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COMMUNICATION FROM THE COMMISSION

**Annual Report on research and technological development activities of the European
Union in 2009**

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1. BACKGROUND TO THE ANNUAL REPORT ON RTD ACTIVITIES

The Annual Report on research and technological development activities of the European Union is prepared pursuant to Article 190¹ of the Treaty on the Functioning of the European Union.

Although formally not within the scope of this Report, some information on research activities carried out under the Euratom Treaty has been included.

2. THE BROADER CONTEXT IN 2009

The Lisbon Treaty established research policy as a competence shared between the Union and the Member States. It provided explicit recognition for the European Research Area as the tool to accomplish the Union's objectives in the research domain. A novel provision for legal measures to progress towards ERA is now in place.

In his political guidelines for the new Commission², President Barroso included his vision on priorities for the Union's future research policy: achieving excellence in basic research, more industry-driven applied R&D, extending exchange programmes and a bigger focus on spreading R&D capacities towards the regions. He called for a Europe of ambition and values with people at the heart of the agenda.

Meanwhile the economic crisis continued. EU27 GDP decreased by 4.2% in 2009. European governments responded by increasing public spending through rescue packages and fiscal stimuli. These short term measures were often balanced with longer term investments in research and innovation, an approach supported in the European Economic Recovery Plan (EERP)³.

A survey⁴ on the effects of the economic crisis on R&D investments revealed that Member States with high or medium-high R&D intensities were maintaining or increasing their 2009 R&D budgets, while some Member States with medium or low R&D intensities were obliged to decrease their efforts. This entailed a risk for a widening of the 'research and innovation gap' within the Union.

Regarding private R&D investments, evidence suggests that the crisis decreased cash flow in nearly all business sectors, reducing the internal financial resources available for R&D, particularly in high-tech SMEs⁵. The more difficult access to external sources of private

¹ *'At the beginning of each year the Commission shall send a report to the European Parliament and the Council. The report shall include information on research and technological development activities and the dissemination of results during the previous year, and the work programme for the current year.'*

² http://ec.europa.eu/commission_2010-2014/president/pdf/press_20090903_en.pdf

³ COM(2008) 800.

⁴ Survey carried out by the Directorate-General for Research

⁵ The May 2009 Innobarometer noted that in response to the crisis the segment of high-tech manufacturing firms was the most likely to have cut their innovation budget.

finance accentuated the negative impact. However, compared to previous economic downturns, large companies appeared to maintain their level of R&D investment, even though they tended to focus their priorities.

The crisis also raised awareness of the fact that research and innovation policy must connect more closely with the aspirations of society. The Lund declaration, adopted at the Swedish Presidency conference 'New worlds, new solutions', called for a focusing of European research on the grand challenges of our time.

3. ERA POLICY ACHIEVEMENTS

3.1. ERA Governance

The aim of the Ljubljana process is to tackle deficiencies and inefficiencies in the European research system due to fragmentation, a lack of coherence and coordination, and constraints on the free movement of knowledge. The process was launched in 2008⁶ with as a first step an agreement on a long-term ERA vision⁷. In parallel, five specific ERA initiatives were launched.

In 2009, progress was made at two levels:

- For all five specific ERA initiatives, practical implementation arrangements have been put in place (see sections 3.2 to 3.6);
- A key step in the overall governance of ERA has been the adoption of a Council Resolution on the enhanced governance of ERA⁸.

In this Resolution, the Council acknowledged the need to develop more coherent policy-making at Union and Member State levels as well as to establish the means to provide impetus to ERA development at the political level. The Resolution also called for a revision of the mandate of CREST⁹.

Since 2007, two major ERA conferences have allowed exchanges of views and consultation with stakeholders on ERA policy development. The second ERA conference was organised in Brussels in October 2009.

3.2. ERA initiative on Researchers

The European Partnership for Researchers (EPR)¹⁰ contains four action lines: open recruitment and portability of grants; social security and pensions; attractive employment and working conditions; and enhancing skills and experience.

The Steering Group for Human Resources and Mobility (SGHRM) has been playing a leading role in implementing the EPR. During 2009, the SGHRM addressed most aspects of the EPR, resulting in a rich exchange of national experiences. Three working groups produced concrete outcomes in the areas of open recruitment and working conditions, training and skills, monitoring and indicators.

