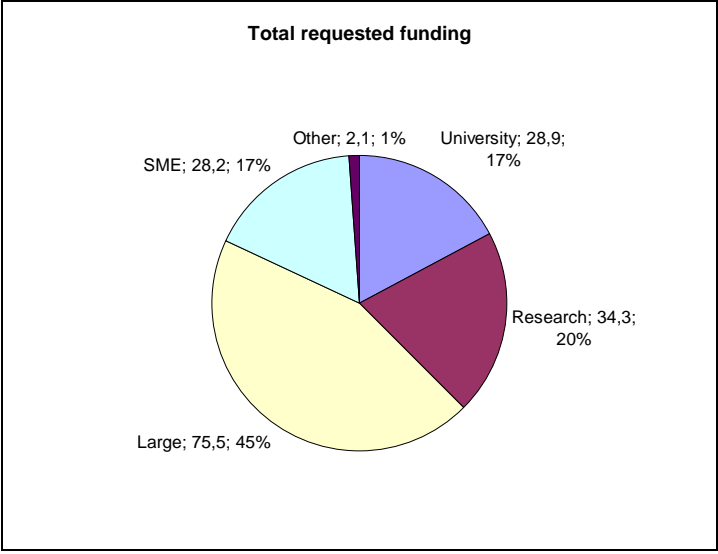
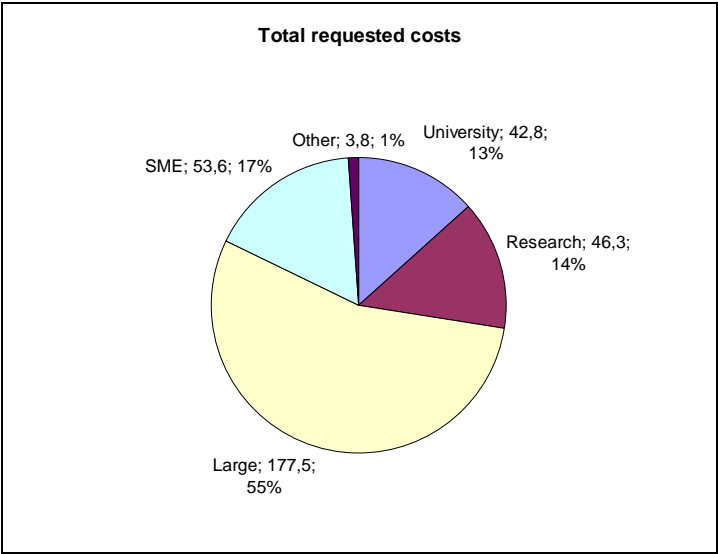
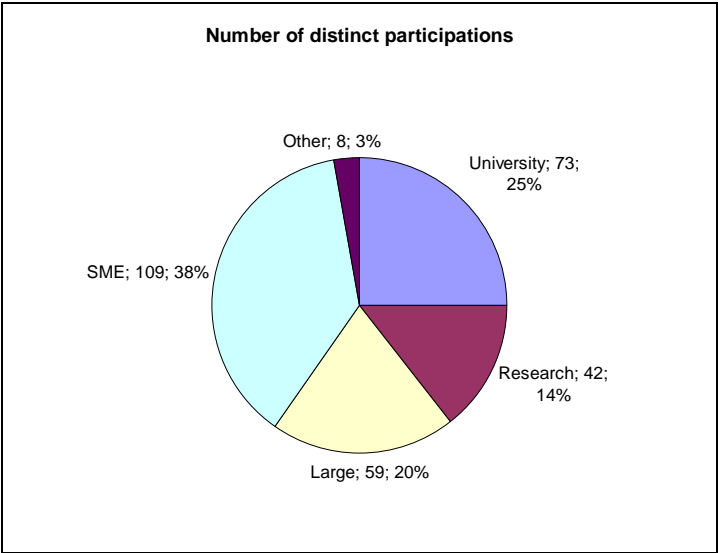
III.3. Overview

The total national funding pre-allocated to this call is EUR 63,8 million whereas the total ARTEMIS JU pre-allocated funding is EUR 35,1 million.