⁶ Council Conclusions of May 2008 (9076/08).

⁷ http://ec.europa.eu/research/era/2020_era_vision_en.html

⁸ OJ C 323, 31.12.2009, p. 1-4.

⁹ CREST is an advisory body to the Council and the Commission on RTD policy.

¹⁰ COM(2008) 317.

Eight countries developed National Action Plans, others are in the process and some are integrating the EPR implementation in existing national plans. The issue of social security was tackled by an expert group. A feasibility study on a pan-European pension fund is also being finalised.

While work will continue on the implementation of the EPR - including social security coordination and supplementary pension schemes¹¹ - new axes and focuses for action appear:

- attracting and retaining more young women and men in research and science via the Europe 2020 flagship initiative 'Youth on the move';
- fostering researchers career progression with an adequate work-life balance;
- in line with the Europe 2020 flagship initiative 'Agenda for new skills and jobs', applying the flexicurity principles to researchers as part of the exit strategy out of the crisis.

3.3. ERA initiative on Joint Programming

Joint Programming is a process to tackle the mismatch between the European or global scale of today's societal challenges and the national or regional nature of the instruments available to address them.

An intense debate on the modalities of Joint Programming took place in the course of 2009, with good progress achieved by the end of the year. In the High-level Group on Joint Programming (GPC), a dedicated configuration of CREST, Member States - supported by the Commission - worked on the identification and preparation of Joint Programming Initiatives, as well as on the development of voluntary guidelines for framework conditions for Joint Programming.

Four Joint Programming Initiatives were identified:

- A pilot Joint Programming Initiative started on 'Neurodegenerative diseases including Alzheimer's';
- 'Agriculture, Food Security and Climate Change', 'Cultural Heritage and Global Change: a new challenge for Europe' and 'Health, Food, Prevention of Diet Related Diseases' were selected as initiatives for launch in 2010.

A limited number of new themes for Joint Programming Initiatives will likely be identified in 2010. Discussions will continue on the voluntary guidelines for framework conditions. A Belgian Presidency Conference will take stock of the progress on Joint Programming.

3.4. ERA initiative on Research Infrastructures

The Council adopted the regulation setting up a legal framework for the development of pan-European research infrastructures in June 2009¹². This framework for a European Research Infrastructure Consortium (ERIC) provides legal personality recognised in all Member States and some of the advantages of international organisations. The ERIC legal framework could cut down significantly the time necessary for setting up European research infrastructures.

¹¹ A Commission Green Paper on Pensions in mid-2010 and a Communication on New Patterns of Mobility in 2011 will address researchers' social security and pension issues.

¹² Council Regulation 723/2009, 25.06.2009.- OJ L 206, 8.8.2009, p. 1–8.

The Commission has put in place the procedures required for implementing ERIC. Applications with the proposed Statutes of the ERIC must be sent to the Commission. This application is then assessed to verify its compliance with the requirements of the regulation. If the assessment is positive, the Commission adopts a decision setting-up the ERIC.

FP7 is supporting the preparatory phase of the 45 research infrastructures identified by the European Strategy Forum for Research Infrastructures (ESFRI). Many of the projects on the ESFRI list are in the process of collecting commitments from Member States and finalising their ERIC Statutes. The first ERIC is expected to be set up in 2010.

3.5. ERA initiative on International Cooperation

Opening of the ERA to the world continues to be a core element of the Union's activities. The Strategic Forum for International S&T Cooperation (SFIC) was established by the Council in December 2008 to provide a European approach. It has so far focused its attention on sharing information and on developing mechanisms for joint priority-setting.

Concrete achievements have been the development of a web-based document management tool to access national and EU information, closer cooperation between science counsellors of the EU and Member States' attachés in third countries, and a calendar sharing of key events to deepen the understanding of the ongoing direction of current work. Steps towards joint research activities have also been taken with the endorsement of a pilot research cooperation initiative with India on water-related challenges and an energy pilot action with the USA. A Global Initiative on Animal Health will be launched by the Commission in 2010.

3.6. ERA initiative on Knowledge Transfer

In 2008, the Commission adopted a Recommendation and a Code of Practice on knowledge transfer¹³ (KT), which was subsequently endorsed by a Council Resolution. A CREST working group on KT was set up to promote and monitor its implementation. The group collected an overview of existing best practices and national progress in implementation. Several countries have adopted or are preparing national legislation to improve knowledge transfer. The working group started work on common guidelines on KT and intellectual property management in international research cooperation and on KT indicators. To involve stakeholders, the Commission organised KT stakeholders' forums, the second one of which took place in May 2009.

In 2010, the working group will prepare its first annual report and organise the third KT stakeholders' forum in autumn 2010. The Commission plans to launch a pilot knowledge transfer promotion scheme in the area of bio-economy.

3.7. Universities: modernisation agenda

The modernisation agenda for universities entered into a new phase in 2009 with the launch of Peer Learning activities (PLAs). The aim of the PLAs is to deepen mutual learning on topics such as institutional reform, costing of research projects, ways to achieve world-class excellence, recruitment and career of young researchers.

An expert group on 'Diversified funding schemes for university-based research' reported on the difficulties created by the lack of consistency among competitive research funding schemes, in particular for what concerns the financial, accounting and reporting requirements.

¹³ C(2008) 1329.

At the ERA Conference, research funders and performers expressed their willingness to address this issue.

A stakeholders' platform will be launched in 2010 to develop common principles for external competitive research funding. A data collection network on research activities in universities will be developed. The development of pan-European Research Schools will also be in focus.

4. THE SEVENTH FRAMEWORK PROGRAMME

4.1. Implementation

63 calls for proposals were concluded in 2009 for a total budget of EUR 5.3 billion. A total of 16 057 eligible proposals were submitted, of which 3678 passed all evaluation thresholds, resulting in a success rate of 22.9 % on a proposal basis.

A total of 73 485 participants took part in all eligible proposals, for a total project cost of EUR 34.3 billion and a total requested EU contribution of EUR 26.8 billion. Participants in the retained proposals totalled 17 626, for a total project cost of EUR 6.9 billion and a total requested EU contribution of EUR 5.2 billion. This leads to a success rate of 24.0 % on an applicant basis.

3 034 grant agreements were concluded, with 17 144 participants and a total requested EU contribution of EUR 5.3 billion. 33.2 % of all grant agreements were concluded under the Specific Programme 'Cooperation', for 63.9 % of the total requested EU contribution. 12.6 % was concluded under the Specific Programme 'Ideas', for 11.6 % of the total requested EU contribution. 43.3 % under the Specific Programme 'People', for 11.9 % of the total requested EU contribution. 10.5 % under the Specific Programme 'Capacities', for 12.2 % of the total requested EU contribution. 0.4 % under the 'Euratom' Framework Programme, for 0.4 % of the total requested EU contribution.

4.2. The 2010 work programmes

The 2010 work programmes were adopted on 29 July 2009. They included the following features:

- Calls for proposals in the EERP public-private partnerships (see section 4.3.1);
- Acceleration of the implementation of the Risk Sharing Finance Facility (RSFF);
- A specific call to respond to the influenza A (H1N1) crisis;
- A joint research initiative between the Commission and the European Cosmetic Toiletry and Perfumery Association (COLIPA) on alternative strategies for animal testing;
- A call to support capacity building in the Western Balkan countries under the Research Potential programme;
- The 'Oceans of tomorrow' call in the context of the European Strategy for Marine and Maritime Research;
- A specific call on water and food security and better health for Africa.

In addition to the existing 41 bilateral S&T international cooperation agreements (17 under the EU Treaty and 24 under the Euratom Treaty), signed with 21 countries, a further four were signed, with Jordan and Japan under the EU Treaty and with India and Brazil under the Euratom Treaty.

4.3. Related initiatives

As regards Article 185 Initiatives, Ambient Assisted Living (AAL) implemented two calls, with more than 50 projects funded and SME participation of more than 40%. Member States' commitments exceeded EUR 25 million per year and the EU contribution accounted for EUR 50 million for the first two years. Under EUROSTARS, three calls were implemented, with 260 projects selected for funding and more than 70% SME participation. Member States' foreseen contributions amounted to EUR 135 million, with a EUR 45 million EU contribution. The General Agreement for the European Metrology Research Programme (EMRP), delegating implementation of the programme to EURAMET e.V. was signed

The Commission adopted a proposal for a Joint Baltic Sea Research Programme (BONUS)¹⁴ and published the second implementation report¹⁵ on the Nanosciences and Nanotechnologies Action Plan.