		ARTEMIS
		Call 1
		2008
Call Budget	National	63,8M€
	JU (EC)	35,1M€
	Total	98,9M€
Call response	Proposals received	27
	Total funding requested	169M€
	Oversubscription ratio	1,7/1
Evaluation results	Projects selected for funding	12

III.4. Statistics for all proposals





III.5. Selection

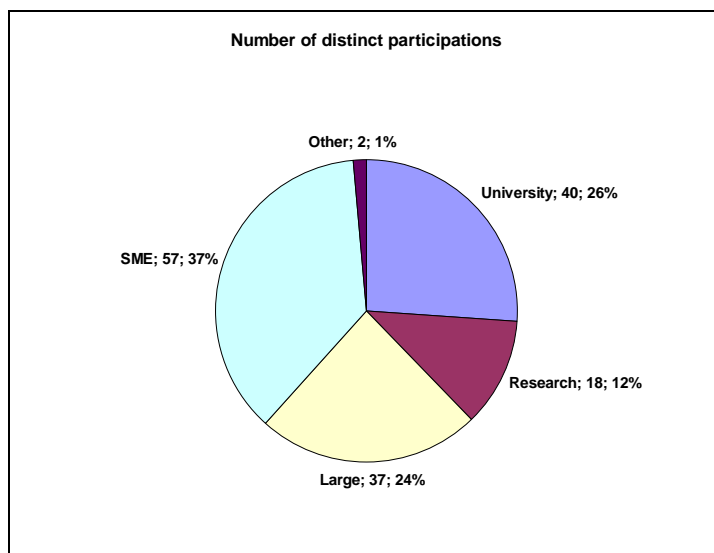
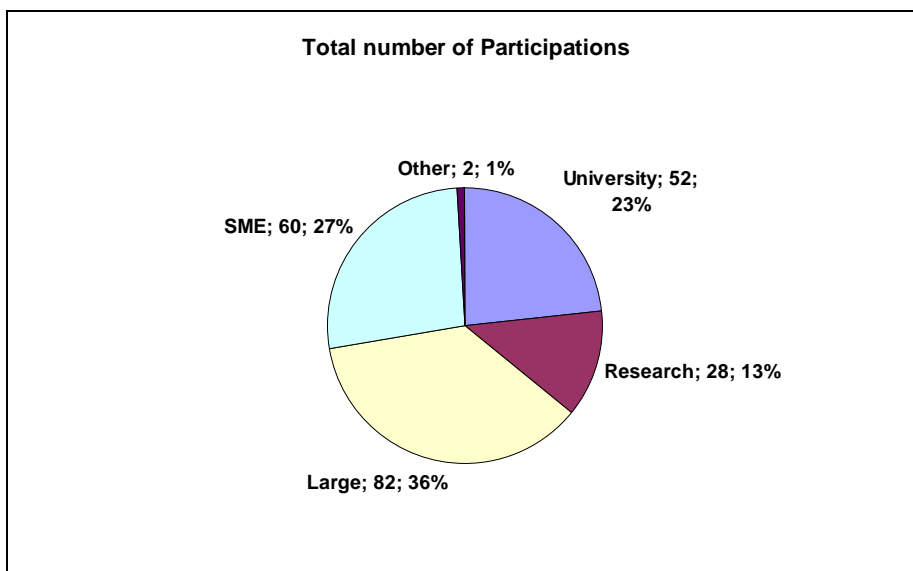
12 proposals were selected and retained for negotiation by the ARTEMIS Public Authorities Board (PAB). 2 proposals were put on a reserve list. The 10 proposals in the "below threshold" list were rejected as their scores were below threshold in one or more evaluation criteria or below the minimum total score required. 3 proposals were rejected as the Public Authorities Board deems them not financially viable due to limitations in the available public funding.

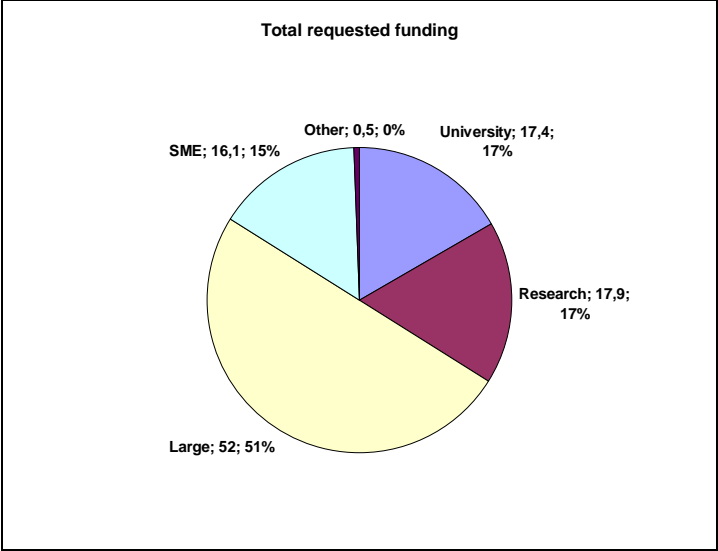
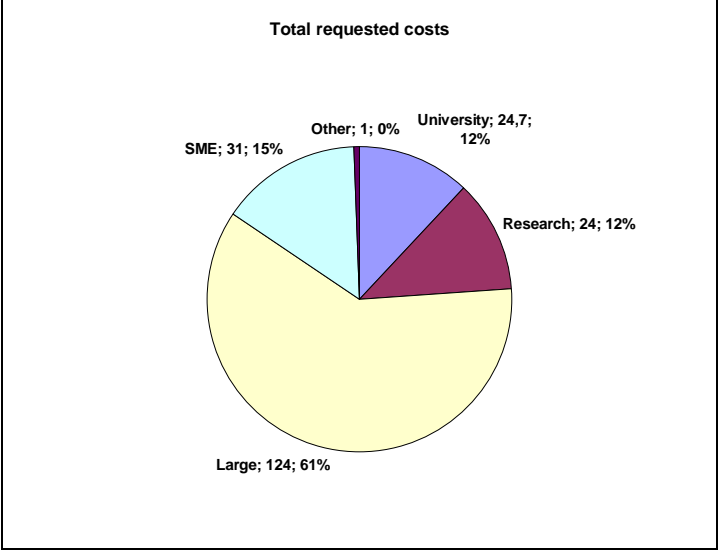
The 12 proposals amount to a total costs of EUR 196.59 million, and the total public funding allocation is as follows:

	<u>Public funding allocated</u>
Austria	3.699.318,76 €
Belgium	1.515.599,70 €
Czech Republic	872.875,28 €
Germany	8.801.508,03 €
Denmark	800.500,00 €
Estonia	0 €
Spain	5.999.274,16 €
Finland	5.098.522,00 €
France	5.052.628,37 €
Greece	1.574.573,20 €
Hungary	2.035.741,00 €
Ireland	644.477,00 €
Italy	7.999.874,54 €
Netherlands	7.385.182,42 €
Norway	1.500.000,00 €
Portugal	769.755,90 €
Romania	0 €
Sweden	2.773.056,48 €
Slovenia	0 €
United Kingdom	3.611.714,98 €
Other	0 €

ARTEMIS JU	32.830.838,45 €
Total public funding allocated	92.965.440,27 €

III.6. Statistics for selected proposals





ANNEX IV : PROGRESS ACHIEVED BY THE CLEAN SKY JTI¹¹⁴

This Annex provides reporting on progress achieved by the Clean Sky JTI in 2008, as foreseen in Article 11 (1) of Council Regulation 2008/71/EC of 20 December 2007.

IV.1. Clean Sky JU first grant agreements for members

IV.1.1. Timetable

The first Clean Sky JU grant agreements were negotiated in November 2008 and signed in November and December 2008.

The pre-financings for the seven signed grant agreements were paid to the coordinators in December 2008.

IV.1.2. Clean Sky Milestones for 2008

The Clean Sky JTI is organised around 6 Integrated Technology Demonstrations (ITD), which will develop a large set of innovative technologies covering all segments of commercial aviation. Most activities defining the basic technology options, the new configurations and the demonstrators' options will be launched in the early phase of Clean Sky.

The Technology Evaluator (TE) will assess the environmental impact of those technologies. Activities on requirements and architecture, on model development at mission, operation and Air Transport System and their validation, and on development of the simulation framework will all start within the first 12 months of Clean Sky.