A monitoring system was created to identify the volume of FP7 funded research with an impact on the objectives of the renewed EU sustainable development strategy (SDS). The analysis shows that 75% of the Cooperation topics contribute positively to these objectives in the first four years of FP7.

On 13 March 2009 the Commission adopted a Communication on 'A Strategy for ICT R&D and Innovation in Europe: Raising the Game'¹⁶ that seeks to step up the effort in ICT research and innovation and to maximise its impact.

Financial support for R&D and innovation was provided to private companies through the RSFF. In 2009, RSFF loans concluded amounted to EUR 2.98 billion for 25 projects. In total, 62 projects have now been approved for an amount of EUR 6.30 billion.

In addition to the dissemination of research results through CORDIS¹⁷, open access is an important way of improving access to and dissemination of the results of publicly funded research¹⁸. The Commission launched an Open Access Pilot in FP7 in August 2008 and in 2009 focused on setting up a monitoring system for this pilot.

In terms of the application of the ethics framework of FP7, in 2009 the new ethics review process has been approved.

The new cost estimates of the ITER project significantly exceeded the original estimates. In order for the EU to meet its commitments, the Commission presented to the Council the status of the ITER project, the challenges faced and the actions to be taken. The Council confirmed its support to the ITER project, provided that the boundary conditions elaborated by the Commission are met. These include credible cost assessment and cost containment policies,

¹⁴ COM(2009) 610.

¹⁵ COM(2009) 607

¹⁶ COM(2009) 116

¹⁷ <http://cordis.europa.eu>

¹⁸ COM(2007) 56 and Council document 14865/07.

realistic timetable and sound management of the project at all levels. It called for action to be taken and invited the Commission to explore funding possibilities in the context of the current Multiannual Financial Framework.

Information on the direct actions of FP7 for the year 2009 can be found in the Joint Research Centre's annual report¹⁹.

The Commission adopted a Communication on 'A European Security Research and Innovation Agenda'²⁰, following the key findings and recommendations of the European Security Research and Innovation Forum²¹.

4.4. Highlights

4.4.1. Public-private partnerships in research

Public-private partnerships (PPPs) at European level are an efficient way of leveraging R&D investments from industry and from national governments, while at the same time reducing fragmentation of R&D efforts.

European Technology Platforms

European Technology Platforms²² (ETP) provide a framework for stakeholders, led by industry, to define R&D priorities, timeframes and action plans. They ensure an adequate focus of research funding on areas with industrial relevance, by covering the whole economic value chain and by mobilising national and regional public authorities.

Developments in 2009 included their continued contribution to shaping the EU's research priorities, the professionalisation of platform operations, shaping framework conditions and policies complementary to R&D policies and exploring tapping into funds beyond the Framework Programme.

An expert group recommended²³ to create ETP clusters²⁴ to work towards solutions to societal challenges and to unleash the potential of the knowledge triangle by having the ETP clusters adopt a wider role and extend their scope to include education and the complete innovation process.

At a conference in Brussels²⁵ the evolution of the role of ETPs was discussed. There was a positive response to the idea of reinforcing cooperation between ETPs to tackle societal challenges and of exploring how overarching societal challenges can be broken down into more manageable key areas. There was a commonly felt need to integrate innovation more systematically in the activities of ETPs.

The European Industrial Initiatives of the Strategic Energy Technology Plan (SET-Plan)²⁶ are an illustration of how the public and private sector have engaged in developing technology roadmaps and implementation plans to accelerate technology development in sectors such as

¹⁹ http://ec.europa.eu/dgs/jrc/downloads/jrc_ar_2009.pdf

²⁰ COM(2009) 691

²¹ <http://www.esrif.eu>

²² http://cordis.europa.eu/technology-platforms/individual_en.html

²³ ftp://ftp.cordis.europa.eu/pub/technology-platforms/docs/fa-industrialresearch-b5-full-publication-rp_en.pdf

²⁴ A cluster of ETPs working towards the creation of European Bio-Economy for sustainable development has been created in 2009 (www.becoteps.org)

²⁵ http://cordis.europa.eu/technology-platforms/seminar11_en.html

²⁶ http://ec.europa.eu/energy/technology/initiatives/initiatives_en.htm

wind energy, solar energy, electricity grids or carbon capture and storage.