IV.1.3. Integrated Technology Demonstrators (ITDs)

Topics are covered by these Integrated Technology Demonstrators (ITDs) and the Technology Evaluator:

- SMART fixed wing aircraft
- Green Regional Aircraft
- Green Rotorcraft
- Sustainable and Green Engine
- Systems for Green Operations
- Eco-Design

IV.1.3.1. Smart Fixed Wing Aircraft ITD

For the first 18 months of the programme the focus of the SFWA work plan will be on the following activities:

¹¹⁴ For further information, see <https://www.cleansky.eu/>

- development of the passive flow and load control technologies;
- the passive wing concepts and the definition/down-selection of the demonstrator vehicles for the first phase of passive testing on the High-Speed/Low-Drag demonstrator;
- the Contra Rotating Open Rotor Flying Test Bed and the Long-Duration flight trials.

IV.1.3.2. Green Regional Aircraft ITD

For the first 18 months of the programme the focus of the GRA work plan will be on the following activities:

- develop the most promising “mainstream” technologies best fitting the requirement of greening the regional aircraft;
- integrate composite multi-layer/multi-function architecture solutions from mainstream technologies in the GRA Demonstrators;
- active monitoring through sensing of events occurring to each aircraft and associated maintenance approach and tool development.

IV.1.3.3. Green Rotorcraft ITD

Most activities of the GRO work plan will be launched in the early period. They comprise:

- preparation of the Technology Evaluator for the rotorcraft;
- innovative rotor blades and engine installation for noise reduction;
- reduced airframe drag and dynamic systems;
- integration of diesel engine technology and advanced electrical systems for fuel consumption reduction;
- environmentally friendly flight paths

IV.1.3.4. Sustainable and Green Engines ITD

Activities on all SAGE demonstrators will start in the early phase of Clean Sky. They comprise:

- Open Rotor Assembly (SAGE 1), aiming at demonstrating at full scale the functionality of an open rotor propulsion system, including the core engine assembly and test definition.
- Direct Driven Pusher Open Rotor (SAGE 2 - counter rotating propfans placed at the engine rear and mounted on a stator-less counter rotating low-pressure turbine) focusing on reduction of SFC, and CO₂ and NO_x emissions;
- Low weight approach overall (SAGE 3), including low pressure intercooler installations, flow control systems and integration aiming towards a more electric engine;
- high efficiency and low noise geared turbofan concept (SAGE 4) providing a step change in fuel burn reduction combined with a strong decrease in noise emission;

- ITD turbo-shaft engine (SAGE 5) aiming specifically at weight, noise and emission reduction in helicopters.

IV.1.3.5. Systems for Green Operations ITD

Most activities of the SGO work plan will be launched in the early period. They comprise:

- all-electric aircraft equipment and systems architectures;
- management of aircraft energy requirements;
- mission and trajectory management and links to the SESAR JU activities;
- improved ground operations.

IV.1.3.6. Eco-Design ITD

Activities in the Eco-Design ITD will encompass the whole life cycle of materials and systems, focusing on the optimal use of raw materials, decreasing the use of non-renewable materials and of natural resources, limiting energy consumption and the emission of noxious effluents, and on recycling.

The initial activities will concentrate on vehicle systems analysis at aircraft level.

IV.1.3.7. Technology Evaluator

The basis for interaction between the TE and all ITDs will be launched in the early part of Clean Sky. They include:

- definition of model framework architecture, identification of requirements like input data necessary to perform modeling and quantification;
- elaboration of state-of-the-art metrics and outputs relevant for the scope of the Technology Evaluator in line with the ACARE goals, including model and data consistency assessments;
- methodology definition to perform those studies and to ensure support for ITDs decisions on demonstrators;
- definition of overall operations and architecture of the Technology Evaluator.

IV.2. Budget

IV.2.1. Overall Budget

ITD	EcD	GRC	SFWA	SAGE	GRA	SGO	TE	Total	JU contribution
Total	2.066	4.020	9.433	8.921	3.863	5.541	495	34.339	17.170

IV.2.2. Budget per ITD

ITD Smart Fixed Wing Aircraft		
Member name	Total (k€)	JU contribution (k€)
Airbus S.A.S.	116,000	58,000
Airbus France SAS	2.080,000	1.040,000
Airbus Deutschland GmbH	1.720,000	860,000
Airbus UK Limited	1.450,000	725,000
Airbus España S.L.	82,000	41,000
SAAB AB	837,000	418,500
Dassault Aviation SA	286,000	143,000
EADS - CONSTRUCCIONES AERONAUTICAS S.A. SOCIEDAD UNIPERSONAL	90,000	45,000
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V.	619,000	309,500
Liebherr-Aerospace Lindenberg GmbH	100,000	50,000
Rolls Royce PLC	68,000	34,000
SAFRAN	0,000	0,000
Aircelle	58,000	29,000
Messier-Dowty SA	0,000	0,000
Messier-Dowty Limited	0,000	0,000
Snecma	40,000	20,000
Sagem Défense Sécurité	206,000	103,000
THALES AVIONICS SA	72,000	36,000
Deutsches Zentrum für Luft- und Raumfahrt DLR	463,000	231,500
ONERA – Office National d’Etudes et de Recherches Aérospatiales	155,000	77,500
RUAG Aerospace	106,000	53,000
Stork	498,000	249,000
ADSE		
Airborne Development B.V.		
Axxiflex Turbine Tooling B.V.		
FMLC		
FOKKER ELMO B.V.		
Nationaal Lucht- en Ruimtevaartlaboratorium (NLR)		
TU Delft fac. Luchtvaart- en Ruimtevaarttechniek		
Universiteit Twente		
S.C. Institutul National de Cercetari Aeronautice “Elie Carafoli” – INCAS S.A.	277,000	138,500
S.C. STRAERO S.A.	0,000	0,000
S.C. AVIOANE Craiova S.A.	0,000	0,000
S.C. ROMAERO S.A.	0,000	0,000
Qinetiq Limited	110,000	55,000
2nd Call Associate member	0,000	0,000
Total	9.433,000	4.716,500

Green Regional Aircraft		
Member name	Total (k€)	JU contribution (k€)
Alenia Aeronautica S.p.A	1.436,000	718,000
Alenia Aermacchi	0,000	0,000
Alenia SIA	0,000	0,000
Alenia Improvement	40,000	20,000
EADS - CONSTRUCCIONES AERONAUTICAS S.A. SOCIEDAD UNIPERSONAL	190,000	95,000
Airbus S.a.S.	0,000	0,000
Fraunhofer-Gesellschaft	484,000	242,000
Liebherr	50,000	25,000
Rolls Royce plc	0,000	0,000
Rolls-Royce Deutschland	67,000	33,500
Safran	0,000	0,000
Hispano-Suiza	50,000	25,000
Messier-Dowty SA	26,000	13,000
Snecma	65,000	32,500
Thales Avionics	88,000	44,000
Thales Avionics Electrical Systems SA	40,000	20,000
Piaggio Aeroindustries S.p.A.		
Centro Sviluppo Materiali S.p.A.		
Distretto Tecnologico sull'Ingegneria dei Materiali Polimerici e Compositi e Strutture S.c.a.r.l., Fox Bit S.r.l. , in short FoxBit POLITECNICO DI TORINO, Dipartimento di Ingegneria Aerospaziale SICAMB S.p.A., in short SICAMB Università degli Studi di Bologna - Facoltà di Ingegneria di Forlì - Dipartimento di Ingegneria Università degli Studi di Napoli "Federico II", Polo delle Scienze e della Tecnologia Università degli Studi di Pisa- Dipartimento di Ingegneria Aerospaziale	252,000	126,000
Avions de Transport Régional - ATR - French Groupement d'intérêt Economique - GIE	340,000	170,000
CIRA S.C.p.A AEROSOFT S.p.A DEMA SpA INCAS - National Institute for Aerospace Research ELSI, UAB	350,000	175,000
Hellenic Aerospace Industry	90,000	45,000
Onera	295,000	147,500
Total	3.863,000	1.931,500

ITD Sustainable and Green Engines		
Member name	Total (k€)	JU contribution (k€)
Rolls-Royce plc	1.826,000	913,000
Rolls-Royce Deutschland	1.474,000	737,000
SAFRAN	0,000	0,000
Aircelle	18,000	9,000
Hispano-Suiza	78,878	39,439
Snecma	2.774,385	1.387,193
Techspace Aero	128,737	64,369
AVIO S.p.A.	459,000	229,500
Industria de Turbo Propulsores S.A. (ITP)	876,000	438,000
MTU Aero Engines GmbH	200,000	100,000
Volvo Aero Corporation	925,000	462,500
Volvo Aero Norge	75,000	37,500
Airbus SAS	0,000	0,000
Airbus France SAS	48,000	24,000
Alenia Aeronautica S.p.A.	20,036	10,018
Alenia Aermacchi	18,000	9,000
Total	8.921,036	4.460,518