Joint Technology Initiatives

A pioneering approach to developing PPPs was brought about with the Joint Technology Initiatives (JTIs). In 2009 the five JTIs²⁷ have continued launching calls for proposals. Further preparatory work has enabled IMI, Clean Sky and ARTEMIS to acquire the operational capacity to implement their budget in autumn 2009. JTIs have therefore started to play their role in shaping the Europe's research landscape.

In November 2009, the Commission published its Communication on 'Mobilising private and public investment for recovery and long-term structural change: developing Public Private Partnerships'²⁸. It recognises the importance of European PPPs in research and acknowledges their special character as they invest into generating new knowledge, with less predictable, but potentially enormous outputs. In view of setting-up new PPPs, all options in reviewing the legal framework and the financial rules will be considered to provide a simple and cost-efficient model, based on mutual understanding, true partnership and risk sharing.

Lessons from the set up of the first JTIs have been drawn by a Group of representatives of the JTI's industrial partners (the 'JTI Sherpas' Group') and can be found in its report on 'Designing together the 'ideal house' for public-private partnerships in European research'²⁹. One recommendation is to recognize PPPs as special bodies in the revised Financial Regulation.

In October 2009, the Commission published its Communication on 'A public-private partnership on the Future Internet'³⁰ detailing the plans to advance Europe's competitiveness in Future Internet technologies and systems and to support the emergence of Future Internet-enhanced applications of public and social relevance. The PPP will be operational in 2011.

The EERP public-private partnerships

- The EERP called for the setting up of three PPPs: 'Factories of the Future', 'Energy-efficient Buildings' and 'European Green Cars Initiative'. Funding is provided on equal terms by industry and FP7 for a total amount of EUR 3.2 billion over the period 2010-2013.
- Ad-hoc Industrial Advisory Groups were set up to facilitate the dialogue with industry and to develop research strategies, which will help to define the PPPs' calls for proposals throughout the remainder of FP7.
- The first calls totalling EUR 268 million were published on 30 July. Preliminary results show a significantly higher industrial participation compared to regular FP7 calls.

In a Joint Statement issued by the Commission and the Industry representatives in March 2009, it was noted that the PPPs are an efficient way of ensuring:

- a leading role for industry in defining the priorities and the implementation of the research;

²⁷ The five JTIs are: Innovative Medicines Initiative (<http://imi.europa.eu>), Clean Sky (<http://www.cleansky.eu>), ARTEMIS (<http://www.artemis-ju.eu>), ENIAC (www.eniac.eu) and Fuel Cells & Hydrogen (FCH) (http://ec.europa.eu/research/fch/index_en.cfm).

²⁸ COM(2009) 615 final, 19.11.2009: http://ec.europa.eu/archives/growthandjobs_2009/pdf/european-economic-recovery-plan/ppp_en.pdf

²⁹ http://ftp.cordis.europa.eu/pub/fp7/docs/jti/jti-sherpas-report-2010_en.pdf

³⁰ COM(2009)479 final

- a multi-annual work programme with a pre-defined budget, ensuring continuity and allowing industry to make long-term investment plans;
- a cross-thematic approach going from basic and applied research to validation and large-scale demonstration, with an increased emphasis on impact and exploitation;
- increased opportunities to support innovation in SMEs.

4.4.2. *Evaluation and monitoring of the Framework Programme*

In its response to the FP6 ex post evaluation³¹ the Commission stressed the importance of the evaluation findings and provided an initial reaction on the recommendations. The Commission agreed with the majority of them, pointing out that many related initiatives were already underway.

The Progress Report on the implementation of FP7³² provided an overview and analysis of FP7 implementation, notably as regards novelties such as the European Research Council (ERC), JTIs, and the RSFF.

Covering the year 2008, the 2nd FP7 Monitoring Report³³ is based on a set of indicators of the implementation and performance of the Framework Programmes. A descriptive section provided an in-depth focus on issues of either topical importance or particular interest. The format of the monitoring report allows the accumulation of time series data on key indicators.

A review of the ERC's structures and mechanisms³⁴ was published on 23 July 2009. In its response³⁵, the Commission announced steps to ensure the ERC's long-term success as a world-class funding organisation supporting leading-edge frontier research.

An interim evaluation of the Euratom FP7 started in July 2009. The panel of experts finished its report in February 2010³⁶. The evaluation provides valuable input into the preparation of the Euratom Framework Programme for 2012 and 2013.

The launch of the website for FP evaluation³⁷ radically improved the visibility and availability of reports on FP evaluations and monitoring. The website contains more than 300 reports and supports a powerful search facility.

5. OUTLOOK FOR 2010

The Europe 2020 Strategy highlights the key role that knowledge and innovation have to play as drivers of growth and in tackling major societal challenges. It stresses the need to strengthen EU research performance and to raise EU R&D intensity to 3% GDP. The completion of ERA is a key component of the 'Innovation Union' flagship initiative. EU research and innovation funding programmes, including the Research Framework Programme, are also highlighted as key instruments to achieve Europe 2020

³¹ http://ec.europa.eu/research/evaluations/pdf/archive/other_reports_studies_and_documents/fp6_ex-post_evaluation_expert_group_report.pdf and COM(2009) 210

³² COM(2009) 209, SEC(2009) 589

³³ http://ec.europa.eu/research/evaluations/index_en.cfm?pg=fp7-monitoring

³⁴ http://erc.europa.eu/pdf/final_report_230709.pdf

³⁵ COM(2009) 552

³⁶ A separate interim evaluation of the FP7 ICT Theme was concluded in June 2010.

³⁷ http://ec.europa.eu/research/evaluations/index_en.cfm?pg=home

objectives. The Innovation Union Flagship initiative is calling for a major streamlining and simplification of these instruments in the next Multi-annual Financial Framework.

Within the existing legal framework, FP7 will support the implementation of the Europe 2020 strategy. In this context, the 2011 work programmes provided for a record EUR 6.4 billion funding for research and innovation, a considerable economic stimulus and an investment in a smarter, sustainable and more inclusive Europe.

The Commission has in October 2010 presented its proposals for taking forward the 'Innovation Union' flagship initiative. The Commission's proposals set out actions to be taken to:

- mobilise research and innovation to tackle major societal challenges;
- generate and attract more knowledge production, creativity and talent;
- enable and support businesses to access and develop valuable ideas and grow;
- develop large European markets for innovation;
- enable regions to specialise according to their strengths, in particular with the support of Cohesion Policy³⁸;
- accelerate internal reforms and cooperation with world partners.

The Commission proposes a scoreboard to monitor the performance of the Union, based on internationally comparable indicators. ERA-related actions will be further developed in 2012.

Work on the FP7 interim evaluation started in early 2010, with the expert panel scheduled to finalise its work by October 2010. The evaluation will provide valuable information for optimising the implementation of the final years of FP7 and will also be an input into the preparation of the next Framework Programme.

6. SOURCES OF FURTHER INFORMATION

Annual Monitoring Reports for the Framework Programme and its Specific Programmes³⁹;

Five-year assessment reports⁴⁰;

Regular Science, Technology and Competitiveness Key Figures reports⁴¹;

Statistics on science and technology in Europe (Eurostat)⁴²;

Studies and analyses published in connection with European Union research activities and policies⁴³;

Annual Activity Reports of the research Directorates-General⁴⁴;

The practical guide to EU funding opportunities for research and innovation⁴⁵

³⁸ http://ec.europa.eu/regional_policy/atlas2007/index_en.htm

³⁹ http://ec.europa.eu/research/evaluations/index_en.cfm?pg=fp7-monitoring

⁴⁰ http://ec.europa.eu/research/evaluations/index_en.cfm?pg=five-year-assessment

⁴¹ http://ec.europa.eu/research/era/facts/figures/key_figures_en.htm

⁴² <http://ec.europa.eu/eurostat>

⁴³ http://ec.europa.eu/research/evaluations/index_en.cfm

⁴⁴ http://ec.europa.eu/atwork/synthesis/aar/index_en.htm

The CORDIS site: <http://cordis.europa.eu>;

The Commission's Research website: <http://ec.europa.eu/research>;

The ERA website: <http://ec.europa.eu/research/era>;

The Investing in European research website: <http://ec.europa.eu/invest-in-research>;

The ERAWATCH website: <http://cordis.europa.eu/erawatch>;

⁴⁵ http://cordis.europa.eu/eu-funding-guide/home_en.html