Green Rotorcraft		
Member name	Total (k€)	JU contribution (k€)
VERTAIR GEIE	58,300	29,150
AGUSTA S.p.A.	654,305	327,153
WESTLAND HELICOPTERS Ltd	505,664	252,832
EUROCOPTER Sas	926,221	463,111
EUROCOPTER DEUTSCHLAND GMBH	253,646	126,823
EUROCOPTER ESPAÑA	66,881	33,441
Liebherr-Aerospace Lindenberg GmbH	12,100	6,050
Thales Avionics Electrical Systems	6,850	3,425
Hispano-Suiza	5,950	2,975
Wytownia Sprzetu Komunikacyjnego PZL Swidnik Spolka Akcyjna	404,435	202,218
Office National d'Etudes et de Recherches Aérospatiales	129,083	64,542
Deutsches Zentrum für Luft- und Raumfahrt e.V.	213,700	106,850
CIRA-SELEX ATS		
Centro Italiano Ricerche Aerospaziali	199,672	99,836
SELEX SISTEMI INTEGRATI S.p.A.		
Stichting IGOR		
Airborne Composites B.V.		
ANOTEC CONSULTING, S.L.,		
Alphei Poeschel Roesler (Akustik Technologie Goettingen)		
Eurocarbon B.V.		
Fibre Optic Sensors and Sensing Systems b.v.b.a.		
LMS International N.V.		
Microflown Technologies B.V.	583,272	291,636
Micromega Dynamics s.a.		
Stichting Nationaal Lucht- en Ruimtevaartlaboratorium		
Technische Universiteit Delft		
Universiteit Twente		
Stichting Nederlands Instituut voor Vliegtuigontwikkeling en Ruimtevaart		
Total	4.020,079	2.010,040

ITD Systems for Green Operations		
Member name	Total (k€)	JU contribution (k€)
Liebherr-Aerospace Lindenberg GmbH	200,000	100,000
Liebherr-Aerospace Toulouse SAS	300,000	150,000
Liebherr-Elektronik GmbH	20,000	10,000
Thales Avionics	767,000	383,500
Thales Avionics Electrical Systems S.A	307,000	153,500
Thales Systèmes Aéroportés S.A.	0,000	0,000
Airbus SAS	34,087	17,043
Airbus France SAS	333,912	166,956
Airbus Deutschland GmbH	58,200	29,100
Airbus UK Ilimited	0,000	0,000
Saab AB	257,200	128,600
Alenia Aeronautica	105,040	52,520
DASSAULT AVIATION SA	0,000	0,000
Rolls-Royce UK	33,191	16,596
Safran	0,000	0,000
Aircelle	162,000	81,000
Hispano-Suiza	215,000	107,500
Labinal	100,000	50,000
Messier-Bugatti	200,000	100,000
Messier-Dowty SA	20,000	10,000
Snecma	0,000	0,000
Techspace Aero	30,000	15,000
Technofan	28,000	14,000
Fraunhofer-Gesellschaft	10,000	5,000
ZODIAC-INTERTECHNIQUE	366,700	183,350
Zodiac ECE	209,100	104,550
Zodiac Aérazzur	94,940	47,470
University of Nottingham	300,000	150,000
DEUTSCHES ZENTRUM FUER LUFT UND RAUMFAHRT E.V.	220,000	110,000
EADS Deutschland GmbH (Innovation Works)	397,000	198,500
Green Systems for Aircraft Foundation (GSAF)	0,000	0,000
Aeronamic BV	0,000	0,000
Stichting Nationaal Lucht- en Ruimtevaartlaboratorium	40,000	20,000
Technische Universiteit Delft	10,100	5,050
University of Malta	56,000	28,000
Cranfield University	220,800	110,400
Diehl Aerospace GmbH	121,096	60,548
Galileo Avionica	100,000	50,000
Total	5.316,365	2.658,183

ITD Eco-Design		
Member name	Total (k€)	JU contribution (k€)
DASSAULT AVIATION SA	190,000	95,000
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V.	291,800	145,900
AIRBUS SAS	1,000	0,500
Airbus France SAS	31,500	15,750
Airbus Deutschland GmbH	31,300	15,650
Airbus UK Ilimited	14,700	7,350
Airbus Espana sl	5,800	2,900
AGUSTA SpA	44,370	22,185
ALENIA Aeronautica SpA	94,000	47,000
WESTLAND HELICOPTERS Ltd	100,000	50,000
EADS - CASA	11,000	5,500
EUROCOPTER SAS	29,400	14,700
EUROCOPTER DEUTSCHLAND GMBH	117,900	58,950
LIEBHERR-AEROSPACE TOULOUSE SAS	45,564	22,782
SAFRAN	0,000	0,000
Aircelle	20,000	10,000
Hispano-Suiza	34,417	17,209
Microturbo	0,000	0,000
Snecma	64,417	32,209
Sofrance	8,474	4,237
Technofan	6,118	3,059
Turbomeca	10,000	5,000
THALES AVIONICS Electrical Systems	30,900	15,450
EADS France - Innovation Works Department	238,214	119,107
HELLENIC AEROSPACE INDUSTRY SA	197,000	98,500
ISRAEL AEROSPACE INDUSTRIES Ltd.	180,000	90,000
STORK FOKKER AESP B.V.		
ADSE		
AXXIFLEX Turbine Tools BV		
NLR (Nationaal Lucht- en Ruimtevaartlaboratorium)	167,830	83,915
SERGEM BV		
TU-Delft, Aerospace Faculty		
University Twente		
RUAG Aerospace		
ICOTEC AG		
HUNTSMAN Advanced Materials (Switzerland) GmbH		
EPFL Ecole Polytechnique Fédérale de Lausanne		
University of Applied Sciences of Northwestern Switzerland	100,600	50,300
ETH Zürich		
TU Hamburg-Harburg		
Advanced Composites Group (ACG)		
HADEG Recycling GmbH		
Total	2.066,304	1.033,152

ITD Technology Evaluator		
Member name	Total (k€)	JU contribution (k€)
THALES Avionics S.A.	81,000	40,500
THALES Avionics Electrical Systems S.A	0,000	0,000
THALES Systèmes Aéroportés S.A.	40,000	20,000
AGUSTA SpA	0,000	0,000
WESTLAND HELICOPTERS Ltd	15,000	7,500
AIRBUS SAS	10,000	5,000
AIRBUS France SAS	6,000	3,000
AIRBUS Deutschland GmbH	0,000	0,000
AIRBUS UK Ltd	0,000	0,000
AIRBUS Espana sl	0,000	0,000
ALENIA Aeronautica SpA	14,000	7,000
DASSAULT AVIATION SA	4,800	2,400
EADS - CASA	14,000	7,000
EUROCOPTER SAS	0,000	0,000
EUROCOPTER DEUTSCHLAND GMBH	14,000	7,000
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V.	15,000	7,500
LIEBHERR-AEROSPACE Lindenberg GmbH	12,000	6,000
LIEBHERR-AEROSPACE Toulouse	0,000	0,000
ROLLS-ROYCE plc	14,000	7,000
SAAB AB	15,000	7,500
SAFRAN	0,000	0,000
Snecma	16,000	8,000
Turbomeca	0,000	0,000
Deutsches Zentrum für Luft- und Raumfahrt (DLR)	131,000	65,500
CIRA S.C.p.A	17,000	8,500
Cranfield University	15,000	7,500
Nationaal Lucht- en Ruimtevaartlaboratorium (NLR)	34,000	17,000
ONERA – Office National d'Etudes et de Recherches Aérospatiales	27,000	13,500
Total	494,800	247,400

IV.3. Participation

IV.3.1. Members by country

FR	73	33,49%
IT	30	13,76%
NL	30	13,76%
DE	29	13,30%
UK	17	7,80%
ES	10	4,59%
CH	7	3,21%
BE	6	2,75%
RO	5	2,29%
SE	4	1,83%
GR	2	0,92%
LT	1	0,46%
NO	1	0,46%
PL	1	0,46%
MT	1	0,46%
IR	1	0,46%
	218	

IV.3.2. Split between industry, Universities and SME's

Industry 133 61,01 %

Universities 50 22,94 %

SME 35 16,06 %

Total 218

IV.4. Calls for proposals

In 2008 no calls for proposals were launched.

The budget was committed in 2008 and will be the basis for the first call for proposals in 2009.